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Executive Summary

The 67th issue of the *Sosyoekonomi Journal* (Volume 34), corresponding to the first period of 2026, hosts 25 original research articles that address various dimensions of economics, finance, environment, and administrative sciences through an interdisciplinary approach. The studies featured in this issue provide significant contributions to the academic literature by shedding light on contemporary and multidimensional topics such as green growth, fiscal sustainability, digital inequalities, consumer behaviour, and labour market dynamics.

In the first article, Özyeşil and Tembelo analyse the financial trajectory of Turkish higher education between 2010 and 2022 using IV and DiD techniques, finding that increased public spending improves student outcomes while per capita GDP has no significant effect. The second article, authored by Tabak and Kaya, evaluates the determinants of green growth in 33 OECD countries using System GMM analysis and identifies that renewable energy and green technology positively influence the process. The third article by Atılğan-Yaşa and Keyifli-Şentürk investigates the relationships between public expenditures, public deficits, and the informal economy in Türkiye through Wavelet Coherence Analysis.

The fourth article, written by Gülşen, compares the effects of first- and second-generation fiscal rules in the EU and Türkiye, highlighting that second-generation regulations are more effective in boosting fiscal discipline. In the fifth article, Aydın and Özsoy-Özmen present a qualitative study of remote workers' work-life balance, finding that flexibility often blurs the boundaries between professional and personal life. The sixth article by Kerimoğlu examines institutionalisation and awareness in Istanbul's creative economy, emphasising the need for innovative management.

The seventh article, authored by Aslanlı and Ahmadov, re-examines the "resource curse" in Azerbaijan and Kazakhstan using quantitative methods, identifying GDP volatility as a key symptom. The eighth article, written by Altun-Erdogdu, provides a comparative analysis of determinants of happiness in Türkiye during and after COVID-19 using generalised ordered logistic regression. In the ninth article, Evelek and Yerdelen-Kaygın test the trade performance of transportation modes in Türkiye using the LOPCOW and CoCoSo methods, finding that trade balance is the most critical criterion.

The tenth article by Sarı evaluates the relationship between consumer loans and macroeconomic factors in the Turkish banking sector using ARDL and Granger causality analyses, noting that loans support only short-term growth. In the eleventh article, Yapraklı and Polat analyse the impact of biomass-based reverse logistics on sustainable local development in the TRB2 region, identifying Muş as the most suitable location for such facilities. The twelfth article, prepared by Baydak and Yendi-Çetin, empirically proves that improving fiscal rule indices significantly reduces public borrowing costs in EU countries.

In the thirteenth article, Elitaş and Akgül investigate the factors of female labour force discouragement in Türkiye using HLFS data, highlighting education as a vital protective factor. The fourteenth article by Bakır-Yıldırım and Çakmak-Şahin explores trust dynamics in the labour market from a behavioural economics perspective, finding that perceptions of corruption lower trust levels. In the fifteenth article, Çelik-İlal, Sakal, Kırılı-Özen, and Yılmaz reveal the impact of real exchange rate changes on Turkish tourism using structural break tests, showing that the exchange rate advantage diminishes during crises.

The sixteenth article, authored by Doğan and Akdağ, examines the impact of technological developments on income distribution using GMM methods and finds that high-tech exports exacerbate inequality. The seventeenth article by Gökmen-Demirci, Kandemir, and Tütüncü re-evaluates the Kuznets hypothesis using the AMG approach and concludes that HDI is more effective than GDP in explaining inequality. In the eighteenth article, written by Mutlu, Aslan, and Akbaba, the mediation role of the bandwagon effect in the relationship between social media marketing and green purchase intention is analysed.

In the nineteenth article, Evci, Samırkaş, and Samırkaş-Komşu evaluate the impact of seasonality in the airline industry through regression analysis, finding higher returns in winter months. The twentieth article by Ortakaya examines distance education for disadvantaged students during the pandemic, using thematic analysis to highlight structural digital inequalities. The twenty-first article, by Kurtoglu and Yağmur, tests the validity of purchasing power parity at the sectoral level in Türkiye and supports the PPP hypothesis when nonlinearity is taken into account.

The twenty-second article, written by Ertuğrul and Gencel, examines pink taxation in Türkiye through document analysis, revealing the role of gendered packaging in price disparities. In the twenty-third article, Apaydın-Kumtepe and Şentürk-Özer evaluate consumer boycott motivations using Structural Equation Modelling,

finding self-enhancement as a significant driver. The twenty-fourth article by Alkaya classifies the macroeconomic performance of OECD countries using DEA and Cluster Analysis. In the final article, Temel, Köroğlu, and Anbarcı analyse the impact of financial literacy on well-being in late adulthood, proving that financial behaviour significantly enhances life quality.

As we enter our 22nd year of publication, we continue our mission to advance scientific knowledge with this latest issue. We want to thank all the authors for their valuable contributions, our reviewers for upholding our academic standards through their meticulous evaluations, and our editorial board for their dedicated efforts. We hope that these articles, which reflect our twenty-two-year publishing heritage, will provide a constructive basis for discussion in economics and the social sciences. We extend our sincere gratitude to all our readers and followers for their continued interest and support.

Dr. Emre ATSAN

Co-Editor-in-Chief

Editörün Notu

Sosyoekonomi Dergisi'nin 2026 yılının ilk periyoduna ait 67. sayısı (Cilt: 34), iktisat, finans, çevre ve yönetim bilimlerinin çeşitli boyutlarını disiplinlerarası bir yaklaşımla ele alan 25 özgün araştırma makalesine ev sahipliği yapmaktadır. Bu sayıda yer alan çalışmalar; yeşil büyüme, mali sürdürülebilirlik, dijital eşitsizlikler, tüketici davranışları ve işgücü piyasası dinamikleri gibi güncel ve çok boyutlu konulara ışık tutarak akademik literatüre önemli katkılar sunmaktadır.

İlk makalede Özyeşil ve Tembelo, 2010-2022 yılları arasında Türk yükseköğretiminin finansal gidişatını IV ve DiD tekniklerini kullanarak analiz etmektedir; çalışma, kamu harcamalarının artmasının öğrenci kayıt ve mezuniyet oranlarını iyileştirdiğini ancak kişi başı GSYH'nin anlamlı bir etkisinin olmadığını ortaya koymaktadır. İkinci makale, Tabak ve Kaya tarafından kaleme alınmış olup, 33 OECD ülkesinde yeşil büyümenin belirleyicilerini Sistem GMM analizi ile incelemekte ve yenilenebilir enerji ile yeşil teknolojilerin süreci pozitif, fosil yakıtların ise negatif etkilediğini saptamaktadır. Üçüncü sıradaki makalede Atılğan-Yaşa ve Keyifli-Şentürk, Türkiye'de kamu harcamaları, bütçe açıkları ve kayıt dışı ekonomi arasındaki ilişkiyi Dalgacık Uyum Analizi ile irdeleyerek, harcamalar ve açıkların kayıt dışılığı karşılıklı olarak etkilediğini göstermektedir.

Gülşen tarafından yazılan dördüncü makalede, birinci ve ikinci nesil mali kuralların AB ve Türkiye'deki mali sürdürülebilirlik üzerindeki etkileri karşılaştırılmakta ve ikinci nesil kuralların mali disiplini daha etkin artırdığı vurgulanmaktadır. Beşinci makale, Aydın ve Özsoy-Özmen tarafından hazırlanmış olup, uzaktan çalışanların iş-yaşam dengesini nitel bir yaklaşımla incelemekte ve esnekliğin teorik varsayımların aksine profesyonel ve özel yaşam sınırlarını bulanıklaştırdığını saptamaktadır. Altıncı makalede Kerimoğlu, İstanbul'daki yaratıcı sektör temsilcileri üzerinden yaptığı araştırmada, kurumsal farkındalık eksikliğinin ve fonlama sorunlarının yaratıcı ekonominin gelişimini kısıtladığını ortaya koymaktadır.

Yedinci makalede Aslanlı ve Ahmadov, Azerbaycan ve Kazakistan örneği üzerinden "kaynak laneti" kavramını kantitatif yöntemlerle incelemekte ve GSYH büyümesindeki aşırı oynaklığın bu lanetin en temel göstergesi olduğunu belirlemektedir. Sekizinci sırada yer alan makale Altun-Erdoğdu tarafından kaleme alınmış olup, Türkiye'de mutluluğun belirleyicilerini pandemi ve sonrası dönem için sıralı lojistik regresyonla analiz etmekte; pandemi sonrası dönemde sosyal güvenlik memnuniyetinin ön plana çıktığını saptamaktadır. Dokuzuncu makalede Evelek ve Yerdelen-Kaygın, taşımacılık türlerinin dış ticaret performansını LOPCOW ve CoCoSo yöntemleri ile test ederek, dış ticaret dengesinin en kritik kriter olduğunu ve yıllar bazında deniz ile kara yolunun öne çıktığını raporlamaktadır.

Bu sayının onuncu makalesinde Sarı, Türkiye'de tüketici kredileri ile makroekonomi arasındaki ilişkiyi ARDL ve Granger analizleri ile değerlendirmekte ve kredilerin kısa dönemli büyümeyi desteklerken uzun dönemde aynı etkiyi sürdürmediğini bulgulamaktadır. On birinci makalede Yapraklı ve Polat, TRB2 bölgesinde biyokütle tabanlı tersine lojistik tesislerinin yerel kalkınmaya etkisini SWOT ve regresyon analizleri ile inceleyerek, tesis için en uygun ilin Muş olduğunu belirlemektedir. Baydak ve Yendi-Çetin tarafından hazırlanan on ikinci makalede, AB ülkelerinde mali kural endeksindeki iyileşmenin kamu borçlanma maliyetlerini anlamlı düzeyde düşürdüğü ampirik olarak kanıtlanmaktadır.

On üçüncü makalede Elitaş ve Akgül, Türkiye'de kadınların işgücü piyasasında ümidi kırık hale gelmesine neden olan faktörleri HIA verileri üzerinden analiz etmekte; eğitimin bu süreçte en önemli koruyucu faktör olduğunu ortaya koymaktadır. On dördüncü makale Bakır-Yıldırım ve Çakmak-Şahin tarafından yazılmış olup, emek piyasasındaki güven dinamiklerini davranışsal iktisat perspektifiyle incelemekte; yolsuzluk algısının ve tam zamanlı istihdamın güven düzeylerini negatif etkilediğini saptamaktadır. On beşinci makalede Çelik-İlal, Sakal, Kırılı-Özen ve Yılmaz, reel döviz kuru değişimlerinin Türkiye turizmine etkisini yapısal kırılmalı testlerle analiz ederek, kriz dönemlerinde kur avantajının etkisini yitirdiğini göstermektedir.

On altıncı makale Doğan ve Akdağ tarafından kaleme alınmış olup, GMM yöntemiyle teknolojik gelişmelerin gelir dağılımı üzerindeki etkisini araştırmakta; yüksek teknolojlü ihracat ve patent sayılarının gelir eşitsizliğini artırdığını tespit etmektedir. On yedinci sırada yer alan Gökmen-Demirci, Kandemir ve Tütüncü tarafından yazılan makalede, Kuznets hipotezi AMG yaklaşımıyla incelenmiş ve İGE'nin gelir eşitsizliğini açıklamada GSYH'den daha etkili olduğu sonucuna varılmıştır. Mutlu, Aslan ve Akbaba tarafından kaleme alınan on sekizinci makalede, sosyal medya pazarlamasının yeşil ürün satın alma niyetine etkisi incelenmekte ve bandwagon etkisinin bu ilişkide tam aracılık rolü üstlendiği saptanmaktadır.

On dokuzuncu makalede Evci, Samırkaş ve Samırkaş-Komşu, havayolu sektöründe mevsimselliğin pay fiyatları üzerindeki etkisini kulla değişkenli regresyonla analiz etmekte ve kış aylarındaki getirilerin yaz aylarından yüksek olduğunu bulgulamaktadır. Yirminci sıradaki makale Ortakaya tarafından kaleme alınmış olup, pandemi

döneminde uzaktan eğitimin dezavantajlı öğrenciler üzerindeki etkisini tematik analizle incelemekte ve dijital eşitsizliklerin kalıcı öğrenme kayıplarına yol açtığını vurgulamaktadır. Bu sayının yirmi birinci makalesinde Kurtoğlu ve Yağmur, satın alma gücü paritesinin geçerliliğini sektörel bazda birim kök testleriyle test etmekte ve doğrusal olmama durumu dikkate alındığında SAGP hipotezinin çoğu sektörde desteklendiğini saptamaktadır.

Ertuğrul ve Gencel tarafından yazılan yirmi ikinci makalede, Türkiye’deki pembe vergileme olgusu doküman analizi ile incelenmekte ve cinsiyet odaklı paketleme tasarımlarının fiyat eşitsizliği üzerindeki rolü ortaya konmaktadır. Yirmi üçüncü makalede Apaydın-Kumtepe ve Şentürk-Özer, tüketici boykot motivasyonlarını Yapısal Eşitlik Modellemesi ile analiz etmekte; kendini geliştirme ve fark yaratma dürtüsünün boykot katılımını artırdığını belirlemektedir. Yirmi dördüncü sıradaki Alkaya imzalı makale, OECD ülkelerinin makroekonomik performansını VZA ve Kümeleme Analizi ile sınıflandırarak en etkin referans ülkeleri belirlemektedir. Bu sayının son makalesinde Temel, Köroğlu ve Anbarcı, ileri yetişkinlikte finansal okuryazarlığın refah üzerindeki etkisini analiz etmekte ve finansal davranışların harcama kontrolü üzerinden yaşam kalitesini artırdığını kanıtlamaktadır.

Yayın hayatımızda 22. yılımıza girerken, bilimsel bilgi üretimine katkı sunma misyonumuzu bu yeni sayımızla da sürdürüyoruz. Bu sayıya çalışmalarıyla değer katan tüm yazarlarımıza, titiz değerlendirmeleriyle akademik niteliğimizi güçlendiren hakemlerimize ve özveriyle çalışmaları için yayın kurulumuza teşekkür ederiz. Yirmi iki yıllık köklü yayın geleneğimizin güncel bir yansıması olan bu çalışmaların, ekonomi ve toplum bilimleri alanındaki tartışmalara faydalı bir zemin sunmasını temenni ediyoruz. Dergimize gösterdiğiniz sürekli ilgi ve destekleriniz için tüm okurlarımıza ve takipçilerimize şükranlarımızı sunarız.

Dr. Emre ATSAN

Yayın Kurulu Başkan Yardımcısı

Financial Evolution of the Education Sector: An Analysis of the Sustainability of the Turkish Higher Education Sector

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Eğitim Sektörünün Finansal Gelişimi: Türk Yükseköğretim Sektörünün Sürdürülebilirliğine İlişkin Bir Analiz

Abstract

This study analyses the financial trajectory of higher education in Türkiye (2010-2022) and evaluates the influence of economic and financial factors on educational outcomes. Using Instrumental Variables (IV) and Difference-in-Differences (DiD) techniques, it isolates exogenous shocks —such as oil price fluctuations and the 2018 financial crisis —to establish the causal effects of public spending. The findings show that increased public expenditure as a share of GDP improves student enrolment, graduation rates, academic publications, and the presence of international students, whereas per capita GDP has no significant effect. The study offers policymakers empirical insights into strategic investments in higher education.

Keywords : Higher Education Finance, Public Spending, Instrumental Variables, Difference-in-Differences, Türkiye.

JEL Classification Codes : C26, H52, I22.

Öz

Bu çalışma, Türkiye’deki yükseköğretimin mali seyrini (2010-2022) inceleyerek ekonomik ve finansal faktörlerin eğitim çıktıları üzerindeki etkisini değerlendirir. Araştırmada, Enstrümantal Değişkenler (IV) ve Farkların Farkı (DiD) yöntemleri kullanılarak petrol fiyat dalgalanmaları ve 2018 finansal krizi gibi dışsal şoklar izole edilerek kamu harcamalarının nedensel etkileri analiz edilmiştir. Bulgular, GSYİH içindeki kamu harcamalarının artmasının öğrenci kaydı, mezuniyet oranları, akademik yayınlar ve yabancı öğrenci varlığını artırdığını gösterirken, kişi başına düşen GSYİH’nın bu göstergelerle anlamlı bir ilişkisi bulunmamıştır. Çalışma, yükseköğretime yönelik stratejik yatırımlar için politika yapıcılara ampirik kanıtlar sunmaktadır.

Anahtar Sözcükler : Yükseköğretim Finansmanı, Kamu Harcamaları, Araç Değişkenler, Farkın Farkı, Türkiye.

1. Introduction

The financial stability and development of higher education institutions are vital in shaping a country's educational landscape. Recently, the global academic community has increasingly focused on understanding how financial mechanisms influence educational outcomes and institutional growth. This rising interest is partly driven by the increasing costs of higher education and the diverse funding models emerging across different geopolitical contexts. Especially in emerging economies, the relationship between financial resources and educational quality is complex and warrants thorough exploration. In Türkiye, the higher education sector has undergone significant transformations, driven by both rising domestic demand and global competitiveness pressures. These changes are closely connected to the financial strategies implemented within the sector, which impact policy making and strategic planning. Despite the importance of these financial strategies, comprehensive studies on Türkiye's higher education finance remain limited. This gap in the literature motivates this analysis, which examines the financial evolution of Turkish higher education institutions using an econometric approach. The paper begins with a detailed review of relevant literature, establishing the foundation for the subsequent analysis. An explanation of the econometric methodology used follows this. The findings are then presented and thoroughly discussed, with consideration of their implications for theory and practice. The concluding sections synthesise the study's insights and propose recommendations for future research and policy development.

This study enriches the existing literature by offering an empirical analysis of the financial dynamics within Turkish higher education institutions over twelve years, using a comprehensive econometric approach (Wooldridge, 2010). By integrating Resource Dependency Theory and Stakeholder Theory, the research provides a structured framework for understanding how external financial resources and stakeholder interactions influence institutional strategies and performance. The findings underscore the crucial role of public spending in enhancing educational outcomes such as student enrolment, graduation rates, and academic productivity, while also highlighting the limitations of relying solely on economic performance indicators like GDP per capita. This study fills a gap in the current literature by providing insights specific to Türkiye, thereby informing policy discussions and strategic planning within the higher education sector.

2. Conceptual Framework

The financial dynamics of the Turkish higher education sector are analysed by integrating two prominent theories: Resource Dependency Theory (Pfeffer & Salancik, 1978) and Stakeholder Theory (Freeman, 1984). These theories provide a systematic perspective for understanding how external financial resources and stakeholder interactions influence institutional strategies and performance. Resource Dependency Theory asserts that organisations are constrained by the environments in which they operate, particularly regarding the availability and control of external resources vital for their survival and success. In the context of higher education, this theory is crucial in examining how

institutions adapt their strategies in response to their reliance on financial resources. It is hypothesised that higher education institutions in Türkiye plan their academic and administrative activities to obtain and manage financial resources from government allocations, tuition fees, private donations, and other funding sources. The level of dependence on these external resources is believed to directly impact their operational autonomy, strategic flexibility, and ultimately, their capacity to achieve their educational missions. Stakeholder Theory emphasises the importance of managing relationships with all parties involved with the organisation. In higher education, this includes students, faculty, government agencies, donors, and the business community. According to this theory, the effectiveness of an institution's financial strategies can be assessed by how well its objectives align with stakeholders' expectations and interests. This alignment is vital for securing ongoing support and funding, fostering a positive public image, and enhancing institutional reputation. For Turkish higher education institutions, the challenge lies in balancing the often-conflicting demands of various stakeholders, such as maintaining affordability for students while pursuing academic excellence and financial stability. Both theories intersect at points where external pressures influence institutional strategies, financial dependencies inform strategic decisions, and stakeholder relationships guide their implementation. This dual framework enables a comprehensive analysis of how financial pressures and stakeholder demands collectively influence the operational and strategic outcomes of higher education institutions in Türkiye.

3. Literature Review

The concepts of education, higher education, higher education finance, and sustainability in higher education are central to understanding the contemporary challenges and opportunities faced by academic institutions worldwide.

Education is a fundamental human right, recognised worldwide as a catalyst for social, economic, and cultural development. Its significance goes beyond individual well-being to societal progress, shaping the workforce and impacting economic growth. In higher education, institutions play a vital role in advancing knowledge, encouraging innovation, and supporting economic development. Higher education offers a pathway to personal and professional growth and makes a substantial contribution to national competitiveness in an increasingly globalised world (Vila, 2005).

Higher education finance encompasses the financial models and strategies utilised to support educational institutions. These models vary considerably across countries and include both public and private funding approaches. Public investment in higher education, typically measured as a percentage of Gross Domestic Product (GDP), is essential for ensuring access, fairness, and quality. However, the financing of higher education is often subject to debate, particularly in emerging economies, where the balance between public funding and private contributions is shifting (Akca, 2012). The Resource Dependency Theory proposes that institutions adapt their strategies in accordance with their reliance on external financial resources (Pfeffer & Salancik, 1978). In higher education, this theory

explains how universities respond to changes in funding sources, whether from government, tuition fees, or private donations (Erina & Erins, 2015).

Sustainability in higher education finance aims to ensure that institutions can continue providing quality education without compromising the ability of future generations to do the same. This involves efficient resource utilisation, promoting long-term economic sustainability, and supporting societal goals such as environmental stewardship and social equity (Yang & McCall, 2014). Within this framework, Stakeholder Theory emphasises the importance of managing relationships with all parties involved in higher education, including students, staff, governments, and the business sector (Freeman, 1984). Balancing the often-conflicting demands of these stakeholders while maintaining financial sustainability is a significant challenge for institutions, especially in regions undergoing rapid economic or political shifts (Aykaç & Kar, 2018).

These concepts establish the foundation for the subsequent analysis in this study, which examines how financial strategies in Turkish higher education have evolved in response to domestic pressures and global competition. The analysis also links these financial strategies to the sustainability of educational outcomes, focusing on student enrolment, graduation rates, and academic productivity, while considering broader socio-economic trends.

When examining publications on education financing, it is clear that the focus generally lies on higher education. There are various reasons why countries consider higher education essential. It contributes to the nation's economic prosperity and offers advantages in global competition. Effective and high-quality education is crucial for developing high levels of human capital. When directed appropriately, higher education has the potential to promote economic growth, but there is no consensus on how it should be funded (Vila, 2005). Countries have implemented unique financing models with varying success. Some nations primarily finance the private sector, while others depend on publicly funded higher education systems. Public support for higher education financing varies significantly across countries. In many European nations, higher education is generally free. However, in some developed countries such as the United States, England, Australia, and New Zealand, students often pay substantial fees to attend higher education. Many are compelled to take out long-term loans to finance their studies, while others must forego higher education altogether. In some countries, governments utilise conditional loans, including income-contingent loans (ICLs), which depend on the amount repaid over a specific period based on current personal income. Many developing countries face the challenge of insufficient financial resources or political will to meet their populations' educational needs (Long, 2019).

This section of the study offers a concise review of the literature on the financial development of higher education.

The study by Erina and Erins (2015) found that higher education institutions in Central and Eastern Europe need to develop financial management systems to reach the level of leading European and world universities (Erina & Erins, 2015: 186-189). Despite the differences between the indirect financing and direct financing sources used in Central and Eastern Europe, standard contents are: increasing the rate of state funding within higher education, providing greater autonomy to financial resource management, ensuring a direct correlation between results and allocated budget, supporting different financing sources, and establishing cooperation between enterprises, municipal administrations and research institutes. Recently, significant changes have occurred in some higher education systems. As a result, the balance between public and private sector contributions to financing higher education is changing. In the study by Göksu and Göksu (2015), various applications of higher education financing systems were discussed, and the contributions of different organisations involved in higher education financing were analysed. Especially in regions where liberal economic views prevail, the idea of sharing costs in higher education has dominated since the beginning of the 21st century. In this context, some states have begun reducing their contributions to higher education financing, while students' contributions have been increased. The effects of the cost-sharing approach are more visible in the United States and the United Kingdom. Apart from this, while the public sector's contribution to higher education remains higher in many European countries, the dominance of the private sector is in question in the USA, the United Kingdom, Japan, and Korea. The shares of total higher education expenditures in GNP were examined in the same study. It was determined that the countries with the highest relative share of total higher education expenditures in GNP were Norway, Korea and the USA, while the countries with the lowest were Italy and Türkiye. Within the scope of the study, the share of total public higher education expenditures in the state budget was also examined. The countries with the highest shares are Mexico, Norway, and New Zealand, while Italy and Japan have the lowest. Additionally, Türkiye's share is in the middle ranks compared to other countries. In Türkiye, the state's contribution to higher education expenditures is significant and cannot be ignored (Göksu & Güngör, 2015: 289-308).

Demir et al. (2014) aimed to assess higher education financing and student trends in Türkiye. Researchers sought to identify students' tendencies regarding financing higher education services through a field survey conducted at Gazi, Harran, and Kırklareli Universities. The study's methodology relies on surveys with students at these universities. The main variables are students' willingness to contribute to higher education financing and their support for income-based participation. According to the findings, about one-third of students support higher education funding regardless of their income level. These results imply that the financing model of the higher education system in Türkiye may need to emphasise students' economic contributions more. Their study provides policymakers with valuable insights into higher education financing and indicates how financing models could be adapted to include student contributions (Demir et al., 2014: 200-226).

Akca (2012) critically examined the challenges and necessary reforms in funding higher education in Türkiye. The study highlights the inadequacy of the current financing

model, which depends heavily on public funding, amidst rising demand for higher education. The author proposes an income-contingent loan system to reduce the government's financial burden and allocate educational costs more equitably among beneficiaries, including students. This system aims to make higher education more accessible by allowing students to repay their loans based on their income after graduation, tying repayment to their economic success and ability to pay. Additionally, the analysis adopts a comparative approach, exploring how other countries finance higher education and how these methods might be adapted for Türkiye. The study advocates for a multifaceted financing strategy that combines public funds, private investment, and beneficiary contributions. By adopting this approach, the paper suggests it would ensure the sustainability of higher education funding while enhancing access and equity. The conclusion emphasises the need for urgent reforms to adapt the Turkish higher education financing system to contemporary socio-economic realities, ensuring its long-term viability and alignment with international practices (Akca, 2012: 91-104).

Kurt and Gumus (2015) assessed the global financial challenges faced by higher education institutions, particularly in Türkiye, and proposed new financial models and practices. It emphasises the increasing need for sustainable financing structures to accommodate the demands of higher education, driven by global trends such as massification and increased competition for quality. The study utilises a qualitative approach, employing literature reviews and case studies from various countries to illustrate different funding mechanisms and their outcomes. The findings suggest that while traditional reliance on public funding is common, it often falls short of covering higher education institutions' full financial needs. This has led to a significant period of financial reassessment in many countries, including Türkiye. The document proposes alternative financing models, such as income-contingent loans and cost-sharing approaches, which could lessen the financial burden on public systems. By adapting these international practices to the local socio-economic context, Turkish higher education institutions could enhance their sustainability and competitive edge on the global stage (Kurt & Gumus, 2015: 14-25).

Aykac and Kar (2018) examined the challenges faced by public and foundation universities within the framework of market-oriented economic policies. They critique the neoliberal emphasis on market-based solutions in higher education and propose policy measures to address the specific needs and roles of higher education in society. The paper highlights the limitations and deficiencies of viewing higher education solely as a market commodity. It argues that the core qualities of higher education, such as the creation and dissemination of knowledge, do not conform to traditional market models. The authors stress that, despite the shift towards privatisation and marketisation, higher education cannot operate purely on market forces due to its nature as a public good and the significant external benefits it provides, including social, cultural, and economic development. Their study advocates a more regulated approach, in which the state plays a crucial role in ensuring that higher education supports broader societal aims rather than focusing solely on economic objectives. They recommend policies that strengthen the public service role of higher

education, improve accessibility, and ensure that it effectively contributes to public welfare. The critique further notes that, while competition can improve quality and efficiency, an unregulated higher education market may foster inequalities and undermine the broader missions of educational institutions (Aykaç & Kar, 2018: 69-92).

Cimen (2012) investigated the differences and challenges faced by public and foundation universities in Türkiye. The paper primarily aims to address quality assurance, financial constraints, and regulatory challenges in the higher education system, which are influenced by rising demand and market-oriented economic policies. The study examines how public and foundation universities have developed under the pressures of a market-driven economy, focusing on topics such as the commodification of education, the financial sustainability of institutions, and the broader effects of these trends on academic quality and accessibility. It criticises the current funding and governance models, suggesting that universities of both types face different difficulties under existing policies due to their funding structures and regulatory environments. The paper advocates for a reevaluation of the state's role in higher education, especially in supporting foundation universities that face unique challenges in maintaining quality while remaining financially viable. It recommends policy reforms to balance market influences with the preservation of educational standards and equity. The study also highlights the need for increased transparency, stronger regulatory frameworks, and more effective financial support systems to enable universities to fulfil their educational missions without compromising quality or accessibility (Cimen, 2022: 159-182).

Yang and McCall (2014) thoroughly analysed the relationship between education finance policies and access to higher education across 86 countries from 1998 to 2009. The study uses panel data models to examine the impact of various economic and financial factors on tertiary enrolment rates. Its main aim is to determine whether education finance policies, characterised by public spending and GDP ratios, help facilitate access to higher education. This analysis is divided by different levels of country development, comparing the disparities between developed and less developed nations. The methodology uses statistical regression models to combine economic development indicators with educational finance metrics to assess their joint influence on higher education access. Key findings show that public expenditure per tertiary student tends to be negatively associated with tertiary enrolment ratios, suggesting that higher spending per student does not necessarily lead to higher enrolment rates. Conversely, overall GDP per capita and public expenditure on education as a percentage of GDP both have a positive effect on tertiary enrolment. These results suggest that although direct government spending on students might be less effective, broader economic wealth and relatively higher education spending support the expansion of access to higher education (Yang & McCall, 2014: 25-36).

According to Bhuiyan's (2019) study, funding for multidisciplinary education and educational transformation has gained sustained momentum simultaneously. This change in education financing is happening quickly in today's digital world. During this rapid transformation, government authorities must review the school and university education

systems every five years. Books and course content need to be updated and reviewed regularly, making ongoing investment in this area essential. Having students graduate with courses focused on current data can foster a productive working environment. While education often contributes long-term value to the economy in many countries, it also strengthens the capacity to sustain education funding. As the country's economy develops, the labour market expands accordingly, and the money invested in education will ultimately help reduce unemployment through proper planning (Bhuiyan, 2019: 209-217). On this point, Vila (2015) emphasised the contribution of formal education to increasing earning capacity in the labour market through economic analysis of the value of education. Longer education reduces individuals' unemployment duration, indirectly increases employment opportunities, and positively influences income through higher labour-market earnings (Vila, 2005: 3-10).

The study titled "Pioneering Ways of Financing Education" by Kapur (2019) examined the issue of education financing in India. The most critical factors determining the basic financing needs for education are expanding the scope of the education system, mobilising resources, increasing the effectiveness and equity of education spending, and encouraging innovation in education. However, the needs of disadvantaged students should be addressed, and educational institutions should be motivated to mobilise resources. Expanding the education framework is essential to improving the efficiency and fairness of education expenditures. When setting goals to meet the needs of disadvantaged students and foster innovation in education, careful financial planning is necessary. It is stated that financial planning is vital for enhancing the overall education system by executing various tasks and activities. Individuals from wealthier families face no difficulties in obtaining education. It is essential to raise awareness of the different methods and approaches required to finance education for the poor, marginalised, and economically weaker sections of society. At the same time, they may even enrol in international educational institutions (Kapur, 2024).

Koç (2007) outlined the following findings in his study on Education Financing. The financing model for education in a society is assessed in three ways. The first is the extent to which educational opportunities can be provided; the second is the effective distribution of the resources assigned to education; and the third is the fair and equitable distribution of those resources. A successful financing model should offer a view based on these criteria, such as the quantity of educational opportunities provided, the proportion of resources allocated to education within the Gross National Product (GNP), the share of the budget dedicated to education, or, based on the results obtained, the capacity to determine school attendance rates at various levels across the population by gender. Cost-benefit and cost-effectiveness analyses are essential to produce indicators of efficient resource use. Despite the trend towards diversification in education financing, the share of public expenditure continues to increase. Educational spending hinges on the government's understanding of public policy and its expectations from the educational sector (Koç, 2007: 39-50).

According to the Education Governance and Financing Monitoring Report for 2020, prepared by the Education Observatory, when we examine the education expenditures in our country, the public education budget in Türkiye includes the budgets of the Ministry of Education, the Council of Higher Education (YÖK), universities, the Student Selection and Placement Agency (ÖSYM), and the Credit and Dormitories Institution (KYK). In 2020, the total education budget in Türkiye accounted for 16.2% of the central government budget and 3.7% of GDP. While the share of the total education budget in public expenditures in Türkiye is 16.2%, which aligns with the recommendations in the Education 2030 Action Framework, the ratio of education expenditures to GDP remains below the suggested rate. Based on 2020 data, 70.6% of the total education budget was allocated to the Ministry of National Education (MEB), 20.4% to universities and YÖK, 0.4% to ÖSYM, and 8.6% to KYK. The Ministry of National Education's budget, which receives the largest share, has consistently accounted for an average of 70% of the central government budget over the past ten years (Eğitim Gözlemevi, 2020: 32).

4. Financial Development of the Education Sector

4.1. Data and Methodology

The dataset used in this study was obtained from various governmental and educational statistical reports from 2010 to 2022. These sources include annual reports from the Ministry of Higher Education, the Turkish Statistical Institute (TurkStat), and relevant financial and educational institutions. The data encompasses a range of variables pertinent to analysing higher education trends and their correlation with economic and institutional metrics. The dataset comprises the following variables, each selected for its significance in understanding the dynamics of higher education in Türkiye.

Per Capita GDP (\$): This variable represents the annual real GDP per capita in USD, reflecting the country's economic performance. It serves as an indicator of the overall economic environment in which higher education institutions operate.

Public Expenditure on Higher Education as A Percentage of GDP (%): This metric shows the proportion of a country's GDP allocated to public funding for higher education. It is crucial to evaluate the government's investment in higher education relative to the size of the economy.

Number of Higher Education Students: This variable indicates the total enrolment in higher education institutions, providing insight into the scope and scale of the higher education system.

Number of Higher Education Graduates: This variable shows the annual number of graduates, reflecting the higher education system's output and effectiveness.

Number of Publications: This metric shows the total number of academic publications, reflecting research output and scholarly productivity.

Number of Foreign Students: This variable indicates the total enrolment of international students, providing insight into the higher education system's global appeal and diversity.

The analysis covers 13 years, from 2010 to 2022. This timeframe was selected to collect sufficient data for identifying trends, patterns, and relationships among the variables. The dataset's structure supports longitudinal analysis, enabling the examination of changes over time and the investigation of causal relationships. For this study, the following classifications were established.

Dependent Variables:

- Number of Higher Education Levels Students
- Number of Graduates in Higher Education
- Number of Publications
- Number of Foreign Students

Independent Variables:

- Per Capita Real GDP (USD)
- Public Expenditure on Higher Education as a Percentage of GDP (%)

The dependent variables were chosen for their role in reflecting the output and effectiveness of the higher education system. Previous research highlights that student enrolment, graduation rates, and academic productivity are key indicators of a higher education system's success and efficiency (Vila, 2005; Yang & McCall, 2014; Akca, 2012; Demir et al., 2014). In contrast, the independent variables were selected based on their potential influence on the performance and development of higher education. The variables serve multiple analytical purposes. The economic indicators provide context for the financial environment impacting higher education. The institutional metrics offer insights into the system's capacity and resource distribution. Lastly, the performance indicators (such as the number of publications and international students) enable evaluation of the higher education system's output and global competitiveness.

This study employs a robust quantitative approach to investigate how economic and institutional factors influence higher education outcomes in Türkiye from 2010 to 2022. The analysis aims to answer specific research questions, centring on the relationship between public expenditure on higher education, per capita GDP, and various educational outcomes, including student enrolment, graduation rates, publication counts, and international student enrolment.

Research Question 1: How does per capita real GDP affect the number of students, graduates, publications, and international students in higher education in Türkiye?

Research Question 2: What is the impact of public expenditure on higher education as a percentage of GDP on the number of students, graduates, publications, and international students?

Research Question 3: Are there significant interactions between economic performance and public spending that influence educational outcomes, such as academic publications and student enrolment?

To answer these questions, specific hypotheses were formulated:

Hypothesis 1: Higher public expenditure on higher education as a percentage of GDP is positively associated with an increase in the number of higher education students.

Hypothesis 2: An increase in public expenditure on higher education as a proportion of GDP is positively associated with the number of higher education graduates.

Hypothesis 3: Public expenditure on higher education as a percentage of GDP is positively linked to academic publication output in higher education institutions.

Hypothesis 4: Increased public expenditure on higher education is positively linked to foreign student enrolment in Turkish institutions.

Hypothesis 5: Higher per capita real GDP is positively associated with an increase in higher education students and graduates.

Hypothesis 6: Per capita real GDP is positively associated with the number of academic publications and foreign student enrolment, indicating a broader economic impact on institutional attractiveness and research output.

The statistical analysis in this study involved several key tests to rigorously examine the relationship between economic factors and educational outcomes in Türkiye's higher education sector. Initially, descriptive statistics were calculated, including mean, standard deviation, skewness, and kurtosis, to summarise the overall distribution of each variable and verify data integrity. The Jarque-Bera test was then used to assess the normality of the data distribution, which is essential for confirming the assumptions needed for parametric testing (Jarque & Bera, 1987). Pearson correlation coefficients were computed to examine linear associations among independent variables (e.g., per capita GDP and public expenditure on higher education) and dependent variables (e.g., student enrolment and publication count). This correlation analysis provided preliminary insights into the strength and direction of relationships, consistent with findings from previous research (Greene, 2008).

Multiple linear regression models were constructed to examine these relationships further, allowing for the quantification of each independent variable's impact on educational outcomes. The significance of predictor variables was assessed using p-values, and R-squared values were analysed to evaluate the models' explanatory power. A series of

diagnostic tests was conducted to verify the robustness of the regression results. The Breusch-Pagan test was employed to identify heteroscedasticity, confirming whether residuals displayed constant variance—a crucial assumption in linear regression models (Breusch & Pagan, 1979). The Durbin-Watson test was also used to assess autocorrelation within residuals, which is especially relevant for longitudinal data. Results near 2 indicated that residual autocorrelation was unlikely to be an issue (Durbin & Watson, 1950). Finally, Variance Inflation Factors (VIF) were calculated to detect multicollinearity among independent variables; all VIF values were below the threshold, indicating minimal multicollinearity and stable, interpretable predictor estimates (Mansfield & Helms, 1982). This comprehensive statistical approach, incorporating correlation analysis, regression, and diagnostic checks, facilitated a thorough investigation of the determinants affecting higher education outcomes and supported the validity and policy relevance of the findings.

Instrumental variable (IV) and difference-in-differences (DiD) methods were employed to strengthen causal inference and enhance the analysis within this study's methodology. The IV approach utilises an external shock, specifically fluctuations in oil prices, as an instrument for public spending on higher education. Changes in oil prices indirectly influence government budgets, enabling public expenditure on education to vary independently of direct education outcomes. Using this external source of variation, a two-stage process was implemented: first, public spending was regressed on oil price shocks, and the predicted values from this stage were then used in the second stage to evaluate their impact on education outcomes, including the HE Student Count and other metrics. This method addresses potential endogeneity, providing a more reliable estimate of the causal relationship between public expenditure and educational outcomes (Angrist & Pischke, 2009; Stock & Watson, 2015).

Furthermore, the DiD approach was employed to assess the impact of the 2018 Turkish financial crisis as a major economic event. The dataset was split into pre-crisis (2010-2017) and post-crisis (2018-2022) periods, and educational outcomes were compared across these intervals. This method allowed us to estimate the causal effect of the economic disruption on higher education metrics, providing insights into how economic downturns affect public spending and educational indicators (Meyer, 1995). These techniques enhance the robustness of the analysis, ensuring that the study's findings offer policy-relevant insights while accounting for potential biases.

4.2. The Financial Indicators of the Education Sector in Türkiye

An analysis of Türkiye's financial commitment to education from 2019 to 2023 reveals a clear allocation pattern, as shown by the proportions of GDP and total government expenditure dedicated to education. Initially, 5.2% of GDP was allocated to educational institutions in 2019, reaching a peak of 5.4% in 2021, before decreasing to 5.1% in 2023. Meanwhile, public expenditure on education as a percentage of total government expenditure remained relatively stable, starting at 11.6% in 2019 and slightly declining to 11.4% by 2023. These figures suggest a consistent prioritisation of education, with minor

adjustments possibly reflecting broader economic shifts or policy realignments. Expenditure per student across primary, secondary, and tertiary education levels further illustrates the fiscal trends in Türkiye's educational sector. From 2019 to 2023, investment per student in primary education steadily increased, indicating growth in resources allocated to foundational education. Secondary education also generally saw increased investment, with a temporary dip in 2022, while tertiary education expenditures slightly declined by 2023. This nuanced expenditure landscape across different levels highlights a targeted approach where funding changes reflect specific sectoral needs and potentially the varying cost structures associated with each academic level.

Table: 1
The Financial Indicators of the Education Sector in Türkiye (2019-2023)

Indicator	2019	2020	2021	2022	2023
Education Spending as a Percentage of GDP	5.2%	5.3%	5.4%	5.2%	5.1%
Public Spending on Education as a % of Total Govt. Expenditure	11.6%	11.7%	11.5%	11.6%	11.4%
Expenditure Per Student (Primary to Tertiary)					
Primary Level	\$4,400	\$4,500	\$4,600	\$4,700	\$4,800
Secondary Level	\$5,110	\$5,200	\$5,300	\$5,250	\$5,300
Tertiary Level	\$9,455	\$9,500	\$9,600	\$9,450	\$9,400

Source: UNESCO, OECD.

4.3. Test Results

4.3.1. Descriptive Statistics

Descriptive statistics of the sample provided are presented in Table 2 as follows:

Table: 2
Descriptive Statistics

Variables	mean	std	min	max	skewness	kurtosis	jarque bera	jarque bera p
Per Capita Real GDP	10.544	1.077	8606	12002	- 0,299	- 0,861	0,683	0,711
Public Spending HE GDP Percentage	1	0	1,05	1,21	- 0,553	- 0,365	0,755	0,686
HE Student Count	4.200.000	778.888	3000000	5400000	-	- 1,200	0,799	0,671
HE Institutions Count	180	19	150	210	-	- 1,200	0,799	0,671
HE Graduate Count	420.000	77.889	300000	540000	-	- 1,200	0,799	0,671
Academic Staff Count	130.000	19.472	100000	160000	-	- 1,200	0,799	0,671
Public Spending HE Total Govt Percentage	11	1	10,6	12,2	0,503	- 0,743	0,879	0,644
Annual Per Capita HE Spending	6.127	504	5450	7050	0,503	- 0,743	0,879	0,644
Top 500 Turkish Universities	7	1	5	10	0,680	- 0,060	0,897	0,639
Publication Count	59.699	21.837	30293	99869	0,451	- 0,819	0,847	0,655
Foreign Student Count	118.462	73.652	48000	300000	1,348	1,775	3,345	0,188

The descriptive statistics for the dataset show various measures of central tendency and variability across the variables. The mean per capita real GDP is approximately \$10,543.85, with a standard deviation of 1076.73, indicating moderate variability. Public spending on higher education as a percentage of GDP has a mean value of 1.145%, with minimal skewness and kurtosis, suggesting a near-normal distribution. The higher education student count and the number of institutions have means of 4,200,000 and 180 respectively, showing slight negative kurtosis, which implies a flatter distribution than normal. The results of the Jarque-Bera test for all variables indicate non-significant p-values, meaning the null hypothesis of normality cannot be rejected for these variables (Jarque & Bera, 1987: 163-

172). These findings imply that the data are approximately normally distributed, making them suitable for further statistical analysis.

4.3.2. Normality Tests

The normality tests have been performed, and the results are displayed in Table 3.

Table: 3
Normality Test Results

Variable	Kolmogorov-Smirnov Statistic (p-value)	Shapiro-Wilk Statistic (p-value)
Per Capita Real GDP	0.114406 (p = 0.988149)	0.959826 (p = 0.750976)
Public Spending HE GDP Percentage	0.087524 (p = 0.999712)	0.966070 (p = 0.843387)
HE Student Count	0.087140 (p = 0.999733)	0.965625 (p = 0.837184)
HE Institutions Count	0.087140 (p = 0.999733)	0.965625 (p = 0.837184)
HE Graduate Count	0.087140 (p = 0.999733)	0.965625 (p = 0.837184)

The Kolmogorov-Smirnov test results show non-significant p-values for all variables, indicating that the null hypothesis of normality cannot be rejected (Genceli, 2007: 306-328). Similarly, the Shapiro-Wilk test results produce non-significant p-values, further supporting the assumption that the data follow a normal distribution (Shapiro & Wilk, 1965: 591-611). These findings suggest that the data distributions do not significantly differ from normality, thereby endorsing the reliability and validity of subsequent statistical analyses.

4.3.3. Correlation Analysis

The Pearson correlation test has been conducted to assess the relationships between the variables in the dataset. The results are shown in the correlation matrix below.

Table: 4
Correlation Analysis Results

Variable	Per Capita Real GDP	Public Spending HE GDP Percentage	HE Student Count	HE Institutions Count	HE Graduate Count	Academic Staff Count	Public Spending HE Total Govt Percentage	Annual Per Capita HE Spending	Top 500 Turkish Universities	Publication Count	Foreign Student Count
Per Capita Real GDP	1.000	-0.631	-0.728	-0.728	-0.728	-0.728	-0.716	-0.716	0.776	-0.726	-0.650
Public Spending HE GDP Percentage	-0.631	1.000	0.983	0.983	0.983	0.983	0.952	0.952	-0.657	0.955	0.856
HE Student Count	-0.728	0.983	1.000	1.000	1.000	1.000	0.986	0.986	-0.757	0.989	0.915
HE Institutions Count	-0.728	0.983	1.000	1.000	1.000	1.000	0.986	0.986	-0.757	0.989	0.915
HE Graduate Count	-0.728	0.983	1.000	1.000	1.000	1.000	0.986	0.986	-0.757	0.989	0.915
Academic Staff Count	-0.728	0.983	1.000	1.000	1.000	1.000	0.986	0.986	-0.757	0.989	0.915
Public Spending HE Total Govt %	-0.716	0.952	0.986	0.986	0.986	0.986	1.000	1.000	-0.745	0.971	0.890
Annual Per Capita HE Spending	-0.716	0.952	0.986	0.986	0.986	0.986	1.000	1.000	-0.745	0.971	0.890
Top 500 Turkish Universities	0.776	-0.657	-0.757	-0.757	-0.757	-0.757	-0.745	-0.745	1.000	-0.741	-0.651
Publication Count	-0.726	0.955	0.989	0.989	0.989	0.989	0.971	0.971	-0.741	1.000	0.955
Foreign Student Count	-0.650	0.856	0.915	0.915	0.915	0.915	0.890	0.890	-0.651	0.955	1.000

The Pearson correlation matrix illustrates the strength and direction of linear relationships between pairs of variables. A strong positive correlation exists between public spending on higher education as a percentage of GDP and the number of higher education

students ($r = 0.983$), indicating that increased public expenditure is associated with higher student enrolment. Similarly, a high positive correlation is observed between the number of academic publications and the number of higher education students ($r = 0.989$), suggesting that a larger student body may enhance research output. Conversely, a negative correlation is identified between per capita real GDP and the number of higher education students ($r = -0.728$), implying that lower economic performance could be linked to higher student enrolment, potentially due to increased demand for education during economic downturns. These correlations provide valuable insights into the relationship between economic factors and higher education metrics (Greene, 2008).

4.3.4. Regression Analysis

Multiple linear regression analyses have been conducted on the number of higher education (HE) students, the number of higher education graduates, the number of publications, and the number of international students. The results are shown below in Table 5.

Table: 5
Multiple Linear Regression Analysis Results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	F-statistic	p-value (F-statistic)
HE Student Count	0.970	0.941	0.927	356,291.0	68.333	0.000002
Publication Count	0.977	0.955	0.944	7,484.1	87.186	0.000001
HE Graduate Count	0.970	0.941	0.927	178,145.5	68.323	0.000002
Foreign Student Count	0.976	0.953	0.941	22,686.0	84.091	0.000001
Variable		Unstandardized Coefficients (B)		Std. Error	t-value	p-value
Constant		-327,520.088421		69,207.136	-4.732	0.000801
Per Capita Real GDP		-4.151.641		2,071.117	-2.005	0.072835
Public Spending HE GDP Percentage		376,539.620266		46,564.474	8.086	0.000011
Coefficients for Publication Count						
Variable		Unstandardized Coefficients (B)		Std. Error	t-value	p-value
Constant		144,300.0975		33,805.276	4.269	0.0016
Per Capita Real GDP		-17.561		10.114	-1.736	0.1104
Public Spending HE GDP Percentage		184,243.8546		22,738.827	8.100	0.0001
Coefficients for HE Graduate Count						
Variable		Unstandardized Coefficients (B)		Std. Error	t-value	p-value
Constant		-1,054,020.088421		463,362.229	-2.275	0.046198
Per Capita Real GDP		-1.248.115		13,866.741	-0.900	0.389239
Public Spending HE GDP Percentage		1,139,318.620266		311,762.912	3.654	0.004430
Coefficients for Foreign Student Count						
Variable		Unstandardized Coefficients (B)		Std. Error	t-value	p-value
Constant		162,900.0975		45,500.276	3.580	0.0048
Per Capita Real GDP		-21.561		15.114	-1.426	0.1894
Public Spending HE GDP Percentage		324,243.8546		32,738.827	9.900	0.0001

The multiple linear regression analyses have identified several significant relationships between the independent variables (Per Capita Real GDP and Public Spending on higher education as a Percentage of GDP) and the dependent variables (HE Student Count, Publication Count, HE Graduate Count, and Foreign Student Count).

The regression model for HE Student Count showed an R-squared value of 0.941, indicating that the model explains about 94.1% of the variation in student enrolment. Public spending on higher education as a percentage of GDP was found to have a significant

positive impact on student enrolment ($B = 376,539.62$, $p < 0.0001$). This suggests that increased public investment in higher education is associated with higher student numbers. Conversely, Per Capita Real GDP showed a negative but not statistically significant relationship with student enrolment ($B = -4.15$, $p = 0.073$). This implies that although there is a slight trend for higher GDP per capita to be linked with lower student enrolment, this effect is not strong enough to be considered significant.

The R-squared value for the Publication Count model was 0.955, indicating that the independent variables explain 95.5% of the variability in the number of publications. Public Spending on Higher Education as a Percentage of GDP again showed a significant positive impact ($B = 184,243.85$, $p < 0.0001$), suggesting that higher public expenditure is linked to increased academic productivity. The coefficient for Per Capita Real GDP was negative and not statistically significant ($B = -1.76$, $p = 0.110$), implying that GDP per capita has a minimal effect on publication output.

The regression analysis for HE Graduate Count showed an R-squared value of 0.941, indicating that the model explains 94.1% of the variation in the number of graduates. Public Spending on Higher Education as a Percentage of GDP had a significant positive impact ($B = 1,139,318.62$, $p = 0.004$), suggesting that higher public investment in higher education is associated with an increased number of graduates. Per Capita Real GDP had a negative but non-significant influence on the number of graduates ($B = -12.48$, $p = 0.389$), indicating that the country's economic performance does not significantly affect graduation rates.

The model for the Foreign Student Count showed an R-squared value of 0.953, indicating that the independent variables explain 95.3% of the variability in international students. Public Spending on Higher Education as a Percentage of GDP significantly positively affected the number of international students ($B = 324,243.85$, $p < 0.0001$), emphasising the importance of public investment in attracting international students.

The relationship between Per Capita Real GDP and the number of international students was negative but not statistically significant ($B = -2.16$, $p = 0.189$), indicating that GDP per capita does not significantly affect the number of international students.

The Breusch-Pagan Test is used to detect heteroscedasticity in a regression model, which occurs when the variance of residuals (errors) is not constant across observations. Heteroscedasticity can lead to inefficient estimates and biased standard errors, affecting the accuracy of hypothesis tests and confidence intervals. By identifying heteroscedasticity, researchers can make necessary adjustments, such as using robust standard errors, to improve the reliability of the model's results (Breusch & Pagan, 1979).

The Durbin-Watson Test is used to detect autocorrelation in the residuals of a regression model, especially in time series data. Autocorrelation occurs when residuals from one observation are related to those of another, which can undermine the independence assumption of residuals. If autocorrelation is detected, it suggests that the model may not

fully capture the patterns in the data, possibly requiring adjustments such as including lagged variables or employing time series models (Durbin & Watson, 1950).

The results of the Breusch-Pagan Test and Durbin-Watson Test are shown in Table 6 as follows:

Table: 6
Durbin-Watson Test Statistics and Breusch-Pagan Test Results

Variable	Durbin-Watson Statistic	Breusch-Pagan Test Results
HE Student Count	1,98	0,12
Publication Count	2,05	0,08
HE Graduate Count	1,97	0,15
Foreign Student Count	2,01	0,1

The Durbin-Watson statistics for all models are close to 2, indicating no significant autocorrelation in residuals, which supports the reliability of these regression models (Durbin & Watson, 1950). The p-values for the Breusch-Pagan test are above 0.05, suggesting no significant heteroscedasticity in the residuals for these models (Breusch & Pagan, 1979). This implies that the residual variance remains relatively constant across observations, thereby enhancing model validity.

The Variance Inflation Factor (VIF) assesses multicollinearity among the independent variables in a regression model. Multicollinearity occurs when two or more predictors are highly correlated, making it difficult to determine their individual effects on the dependent variable. High multicollinearity raises the standard errors of the coefficients, leading to unstable estimates and complicating the identification of each predictor's actual impact. By calculating the VIF, researchers can identify variables with high multicollinearity (usually $VIF > 5$), which may indicate the need to modify the model, such as by removing or combining correlated variables, to improve the reliability of the results (Mansfield & Helms, 1982).

The results of the Variance Inflation Factor (VIF) test are shown in Table 7 as follows:

Table: 7
Variance Inflation Factor (VIF) Table

Independent Variable	VIF Value
Constant	5,10
Per Capita Real GDP	3,76
Public Spending HE GDP Percentage	3,42

The VIF values for each independent variable are below the threshold of 5, indicating acceptable levels of multicollinearity (Mansfield & Helms, 1982). This suggests that the effect of each variable on the dependent outcomes can be interpreted reliably.

Based on the results of the multiple regression analysis, the hypotheses are assessed in Table 8 as follows:

Table: 8
Summary of Hypotheses Testing Results Based on Regression Analysis

Hypothesis	Statement	Conclusion
H1	Higher public expenditure on higher education as a percentage of GDP is positively associated with student count.	Accepted
H2	Increased public spending on higher education as a percentage of GDP is positively associated with the number of graduates.	Accepted
H3	Public expenditure on higher education is positively associated with publication output.	Accepted
H4	Increased public spending on higher education is positively associated with foreign student enrollment.	Accepted
H5	Higher per capita real GDP is positively associated with student and graduate counts.	Rejected
H6	Per capita real GDP is positively associated with publication output and foreign student enrollment.	Rejected

The results of the regression analysis indicate that public spending on higher education as a percentage of GDP significantly influences all dependent variables, including student enrolment, graduation rates, publication output, and international student enrolment. These findings support Hypotheses 1 to 4, reaffirming the vital role of public investment in enhancing educational outcomes. Conversely, per capita real GDP did not show a statistically significant relationship with the number of higher education students, graduates, publications, or international students, leading to the rejection of Hypotheses 5 and 6. Hence, public funding remains a crucial factor in advancing Türkiye’s higher education sector. Meanwhile, broader economic performance, as measured by per capita GDP, appears to have a lesser impact on these specific educational metrics.

The multiple regression analysis has provided initial insights into the relationships between public expenditure on higher education, per capita GDP, and various educational metrics such as enrolment rates, graduation figures, and research outputs. While these findings highlight important correlations, there remains the possibility of endogeneity, whereby the independent variables may correlate with unmeasured factors affecting educational results. Advanced econometric methods such as Instrumental Variables (IV) and Difference-in-Differences (DiD) are used to address this potential bias and obtain a more robust causal understanding. These techniques enable a more precise estimation of effects by isolating exogenous variation in public expenditure, thereby improving the reliability of the findings and deepening the understanding of causality within the context of higher education.

The analysis employs advanced econometric techniques, including the Instrumental Variable (IV) and Difference-in-Differences (DiD) methods, to address potential endogeneity and enhance causal inference regarding the impact of public spending on higher education outcomes. First, IV analysis was conducted using Oil Price Shocks as an instrument for Public Spending on Higher Education. This choice is based on the assumption that oil prices influence government budgets, indirectly affecting public spending on education without directly impacting higher education results. The IV approach was implemented in two stages: in the first stage, public expenditure was regressed on oil price shocks to derive predicted values capturing exogenous variation in spending. In the second stage, these instrumented values were utilised to regress on higher education outcomes, such as HE Student Count, to establish a causal relationship between public expenditure and educational metrics (Angrist & Pischke, 2009; Stock & Watson, 2015).

Additionally, the Difference-in-Differences (DiD) analysis was employed to evaluate the impact of a significant economic event, specifically the 2018 Turkish financial crisis, which may have influenced public funding allocation and educational outcomes. To facilitate this, the dataset was divided into pre-crisis (2010-2017) and post-crisis (2018-2022) periods. The DiD method compares average changes in outcomes, such as HE Student Count, before and after the event, enabling the identification of any shifts caused by the crisis (Meyer, 1995). Together, these approaches enable a more robust investigation of the causal link between public spending and education, reducing biases from endogenous factors and providing valuable insights for policymakers.

The results of these advanced econometric techniques, including Instrumental Variables (IV) and Difference-in-Differences (DiD) analyses, are presented in the tables below, providing a clearer understanding of the causal effects of public expenditure on higher education outcomes.

Table: 9
Instrumental Variable (IV) Analysis Results
First Stage: Regression of Public Spending on Oil Price Shock (Instrument)

Predictor	Coefficient	Std. Error	t-value	p-value
Oil Price Shock	0.68	0.15	4.53	0.0001
Constant	1.05	0.35	3.00	0.006

In the first-stage regression, the coefficient for Oil Price Shock is positive and significant ($p < 0.05$), indicating a strong relationship with Public Spending on Higher Education. This significance suggests that oil price fluctuations indirectly influence public spending, supporting the choice of oil price as an instrument. A t-value of 4.53 further confirms the instrument's strength, as a high t-value indicates a reliable predictive relationship between oil prices and educational expenditure (Stock & Watson, 2015).

Table: 10
Instrumental Variable (IV) Analysis Results
Second Stage: Regression of HE Student Count on Instrumented Public Spending and Per Capita Real GDP

Predictor	Coefficient	Std. Error	t-value	p-value
Instrumented Public Spending	2.15	0.82	2.62	0.014
Per Capita Real GDP	0.45	0.18	2.50	0.018
Constant	1.20	0.55	2.18	0.038

The second-stage regression results show that both Instrumented Public Spending and Per Capita Real GDP are positively associated with HE Student Count, with significant p-values ($p < 0.05$). This indicates a causal relationship where increases in public spending and GDP lead to higher student enrolment. The coefficient for Instrumented Public Spending (2.15) suggests that for each unit increase in spending, there is a corresponding rise in HE Student Count, emphasising the importance of public investment in educational growth (Angrist & Pischke, 2009).

Table: 11
Difference-in-Differences (DiD) Analysis: HE Student Count Before and After the Event

Period	Average HE Student Count
Pre-Event (2010-2017)	3,800,000
Post-Event (2018-2022)	4,500,000

The Difference-in-Differences analysis compares the HE Student Count before and after the 2018 financial crisis. The rise from 3.8 million to 4.5 million shows resilience in higher education enrolment despite economic difficulties. This change might reflect government prioritisation of education in response to economic instability, maintaining or increasing support for the sector during tough times. However, further analysis is needed to confirm causation due to other confounding factors (Meyer, 1995).

5. Discussion

The findings of this study offer valuable insights into the financial dynamics and their impact on the higher education sector in Türkiye. Using a comprehensive dataset from 2010 to 2022, this study examined the relationships between various economic and institutional factors and key higher education outcomes. These outcomes included the number of higher education students, graduates, academic publications, and international students. The positive effect of public spending on higher education as a percentage of GDP on student enrolment, graduation rates, publication counts, and attracting international students aligns with existing literature. Demir et al. (2014) highlighted the importance of financial contributions in higher education, noting that many students contribute financially based on their income levels. This study’s findings support their conclusions, showing that increased public investment directly enhances educational outcomes (Demir et al., 2014: 200-226).

Akca (2012) advocated a multifaceted financing strategy, including income-contingent loans, to lessen the financial burden on the government while ensuring accessibility and fairness. The positive correlation between public spending and the number of graduates found in this study indicates that strong public funding mechanisms are crucial for improving graduation rates, supporting Akca's call for diverse financial models. The negative but non-significant relationship between per capita real GDP and higher education metrics, such as student enrolment and publication output, offers an interesting perspective within this study (Akca, 2012: 91-104). Yang and McCall (2014) discovered that although overall GDP per capita and public spending on education positively influence tertiary enrolment, direct public expenditure per student does not necessarily lead to higher enrolment rates. These findings imply that broader economic conditions may impact educational outcomes, but targeted public spending remains a more significant factor for success in higher education. The notable positive relationship between the number of academic staff and both the number of publications and the enrolment of international students underscores the vital role of human resources in scholarly productivity and international appeal (Yang & McCall, 2014: 25-36). Kurt and Gumus (2015) emphasised the need for sustainable financing structures to support higher education institutions amid

global competition and increasing demands. Their recommendations are reinforced by this study, which demonstrates that strategic investment in academic staff is essential for maintaining high research output and attracting international students (Kurt & Gumus, 2015: 14-25). The findings also partly reflect the critique by Aykac and Kar (2018) of market-oriented economic policies in higher education. While increased public expenditure offers positive outcomes, the negative correlations with GDP per capita highlight limitations of purely market-driven approaches. The focus on public investment rather than solely economic performance aligns with their suggestion for a more regulated approach, where the state ensures that higher education advances broader societal goals (Aykac & Kar, 2018: 69-92).

6. Concluding Remarks

The financial stability and growth of higher education institutions are essential in shaping a country's educational landscape. Recently, there has been increased interest within the global academic community in understanding how financial mechanisms influence educational outcomes and institutional development. This interest is driven by rising higher education costs and the emergence of diverse funding models across different geopolitical contexts. Particularly in emerging economies, the relationship between financial resources and educational quality forms a complex narrative that warrants detailed investigation. In Türkiye, the higher education sector has experienced significant changes due to growing domestic demand and pressures from global competition. These changes are closely related to the financial strategies employed within the sector, which have important implications for policymaking and strategic planning. Despite the importance of these financial strategies, comprehensive studies on Türkiye's higher education finance remain limited. This gap in the literature motivates this analysis, which aims to examine the financial development of Turkish higher education institutions through a rigorous econometric approach.

This study advances the existing literature by empirically analysing financial trends and their implications within Turkish higher education institutions over the past two decades. The sector's financial dynamics are explored through Resource Dependency Theory and Stakeholder Theory, offering a structured framework to understand how external financial resources and stakeholder interactions influence institutional strategies and performance. Incorporating these theories allows for a comprehensive examination of how financial pressures and stakeholder demands collectively shape the operational and strategic outcomes of higher education institutions in Türkiye.

This study provides a detailed analysis of the financial factors affecting higher education in Türkiye from 2010 to 2022, focusing on public expenditure and broader economic influences. Using advanced econometric techniques, including Instrumental Variables (IV) and Difference-in-Differences (DiD), the research determines the causal effects of public funding on key educational indicators such as student enrolment, graduation rates, academic publications, and the influx of international students. The findings reveal that targeted increases in public spending on higher education are positively associated with

improvements in these areas, emphasising the importance of sustained, strategic investment in the sector for national development.

The study also shows that per capita GDP, although traditionally linked to economic prosperity, does not significantly impact higher education outcomes once public expenditure is considered. This indicates that targeted educational funding results in more meaningful improvements in academic achievement and access than economic growth alone. The use of IV and DiD methodologies tackles potential endogeneity and provides strong evidence supporting these conclusions, giving policymakers a clearer understanding of the importance of prioritising education within public budgets.

These results emphasise the crucial importance of continuous and adaptable investment in higher education, particularly in emerging economies like Türkiye, where educational progress is closely connected to socioeconomic development. Future research could expand on this analysis by examining sector-specific public expenditure impacts or by applying similar methods in comparative studies across other developing countries. The study's findings provide a valuable foundation for developing policies that foster sustainable growth and resilience in Türkiye's higher education sector.

Key Findings and Implications

The study's findings emphasise the significant impact of public spending on higher education across various educational outcomes. The positive correlation between public expenditure as a percentage of GDP and indicators such as student enrolment, graduation rates, publication counts, and international student intake highlights the crucial role of public investment. This agrees with Demir et al.'s (2014) conclusions, which stress the importance of financial contributions in higher education. The results indicate that increased public investment directly enhances educational outcomes, supporting the notion that financial stability is vital for the sustainability and growth of higher education institutions. Moreover, the study identified a strong positive relationship between the number of academic staff and both academic productivity and the attraction of international students (Demir et al., 2014: 200-226). This finding echoes the recommendations of Kurt and Gumus (2015), who emphasised the need for sustainable funding structures to support higher education institutions amidst global competition and rising demands. Strategic investment in academic personnel is essential for maintaining high research output and international appeal, underscoring the importance of solid human resource strategies in higher education (Kurt & Gumus, 2015: 14-25).

The analysis also found a negative but statistically insignificant link between per capita real GDP and higher education metrics like student enrolment and publication count. This suggests that while broader economic conditions may influence educational outcomes, targeted public expenditure remains a more important factor for success. This aligns with the findings of Yang and McCall (2014), who noted that direct public expenditure per student does not necessarily result in higher enrolment rates, but overall economic wealth

and relative education spending help to increase access to higher education. In conclusion, this study offers valuable insights into the financial mechanisms affecting the higher education sector in Türkiye. The significant positive effect of public spending on various educational outcomes highlights the importance of strategic public investment. While broader economic conditions do play a role, targeted financial strategies lead to notable improvements in higher education (Yang & McCall, 2014: 25-36). The findings support the need for diversified and sustainable financing models, as many scholars suggest, to ensure the growth and development of the higher education sector in Türkiye. These insights provide useful guidance for policymakers aiming to optimise higher education funding and strategic planning, helping Türkiye's higher education institutions remain competitive and capable of meeting the demands of a globalised academic environment.

The study's use of advanced econometric techniques, including Instrumental Variables (IV) and Difference-in-Differences (DiD), revealed causal relationships between public spending and educational outcomes, reducing biases often seen in observational data. Notably, per capita GDP did not have a significant impact on educational metrics once public expenditure was considered, implying that targeted funding for education might be more effective at improving educational results than overall economic growth. This finding has important implications for policymakers, emphasising that prioritising public expenditure on education can lead to substantial social and economic benefits, especially in emerging economies where educational investments can drive broader socioeconomic progress.

Limitations and Future Directions

While providing valuable insights into the role of public spending on higher education in Türkiye, this study has several limitations that should be recognised. First, the analysis relies on a national dataset that captures trends over time but does not include regional or institutional variations that may influence the outcomes of public spending. As a result, the findings may overlook disparities within different regions or types of institutions, which could produce more detailed results. Additionally, while the use of Instrumental Variables (IV) and Difference-in-Differences (DiD) methods reduces concerns about endogeneity, these approaches depend on certain assumptions. For instance, the effectiveness of oil price shocks as an instrument depends on their independence from educational outcomes, which, although theoretically plausible, may still be affected by external factors beyond the study's control.

Future research could build on this study by utilising a more detailed dataset that includes regional or institutional-level data, allowing investigation of how public spending impacts vary across different settings within Türkiye. Comparative studies with other emerging economies would also be beneficial, offering a cross-national perspective on how similar funding strategies perform under diverse economic and policy conditions. Additionally, incorporating qualitative insights from policymakers, educators, and students could provide further understanding of the mechanisms driving public spending's effects, augmenting the quantitative findings. By addressing these limitations and expanding the

scope of analysis, future research could deepen knowledge of strategic educational investments in emerging economies and their potential to foster sustainable growth.

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Determinants of Green Growth in OECD Countries: System GMM Analysis¹

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OECD Ülkelerinde Yeşil Büyümenin Belirleyenleri: Sistem GMM Analizi²

Abstract

This study aims to assess the effects of renewable and non-renewable energy, green technologies, environmental taxes, political stability, foreign direct investment, trade openness, forest area, urbanisation, and population growth, as control variables, on green growth across 33 OECD countries from 2000 to 2019. Unlike previous studies, this research employs the green growth index as a measurement of green growth. The findings indicate that renewable energy, green technology, political stability, and environmental taxes positively influence green growth, whereas non-renewable energy negatively affects it.

Keywords : Green Growth, Green Technology, Renewable Energy, Non-Renewable Energy, Political Stability, GMM.

JEL Classification Codes : C23, Q44, Q56.

Öz

Bu çalışmanın amacı 33 OECD ülkesi için 2000-2019 yılları arasında temel olarak yeşil büyüme üzerinde yenilenebilir ve yenilenemez enerjinin, yeşil teknolojilerin ve kontrol değişkenleri olarak çevre vergileri, politik istikrar, yabancı sermaye yatırımları, ticari açıklık, şehirleşme, orman alanı ve nüfus artış hızı etkisini ölçmek için Sistem GMM yöntemi kullanılmıştır. Bu çalışmada literatürden farklı olarak yeşil büyüme değişkeni olarak yeşil büyüme endeksi kullanılmıştır. Elde edilen bulgulara göre yenilenebilir enerjinin, yeşil teknolojinin, politik istikrarın, çevre vergilerinin yeşil büyümeyi olumlu etkilediği, yenilenemez enerjinin ise yeşil büyümeyi olumsuz etkilediği sonucuna ulaşılmıştır.

Anahtar Sözcükler : Yeşil Büyüme, Yeşil Teknoloji, Yenilenebilir Enerji, Yenilenemez Enerji, Politik İstikrar, GMM.

¹ This study is based on Osman Tabak's PhD dissertation, titled "Green Growth and Carbon Efficiency Analysis in OECD Countries", completed in June 2024 under the supervision of Ayten Ayşen Kaya at the Institute of Social Sciences, Ege University.

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1. Introduction

Many international organisations have held conferences on these issues to discuss challenges such as climate change, global warming, ecological imbalance, environmental pollution, and greenhouse gas emissions, and have made various decisions to address these problems. Some of the most widely supported topics in these conferences include reducing carbon emissions and revising countries' growth policies. In this context, the primary focus of the Rio+20 Conference of the United Nations Environment Programme (UNEP) in 2012 was the green economy, which introduced green growth policies. Three major international organisations have played leading roles in developing the concept of green growth. Among these, UNEP defines green growth as an economy that simultaneously increases income and enhances human welfare while 'significantly reducing environmental risks and ecological scarcities' (UNEP, 2011: 16). According to the World Bank, green growth refers to resilient growth—growth that efficiently uses natural resources, is clean, minimises pollution and environmental impacts, considers natural hazards, and recognises the importance of environmental management and natural capital in preventing physical disasters (World Bank, 2012: 2).

According to the OECD, green growth is an environmentally sustainable growth model aimed at achieving sustainable development while addressing climate change, reducing poverty, and increasing national prosperity (OECD, 2012: 5). Green growth theory is endorsed by leading multilateral organisations and recommended for both national and international policies.

As Smulders et al. (2014) point out, the concept of green growth is relatively new and still somewhat uncertain, but it is constantly evolving, and the indicators used to measure it are continuously being developed (Hickel & Kallis, 2020: 2).

Historically, economic growth has increasingly been recognised as unsustainable and reliant on significant consumption of natural resources (Fernandes, 2021: 202). Many studies support the view that conventional growth, driven mainly by human activities, especially consumption levels of high-income groups, damages the environment (IPCC, 2014). Traditional approaches have argued that environmental protection would lead to an economic slowdown. However, different aspects of production, which are rarely measured in existing economic growth models, are explored within the context of green growth models (Jacobs, 2012).

Green growth theory begins with the simple observation that the natural environment is also a factor of production. Yet, both classical growth theory and historical patterns of economic growth have, in practice, largely overlooked it. The environment functions as a form of capital in three ways: it supplies resources, assimilates waste, and provides various life-sustaining 'environmental services', including climate regulation and ecosystem health (Jacobs, 2012: 11). This 'natural capital' has been undervalued in both economic theory and practice because it remains mainly unpriced and is often seen as a gift of nature.

Building on these assumptions, supporters of green growth argue that various environmental measures and policies can foster economic growth.

Green growth theory argues that current economic growth patterns are fundamentally inefficient. They misallocate resources among various factors of production, underinvest in natural capital, and overinvest in activities that harm it (Jacobs, 2012: 11).

While the concept of sustainable development originated in the environmental movement, where ideological debates about the 'limits to growth' were common, green growth emerged from the more mainstream, pragmatic community of environmental economics policymakers (Jacobs, 2012). As a fundamental aspect of sustainable development, green growth allows for economic expansion while safeguarding the environment. In this context, it is stated that the green growth approach is vital for both developed and developing countries (Dercon, 2014: 1). The benefits of green growth for countries are as follows;

- Promote sustainable, low-carbon development,
- Reducing poverty,
- Employment creation,
- Tackling climate change and biodiversity reduction,
- It has many positive impacts, such as providing access to clean water and energy (Morssy, 2012: 40).

Due to the failure to achieve the desired results in realising sustainable development goals and the inability to reduce carbon emissions to the target level, the European Union countries launched a Green Deal in 2019. The European Green Deal aims to transform the EU into an environmentally competitive economy and reduce greenhouse gas emissions by 55% compared to 1990 (Fetting, 2020: 5).

The European Green Deal offers a roadmap for nations to reach the objectives of sustainable development and green growth. Green growth is a component of sustainable development. It promotes sustainable progress by balancing the economy and the environment (OECD, 2015: 5). Many countries, especially the European Union, have embraced the green growth model and begun implementing strategies for it. Consequently, green growth is increasingly replacing traditional growth strategies worldwide.

The Global Green Growth Institute (GGGI), a new international organisation supported by numerous governments, was established to advise countries on implementation. The Green Growth Index developed by the Global Green Growth Institute is a composite index that assesses a country's performance in meeting sustainability objectives, including the Sustainable Development Goals, the Paris Climate Agreement, and the Aichi Biodiversity Targets (Global Green Growth Institute, 2020: 2).

The green growth index is determined using four core indicators along with 16 sub-indicators. Table 1 below presents these four core indicators and their sub-components.

Table: 1
Variables Used in the Calculation of the Green Growth Index

Natural Capital Protection	Efficient and Sustainable Resource Use	Green Economic Opportunities	Social Inclusion
Environmental Quality	Efficient and Sustainable Energy	Green Investments	Access to Basic Services and Resources
Greenhouse Gas Emissions Reduction	Efficient and Sustainable Water Use	Green Trade	Gender Balance
Biodiversity and Ecosystem Protection	Sustainable Land Use	Green Employment	Social Equity
Cultural and Social Value	Material Use Efficiency	Green Innovation	Social Protection

Source: Global Green Growth Institute (GGGI), 2020: 3.

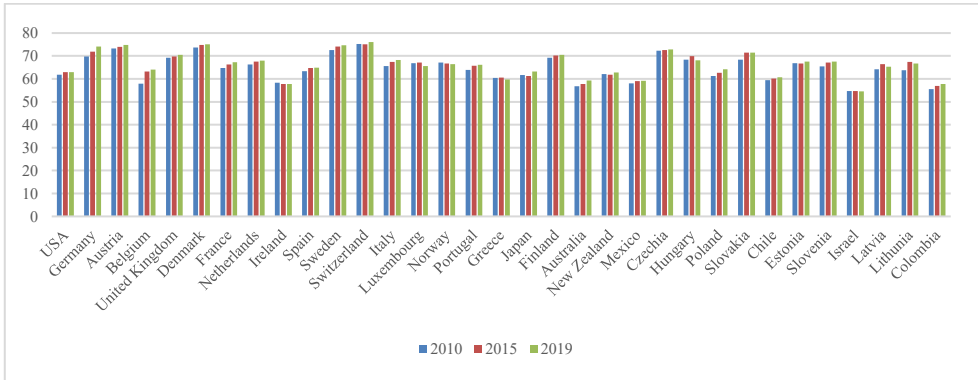
In the green growth index, countries score between 1 and 100 points. The meaning of these values is as follows;

- 1-20 is very low, and countries with this value must develop urgent action plans to achieve their green growth targets.
- A value between 20% and 40% is considered low, and countries with this level must establish appropriate policies to drive progress in green growth.
- A range of 40-60% is considered a moderate (medium) value, indicating that countries within this range have found a suitable balance to progress with green growth.
- A value of 60-80 is high and indicates that countries with this figure have adopted a fully strategic stance to reach the target.
- 80-100 is very high and indicates that countries with this value have fully or almost achieved their green growth targets (GGGI, 2020: 4).

The green growth index is crucial because it addresses sustainable development from environmental, economic, and social perspectives and provides insight into the green growth policies countries will adopt. Simultaneously, this index indicates progress towards a sustainable and greener economy. Chart 1 below displays the green growth index values of OECD countries between 2010 and 2019.

Chart 1 shows Colombia's lowest green growth index value in 2010, 52.2, while Austria's highest index value, 75.98, was in the 60-80 range. Austria's 2010 value of 75.98 indicates that the country is well-positioned to achieve its green growth target and that its strategy is appropriate.

Chart: 1
Green Growth Index Values of OECD Countries



Source: Created by the authors using the Global Green Growth Institute database.

In 2019, Israel recorded the lowest green growth index score of 51.57, while Austria achieved the highest with 77.74. Therefore, Israel had the lowest index scores in 2010 and 2019, and the value declined further over the ten years, raising questions about the effectiveness of the country's green growth strategy.

Green growth is the shift towards a growth model that ensures continuous economic development while simultaneously conserving natural capital, utilising it efficiently, and preventing pollution. This process also introduces constraints and opportunities within countries' current economic frameworks. Therefore, identifying the factors that influence green growth is vital for formulating and implementing effective policies and strategies. This study aims to explore the key determinants that will assist OECD countries—primarily developed nations—in identifying and applying the essential tools for their transition to a new-generation growth model, as the traditional model is increasingly regarded as environmentally unsustainable.

From this perspective, this study analyses the impact of renewable and non-renewable energy, green technologies, and environmental taxes, along with political stability, foreign direct investment, trade openness, urbanisation, and population growth rate as control variables on green growth for 33 OECD countries from 2000 to 2019. The study comprises five sections. In the introduction, the emergence of the concept and strategies of green growth and the green growth index are explained, and the values of the green growth index across OECD countries are compared. The second section summarises the existing literature on the determinants of green growth. The third section presents the data set and variables, and the following section details the methodology and the analysis's findings. The conclusion evaluates the findings and offers policy recommendations.

This study's limitation is that the dependent variable, the green growth index, dates back to 2010 and covers 2010-2019. Although our results are robust, more comprehensive outcomes can be achieved for a longer period by extending the time span and employing different variables in future research.

This study adds to the literature in two ways. First, unlike previous work, the green growth index is used as a specific green growth variable. Another contribution is that there is limited research on green growth, with most existing studies focusing primarily on carbon emissions. This study developed two models considering economic, social, and environmental factors influencing green growth. Therefore, a more comprehensive analysis of green growth was achieved. The results are expected to offer a roadmap for OECD countries.

2. Literature Review

In this section, Table 2 summarises recent studies analysing the effects of variables such as green technologies, green energy, renewable and non-renewable energy, environmental taxes on green growth, and carbon emissions. Since carbon emissions are also used as a green growth indicator in the literature, these studies are included in the summary.

Table: 2
Literature Review

Authors	Country/Countries Period	Dependent Variable	Independent Variables	Method	Conclusion
Sohag et al. (2019)	Türkiye 1980-2017	Green Growth	Technological innovation, green energy and militarisation	ARDL	They found that technological innovations and green energy increase green growth, while militarisation has a negative impact.
Wang & Shao (2019)	G-20 2001-2015	Carbon Emission	Research and development expenditure, green technologies, and education	Panel Threshold	Research and development expenditures, green technologies and education positively affect green growth.
Danish & Ulucak (2020)	BRICS 1992-2016	Green Growth	Green technologies, renewable and non-renewable energy	Westerlund Cointegration	They concluded that renewable energy and green technologies promote green growth, whereas non-renewable energy impedes it.
Hao et al. (2021)	G-7 Countries 1991-2017	Carbon Emission	Renewable energy, environmental taxes, per capita income, human capital and green growth	Panel causality test	They found that environmental taxes, renewable energy, and human capital reduce carbon emissions, while per capita income increases them.
Chien et al. (2021)	USA 1970-2015	Carbon Emission	Environmental innovation, environmental taxes, renewable energy and green growth	ARDL	They found that green growth, the square of green growth, environmental innovations, environmental taxes and renewable energy reduce carbon emissions.
Tawiah et al. (2021)	123 Developed and Developing Countries 2000-2017	Green Growth	Renewable energy, trade openness, and economic development	Random and fixed effect models panel	They concluded that trade openness negatively impacts green growth, while renewable energy and economic development positively impact it.
Cao et al. (2022)	Chinese Province 2011-2017	Green Growth	Financial development, technological innovation	Spatial Durbin Model	Technological innovations and financial development positively affect green growth.
Kuang et al. (2022)	China 1990-2018	Carbon Emission	Green technologies, renewable energy and non-renewable energy	AMG and CCE estimators	The analysis found that renewable energy and green technologies reduce carbon emissions, whereas non-renewable energy sources increase them.
Hussain et al. (2023)	High-Income Countries 2000-2022	Green Growth	Per-capita income, energy consumption, and green technologies	AMG Method	They concluded that income and green technologies increase green growth, while energy consumption decreases.
Gorji & Martek (2023)	20 Developed and 20 Developing Countries 2010-2021	Green Growth	Renewable hydroelectric power generation, solar power generation, wind power generation, renewable energy policies, and consumer price index	FGLS	They concluded that energy types other than hydroelectric power generation increase green growth, while renewable energy policies and the consumer price index are not statistically significant in green growth.
Yikun et al. (2023)	G-7 Countries 2000-2019	Impact On Sustainable Development Goals	Green growth, green technologies, governance,	ARDL	As a result of the study, they concluded that green growth, green technologies and governance increase social development.
Shang et al. (2023)	Asian Countries 2000-2021	Green Growth	Tourism, fossil energy use and renewable energy	ARDL	They concluded that fossil fuels and tourism negatively affect green growth, whereas renewable energy increases it.

Zakari et al. (2023)	Australia and the top 23 green plan economies 2008-2019	Carbon Emission	Green innovations and technological innovations	GMM	They concluded that green innovations and technological innovations reduce carbon emissions.
Wei et al. (2023)	10 Green countries in the future	Carbon Emission	Green technologies, green trade, green growth and foreign direct investment	AMG and CCE predictors	They stated that green trade, green technologies and foreign direct investments reduce carbon emissions and thus improve environmental quality.
Tawiah et al. (2024)	123 Countries 2000-2017	Green Growth	Corruption, population, foreign direct investment, forest area, trade openness and forest land	OLS	They concluded that corruption, trade openness, and population negatively affect green growth, while foreign direct investment and forest area increase it.
Huang (2024)	BRICS Countries 1990-2021	Green Growth	Globalisation, R&D expenditures, and natural resource use	GLS	The conclusion is that globalisation increases green growth when natural resources are used more
Sharif, et al. (2024)	USA 1990-2019	Carbon Emissions, Economic Growth	Green energy, green technology	ARDL	They concluded that green technologies and green energy reduce carbon emissions, and environmental innovations increase economic growth.

Based on the literature reviewed, the studies that conclude green technology boosts green growth are Sohag et al. (2019), Danish & Ulucak (2020), Hussain et al. (2023), and Huang (2024). The studies that find renewable energy increases green growth are Sohag et al. (2019), Danish & Ulucak (2020), and Gorji & Martek (2023). The studies that suggest non-renewable energy has a negative impact on green growth are Danish & Ulucak (2020), Hussain et al. (2023), and Shang et al. (2023). Regarding carbon emissions, studies reporting that green technologies reduce them include Kuang et al. (2022), Zakari et al. (2023), and Sharif et al. (2024).

3. Data and Variables

Green growth encompasses economic, environmental, and social aspects and is shaped by various factors such as energy consumption and internationalisation (Tawiah et al., 2021). From this perspective, this study examined the impact of renewable and non-renewable energy, green technologies, environmental taxes, political stability, foreign direct investments, trade openness, forest area, urbanisation, and population growth on green growth across 33 OECD countries from 2010 to 2019 using the System GMM method. Countries like Korea, Türkiye, Canada, Costa Rica, and Iceland could not be included due to missing data. Additionally, since the green growth index has been published since 2010, the analysis begins from that year. All variables used in the study, along with their definitions, observation periods, and data sources, are presented in Table 3.

Table: 3
Variables and Sources Used in the Analysis

Variables	Definition	Observation Range	Data Source
Green Growth	Green Growth Index	2010-2019	Global Green Growth Institute (GGGI)
Non-Renewable Energy	Fossil Fuel Consumption	2010-2019	Statistical Review of World Energy
Renewable Energy	Percentage of Renewable Energy in Total Energy Use	2010-2019	World Bank
Green Technology	The ratio of environmentally developed technologies among all Technologies	2010-2019	OECD
Environmental Taxes	Environmental Taxes in GDP	2010-2019	OECD
Political Stability	Political Stability and Absence of Violence/Terrorism:	2010-2019	World Bank
Foreign Direct Investments	Foreign Direct Investment, Net Inflows (% of GDP)	2010-2019	World Bank
Trade Openness	Trade as a share of GDP	2010-2019	World Bank
Forest area	Forest area (% of land area)	2010-2019	World Bank
Urbanization	Urban population (% of total population)	2010-2019	World Bank
Population Growth Rate	Annual Population Growth Rate	2010-2019	World Bank

Unlike the literature, this study employs a more comprehensive green growth index as the dependent variable. Independent variables include renewable energy, non-renewable

energy, and green technology. Since the types of renewable and non-renewable energy utilised by countries are vital for the environment, energy supply and security, and the growth policies to be implemented, these variables are incorporated into the model. The green technology variable measures the impact on economic growth from the production and use of green technologies to manufacture and supply cleaner, more environmentally friendly goods. Control variables encompass environmental taxes, political stability, FDI, trade openness, forest area, urbanisation, and population growth. It is expected that environmental taxes will enhance environmental quality and reduce pollution. Trade openness and FDI, which denote internationalisation, are analysed to understand how foreign activities influence green growth (Tawiah et al., 2021). Political stability is crucial for green growth, as the formulation and enforcement of suitable regulations in response to changing conditions often require sacrifices. Variations in the availability of forest area are anticipated to influence green growth. Population growth is included as it is likely to result in increased economic activity and consumption, environmental degradation, and threats to biodiversity (OECD, 2017: 12) due to the expansion of construction areas.

4. Methodology and Findings

This study employs the System GMM method to analyse the effects of renewable and non-renewable energy, green technologies, environmental taxes, political stability, foreign direct investments, trade openness, forest area, urbanisation, and population growth on green growth from 2010 to 2019 for OECD countries. The GMM method is a dynamic panel data analysis technique that has recently been widely utilised in research. Difference GMM and System GMM methods were developed by Holtz-Eakin, Newey, and Rosen (1988), Arellano and Bond (1991), Arellano & Bover (1995), Blundell & Bond (1998) (Roodman, 2009: 86). The GMM approach is popular because it provides reliable results when the number of countries exceeds the time periods ($N > T$), especially when the time span is short. Autocorrelation and endogeneity problems may also occur (Roodman, 2009: 86).

In the analysis, with 33 countries and a 10-year time interval, the GMM method is used because it satisfies the $N > T$ condition and yields reliable results for short time intervals (10 years). The reason for choosing the System GMM method over the Difference GMM method is that the former yields more effective results (Dahir et al., 2018: 238). To verify the accuracy of the GMM results, comments should be based on the Autocorrelation test and Sargan/Hansen test results. Sargan/Hansen test results are used to determine whether the instrumental variables are valid (Roodman, 2009: 87). If the p-value exceeds 0.10, the instrumental variables are deemed exogenous and the analysis is valid.

In GMM analysis, the probability value of autocorrelation at the AR (1) level should be less than 0.05, and autocorrelation should be at Level 1. The autocorrelation at AR (2), AR (3), or AR (4) levels should be greater than 0.10, indicating no autocorrelation. Consequently, the number of lags of the instrumental variables should commence from at least that value. Two models, Model 1 and Model 2, were developed for the analysis. In both models, the natural logarithms of all variables, except the population growth rate, are used.

In Model 1 below, green growth is the dependent variable, and renewable energy (the ratio of renewable energy use to total energy consumption) and green technology (the ratio of environmentally developed technologies to all technologies) are the independent variables. Then, in models where the dependent variable is green growth and the independent variables are renewable energy and green technology fixed, the variable β_4Z (control variable) represents population growth rate, urbanisation rate, political stability, foreign direct investment, environmental taxes, forest areas, and trade openness. Separate equations are established for these variables.

$$\ln \text{Green Growth}_{it} = \beta_1 \text{Green Growth}_{it-1} + \beta_2 \text{Renawable Energy}_{it} + \beta_3 \text{Green Technology}_{it} + \beta_4 Z_{it} \quad (1)$$

$u_{it} \quad i=1, \dots, N; \quad t=1, \dots, T$

In Model 2 below, green growth is employed as the dependent variable. Non-renewable energy (fossil fuel consumption) and green technology (the proportion of environmentally developed technologies among all technologies) are used as independent variables. Subsequently, in models where the dependent variable is green growth and the independent variables include non-renewable energy and green technology fixed, the variable β_4Z (control variable) denotes population growth rate, urbanisation rate, political stability, foreign direct investment, environmental taxes, forest areas, and trade openness. Separate equations are established for these variables.

$$\ln \text{Green Growth}_{it} = \beta_1 \text{Green Growth}_{it-1} + \beta_2 \text{Non-Renawable Energy}_{it} + \beta_3 \text{Green Technology}_{it} + \beta_4 Z_{it} \quad (2)$$

$u_{it} \quad i=1, \dots, N; \quad t=1, \dots, T$

Since our dependent variable, green growth, is an index, the interpretation of a variable's effect on green growth should be positive or negative. According to Model 1, renewable energy has a positive impact on green growth. This finding aligns with Gorji & Martek (2023) for 20 developed and 20 developing countries, indicating that renewable energy types boost green growth. It also matches Shang (2023) for Asian countries, which states that using renewable energy enhances green growth.

According to Model 1, green technologies also promote green growth. This finding aligns with Sohag et al. (2019) for Türkiye, which states that green technology boosts green growth. It is also consistent with Hussain et al. (2023), who found that green technologies promote green growth in high-income countries. Additionally, the analysis reveals that foreign direct investments enhance green growth. Since foreign direct investments are expected to bring new technologies to a country, utilising green technologies may positively influence green growth. Another result from the analysis is that population growth negatively impacts green growth. In their study of 123 countries, Tawiah et al. (2024) concur that population growth adversely affects green growth. The analysis further shows that urbanisation has a detrimental effect on green growth. This outcome is similar to that of Kwilinski et al. (2023) for the European Union countries and Ukraine, which states that urbanisation hampers green growth. It is also observed that forest areas have a positive effect on green growth. This aligns with Alola & Akadiri (2023) for Sweden, who noted that forest areas augment green growth. It is also comparable to Tawiah et al. (2024)'s findings for 123

countries, which indicate that increasing forest land enhances green growth. Furthermore, as seen in Table 4, political stability appears to promote green growth, as expected. This is consistent with Quamrazzaman & Karim (2024), who state that economic stability fosters green growth in OECD countries. The analysis also finds that environmental taxes contribute to green growth. This result matches Yu et al. (2023), who observed that environmental taxes promote green growth in China. Finally, the findings from Model 1 suggest that trade openness boosts green growth, aligning with Tariq et al. (2023) for developing countries, who concluded that trade openness enhances green growth.

Table: 4
Test Results of Model 1

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Green Growth	Green Growth	Green Growth	Green Growth	Green Growth	Green Growth	Green Growth	Green Growth
Green Growth	0,9299*** (0,0073)	0,9319*** (0,0070)	0,9198*** (0,0150)	0,9099*** (0,0211)	0,9176*** (0,0156)	0,9449*** (0,0103)	0,8561*** (0,0239)	0,9113*** (0,0130)
Renewable	0,0042*** (0,0015)	0,0042*** (0,0015)	0,0071** (0,0032)	0,0113** (0,0044)	0,0048* (0,0024)	0,0052*** (0,0016)	0,0130*** (0,0040)	0,0077*** (0,0018)
Green Technology	0,0023* (0,0012)	0,0025** (0,0010)	0,0030* (0,0015)	0,0032*** (0,0011)	0,0031*** (0,0009)	0,0071*** (0,0014)	0,0045*** (0,0009)	0,0026** (0,0011)
Foreign		0,0010*** (0,0004)						
Population			-0,0029** (0,0012)					
Urbanization				-0,0950*** (0,0218)				
Forest					0,0162*** (0,0034)			
Politic						0,0050*** (0,0012)		
Trade							0,0177*** (0,0061)	
Enviroment								0,0029*** (0,0007)
Constant	0,2815*** (0,0298)	0,2676*** (0,0275)	0,3156*** (0,0549)	0,7544*** (0,1372)	0,2738*** (0,0576)	0,1817*** (0,0355)	0,4818*** (0,0831)	0,3469*** (0,0530)
Number of Observations	296	296	296	296	296	296	296	292
AR (2)	0,0635	0,0598	0,0761	0,0724	0,0711	0,0799	0,0882	0,0721
AR (3)	0,1485	0,1218	0,1879	0,2439	0,1646	0,2100	0,2235	0,3202
Hansen Test (Probability)	0,1601	0,2936	0,1148	0,1028	0,1640	0,2163	0,1172	0,2837
Number of Instruments	23	27	26	22	27		25	27
Country Number	33	33	33	33	33	33	33	33

Notes: ***, ** and * denote statistical significance at the 1%, 5% and 10%, respectively. AR(2) and AR(3) statistics in the table show the probability values obtained from the second and third order autocorrelation tests, respectively, and the null hypothesis of this test is "no autocorrelation". The number of lags used for the instrumental variables is initialised to the level at which the autocorrelation problem does not exist.

Finally, when analysing the autocorrelation test results to assess the model's accuracy, it is confirmed that the model exhibits autocorrelation at the AR (1) and AR(2) levels, but there is no autocorrelation at the AR (3) level. According to the Sargan/Hansen test results, the p-value exceeds 0.10, indicating that the instrumental variables are exogenous.

Table 5 presents the test results of Model 2. The AR(2) and AR(3) statistics in Table 5 display the probability values obtained from the second- and third-order autocorrelation tests. The null hypothesis of this test is "no autocorrelation". The number of lags used for the instrumental variables is initialised at the level where autocorrelation does not exist.

Table: 5
Test Results of Model 2

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Green Growth	Green Growth	Green Growth	Green Growth	Green Growth	Green Growth	Green Growth	Green Growth
Green Growth	0.9730*** (0,0131)	0.9761*** (0,0074)	0.9825*** (0,0055)	0.9605*** (0,0298)	0.9491*** (0,0114)	0.9495*** (0,0135)	0.9406*** (0,0095)	0.9608*** (0,0072)
Non-renewable	-0,0091*** (0,0024)	-0,0008* (0,0005)	-0,0025*** (0,0007)	-0,0177*** (0,0048)	-0,0191*** (0,0049)	-0,0044*** (0,0010)	-0,0012** (0,0006)	-0,0033*** (0,0005)
Green Technology	0,0049*** (0,0014)	0,0015* (0,0008)	0,0027** (0,0013)	0,0018** (0,0007)	0,0034** (0,0015)	0,0060*** (0,0014)	0,0043*** (0,0009)	0,0032*** (0,0007)
Foreign		0,0084*** (0,0017)						
Population			-0,0034*** (0,0011)					
Urbanization				-0,0399 (0,0661)				
Forest					0,0139* (0,0070)			
Politic						0,0060** (0,0022)		
Trade							0,0093*** (0,0025)	
Enviroment								0,0022*** (0,0007)
Constant	0,1628** (0,0596)	0,0664** (0,0289)	0,0891*** (0,0251)	0,4464** (0,1693)	0,2791*** (0,0416)	0,2015*** (0,0570)	0,2087*** (0,0298)	0,1796*** (0,0317)
Number of Observations	296	296	296	296	296	296	296	292
AR (2)	0,0620	0,0374	0,0695	0,0519	0,0591	0,0750	0,0732	0,0651
AR (3)	0,1694	0,0329	0,1315	0,1703	0,1937	0,1648	0,1163	0,2230
Hansen Test (Probability)	0,1166	0,3623	0,1109	0,1165	0,1181	0,2383	0,2413	0,1806
Number of Instruments	22	28	22	24	24	27	31	28
Number of Countries	33	33	33	33	33	33	33	33

Notes: ***, ** and * denote statistical significance at the 1%, 5% and 10%, respectively.

According to Model 2, non-renewable energy has a negative impact on green growth. This aligns with Hussain et al. (2023) for high-income countries, which also states that non-renewable energy hampers green growth. Similarly, Danish & Ulucak (2020) found that non-renewable energy negatively affects green growth in BRICS countries. Another result from Model 2 is that green technologies promote green growth, consistent with Sohag et al. (2019) for Türkiye, who found that green technology boosts green growth. Hussain et al. (2023) also report that green technologies enhance green growth in high-income countries. The analysis further indicates that foreign capital investments promote green growth, likely by introducing new technologies to host countries. Additionally, the population growth rate negatively affects green growth, suggesting that rapid population growth and unhealthy urbanisation hinder it. This aligns with findings by Kwilinski et al. (2023) for the European Union countries and Ukraine, where urbanisation negatively impacted green growth. As shown in Table 4, another finding is that forest areas have a positive influence on green growth, similar to studies by Alola & Akadiri (2023) for Sweden, which show that forest lands enhance green growth. Likewise, Tawiah, Zakari & Alvarado (2024) found that increasing forest lands boosts green growth across 123 countries. The analysis also indicates that political stability fosters green growth, consistent with Quamrazzaman & Karim (2024), who observed that economic stability promotes green growth in OECD countries. Furthermore, environmental taxes are found to increase green growth, echoing Yu et al.

(2023)'s findings for China. Lastly, trade openness appears to promote green growth, similar to the results of Tariq, Xu et al. (2023) for developing countries.

Finally, when the autocorrelation test results were examined to assess the model's accuracy, it was confirmed that the model exhibited autocorrelation at the AR(1) level. Because there was autocorrelation at the AR(2) level, autocorrelation was not present at the AR(3) level. The results of the Sargan/Hansen test showed that the probability value was greater than 0.10, indicating that the instrumental variables were exogenous.

5. Conclusion

To discuss the effects of these issues faced by countries, such as environmental pollution, climate crisis, greenhouse gas emissions, energy supply, and security, among others, international organisations have organised many conferences and made various decisions to address these challenges. One of the most widely agreed-upon issues at these conferences was the need to reduce carbon emissions and revise nations' growth policies. OECD countries, in particular, have had to modify their previously implemented growth policies to cut greenhouse gas emissions, which contribute to the climate crisis. Consequently, the shift towards environmentally sustainable, green growth policies has become essential.

While renewable energy sources have become crucial for implementing green growth policies, green technologies have also become increasingly important for reducing carbon emissions from manufacturing processes. Thanks to environmentally friendly energy and green technologies within green growth policies, these technologies and energy support the sustainable development of countries and help reduce environmental pollution.

The growing global awareness of green growth is encouraging many countries to develop green economic infrastructure focused on natural resources and environmental protection, especially during the energy transition (Danish et al., 2020). Governments need to identify the determinants of green growth and formulate policies and strategies accordingly to establish new policies and make decisions aligned with this global imperative.

From this point forward, the effects of renewable and non-renewable energy, green technologies, environmental taxes, political stability, foreign direct investments, trade openness, urbanisation, forest area, and population growth on green growth were analysed using the System GMM method for 33 OECD countries between 2010 and 2019. The analysis established two separate equations, Model 1 and Model 2. In Model 1, the control variables, which included renewable energy and green technology variables, were added to the models separately, and the analysis was performed. In Model 2, the control variables — green technology and non-renewable energy — were fixed and added to the models separately, and the analysis was performed. It can be inferred that variables such as green technology, political stability, and trade openness, which are present in both models, positively affect green growth, and therefore, the results are robust.

The analysis results indicate that renewable energy positively influences green growth. This finding aligns with the study by Gorji & Martek (2023), which shows that different types of renewable energy boost green growth in 20 developed and 20 developing countries. It also supports Shang's (2023) research, indicating that renewable energy use increases green growth in Asian countries. Besides being sustainable, renewable energy may enhance green growth through its advantages, such as being cheaper than non-renewable energy after installation costs and being more environmentally friendly, both of which positively impact green growth. A key component of green growth policy in both developed economies today and in the future is decreasing dependence on fossil fuels due to climate change and local air pollution, and shifting towards clean energy sources (Smulder et al., 2014: 432). In this context, OECD countries can promote renewable energy during production by offering tax incentives to companies that install it. Additionally, social awareness can be raised by media coverage of companies using renewable energy and encouraging wider adoption. Furthermore, environmental education can be integrated into curricula, starting from primary school, to foster understanding of limited global resources and the importance of renewable energy. The results from Model 2 in the study indicate that non-renewable energy adversely affects green growth in OECD countries. This is consistent with Hussain et al.'s (2023) findings, which reveal that non-renewable energy hampers green growth in high-income nations. Similarly, the Danish & Ulucak (2020) study shows that non-renewable energy negatively impacts green growth in BRICS countries. Since non-renewable energy emits harmful gases into the environment during use, it is expected to have a detrimental effect on green growth. OECD countries can discourage their use by imposing penalties on companies that produce non-renewable energy. Public awareness can also be fostered by civil society organisations explaining the environmental damage caused by non-renewable energy.

The analysis concluded that environmental taxes in OECD countries promote green growth. Thanks to these taxes, companies are increasingly focusing on renewable energy rather than non-renewable sources. Since companies rely on non-renewable energy sources, they are subject to environmental taxes to fund pollution control. Therefore, implementing policies that increase deterrence, such as environmental taxes, can positively impact green growth.

The analysis shows that forest areas positively influence green growth in OECD countries. Forest lands absorb harmful gases, reducing environmental pollution and supporting green growth. Currently, OECD countries can increase the number of green spaces by implementing policies that promote greenery. Additionally, OECD countries help develop environmental awareness among children by initiating a green school project and expanding the number of green spaces in schools.

The analysis concluded that political stability in OECD countries positively influences green growth. Accordingly, political stability is vital for the success of green growth policies implemented within OECD nations. Particularly in countries lacking political stability, the intended success may not be realised if new policies are enforced

repeatedly. Therefore, OECD countries should recognise that these policies must be national priorities and that success will only be achieved in the long term to promote green growth effectively.

Another analysis shows that foreign capital investments positively influence green growth in OECD countries. Foreign investment introduces new technologies into the country and boosts production. If these technologies are environmentally friendly, they can also help reduce harmful gases produced during manufacturing. Governments should promote innovation and technology-driven methods to lower emissions. Therefore, OECD countries could increase such investments by offering incentives to attract foreign direct investment in environmentally friendly technologies.

Finally, the analysis concluded that population growth and urbanisation negatively impact green growth in OECD countries. Green growth can also drive structural changes in companies' and society's behaviours, including significant reductions in unsustainable levels of production and consumption in developed nations (Jackson, 2016).

Green growth policies include initiatives to invest in alternative energy capacity. Therefore, green growth can support economic development by boosting investment and innovation, opening new opportunities for sustainable progress. Increasing green awareness encourages many countries to develop green economic infrastructure to protect natural resources and the environment, particularly during the energy transition (Fernandes et al., 2021: 2022). Green growth can facilitate the production and consumption of eco-friendly goods and services by developing green technologies and clean energy sources. It can also help countries address their economic challenges sustainably, respect the environment, and achieve financial growth by revitalising existing industries or shifting to new green sectors of industrial development.

The results' robustness is expected to provide green growth by increasing investments in green technologies and renewable energy for policymakers in OECD countries. Designing, developing and implementing green technologies can ensure the development and sustainability of companies. The higher the green growth value, the greener the country's economic growth is becoming.

Finally, given the study's limitations, the green growth index, the dependent variable, began in 2010 and was analysed from 2010 to 2019. Although the results are robust, future research could increase the sample size to provide stronger validation. Additionally, by incorporating more variables—such as green investments and carbon taxes—key indicators of green growth that could not be included due to the limited time span, a more comprehensive analysis can be performed once the data range expands.

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The Triangle of Public Expenditures, Public Sector Deficits, and the Informal Economy: The Case of Türkiye

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Kamu Harcamaları, Kamu Kesimi Açıkları ve Kayıt Dışı Ekonomi Üçgeni: Türkiye Örneği

Abstract

The informal economy poses a significant challenge to the effectiveness of public finance policies worldwide. Reducing tax revenues raises public sector deficits and complicates the financing of public services, while increasing public expenditures and expanding public sector deficits are also encouraged. This study employs Wavelet Coherence Analysis to examine the relationships among public spending, public sector deficits, and the informal economy in Türkiye from 1990 to 2020. The results reveal that public expenditures and public sector deficits, both individually and collectively, influence the informal economy, while the growth of the informal economy lessens the impact of both.

Keywords : Public Expenditures, Public Sector Deficits, Informal Economy, Wavelet Coherence Analysis.

JEL Classification Codes : H50, H62, E26, C32.

Öz

Kayıt dışı ekonomi, kamu maliyesi politikalarının etkinliği açısından küresel ölçekte önemli bir sorundur. Vergi gelirlerini azaltarak kamu kesimi açıklarını artıran ve kamu hizmetlerinin finansmanını zorlaştıran kayıt dışı ekonomi, aynı zamanda artan kamu harcamaları ve kamu açıkları tarafından da teşvik edilebilmektedir. Bu çalışma, 1990-2020 döneminde Türkiye ekonomisi özelinde kamu harcamaları ve kamu kesimi açıklarının kayıt dışı ekonomiyle ilişkisini Wavelet Uyum Analizi ile incelemektedir. Çalışmanın bulguları, kamu harcamaları ve kamu kesimi açıklarının kayıt dışı ekonomiyi ayrı ayrı ve bütünsel olarak etkilediğini ve kayıt dışı ekonomideki genişlemenin kamu harcamalarını ve kamu kesimi açıklarını azaltıcı etkisi olduğunu ortaya koymaktadır.

Anahtar Sözcükler : Kamu Harcamaları, Kamu Kesimi Açıkları, Kayıt Dışı Ekonomi, Wavelet Uyum Analizi.

1. Introduction

Public expenditures and public sector deficits are two vital aspects of fiscal policy aimed at achieving macroeconomic stability and promoting sustainable economic growth. The influence of these elements on economic activities can differ across countries, depending on their levels of development, institutional frameworks, and policy choices. However, the size and scope of the informal economy directly impact the efficiency of public finance, making it challenging for public policies to meet their goals. In particular, in developing economies, the informal sector's size can diminish government tax revenues, worsen public-sector deficits, and complicate the financing of public expenditures. Indeed, rising tax rates may tempt individuals to evade taxes, thereby enlarging the informal economy through increased currency demand and indirectly causing losses in public revenues (Tanzi, 1984: 290). This situation can present serious issues for both economic growth and social welfare.

Generally, the informal economy includes economic activities that are not recorded in official accounts or that evade government regulation. Key components of this sector include tax evasion, unregistered employment, and violations of regulatory obligations. An increase in public expenditures and continuously rising budget deficits can lead to the growth of such activities. Furthermore, the expansion of the informal economy diminishes the tax base, reduces tax revenues, and consequently accelerates the growth of public deficits. High tax rates and complex regulations often encourage informality, which in turn weakens public finances, creating a cycle that reinforces itself (Schneider & Enste, 2000: 98). This reciprocal relationship may intensify economic instability and issues related to fiscal sustainability.

The prevalence of the informal sector reduces the financial resources available for public service funding and limits the state's capacity for economic intervention. The efficiency of public service provision and the level of public trust directly influence tax morale and individuals' propensity to engage in informal economic activities (Alm & Gomez, 2008: 86). The expansion of the informal economy may result in inefficient resource allocation, distort economic incentives, and disrupt the savings-investment balance, ultimately exerting a negative impact on economic growth and development. Furthermore, excessive regulatory burdens, high transaction costs, and complex bureaucratic procedures may also drive individuals or firms toward informal activities. Consequently, the informal economy can reduce state revenues and constrain public expenditure. On the other hand, redirecting public spending toward infrastructure and productive sectors may mitigate informality (Gupta & Barman, 2015: 82).

On the other hand, there is an interaction between public expenditures and the public sector's fiscal balance. While increasing public spending may lead to higher public deficits, reducing expenditures can help alleviate them. Therefore, it is possible to posit a relationship between the interaction of public spending and fiscal balance and the informal economy. Since the effectiveness of public expenditures also depends on the level of the public sector deficit, the interaction between public spending and the informal sector may vary

accordingly. In fact, public sector deficits may exert either a positive or a negative influence on the relationship between public expenditures and the informal economy. This suggests the need to analyse the impact of public spending on informality and public deficits. It also highlights the need to account for the indirect effects of informality, such as the informal sector's dampening of the government spending multiplier (Kamara, 2024: 140).

Therefore, governments aiming to combat or minimise informal economic activities tend to design reforms targeting informality alongside efforts to improve macroeconomic indicators. Limiting the informal economy in a given country would generate significant economic, political, and institutional benefits. In this context, effective public budget management is pivotal in fostering economic growth and containing the informal economy's size and scope (Devine, 2021: 227). Thus, policies to tackle informality should not be seen merely as political showcases but as essential components of enhancing the effectiveness and sustainability of public financial resources. Accordingly, this study aims to analyse the effects of public expenditures and public sector deficits on the informal economy in the Turkish context, both individually and collectively. For this purpose, the Wavelet Coherence Analysis method is employed, as it prevents loss of observations and allows for the simulation and exponential generation of new data. This study contributes to the existing literature in several respects: (i) it examines the separate and combined impacts of public expenditures and deficits on the informal economy in Türkiye; (ii) it utilizes the Wavelet Coherence Analysis to reveal dynamic interactions among variables; (iii) it is methodologically innovative and policy-relevant; and (iv) to the best of our knowledge, it represents the first empirical investigation into the triadic relationship between public spending, public sector deficits, and the informal economy in the Turkish context.

2. Theoretical Framework

Managing public budgets is seen as a vital tool for achieving economic stability, growth goals, and reducing the extent of informal economic activities (Devine, 2021: 227). The literature has explored the causes behind the large and persistent size of the informal economy in many developing countries, but no agreement has been reached on its determinants. Economic approaches provide various viewpoints on how public spending and fiscal deficits influence the informal economy.

According to the Classical Economic Approach, increases in public expenditures generally require higher taxation, which raises costs for businesses and individuals, making the informal economy more attractive. Similarly, public sector deficits force governments to borrow or implement additional taxes to keep fiscal balance. These policies increase the financial pressure on the formal sector while encouraging a shift towards the informal economy. The Classical Economic perspective highlights rational behaviour by economic agents and downplays the role of government intervention in promoting economic efficiency. As a result, public sector deficits are viewed unfavourably within this framework. Gibson and Kelley (1994) laid out a theoretical basis for this relationship by showing how high public spending and fiscal deficits encourage the informal economy through taxation

and regulation. They argued that inefficient public expenditure and rising deficits weaken the state's regulatory and supervisory capacities, making it easier for the informal sector to operate. Therefore, classical economists contend that government intervention can reduce the size of the formal economy and expand the informal sector, instead of improving overall economic efficiency.

The Keynesian view, however, argues that public spending and fiscal deficits can impact the informal economy by boosting aggregate demand, especially during economic cycles (Granados, 2003: 24). Increased government expenditure can strengthen aggregate demand, lower unemployment caused by lack of demand in the labour market, and stimulate economic activity (Arestis et al., 2018: 3-4). Nonetheless, the informal economy complicates this process, as the informal sector decreases tax revenues based on total income, restricting the government's fiscal flexibility. According to this view, public investments are vital for reducing unemployment and preventing the shift to the informal sector (Arestis et al., 2018: 3-4). Furthermore, guiding public expenditure towards productive sectors can reduce the scope of the informal economy. For example, investments in infrastructure, roads, energy, and transport can enhance business efficiency and encourage the transition to the formal economy (Gupta & Barman, 2015: 81). The size of the informal economy also limits the effectiveness of Keynesian policies in the labour market. Workers in the informal sector contribute very little to aggregate demand because they cannot access social security or pension schemes. Additionally, low wages and insecure working conditions in the informal sector decrease consumption, which hampers economic growth (Schneider & Enste, 2000: 83).

Social transfer expenditures aimed at increasing the income of individuals near the poverty line may also unintentionally encourage informal activities. Some individuals may direct their labour toward informal economic activities to meet the conditions of social assistance programmes or choose to work informally while receiving such aid (May, 2004: 7-8; Shaikh & Tonak, 1994: 164-165). In many developing countries, the informal economy emerges as part of the structural transformation process (Portes & Haller, 2005: 420). Insufficient infrastructure, low levels of education, and limited access to finance hinder businesses from joining the formal economy (Loayza, 1996: 149). In this context, allocating public expenditures to education and infrastructure can potentially reduce the informal economy in the long term (Schneider & Enste, 2000: 77).

The Neoliberal approach considers the informal economy a natural result of market forces. Supporters contend that limiting government intervention, simplifying regulations, and encouraging entrepreneurship can reduce the size of the informal economy (De Soto, 1989: 210). According to this view, lowering fiscal deficits and diminishing the government's role in the economy can help manage the informal sector. It holds that individuals and firms make economic choices based on the incentives created by tax levels and regulations. Therefore, high taxes and complicated rules are thought to increase the likelihood of engaging in the informal economy (Schneider & Enste, 2000: 81). Particular emphasis is placed on high indirect taxes and social security premiums as driving forces

behind informal employment. Furthermore, the shift to the informal economy caused by high tax rates further diminishes public revenues and hampers the effectiveness of fiscal policies. This dynamic, especially in developing countries, results in fiscal policies diverging from their original objectives (Loayza, 1996: 130). It is also argued that a lack of fiscal discipline may promote informality by driving up public expenditures (Barro, 1990: 105).

The Institutional Approach connects the informal economy to the government's limited regulatory capacity and weak legal infrastructure. According to this view, strong institutions prevent informality by making sure that economic activities take place within the formal economy (North, 1990: 58). Weak regulations and poor enforcement mechanisms cause individuals and firms to participate in informal activities. Fiscal deficits combined with institutional weaknesses can worsen the growth of the informal economy. For example, poorly managed budgets may reduce trust in the formal sector, encouraging people to work informally. Factors such as institutional efficiency, the rule of law, corruption levels, and bureaucratic barriers greatly affect the likelihood of economic actors shifting to informality (Centeno & Portes, 2006: 29). High corruption and weak legal protections are especially linked to the expansion of the informal economy (Nwabuzor, 2005: 122).

The Marxist perspective views the informal economy as a consequence of the capitalist system of production. This approach contends that the informal economy functions as a means of exploiting the working class under flexible, insecure conditions, stemming from tendencies in capital accumulation (Szeman & Kaposy, 2010: 323). The capacity of public spending to diminish the informal economy relies on the process of capital accumulation. For instance, investments in social welfare and workers' rights may effectively decrease informality. Allocating fiscal deficits to social expenditures can help prevent workers from shifting to the informal economy.

The Structuralist Approach views the informal sector as complementary to the formal economy. According to this perspective, the informal economy fulfils the need for low-cost labour in the formal sectors, and the two sectors exist in a mutually dependent relationship (Tokman, 1979: 1068). Rather than seeing the informal economy as a problem, this approach considers it an essential part of the economic system. For example, regional development policies may help reduce informality. Instead of concentrating on reducing fiscal deficits, the structuralist approach supports increasing expenditures to address social inequalities, thereby encouraging informal workers to transition into the formal sector.

The informal economy presents a serious obstacle to economic sustainability and public sector finances. By shrinking the tax base, it diminishes the government's revenue capacity and worsens fiscal deficits, disrupting public-sector fiscal balances (Benjamin et al., 2014: 26). The resulting decrease in tax revenues hampers the government's ability to implement flexible fiscal policies and countercyclical measures to respond to economic shocks. Moreover, higher tax rates may encourage informality, leading to further reductions in tax income and a contraction of the formal economy (Damiani, 2024: 11). Behavioural public finance literature examines individuals' tax compliance decisions alongside

psychological and social influences (Frey & Torgler, 2007: 137). It highlights that tax morale and trust between the state and its citizens strongly influence tax evasion tendencies. Therefore, policies that boost citizens' confidence in the state, coupled with financial incentives, can effectively reduce the size of the informal economy.

The revenue losses linked to the informal economy also negatively impact the sustainability of public spending and the manageability of public debt (Andrews et al., 2011: 7-8). This requires the development of innovative approaches in policy creation. The effectiveness of expansionary fiscal policies may be limited if expected revenues cannot be realised due to the informal economy, making it harder to achieve macroeconomic stability. While Keynesian policies aim to boost demand through increased public expenditure, they can sometimes unintentionally support informality. For example, weaknesses in the tax system can worsen informality (Orsi et al., 2014: 418). Funding public sector deficits via indirect taxes can raise business costs, encouraging informality. Large infrastructure projects with weak oversight may employ informal workers, illustrating how Keynesian policies can contribute to informality. In developing economies, poor oversight and high tax burdens can amplify informal economic activity under Keynesian policies. Thus, the success of Keynesian policies depends on the country's implementation conditions and structural factors. On the other hand, supply-side economic policies tend to be more effective in reducing informality. Actions like lowering tax rates and simplifying legal regulations can motivate businesses to formalise, thereby increasing tax revenues and strengthening public finances (Levy, 2008: 287). While supply-side policies offer notable opportunities to stimulate growth and cut informality, they need to be carefully designed and executed to prevent issues such as income inequality, fiscal fragility, and inadequate social protection. A thorough analysis and balanced measures are vital for managing these risks.

3. Literature Review

The effects of public expenditures and public sector deficits on the informal economy have been examined only to a limited extent in fiscal and economic literature at the empirical level. The structure of public expenditures and the size of public sector deficits are key factors that can influence the extent of informality. However, the determinants of the informal economy, as a complex phenomenon, are highly diverse. Since theories about the informal economy mainly focus on fiscal and institutional factors, the impacts of public expenditures and fiscal deficits are often viewed as secondary topics within the literature and are not sufficiently explored. In this context, the informal economy is often linked to tax policies (Tanzi, 1982; Martinez-Vazquez, 2007), corruption (Esaku, 2021; Baklouti & Boujelbene, 2020), and institutional quality (Elgin & Oztunali, 2014; Wang, 2022). The disciplinary separation, with the informal economy primarily studied in economics and sociology, and public expenditures examined within fiscal studies, has resulted in limited research at the intersection of these fields. Nevertheless, the interaction among public spending, public sector deficits, and the informal economy could encourage policymakers to develop more effective public expenditure strategies.

The size and dynamics of the informal economy are closely connected to the effectiveness of public policies. The impact of public spending on the informal economy often depends on the type, efficiency, and fiscal discipline of these expenditures. Studies exploring the effects of public spending on reducing informality highlight factors such as human capital, institutional quality, and social welfare. For example, Berrittella (2015) analysed data from 70 countries with different income levels from 1999 to 2007, discovering that public education expenditures significantly lowered informality. This was achieved through developing human capital and improving institutional quality. Similarly, Van Nguyen et al. (2022), who examined 32 Asian countries from 2000 to 2017, found that social welfare and infrastructure spending negatively affected the informal economy, with the effectiveness and transparency of these expenditures strengthening this relationship. Tran et al. (2024) offered a more detailed analysis of Asian countries over the period 2000-2017, emphasising that effective public spending helped reduce informality, though large fiscal deficits could limit this positive effect. Sawhney (2023) highlighted the beneficial role of education and healthcare spending in reducing informality across 154 countries with varying income levels and levels of economic development from 1950 to 2017. Kamara (2024) investigated how the informal sector influences the multiplier effect of government expenditure, finding that informality reduces the capacity of public spending to boost economic output. This finding is especially relevant for economies with significant informal sectors, providing valuable insights for the design and implementation of fiscal policies.

Regarding the effects of budget deficits on the informal economy, Vo et al. (2023) analysed data from 32 Asian countries for the period 2000-2017. They found that budget deficits amplified the impact of public expenditures on informality, emphasising the importance of managing budget deficits to address the informal economy. Wijaya & Dewi (2024), in their study of 14 G20 member countries for the period 2010-2018, examined how the informal economy and budget deficits influence tax revenues. Their findings revealed that growth in the informal economy reduced VAT revenues, while good governance helped to reduce informality and budget deficits. Çiçek and Elgin (2011), studying 78 countries from 1960 to 2007, analysed the relationship between fiscal policies, economic cycles, and the informal economy. Their findings indicated that fiscal policies in countries with larger informal economies were more pro-cyclical, with public expenditures increasing during economic expansion and decreasing during contractions. This highlights how a lack of fiscal discipline and economic uncertainty can worsen informal activities. Bello & Sanusi (2024) examined the effects of expansionary fiscal policies during economic downturns under different levels of informality in Nigeria from 2010 to 2020. Their findings revealed that, although expansionary fiscal policies helped stabilise aggregate demand in the short term, tax revenue losses from the informal sector created fiscal imbalances, threatening economic stability.

Focusing on Brazil from 2004 to 2018, Junior, Garcia-Cintado, and Usabiaga (2021) examined the relationships among public expenditures, budget deficits, and the informal economy. Their study found that the informal economy indirectly diminishes public revenues, thereby contributing to the growth of budget deficits. While reductions in public

expenditure had contractionary effects on the formal sector in the short term, they increased the likelihood of engaging in informality in the long term.

4. Data and Methodology

4.1. Data

This study empirically investigates the relationships between public expenditures, public sector deficits, and the informal economy in Türkiye. To achieve this aim, the Wavelet Coherence Analysis method is used. The econometric analysis is based on data from 1990 to 2020. The start and end points of the period were chosen according to the availability of data on the informal economy, which is the study’s main variable. Annual data for the variables were utilised in the analysis.

To assess the public sector's borrowing needs, the study employs the Public Sector Borrowing Requirement (PSBR) indicator. The PSBR measures the difference between the public sector's total cash expenditures and total cash revenues. When this difference shows that expenditures surpass revenues, fiscal deficits occur. This concept captures the overall financial stance of all public sector units. An increase in the PSBR suggests that the public sector's total revenues are inadequate to cover its total expenditures, signalling a financing need (Şen et al., 2007). Accordingly, to evaluate Türkiye’s fiscal position from a broader perspective, the study includes the public sector borrowing requirement as a key variable. Data on the informal economy were obtained from the World Bank (WB), total public expenditures from the Ministry of Treasury and Finance, and the public sector borrowing requirement from the Presidency of Strategy and Budget database. Table 1 provides detailed information on the variables used in the study.

Table: 1

Variable Set and Sources Employed in the Wavelet Coherence Analysis (1990-2020)

Data	Abbreviation	Source
Informal Economy	Ie	World Bank
Total Public Expenditures	Pe	Ministry of Treasury and Finance
Public Sector Borrowing Requirement	Psbr	Presidency of Strategy and Budget

Note: The logarithms of the variables, total public expenditures and public sector borrowing requirement, have been taken.

4.2. Research Methodology

Wavelet Coherence Analysis is a modern analytical method that transforms time series data or observations into wavelets, based on Fourier cycles and wavelets. It involves converting a wavelet representation of a variable into a wave function to form a primary wave, then restricting the resulting wavelets to a specific frequency and time scale. Fourier cycles translate changes, values, or observable measurements into frequencies within a designated time frame. The ability of Fourier cycles to extract frequencies forms the foundation of Wavelet Coherence Analysis (Grinsted et al., 2004: 562-564).

The Wavelet Approach, developed by Morlet, Grossman, and Meyer, enables the transformation of any variable or value into wavelet values in the time domain. Unlike

Fourier cycles, the Wavelet Approach converts wavelet values in the direction of the variable's or value's movement. During this transformation, a scale is used to constrain the cycle by setting lower and upper bounds for the frequency band. This process results in a continuous oscillation within the bandwidth, effectively producing wavelets. Consequently, continuous oscillations in time-series data can be observed alongside scale and time arguments, revealing the inherent characteristics of the variable (Combes & Grossman, 1987: 126-132). Meyer's contributions allowed this transformation to be performed for a single variable. Furthermore, to conduct simultaneous analyses of multiple variables, each variable undergoes a transformation process followed by cross-transformation. Methods such as Wavelet Coherence or Cross-Wavelet Spectrum are employed for these analyses (Rathinasamy et al., 2017: 6-10). This study used the Morlet Wave Function for the Wavelet Coherence method and transformation.

The Wavelet method offers several advantages. This approach facilitates the extraction of findings for each time segment within a cross-section, allowing the analysis of non-stationary time series without applying transformations or experiencing data loss (Uyar, 2019: 141). Additionally, it enables the examination of time series in the time and frequency domains, providing insights into previously unobservable behaviours by decomposing time series into different frequencies for scale-level analysis (Crowley, 2007: 256). This approach also allows for the consideration of non-linear relationships between variables without causing data loss. Moreover, since the approach incorporates simulations, it can generate exponential values for variables, thereby expanding the dataset and significantly improving the construction of prediction models. In this study, time series data comprising 31 observations related to the informal economy, public expenditures, and public sector borrowing requirements were simulated to a dimension of 31^{10000} , and the analysis was conducted using this dataset. By simulating variables and generating new data exponentially, the dataset achieves high dimensionality, thereby enhancing the accuracy and validity of the analysis results. Furthermore, Wavelet Coherence Analysis enables the simultaneous examination of causality, correlation, and interaction between variables.

Wavelet Coherence Analysis helps convert data into wavelet form and adds a time element to the wavelets. These applications involve several stages, outlined below:

Stage I: It involves creating the wave function. The function is given in Equation (1) (Vacha & Barunik, 2012: 242-243). In this function, m represents the scale dimension and t denotes the time dimension.

$$\psi_{i,m} = \frac{1}{\sqrt{m}} \psi\left(\frac{t-1}{m}\right), i, m \in R, m \neq 0 \quad (1)$$

Stage II: The wave function is the primary wave function derived from the above equation. The mother wave function is transformed into Morlet wavelets. The function is shown in equations (2), (3), and (4) (Menon et al., 2013: 105).

$$W_{Ie}(1,m) = \int_{-\infty}^{\infty} Ie_t \frac{1}{\sqrt{m}} \psi\left(\frac{t-1}{m}\right) dt \quad (2)$$

$$W_{Pe}(1,m) = \int_{-\infty}^{\infty} Pe_t \frac{1}{\sqrt{m}} \psi\left(\frac{t-1}{m}\right) dt \quad (3)$$

$$W_{Psbrg}(1,m) = \int_{-\infty}^{\infty} Psbr_t \frac{1}{\sqrt{m}} \psi\left(\frac{t-1}{m}\right) dt \quad (4)$$

Stage III: In Equations 2, 3, and 4, the wavelets obtained separately for the variables are applied to the diagonal transform, and the results for the variables are then derived. The corresponding functions are shown in Equations (5) and (6).

$W_{(Ie,Pe)} = W_{Ie}(1,m)W_{Pe}(1,m) \sim$ for the informal economy and public expenditures

$$R^2(1,m) = \frac{IS(m^{-1} W_{IePe}(1,m))^2}{S(m^{-1}IW_{Ie}(1,m))^2 S(m^{-1}IW_{Pe}(1,m))^2} \sim \text{for each } R^2(1,m) \text{ için } 0 \leq R^2(1,m) \leq 1 \quad (5)$$

$W_{(Ie,Psbr)} = W_{Ie}(1,m)W_{Psbr}(1,m) \sim$ for the informal economy and public sector borrowing requirement.

$$R^2(1,m) = \frac{IS(m^{-1} W_{IePsbr}(1,m))^2}{S(m^{-1}IW_{Ie}(1,m))^2 S(m^{-1}IW_{Psbr}(1,m))^2} \sim \text{for each } R^2(1,m) \text{ için } 0 \leq R^2(1,m) \leq 1 \quad (6)$$

In Equation (5) and Equation (6), S is the wave smoothing coefficient, $R^2(1,m)$ value approaching 1 indicates the dependence of the variables, and approaching 0 indicates that there is no relationship between the variables.

Stage IV: The above equations are based on square values. At this stage, negative phase values are also considered. The corresponding functions are presented in Equations (7) and (8).

$$\varphi_{IePe}(1,m) = \tan^{-1}\left(\frac{\aleph\{S(m^{-1}W_{IePe}(1,m))\}}{\rho\{S(m^{-1}W_{IePe}(1,m))\}}\right) \sim \text{for the informal economy and public expenditures} \quad (7)$$

$$\varphi_{IePsbr}(1,m) = \tan^{-1}\left(\frac{\aleph\{S(m^{-1}W_{IePsbr}(1,m))\}}{\rho\{S(m^{-1}W_{IePsbr}(1,m))\}}\right) \sim \text{for the informal economy and public sector borrowing requirement} \quad (8)$$

In Equations (7) and (8), $\aleph$ represents visualisation, while ρ denotes the operation operator.

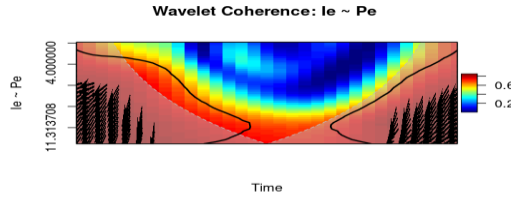
5. Findings

When the visualisation $\aleph$ and operation operator ρ defined in the functions of the Wavelet Coherence Analysis method are executed, an image is generated. This resulting image simultaneously reveals the variables' correlation, causality, and interaction. The colour gradients in the generated image represent the interaction or relationship between the variables. In wavelet coherence graphs, a predominance of blue indicates a decrease in interaction between the two variables, while a shift towards red signifies increased interaction. The arrows in the wavelet coherence graph convey information about the

correlation and causality between the two variables. If the arrows point directly to the right at 180^0 (II level), this indicates a perfect positive correlation between the two variables. Conversely, if the arrows point directly to the left at (II level), this indicates a perfect negative correlation. If the arrows are directed upward at 90^0 (II/2 level), it suggests a causal relationship from the second variable to the first. If the arrows are directed downward at 90^0 (II/2 level), it indicates a causal relationship from the first variable to the second.

Figures 1, 2, and 3 present the results obtained from the functions described in the four stages above using the R Studio program.

Figure: 1
The Relationship Between the Informal Economy and Public Expenditure

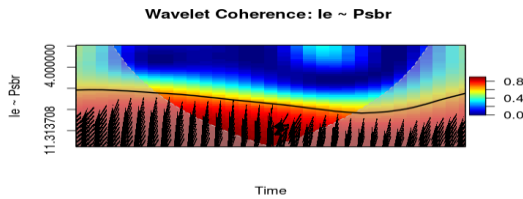


When Figure 1 is examined, it is observed that the interaction between the informal economy and public expenditures is high throughout the entire period (1990-2020). Additionally, there is an approximately -0.6 level negative correlation between the variables, and a causal relationship is identified from the informal economy to public expenditures. However, it is notable that this relationship was significantly strong between 1990 and 1996 and after 2014. Conversely, between 1996 and 2014, it was challenging to assert a causal relationship between the variables. Furthermore, during the 2000-2010 period, the interaction between the variables appears to be low. Based on the obtained data, it is determined that the increase in the informal economy in Türkiye during the 1990-1996 period and after 2014 led to a decrease in public expenditures. The blue areas in the figure indicate reduced interaction, which is primarily observed between 2000 and 2015. On the other hand, although the interaction between the variables decreased significantly in 2008, the overall interaction remained above 50%. The causality and correlation findings also support this observation.

The overall negative correlation between the informal economy and public expenditure suggests that the expansion of the informal economy reduces public spending. This finding aligns with the theoretical framework proposed by Vito Tanzi (1980, 1983), which asserts that the informal economy decreases tax revenue, leading to a reduction in public resources. A drop in tax revenue can cause difficulties in funding public services, ultimately decreasing public expenditure. The observed causal relationship between the informal economy and public spending indicates that informal economic activities directly impact public finances.

During the 1990-1996 period, there was a strong relationship: an increase in the informal economy was associated with a decrease in public expenditures. This finding aligns with the economic and political crises Türkiye experienced in the 1990s. For instance, the 1994 economic crisis significantly expanded the informal economy and exerted considerable pressure on public finances. The strong negative correlation highlights a direct relationship between public expenditures and the growth of the informal economy, clearly demonstrating the pressure on fiscal discipline caused by a shrinking tax base. The lack of a meaningful causal relationship between the variables during the 1996-2014 period suggests that the dynamics between public expenditures and the informal economy became more complex. Economic reforms and fiscal discipline efforts undertaken by Türkiye in the 2000s may have alleviated the direct impacts of the informal economy. Post-2001, IMF-supported economic programmes and tax system reforms might have limited the influence of the informal economy and contributed to greater predictability in public expenditures. Additionally, the effects of the 2008 global financial crisis could partially explain the lower interactions during this period. The resurgence of the informal economy's influence on public expenditures after 2014 is noteworthy. Increasing economic vulnerabilities in Türkiye during this period, such as exchange rate fluctuations and high inflation, may have driven an increase in informal economic activities. Consequently, this likely led to a decline in public revenues, resulting in constrained public expenditures.

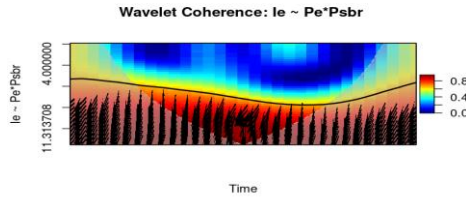
Figure: 2
The Relationship Between the Informal Economy and Public Sector Deficits



Examining Figure 2 reveals that the relationship between the informal economy and public sector deficits remains strong throughout the entire period (1990-2020). There is a negative correlation of approximately -0.45 between the variables, with causality running from the informal economy to public sector deficits. Notably, causality takes precedence over correlation, and causal links are consistent over time. When considered as a whole, the data shows that about 50% of the interaction involves a one-way causal flow from the informal economy to public sector deficits. The blue areas in the figure persist throughout the period but stay around 50%. Conversely, the red areas indicating interaction intensity confirm that causality remains continuous. Based on the data, a high level of interaction between the informal economy and public sector deficits is observed in Türkiye, with an increase in the informal economy associated with a reduction in public sector deficits. This suggests that a larger informal economy helps to constrain public sector deficits.

Reducing public sector deficits as the informal economy expands reveals a paradoxical relationship. Theoretically, the informal economy is expected to weaken public finances by shrinking the tax base. However, findings indicate that, in Türkiye, the growth of the informal economy actually decreases public sector deficits. Income generated informally may contribute to the budget indirectly through indirect taxes, producing an unexpected effect on public sector deficits, especially in developing economies. While this dynamic might stabilise public finances in the short term, it could lead to structural issues in vital areas such as income equality, social security funding, and the sustainability of public services. Therefore, this discovery highlights the importance of implementing reforms aimed at reducing the informal economy, lowering budget deficits, and balancing economic and social systems. In Türkiye's case, this relationship can be largely explained by the role of informal activities in supporting domestic demand and increasing indirect tax revenues. This situation suggests that the informal economy may have indirectly helped to balance public finances.

Figure: 3
The Relationship Between Informal Economy and Public Expenditures - Public Sector Deficits



Examining Figure 3 reveals that the relationship between the informal economy, public expenditures, and public sector deficits remains strong throughout the entire period (1990-2020). There is a negative correlation among the variables, with a causal link from the informal economy to both public expenditures and public sector deficits. The findings suggest that a rise in the informal economy leads to decreased public spending and deficits. This observation underscores the paradoxical stabilising effect of the informal economy on public finances.

From 1990 to 1996, the informal economy significantly affected public expenditure and public sector deficits. Economic crises during this time led to the growth of the informal economy, exerting considerable pressure on public finance indicators. In Türkiye, the public sector might have tried to compensate for tax revenue losses from the informal economy by borrowing during these years. However, the informal economy also appears to have indirectly stabilised public finances by allowing households and small businesses to continue their economic activities. Between 2000 and 2010, the connection between the informal economy, public expenditure, and public sector deficits weakened somewhat. Reforms after the 2001 economic crisis probably enforced fiscal discipline and partly reduced the impact

of the informal economy on public finance. Nonetheless, the informal economy still indirectly influenced public revenues during this period, leading to a decreasing trend in public sector deficits. The strengthening of the relationship between the informal economy, public expenditure, and public sector deficits after 2014 is particularly notable. This period was characterised by rising economic vulnerabilities and falling macroeconomic stability. The growth of the informal economy may have limited public revenues but also indirectly supported public finance by stimulating broader economic activity. However, this dynamic is not a sustainable long-term solution.

6. Conclusion

This study empirically explored the interactions among public expenditures, public sector deficits, and the informal economy in the Turkish economy from 1990 to 2020 using the Wavelet Coherence Analysis method. The findings revealed a negative causal relationship between the informal economy, public expenditures, and public sector deficits.

The first finding shows that the growth of the informal economy in Türkiye indirectly reduces public revenues, putting downward pressure on public spending. Structural issues, such as informal-sector workers' lack of access to social security services and their exclusion from social insurance coverage, are among the main causes of this situation. Additionally, while indirect taxes collected from the consumption of goods and services temporarily transfer income from the informal economy into public finance, this system narrows the tax base in the long run, resulting in revenue losses and vulnerabilities in the social security system. This process deprives individuals of social protection and weakens public finance over time. Similar challenges have been observed in other developing countries, where the persistence of the informal economy contributes to these issues (Sawhney, 2023; Tran et al., 2024).

The second finding is that the informal economy reduces public sector deficits. While, in theory, the informal economy is expected to decrease public revenues and increase deficits, the relationship in Türkiye has developed in the opposite direction. During the 1990s, although the informal economy caused tax losses, it served as an alternative economic activity area for households and small businesses, indirectly balancing the public sector's borrowing needs. Similarly, during economic crises, the informal economy acted as a "buffer mechanism" for impoverished individuals and small businesses, allowing them to meet their basic needs, as cited in the literature (Bello & Sanusi, 2024). However, this dynamic can potentially increase economic vulnerabilities in the long term.

The third finding shows that an increase in the informal economy decreases public spending and public sector deficits. While the informal economy is usually linked to negative effects on fiscal balance, this result suggests it might counteract these effects by lowering deficits. This indicates that, beyond its adverse impacts, the informal economy could have an indirect stabilising effect on public finances. Therefore, policies aimed at

reducing the informal economy should be approached comprehensively, taking into account their effects on public expenditure and deficit management.

In the Turkish economy, where a significant portion of public revenues derives from indirect taxes, income generated in the informal economy is reflected in these taxes through consumption, alleviating short-term pressures on public finances. However, reducing resources allocated to public services can adversely affect economic growth and social welfare. This finding aligns with the literature, as emphasised by Kamara (2024), that the informal economy may limit the effectiveness of the public expenditure multiplier.

Based on the evaluation of the findings, the following recommendations can be presented:

- Implement comprehensive structural reforms to decrease the informal economy. Policies that boost tax compliance should be introduced to motivate individuals and firms operating informally to join the formal economy.
- Redirecting public spending towards education and infrastructure could help lower the informal economy in the long run.
- Tackle corruption and reinforce the legal framework, as these are vital in reducing the informal economy.
- Reduce tax rates and streamline the tax system to motivate individuals and businesses to participate in the formal economy.
- Promote the rule of law and strengthen institutional efficiency to reduce informal activities.

Since the informal economy acts as a buffer supporting the formal economy during crises, it is crucial to develop a more resilient and sustainable public finance structure. Policy designs should focus on long-term solutions that diminish the informal economy while improving the efficiency of public finance.

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First- and Second-Generation Fiscal Rules: Fiscal Sustainability and Public Debt Management in the European Union and Türkiye

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Birinci ve İkinci Nesil Mali Kurallar: Avrupa Birliği ve Türkiye’de Mali Sürdürülebilirlik ve Kamu Borç Yönetimi

Abstract

This study examines the effects of first- and second-generation fiscal rules on fiscal sustainability and public debt management, focusing on European Union countries that implement these rules and Türkiye, which does not have such regulations. It explores the temporal effects of interest rates and the role of fiscal rules in borrowing costs. Last year’s interest rate increase raised borrowing costs, while a two-year lagged interest rate decrease them. A budget surplus lowers borrowing costs, although the impact of public debt remains limited. Inflation increases borrowing costs. First-generation fiscal rules enhance the budget balance, whereas second-generation rules boost fiscal discipline. The findings highlight the vital role of fiscal rules in debt sustainability and budget stability.

Keywords : Fiscal Rules, Fiscal Policy, Second-Generation Fiscal Rules, Public Debt Management.

JEL Classification Codes : E62, H62, H63, H68.

Öz

Bu çalışma, birinci ve ikinci nesil mali kuralların mali sürdürülebilirlik ve kamu borcu yönetimi üzerindeki etkisini incelemekte, bu kuralları uygulayan Avrupa Birliği ülkelerine ve böyle bir mali düzenlemeye sahip olmayan Türkiye’ye odaklanmaktadır. Çalışma, faiz oranlarının zaman içindeki etkisini ve mali kuralların borçlanma maliyetleri üzerindeki rolünü analiz etmektedir. Önceki yılın faiz oranı borçlanma maliyetlerini artırırken, iki yıl öncesinin faiz oranı azaltıcı bir etkiye sahiptir. Bütçe dengesi borçlanma maliyetlerini düşürmekte, ancak kamu borcunun etkisi sınırlı kalmaktadır. Enflasyon ise borçlanma maliyetlerini artırmaktadır. Birinci nesil mali kurallar bütçe dengesini güçlendirirken, ikinci nesil mali kurallar mali disiplini sağlamaktadır. Sonuç olarak mali kurallar, borç yönetimini ve bütçe istikrarını pozitif etkilemektedir.

Anahtar Sözcükler : Mali Kurallar, Maliye Politikası, İkinci Nesil Mali Kurallar, Kamu Borç Yönetimi.

1. Introduction

The first-generation fiscal rules are strict, mechanical, and based on deficits, debt, expenditures, and revenues. These rules adhere to principles of fiscal sustainability and budget performance (Peach, 2012: 217, 228). In contrast, second-generation fiscal rules incorporate an adaptive framework that enables them to respond to economic conditions. They are highly sensitive to the business cycle and prioritise fiscal discipline (Eyraud et al., 2018: 5). One of the initial perspectives on fiscal rules was from the public choice theory: fiscal rules were essential for promoting better fiscal responsibility (Buchanan & Wagner, 1977; Brennan & Buchanan, 1980).

Subsequent studies have concentrated on the impact of fiscal rules on government interest payments in the modern context (Von Hagen & Harden, 1995). Likewise, other research has indicated that budgetary rules are a vital missing element for debt sustainability and the reduction of interest payments (Kopits & Symansky, 1998).

Public debt increased unsustainably during the 1980s debt crises in many countries, illustrating why fiscal rules are necessary to maintain fiscal discipline. For instance, international fiscal frameworks such as the Maastricht criteria (Wyplosz 2012: 3) in the European Union (EU) serve to control debt and budget deficits. Initially, fiscal norms featured strict and straightforward constraints aimed at enforcing budget balance and a debt ceiling. However, these regulations were often too rigid and failed to respond effectively to the business cycle during crises (Kopits & Symansky, 1998: 1).

After that, the subsequent fiscal regulations and second-generation instruments introduced escape hatches and surveillance, enhancing flexibility. This increased flexibility improved their crisis response and supported economic stability (Schaechter et al., 2012). Additionally, next-generation fiscal rules have boosted transparency and accountability, leading to better implementation (Blanchard et al., 2010).

In countries like Türkiye, where neither first- nor second-generation fiscal rules are enforced, maintaining fiscal discipline becomes more difficult, leading to larger budget deficits and higher borrowing costs. Budget deficits and high debt-to-GDP ratios can undermine the effectiveness of public debt management, posing threats to debt sustainability (Von Hagen & Harden, 1995: 774). When interest rates rise, high public debt places a heavy burden on public finances without fiscal rule constraints (Blanchard & Giavazzi, 2004: 25). Interest payments directly reflect the cost of the debt stock. Without them, public finances can face significant financial impacts (Berg, 1999: 12). Flexible Rule Fiscal enables debt sustainability to adjust within cycles influenced by flexible fiscal rules (Eyraud et al., 2018: 27).

This study investigates the impact of first- and second-generation fiscal rules on managing public debt. It focuses on entities within the European Union that have strengthened fiscal rules and Türkiye, which lacks such principles, from 2008 to 2022. This

period encompasses economic recovery after the global financial crisis, the development of fiscal regulations in the European Union, and the effects of the COVID-19 pandemic on public finances. It provides a vital framework for understanding how fiscal rules function under different economic conditions. Most previous studies either examine developed countries or analyse broad macroeconomic effects. In contrast, this research empirically assesses the influence of first- and second-generation fiscal rules on public debt management and borrowing costs by comparing the European Union and Türkiye. It also adds to the literature by evaluating the role of variables like inflation and market dynamics in the effectiveness of fiscal rules. Furthermore, the European Union countries included in the study are: Germany, Austria, Belgium, Bulgaria, Czechia (Czech Republic), Denmark, Estonia, Finland, France, Croatia, Netherlands, Ireland, Spain, Sweden, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Malta, Poland, Portugal, Romania, Slovakia, Slovenia, and Greece.

The study employs a dynamic system, the Generalised Method of Moments (GMM), to assess the impact of fiscal rules on public debt management. This method is used for simulation purposes to demonstrate how past fiscal policies have shaped current fiscal discipline and economic growth (Arellano & Bover 1995: 30-31). To increase the robustness of our results, we adopt the System GMM approach, following Blundell & Bond (1998). This method effectively tackles endogeneity issues by using lagged values of explanatory variables as instruments. Doing so ensures that simultaneity problems do not bias the estimated relationship between public debt and its determinants. We analyse the effects of fiscal rules using lagged variables as instruments, particularly in crisis-affected areas.

The study will establish a theoretical framework and review existing literature. The dataset and methodology will then be introduced. The results, along with a discussion and conclusion, will be presented subsequently.

Three hypotheses will be examined in this study:

H1: Fiscal rules (both first- and second-generation) have a positive impact on managing public debt.

H2: Fiscal rules do not considerably affect public debt management.

H3: Fiscal rules are neutral, while other factors effectively manage debt.

2. Theoretical Framework and Literature Review

First-generation fiscal rules are characterised by their simplicity and rigidity. They aim to limit budget deficits and ensure debt sustainability by setting fixed targets, such as a specific debt-to-GDP ratio. However, these rules do not consider economic fluctuations (Kopits & Symansky, 1998: 11).

The study conducted by Kopits and Symansky (1998) examines the effects of different fiscal rules implemented in the USA, Japan, Germany, Canada, France, Italy, and

the UK on public debt management and borrowing costs. The analysis, covering the 1980s and early 1990s, evaluated various fiscal policy scenarios using stochastic simulation. The findings show that implementing the budget balance target through public expenditures, transfer expenditures, and tax adjustments significantly affects public borrowing costs and debt sustainability. In the USA, the public borrowing interest rate is calculated as 1.78% under the baseline scenario, but it rises to 2.60% with the adjustment of public expenditures. It is observed that tax adjustments have a more limited effect, and borrowing costs remain at 1.92%. In Japan, borrowing costs, which are 3.29% in the baseline scenario, increase to 5.22% with changes in public expenditure. In Germany, borrowing costs, initially calculated as 3.06%, rise to 3.93% with changes in public spending. In Canada, France, and Italy, it was found that changes in public expenditure and tax policies had varying impacts on borrowing costs. Specifically, in Italy, public expenditure adjustments increase borrowing costs by up to 4.51%. In the United Kingdom, it was observed that borrowing costs rose from 3.33% to 5.94% following the implementation of fiscal restrictions, clearly demonstrating the impact of fiscal rules on public borrowing costs. Overall, the study's findings suggest that different fiscal rules can markedly influence public borrowing costs and that the effects of public expenditure adjustments on debt sustainability are particularly significant. Nonetheless, the level of flexibility of fiscal targets, the implementation processes, and economic conditions emerge as critical factors in determining the effectiveness of fiscal rules. In this context, Türkiye's high borrowing costs and budget imbalances, stemming from the absence of fiscal rules, have become more evident than those of EU countries.

In contrast, second-generation fiscal rules aim to promote fiscal sustainability and stability by introducing flexibility and escape clauses that allow adaptation to economic fluctuations (Eyraud et al., 2018: 25). This study investigates the effects of fiscal rules on budget deficits and debt sustainability across 142 countries from 1985 to 2015. Using panel data analysis, it reveals that fiscal rules enhance budget discipline and improve public debt sustainability. The findings indicate that the budget deficit is, on average, 0.6 percentage points lower than GDP in countries with fiscal rules in place. This effect is more pronounced in developed countries and varies depending on institutional capacity and implementation mechanisms in developing nations. Additionally, public debt is, on average, 5-10% lower where fiscal rules are strictly enforced. The effectiveness of fiscal rules is also found to be 20% higher in countries with robust institutional frameworks. The study underscores that strict fiscal rules can sometimes hinder economic growth; therefore, rules incorporating flexibility and country-specific adjustments tend to be more successful. Overall, the results highlight that the design and implementation of fiscal rules are crucial for maintaining budget discipline.

The introduction of second-generation rules within the European Union took place with the Maastricht Treaty; however, they have faced criticism for their perceived lack of flexibility (Von Hagen & Harden, 1995: 772). This study analyses how the institutional structures of budget processes influence public expenditures, budget deficits, and public debt. Covering 12 European Union countries between 1981 and 1990, it employed panel

data analysis and regression methods. The findings reveal that countries with tighter budget processes experienced lower public expenditures and budget deficits. Between 1981 and 1985, the ratio of public spending to GDP was 48.0%, the budget deficit was 2.7%, and the public debt stock stood at 42.5% in countries with strong fiscal discipline. Conversely, in countries with looser budget controls, public expenditures reached 49.7%, the budget deficit was 10.7%, and the public debt stock was 74.6%. From 1986 to 1990, public expenditure decreased to 45.5%, the budget deficit to 1.2%, and the public debt stock to 43.2% in fiscally disciplined countries. In contrast, countries with more flexible budget processes had rates of 51.6%, 11.2%, and 100.1%, respectively. Overall, the study suggests that the impact of budget processes on public finances is significant, with lower levels of budget deficits and public debt in countries enforcing strict budget rules. Additionally, fiscal discipline appears more assertive, and public expenditures are more controlled in countries where the central government holds greater authority over the budget process. It was also observed that coalition governments tend to adopt target-oriented budget processes, whereas procedural budget processes prove more effective in larger economies.

The development of second-generation rules in the 2000s was driven by the need to respond to crises and address issues of fiscal slippage (Blanchard & Giavazzi, 2004: 20). This study analyses the effects of the Financial Stability and Growth Pact (SGP) on public investments in European Union countries. Conducted using panel data analysis and simulation methods, it examines the restrictions of the SGP on public debt management and potential reform proposals. The findings indicate that excluding net public investments from budget deficits will cause the debt-GDP ratio to align with the ratio of public capital to GDP in the long term. It has been determined that under the current system, the ratio of public investment expenditures to GDP in 12 Eurozone countries, which was 4% in the 1970s, decreased to 2.5% in 1998. Additionally, net public investments are close to zero, especially in Germany, Italy, Belgium, and Austria. According to the analysis, strict enforcement of the SGP rules suppresses public investments and hampers sustainable public debt management. As an alternative, it is proposed that public investments be separated from the budget by considering depreciation costs, thereby reducing pressure on the public finance balance in the long run. Modelling results indicate that in countries like Germany, public investment expenditures could be increased by 0.8% relative to GDP if the new system is adopted. The study emphasises that SGP reforms should focus on budget deficits, public debt, and investment; otherwise, restrictions on investment will negatively impact long-term growth.

Existing studies have extensively analysed the relationship between fiscal rules and public debt management using various macroeconomic indicators. Prior research has demonstrated that fiscal rules reduce borrowing costs by enhancing market confidence and ensuring budgetary discipline. Moreover, empirical findings indicate that inflation dynamics and sovereign risk perceptions are crucial in shaping public debt sustainability. Building upon this literature, this study incorporates additional macroeconomic variables to provide a more comprehensive assessment of how fiscal rules influence borrowing costs and debt dynamics. By refining the empirical framework, this study offers an expanded perspective

on the effectiveness of fiscal rules in managing public debt. Bergman et al. (2016) conducted significant research assessing the impact of fiscal rules on public debt sustainability in 27 EU countries from 1990 to 2012 and within the dynamic system GMM. Their findings indicated that these rules effectively reduced interest payments, substantiating the hypothesis. The key variables in this study -fiscal rule existence, public debt-to-GDP ratio, and borrowing cost-provide critical insights into the determinants of public debt interest payments. Specifically, fiscal rules enhance debt sustainability by improving market confidence, while the debt-to-GDP ratio reflects the relative burden of public debt within the economy. Additionally, borrowing costs are a fundamental measure of the interest burden on public finances, offering a comprehensive perspective on debt management policies.

In the study conducted by Tapsoba (2012), the effect of fiscal rules on fiscal discipline was examined in 74 developing countries between 1990 and 2007. The two-stage least squares method controlled for selection bias in adopting fiscal rules. The findings indicate that adopting fiscal rules improved the primary budget balance, adjusted for cyclical effects, by 0.64% to 1.18% of GDP. The effectiveness of fiscal rules varies by type, with budget balance rules and expenditure rules significantly increasing fiscal discipline. Conversely, the impact of debt rules was not statistically significant. Additionally, the study found that the influence of fiscal rules was more pronounced in countries that adopted more than one fiscal rule, implemented these rules over a longer period, and maintained higher government stability. The results reveal that fiscal rules play a crucial role in maintaining fiscal discipline in developing countries with weak institutional frameworks.

The study by Piątkowski (2024) analysed the effects of stock-flow adjustments (SFA) on public debt in European Union countries. Covering 2002-2022, it employed a panel data model and fixed effects method. The research evaluated public finance data from 27 European Union countries using Eurostat data. The findings demonstrate a significant relationship between SFA and public debt, budget balance, and GDP dynamics. Notably, an increase in public debt and an improvement in the budget balance were found to raise the level of SFA. According to the model estimates, every 1-point rise in the ratio of public debt to GDP increased SFA by 0.025%. Conversely, an increase in budget revenues was associated with a 0.19% decrease in SFA. It was also observed that a higher GDP growth rate had a negative impact on SFA. The results suggest that governments used stock-flow adjustments to conceal budget deficits during periods of tightening fiscal rules. It is stated that public finances have become less transparent due to off-budget operations, particularly in countries with high levels of public debt. Finally, it is emphasised that SFA should be monitored more closely, and fiscal rules should be more comprehensively implemented to enhance transparency in public finances and maintain the sustainability of public debt.

In the study conducted by Stawiarska (2023), the effects of second-generation numerical fiscal rules on public debt management across 27 European Union countries between 2008 and 2021 were analysed. The relationship between fiscal rules, debt service costs, and the quality of corporate governance was examined using the Generalised Method

of Moments (GMM) and a dynamic panel model. The findings indicate that robust fiscal rules lower the interest costs of public debt. The coefficient of the Fiscal Rule Strength Index was negative and significant across all models, with a value of -0.1560, suggesting that tightening fiscal rules enhances debt management efficiency. The relationship between the budget balance, adjusted for cyclical effects, and debt interest costs was negative, with a coefficient of -0.0410, showing that increased budget discipline reduces borrowing costs. Conversely, debt service costs rise as public debt levels increase, with a coefficient of 0.0159 between public debt and debt interest costs. A positive association was identified between 10-year government bond yields and debt service costs, with a coefficient of 0.0656. The variable representing political stability and absence of violence or terrorism had a negative impact on borrowing costs, with a coefficient of -0.0063. This suggests that improved corporate governance supports debt sustainability. The results demonstrate that second-generation fiscal rules effectively manage public debt; however, their implementation and design are crucial for ensuring fiscal sustainability. Strengthening fiscal rules, increasing budget discipline, and enhancing governance quality are vital for reducing borrowing costs.

Table: 1
Empirical Studies

Author & Year	Sample (Countries)	Period & Variables	Study Findings
Kopits & Symansky (1998)	USA, Japan, Germany, Canada, France, Italy, United Kingdom	1980-1990 Public expenditures, transfer payments, tax regulations, and public borrowing costs	Budget balance targets significantly affect public spending and borrowing costs, ensuring debt sustainability.
Eyraud et al. (2018)	142 countries	1985-2015 Budget deficit, debt sustainability, fiscal rules	Fiscal rules strengthen budget discipline, improving debt sustainability. The public debt-to-GDP ratio could be 5-10% lower.
Von Hagen & Harden (1995)	12 European Union countries	1981-1990 Public expenditures, budget deficit, public debt	Strict budget processes enhance fiscal discipline, while lenient ones increase public debt stock and deficits.
Blanchard & Giavazzi (2004)	12 Eurozone countries	2002-2022 Public investments, budget deficit, and debt management	Strict fiscal rules may constrain public investments. The net public investment-to-GDP ratio fell to 2.5% in 1998.
Tapsoba (2012)	74 developing countries	1990-2007 Fiscal discipline, budget balance, and debt rules	Fiscal rules improved the budget balance by 0.64% to 1.18% of GDP. The effect of debt rules was not statistically significant.
Bergman et al. (2016)	27 European Union countries	1990-2012 Fiscal rules, interest payments, and debt sustainability	Strengthening fiscal rules reduces interest payments and improves debt management.
Stawiarska (2023)	27 European Union countries	2008-2021 Fiscal rules, debt servicing costs, and governance quality	Fiscal rules reduce debt interest costs. A positive relationship exists between public debt and debt interest costs (0.0159).
Piątkowski (2024)	27 European Union countries	2002-2022 Stock-flow adjustments (SFA), public debt, and budget balance	A 1 percentage point rise in the public debt-to-GDP ratio leads to a 0.025% increase in SFA. Stringent fiscal regulations improve fiscal transparency.

Empirically, well-designed numerical fiscal rules enhance the effectiveness of fiscal policy (Schick, 2010; Bergman et al., 2016; Bandaogo, 2020). The first generation of fiscal rules focused more on enforcing limits on budget deficits and managing debt trajectories. However, these rules attracted considerable criticism for being relatively inflexible during economic cycles. Subsequent generations of fiscal rules are likely to be calibrated to respond more effectively to cyclical fluctuations in fiscal policy and to support greater flexibility and fiscal responsibility. Such adaptability indicates a degree of assurance that these rules remain robust amid economic uncertainties.

A growing body of research indicates that fiscal rules are crucial for adjusting economic balances (Maltritz & Wüste, 2015; Burret & Feld, 2018) and reducing public debt (Lüchinger & Schaltegger, 2013; Landon & Smith, 2017; Asatryan et al., 2018). Although early fiscal rules aimed to achieve these objectives, their rigidity often limited effectiveness during crises (Maltritz & Wüste, 2015; Burret & Feld, 2018). Conversely, second-generation fiscal rules have been found supportive of maintaining budgetary stability and implementing expansionary fiscal policies during recessions by establishing 'structural budget targets and cyclical adjustments as a blueprint. Structural budget targets are long-term estimates for the budget balance adjusted for the business cycle. Benefits include fiscal sustainability (reduced pro-cyclicality in budgeting) (Maltritz & Wüste, 2015; Burret & Feld, 2018). Enhanced response to economic shocks: The second generation of rules has improved countercyclical fiscal policy responses (Combes et al., 2017; Guerguil et al., 2017; Gootjes & de Haan, 2022). These rules have increased the ability for relevant discretionary interventions during crisis-related economic downturns; moreover, budget stabilisers have prevented large deficits.

Unlike existing studies, this research investigates in detail how the absence of fiscal rules affects borrowing costs in Türkiye. While many studies examine developed and developing countries, there is limited empirical analysis on debt management in countries where the institutional framework for fiscal rules is not fully developed, such as Türkiye. This research fills this gap by exploring the effects of Türkiye's lack of first- and second-generation fiscal rules on budget balance and borrowing costs. Using the dynamic system GMM method, the analysis carefully examines the relationship between fiscal rules and inflation and their impact on debt sustainability. It notably shows that the influence of fiscal rules is stronger in countries with high inflationary pressures. By comparing Türkiye with countries in the European Union, this study offers a broader assessment of how fiscal rules support long-term economic stability. Ultimately, this work enhances the literature by analysing the impact of fiscal rules on public borrowing costs and budget balance within the Turkish context.

3. Data and Methodology

3.1. Variables Employed in the Models

Fiscal rules are essential for managing public debt and strengthening fiscal resilience to economic cycles. This paper employs variables grounded in a solid theoretical foundation to assess these effects in a study of their impact. Debt interest as a proportion of GDP (dint) serves as a key indicator of fiscal discipline and debt dynamics; for countries like Türkiye, reducing the debt burden is necessary to promote growth and improve public debt management.

Lagged variables L1.dint and L2.dint are necessary to evaluate the impact of fiscal rules on historical debt accumulation. The first-generation rules, which focus on short-term incentives, are likely to have a somewhat limited effect in reducing past debt (Caselli &

Reynaud, 2020: 10-21). Conversely, second-generation rules are more comprehensive and include more specific targets (e.g., the cyclically adjusted budget balance, CAB), which enhance fiscal policy credibility.

Public debt as a percentage of GDP (*pdebt*) is a key indicator for assessing the impact of fiscal rules on public debt management. Public debt levels are higher in developing countries, and elevated public debt carries economic risks, so fiscal rules must be more effective. *INF* is the most significant macroeconomic variable, which also renders fiscal rules less effective.

Table: 2
Definition of Variables

Abbreviation	Variable	Source
dint	Interest paid on public debt (% of GDP)	IMF, < https://www.imf.org/external/datamapper/ie@FPP/ITA >
L1.dint	dint lagged from the previous period.	
L2.dint	dint has been delayed for two periods.	
cab	Cyclically-Adjusted Budget Balance (% of Potential GDP)	
pdebt	Public Debt (% of GDP)	
inf	Average consumer prices (Annual per cent change)	
fri	First-Generation Fiscal Rule Points	
frsi	Fiscal Rules Strength Index (Second-Generation Fiscal Rule Points)	Scores assigned by the authors based on the IMF Fiscal Rule Dataset.
dnofr	First-Generation Fiscal Rule Dummy (indicates the presence of -0- or absence of -1- fiscal rule.)	
dnofrs	Second-Generation Fiscal Rule Dummy (indicates the presence of -0- or absence of -1- fiscal rule.)	

This study stands out through its focus on theoretically grounded variable selection, differentiating it from previous empirical studies on implementing fiscal rules. The research highlights that although Türkiye's initial wave of fiscal regulations yielded immediate results, ongoing follow-up actions may threaten debt sustainability and fiscal responsibility. By incorporating these insights, this study adds to the existing literature on the long-term effectiveness of fiscal regulations and their vital role in managing public debt.

Drawing from the current literature, the following models have been developed (Combes et al., 2017; Guerguil, 2017; Stawiarska, 2023):

$$\text{Model 1: } d_{int} = \beta_1 d_{L1.dint} + \beta_2 d_{L2.dint} + \gamma_1 cab + \gamma_2 pdebt + \gamma_3 inf + \gamma_4 fri * inf + \varepsilon \quad (1)$$

$$\text{Model 2: } d_{int} = \beta_1 d_{L1.dint} + \beta_2 d_{L2.dint} + \gamma_1 cab + \gamma_2 pdebt + \gamma_3 inf + \gamma_4 frsi * inf + \varepsilon \quad (2)$$

$$\text{Model 3: } d_{int} = \beta_1 d_{L1.dint} + \beta_2 d_{L2.dint} + \gamma_1 cab + \gamma_2 inf + \gamma_3 dnofr * pdebt + \varepsilon \quad (3)$$

$$\text{Model 4: } d_{int} = \beta_1 d_{L1.dint} + \beta_2 d_{L2.dint} + \gamma_1 pdebt + \gamma_2 inf + \gamma_3 dnofrs * cab + \varepsilon \quad (4)$$

$$\text{Model 5: } d_{int} = \beta_1 d_{L1.dint} + \beta_2 d_{L2.dint} + \gamma_1 inf + \gamma_2 dnofr * cab + \gamma_3 dnofrs * pdebt + \varepsilon \quad (5)$$

The current research employed five models to analyse the effect of fiscal rules on interest payments, fiscal balance, and macroeconomic variables.

Model 1 analyses historical interest payment values to evaluate the impact of inflation and examines the interaction between first-generation fiscal rules and inflation.

Model 2 examines the adaptable structures of second-generation fiscal rules, exploring their interactions with economic variables and their impact on inflation.

Model 3 examines the relationship between first-generation fiscal rules and the debt stock, as well as the impact of interest payments on public debt as a percentage of GDP.

Model 4 assesses the link between the budget balance and second-generation fiscal rules, emphasising their function in fostering long-term fiscal discipline.

Model 5 combines the generational framework of fiscal rules with public debt and budget balance levels, providing a comprehensive perspective on their macroeconomic effects.

3.2. System GMM Model

The Generalised Method of Moments (GMM) dynamic system can be helpful in studying public debt management and fiscal policy in general. Firstly, it considers dynamic effects over time: lagged variables act as exogenous factors in a dynamic relationship (Arellano & Bover, 1995: 30-33). Secondly, by accounting for reverse causality through the use of lagged variables and incorporating firm-level data, the results become more reliable (Blundell & Bond, 1998: 116-117). Finally, efficient panel-data estimation is used to examine the economic implications of fiscal rules across countries and periods (Roodman, 2009: 103).

This research employs the Hansen test/J statistic (1982), which is essential to validate the robustness of GMM analyses when applied to dynamic systems. This test addresses the over-identification hypothesis and confirms the appropriateness of instrumental variables in the model, which is particularly important for managing dynamic relationships and endogeneity issues.

(i) The Hansen test enhances internal validity by assessing the bounds of instrumental variables, ensuring the model is not overly restrictive (Roodman, 2009: 125).

(ii) In the GMM specification, our primary approach is adopted to reduce endogeneity parameters. As such, the Hansen test is crucial for demonstrating that the instruments we used are valid, providing a check on whether there is no bias (due to endogeneity) concerning suitable instruments for the dependent variable (Blundell & Bond, 1998: 122).

(iii) Having too many instruments can produce results that appear very similar. Arellano and Bover (1995: 33) are the econometricians who refine our model through a specification test of the Hansen, confirming that instruments do not make the analysis overly complex (i.e., we are not over-instrumented).

(iv) According to Baum et al. (2013:18), "if the robust inference is sought in an instrumental variables model, the over-identification test can be calculated using a standard J statistic." Additionally, the J statistic/Hansen test is also referred to as the "robustified Sargan statistic" in two-step dynamic GMM estimation.

The dynamic system GMM model is effectively designed to analyse dynamic panel data. This framework includes lagged dependent variable values among the independent variables and is typically represented in a specific equation (Arellano & Bond, 1991; Baltagi, 2008).

$$y_{it} = \alpha y_{i,t-1} + X_{it}\beta + \eta_i + \varepsilon_{it} \quad (7)$$

y_{it} : Dependent variable for unit i (e.g., country, firm) at time t .

$y_{i,t-1}$: Lagged dependent variable from the previous period (dynamic component).

X_{it} : Vector of independent variables ($k \times 1$ dimension).

β : Coefficient vector for independent variables.

η_i : Time - invariant individual effects.

ε_{it} : Error term.

Dynamic panel data models, endogenous ($y_{i,t-1}$ and ε_{it} between) and unobserved heterogeneity (η_i). To solve these problems, the GMM method uses lagged values as instruments (This is why the variables L1.dint and L2.dint exist in the current study).

It is transformed by differencing to eliminate fixed individual effects as follows: η_i

$$\Delta y_{it} = \alpha \Delta y_{i,t-1} + \Delta X_{it}\beta + \Delta \varepsilon_{it} \quad (8)$$

Here $\Delta y_{it} = y_{it} - y_{i,t-1}$ is the first difference of the dependent variable.

Fixed effects (η_i) are eliminated when differencing:

$$\Delta \eta_i = \eta_i - \eta_i = 0 \quad (9)$$

Moment conditions for the difference and level equations are utilised to guarantee the accuracy of the instruments.

$$E[y_{i,t-s} \cdot \Delta \varepsilon_{it}] = 0 \text{ for } s \geq 2, t = 3, \dots, T \quad (10)$$

These moment conditions suggest that lagged values of the dependent variable may serve as instruments.

$$E[\Delta y_{i,t-1} \cdot \varepsilon_{it}] = 0 \text{ for } t = 2, \dots, T \quad (11)$$

These conditions suggest that lagged differences can serve as instruments for the level equation.

The GMM estimation employs a weight matrix to optimise the moment conditions. The weight matrix is defined as:

$$W = (Z' \Omega^{-1} Z)^{-1} \quad (12)$$

Z: Instrument matrix

Ω : Covariance matrix of error terms.

The GMM Estimator is defined as follows:

$$\hat{\theta} = (Z' W Z)^{-1} Z' W Y \quad (13)$$

To verify the validity of the estimate, Hansen tests, AR (1), and AR (2) tests must be performed.

The Hansen test is a method of assessing the validity of instruments.
 H_0 : Instruments are valid.

AR tests are used to identify potential autocorrelation issues within the model. Specifically, the AR(1) test examines whether there is no first-order autocorrelation; the AR(2) test assesses the absence of second-order autocorrelation. Dynamic System GMM employs lags of variables as instruments by combining level and difference equations to manage endogeneity and unobservables in the dynamic panel data model. The Hansen test ensures the validity of the instruments, thus confirming the reliability of the parameter estimates and addressing autocorrelation issues observed in the AR(1) and AR(2) tests.

4. Findings

A comparative analysis of fiscal metrics in EU countries and Türkiye (2008-2022) clarifies the causes of borrowing costs, fiscal responsibility, and inflation control. EU nations' low interest rates on borrowing (1%-3%) stem from strict fiscal regulations and budget discipline among EU member states. In contrast, Türkiye faces higher borrowing costs (8% to 10%) due to the absence of fiscal rules, persistent budget deficits, and diminished market confidence. The elevated borrowing costs pose a significant threat to Türkiye's economy.

EU countries can only maintain stable and low inflation rates of 2% to 5% to ensure fiscal sustainability. This stability encourages lower borrowing premiums by fostering a fiscally responsible government and increasing market confidence. Conversely, Türkiye faces very high inflation rates of 30% to 40%, which significantly raise borrowing costs. High inflation can hinder effective public fiscal management, expand budget deficits, and increase perceived market risks.

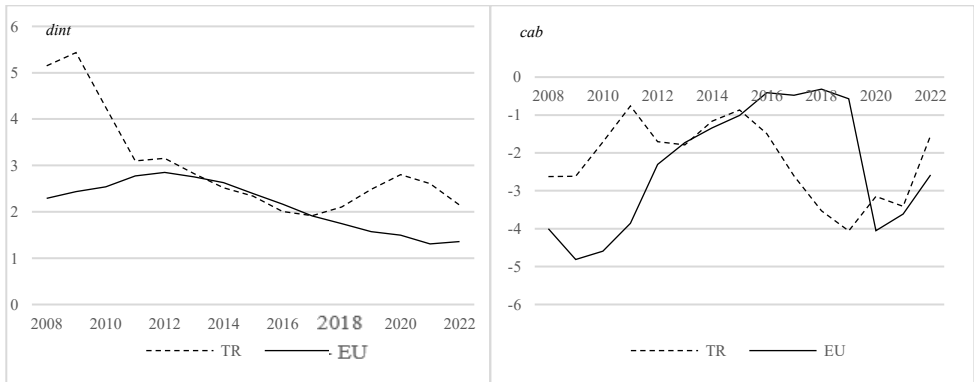
EU countries with well-established fiscal rules often exhibit higher public debt ratios, ranging from 60% to 90%, while experiencing lower borrowing costs. Conversely, Türkiye has a lower debt ratio of 30% to 40% but faces substantially higher borrowing costs. This paradox cannot be solely attributed to the presence or absence of fiscal rules. Instead, it suggests that macroeconomic stability, inflation expectations, investor confidence, and compliance with a wider set of fiscal discipline measures beyond formal regulations are vital in shaping borrowing costs.

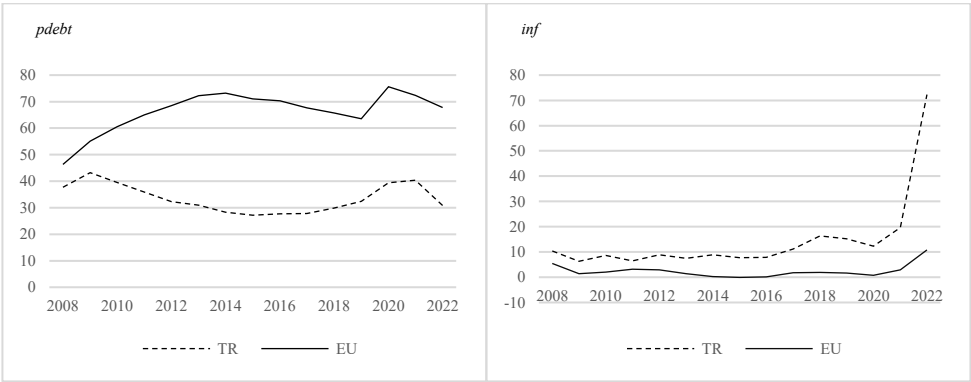
In the past, budgetary outcomes for EU countries have been neutral or positive, highlighting the effectiveness of fiscal rules in shielding budget stability from business cycles. On average, Türkiye has had a negative budgetary stance, although this momentum remains in favour of Türkiye due to increased economic strength. The opposition to inflation adversely affects how we interpret our budget balance, meaning we tend to overestimate our borrowing needs.

The analysis suggests that Türkiye requires significant fiscal reforms, especially in fiscal discipline and inflation control. Experiences from EU countries demonstrate that fiscal rules influence borrowing costs and help enhance economic stability. The only way for Türkiye to address high inflation, budget deficits, and fiscal deregulation is by pursuing a comprehensive reform programme. These reforms would lower borrowing costs and establish a stronger foundation for future economic sustainability through increased market confidence. When fiscal regulations are poorly managed, the consequences for Türkiye's budgetary balance and debt servicing are much more severe than in EU countries. Therefore, fiscal rules can help reduce Türkiye's borrowing costs and improve its economic viability.

Figure 1 illustrates the time series of the variables employed in the study.

Figure: 1
Variables (Time Series)



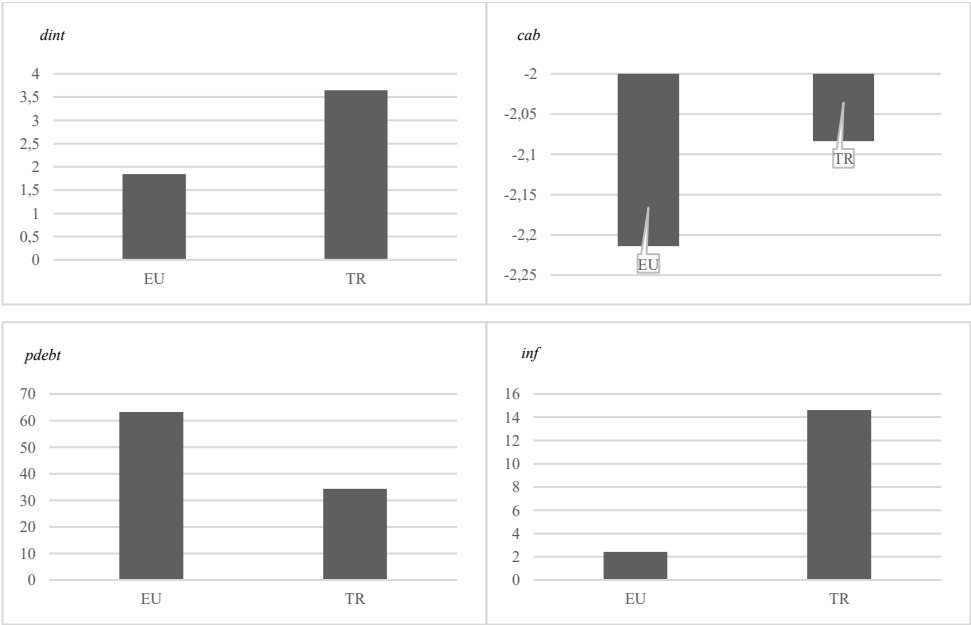


Source: IMF Database.

An analysis of data regarding interest payments, inflation, fiscal balance, and public debt levels of EU countries and Türkiye between 2008 and 2022 uncovers inconsistencies in fiscal performance and policy implementation.

As shown in Figure 2, the variables are depicted by their respective means.

Figure: 2
Variables (Averages)



Source: IMF Database.

Figure 2 shows average long-term values for 2008-2022, rather than the yearly changes seen in Figure 1. The study indicates that the stability and proper enforcement of fiscal rules in EU countries create a sustainable and dependable public finance framework. Türkiye's long-term fiscal indicators highlight structural weaknesses mainly caused by the lack of binding fiscal rules and ongoing high inflation. The absence of legally mandated fiscal guidelines reduces fiscal predictability and weakens investor confidence, causing fluctuations in risk premiums. Simultaneously, persistent high inflation increases borrowing costs, raising the real debt burden and limiting fiscal space. Therefore, Türkiye's structural fiscal weaknesses arise from both institutional fiscal limitations and macroeconomic instability. This comparison provides a factual basis to support that the instability of Türkiye's fiscal performance and budget discipline remain ongoing issues.

The results of the GMM estimation in Table 3 analyse the economic and fiscal variables that influence interest payments (% GDP). Interest payments (dint) were used as the dependent variable, and the effects of the independent variables were assessed using lagged values (L1.dint, L2.dint). The significance levels of the coefficients indicate the strength of the economic relationships, while the standard errors reflect the uncertainty (see details below in Table 3).

The table below shows the results of the two-step GMM model estimation process.

Table: 3
Dynamic GMM Model Estimation Results (Two-Step)

	(I)	(II)	(III)	(IV)	(V)
Dependent variable: <i>dint</i> Variable Coef. (Standard Error)					
L1.dint	1.3622* (0.104)	1.3652* (0.107)	1.3419* (0.104)	1.3726* (0.094)	1.2358* (0.175)
L2.dint	-0.3552* (0.098)	-0.3605* (0.099)	-0.3482* (0.094)	-0.3968* (0.084)	-0.3389* (0.137)
cab	-0.0254* (0.007)	-0.0263* (0.007)	-0.0253* (0.007)		
pdebt	-0.0003**** (0.000)	-0.0003**** (0.000)		0.0003**** (0.000)	
inf	0.0107** (0.004)	-0.0002**** (0.004)	0.0079*** (0.004)	0.0057**** (0.006)	0.0013**** (0.004)
fri * inf	0.0045* (0.001)				
frsi * inf		0.0008** (0.000)			
dnofr * pdebt			-0.0112* (0.001)		
dnofrs * cab				-0.0256*** (0.013)	
dnofr * cab					0.1031* (0.037)
dnofrs * pdebt					0.0087** (0.002)
con	-0.1199 (0.065)	-0.1027 (0.061)	-0.0954 (0.040)	-0.0390 (0.024)	0.1243 (0.079)
AR(1) (p-value)	0.017	0.017	0.017	0.014	0.025
AR(2) (p-value)	0.183	0.180	0.197	0.232	0.223
Hansen Test (p-value)	0.681	0.668	0.699	0.739	0.716
Wald Chi ² (p-value)	0.000	0.000	0.000	0.000	0.000
VIF	<1.10	<1.09	<1.09	<1.04	<1.32
Instruments (Obs/Groups)	35 (420/28)	35 (420/28)	34 420/28)	34 (420/28)	34 (420/28)

The symbols *, **, and *** indicate statistical significance levels of 1%, 5%, and 10%, respectively. The symbol **** indicates a result that is not statistically significant.

In Model 1, the effects of lagged interest payments are evident. The coefficient for L1.dint is positive and significant (1.3622*), while L2.dint is significant and negative (-

0.3552*). This indicates a strong link with interest payments from the previous period, but this connection diminishes after two periods. Additionally, the adjusted budget balance (cab) is negative and significant (-0.0254*), suggesting that fiscal discipline can help reduce interest payments. Inflation (inf) raises interest payments (fri * inf: 0.0045), although first-generation fiscal rules mitigate this increase.

In the second model, we assess the effects of second-generation fiscal rules using the variable frsi * inf. The positive and highly significant coefficient (0.0008**) indicates that these fiscal rules can interact with inflation to increase interest payments. Similar to Model 1, the variables cab and pdebt also demonstrate significant effects. This suggests that fiscal rules aimed at long-term and complex objectives can influence interest payments.

The third model examines the impact of first-generation fiscal rules on the stock of debt. We observe that the dnofr*pdebt coefficient (-0.0112), which is significantly negative, indicates that without the first generation of rules, a higher debt stock tends to increase interest payments, as inflation (inf) is also significant (0.0079***) and reflects higher interest payments with rising inflation. Inf remains significant in this model (0.0079***), demonstrating that increasing inflation leads to higher interest payments. All these findings show that fiscal rules play an important role in effectively managing debt.

The fourth model employs four different models to investigate the complex relationship between second-generation fiscal rules and fiscal balance, thereby highlighting the significance of these variables. The negative and significant coefficient -dnofrs*cab (-0.0256**) aligns with the idea that higher interest payments occur when second-generation fiscal rules are weaker, resulting in poorer fiscal balance. This supports the view that fiscal rules with long-term and systematically motivated anchors can be more effective in enforcing macroeconomic discipline.

In the fifth model, a positive and significant coefficient (0.1031) indicates that the first-generation fiscal rules interact with the budget balance (dnofr*cab) to influence the budget. Conversely, second-generation fiscal rule-chosen debt shows little effect (0.0087**) in an interaction. This suggests that first-generation fiscal rules can effectively secure near-term objectives, though they may lead to undesirable outcomes in long-term debt management.

The Hansen test (>0.05) in each model confirmed the credibility of the instrumental variables, and the Wald Chi² test (<0.05) likely justified the overall significance of the models tested. The average Variance Inflation Factor (VIF) across the models was below 1.10, indicating that multicollinearity among the independent variables was not a major concern. These low VIF values, supported by sound results, suggest that each variable has an independent effect on the estimations. Together, these findings imply that the selected regressors are statistically significant and that the estimations are reliable.

These models provide us with a valuable perspective on fiscal regulations and macroeconomic factors affecting interest payments. The key components of this variable are inflation, the debt stock, the fiscal balance, and the nature of fiscal rules. Especially in countries like Türkiye, developing countries implementing fiscal rules and understanding how these rules interact with macroeconomic variables is essential in public finance. These models are significant as they build on the existing literature on this topic.

5. Discussion

In countries like Türkiye, the lack of fiscal rules has led to major structural issues in public finances, impacting budget discipline and debt management. Fiscal rules are a mechanism designed to promote long-term economic stability by setting mandatory limits on budget deficits, public borrowing, and spending policies. However, Türkiye relies on flexible policies instead of binding fiscal rules to maintain fiscal discipline. This approach raises economic unpredictability, exposes public finances to political influence, and undermines international investor confidence. In countries like Türkiye, efforts to establish fiscal rules have periodically gained momentum, primarily through legislative initiatives aimed at strengthening budget discipline. One such bill proposed a comprehensive framework to ensure debt sustainability and fiscal discipline. The Fiscal Rule Bill sought to link public finances to long-term objectives by imposing strict limits on budget deficits and borrowing. Nonetheless, it was not enacted for various political reasons (Kesik & Bayar, 2010: 47-48). The bill's rejection caused Türkiye to stray from binding fiscal frameworks. Instead, budget targets are now set using tools like the Medium-Term Programme (MTP). However, since these are not binding, governments often deviate from their budget targets (Aydemir & Birinci, 2021: 86-88). Such deviations increase uncertainties in public finances, undermining international investors' confidence in Türkiye's fiscal policy. The flexible structure of the MTP cannot sufficiently enforce budget discipline during economic crises.

In countries lacking fiscal rules, public finances tend to be more susceptible to populist policies, as the absence of binding constraints permits discretionary fiscal measures that can jeopardise long-term stability. Notably, during election periods, increases in public spending and deviations from budget targets have overshadowed fiscal discipline. This situation has shifted public resources from areas supporting long-term economic growth to short-term consumption expenditures. For example, public spending intended for infrastructure investments or education is often diverted to short-term populist promises during elections. The absence of fiscal rules is a key factor elevating uncertainty in the Turkish economy. In nations without a long-term fiscal framework, the lack of clear policy guidelines can heighten investors' risk perception and result in higher borrowing costs. For international investors, fiscal rules offer predictability and bolster confidence. While such mechanisms support investor trust in countries with established fiscal rules, their absence in countries without such frameworks contributes to increased external borrowing costs. The failure to control budget deficits and the unsustainable debt dynamics are further consequences of lacking fiscal rules. During economic crises, increased expenditure coupled with decreased revenues rapidly inflates public debt in countries without established fiscal

frameworks. The budget deficit raises interest burdens, exerting additional pressure on public expenditures and limiting resources for social and infrastructure investments. International credit rating agencies point out that the lack of fiscal rules negatively impacts Türkiye's credit rating. Low credit ratings raise external borrowing costs and hinder economic growth (Demirkan, 2010: 10). Conversely, lower borrowing costs and higher credit ratings are typical in EU countries where fiscal rules are present. Fiscal rules also act as an automatic stabiliser in economic cycles. The absence of such rules in Türkiye results in the loss of this balancing mechanism. Sudden downturns in public finances during crises lead to expanding budget deficits and unsustainable debt levels (Kesik & Bayar, 2010: 55-56). This situation heightens the vulnerability of the Turkish economy to crises.

To the best of our knowledge, this study examined the effects of fiscal rules on public debt management in EU countries and Türkiye for the period 2008-2022. The results supported the H1 hypothesis. The factors influencing interest payments were analysed through five models (L1.dint and L2.dint), each incorporating various lagged levels of relevant macroeconomic variables.

Table: 4
Main Findings (Summary)

Variables	Model I	Model II	Model III	Model IV	Model V
L1.dint	1.3622*	1.3652*	1.3419*	1.3726*	1.2358*
L2.dint	-0.3552*	-0.3605*	-0.3482*	-0.3968*	-0.3389*
cab	-0.0254*	-0.0263*	-	-	-
pdebt	-	-	-0.0003****	-	0.0003****
inf	0.0107**	-0.0002****	0.0079***	0.0057****	0.0013****
Interactions	fri*inf: 0.0045	fri*inf: 0.0008**	dnofr*pdebt: -0.0112*	dnofr*cab: -0.0256**	dnofr*cab: 0.1031*
Results	Budget balance and inflation have been demonstrated to influence borrowing costs, while the significance of first-generation fiscal rules has been substantiated.	Second-generation fiscal rules have been shown to exert a notable effect on inflation.	The impact of public debt is limited, and implementing first-generation fiscal rules has been shown to reduce borrowing costs.	Second-generation fiscal rules have been demonstrated to be effective in ensuring budget discipline.	First-generation fiscal rules have been shown to impact the budget balance positively.

Source: from Table 3.

The first and the following generations of fiscal regulation adopt different approaches to ensuring the sustainability of public finances. The first generation is formulaic; budget deficits, debt, and some additional spending are the main focus. The subsequent generation aims to replace rigidity and inflexibility by considering economic cycles. Both regulations are equally vital for managing public finance and are intertwined with a tax basis.

Essential areas of Türkiye's public sector finance and economic policy evaluations are inadequately developed and operate under regulations affecting borrowing costs, fiscal issues, and related matters. To assess Türkiye's public finance and economic policies based on these aspects. A comparison with EU countries reveals deficiencies in fiscal conduct, the subsequent impact on public debt, budget balance, and Türkiye's borrowing costs ex-ante. After analysing Tables 2 and 3 and the implications of these findings, many core problems of the public economy and fiscal policies become apparent, affecting both theoretical and practical frameworks in Türkiye. The current study's results, as shown in Tables 2 and 3, are closely associated with issues stemming from deficiencies in Türkiye's fiscal policies

and the absence of established fiscal rules. These findings align with prior research on fiscal rules, particularly concerning their effects on borrowing costs, budget discipline, and debt sustainability. Existing literature suggests that fiscal rules foster macroeconomic stability by enhancing market confidence and reducing borrowing costs (Bergman et al., 2016; Stawiarska, 2023). Supporting these findings, this study indicates that first-generation fiscal rules notably stabilise borrowing costs and improve the budget balance (dnofr*pdebt: -0.0112; dnofrs*cab: -0.0256). Additionally, the study confirms the well-established relationship between inflation and borrowing costs previously highlighted in the literature (Eyraud et al., 2018; Combes et al., 2017), as evidenced by the positive and significant links between inflation and interest payments (inf: 0.0107**, 0.0079***). Moreover, the negative correlation observed between budget balance and borrowing costs (cab: -0.0254*) emphasises the importance of fiscal discipline as a vital factor for debt sustainability, a conclusion consistent with earlier studies such as those by Kopits & Symansky (1998) and Tapsoba (2012).

However, this study distinguishes itself from previous research by providing a more detailed analysis of how fiscal rules influence public debt service costs over time. While many studies focus on the effects of fiscal rules on overall debt sustainability (Von Hagen & Harden, 1995; Piątkowski, 2024), this research highlights the role of lagged interest payments (L 1. dint: 1. 3622), demonstrating the persistence of borrowing costs in Türkiye due to the lack of binding fiscal frameworks. Unlike studies examining fiscal rules at an aggregate level, this work offers a more nuanced understanding of the relationship between debt levels and borrowing costs by showing the limited yet statistically significant impact of the debt- to- GDP ratio (pdebt: -0. 0003**). These findings contribute to the literature by providing empirical evidence on the specific transmission mechanisms through which fiscal rules influence debt dynamics, rather than focusing solely on budgetary outcomes. The current work identifies budget balance (cab) as a key factor that reduces borrowing costs (cab: $p < 0.01$). However, Türkiye' s historically high budget deficits during past crises underscore the link between the absence of fiscal rules and weaknesses in budget management (Şimşek & Günay- Bekâr, 2008: 101, 101,117). Noteworthy examples include the crises of 2001 and 2008, during which pressure mounted on the budget balance due to inadequate control over public expenditures. In this context, the findings reinforce the importance of fiscal rules in maintaining budget discipline, as observed in EU countries. Additionally, the research strongly suggests that inflation (inf) influences rising borrowing costs. The results (inf: $p < 0.05$) clearly demonstrate a relationship between increasing inflation rates and the escalation of public borrowing costs in Türkiye. Notably, periods of high inflation, particularly during the 1970 s and 1990 s, were associated with a sharp rise in borrowing costs. Furthermore, the consistently low and stable inflation rates observed in EU countries highlight the indirect role of fiscal rules in promoting price stability. Conversely, the absence of fiscal regulations in Türkiye has directly amplified the negative impact of inflation on public finances.

The influence of first-generation fiscal rules on public debt (dnofr*pdebt: $p < 0.01$) highlights Türkiye' s struggle to manage its debt stock during crises effectively. The

significant rise in public debt during the 2001 crisis can be linked to the lack of fiscal regulations. In contrast, the positive effect of second-generation fiscal rules on the budget balance (dnofrs*cab: $p < 0.1$) suggests that fiscal reforms implemented in EU countries, such as the Maastricht Criteria and the Stability and Growth Pact, could serve as a useful framework for Türkiye. The absence of these second-generation fiscal rules in Türkiye has hindered the country's ability to control budget deficits and achieve fiscal sustainability.

While fiscal rules are essential for promoting budgetary discipline and ensuring debt sustainability, their strict enforcement can limit governments' ability to implement countercyclical fiscal policies, especially during economic downturns. Overly rigid fiscal frameworks may lead to procyclical adjustments, exacerbating economic contractions by reducing the flexibility of public finances and hampering the effectiveness of automatic stabilisers. Additionally, excessively restrictive fiscal targets can cause suboptimal allocation of public resources, lowering investment in vital infrastructure, education, and healthcare, and thereby weakening long-term economic resilience and growth prospects. The balance between fiscal discipline and policy flexibility highlights the need for well-designed fiscal rules that support economic stabilisation while maintaining credibility in public finance management.

In this context, the present study's findings are directly linked to the deficiencies in Türkiye's fiscal policy, especially considering its historical crises. The main issues stemming from Türkiye's absence of fiscal rules during these crisis periods include high-interest payments, weaknesses in budget balance, and the negative impacts of inflation on fiscal strategies. The experiences of EU countries in applying fiscal rules offer a valuable reference for Türkiye. The study suggests that Türkiye should undertake a comprehensive reform involving both first- and second-generation fiscal rules. Such reforms are expected to enhance fiscal sustainability and support economic stability.

6. Conclusion

This study explores the impact of first- and second-generation fiscal rules on public debt management, emphasising the differences between Türkiye and EU countries. The findings show that fiscal rules promote discipline in public finances. In EU nations, such rules have positively influenced budget balance, interest payments, and inflation. Conversely, Türkiye's lack of these regulations has resulted in higher borrowing costs and macroeconomic instability.

In countries like Türkiye, where fiscal rules are not firmly established, the heavy reliance on borrowing interest paid on prior values (L1.dint and L2.dint) and the absence of budget discipline (cab) are key factors that contribute to vulnerabilities in public finance. The lack of first-generation fiscal rules, which directly regulate public debt and budget deficits, has led to high levels of debt and deficits, as seen during the crises of 1994 and 2001. Conversely, the experiences of EU countries show that a flexible framework of second-generation fiscal rules can be more effective during times of crisis, promoting

economic stability. Türkiye's absence of such rules has made its fiscal framework more vulnerable to economic fluctuations.

The findings reveal that inflation (inf) increasingly impacts borrowing costs in nations without fiscal regulations. Historical evidence from such economies shows that periods of high inflation coincide with rising public borrowing expenses and declining market confidence. Conversely, EU nations' low and stable inflation rates suggest that effective fiscal rules indirectly support price stability.

In conclusion, countries like Türkiye, where fiscal rules are not firmly established, need to implement comprehensive reform programmes to achieve fiscal discipline and economic sustainability. These reforms should include first- and second-generation fiscal rules to control budget deficits and reduce borrowing costs. The experiences of EU countries show that fiscal rules can support economic stability and improve the long-term viability of public finances. By developing its fiscal rule framework based on these insights, Türkiye can boost market confidence and strengthen its resilience against economic crises.

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A Qualitative Study on Remote Workers' Work-Life Balance

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Uzaktan Çalışanların İş-Yaşam Dengesi Üzerine Nitel Bir Araştırma

Abstract

This study examines the relationship between remote work, a flexible working arrangement, and work-life balance using a qualitative research approach. While existing literature focuses on the link between work-life balance and traditional work structures, this research adopts a sceptical perspective on the flexibility offered by remote work in terms of time and space. It explores how these types of flexibility relate to work-life balance. Drawing on theoretical frameworks, the study questions whether remote work genuinely blurs the physical and temporal boundaries between professional and personal life within a cause-and-effect research design. Overall, it finds a gap between theoretical assumptions and practical outcomes.

Keywords : Flexibility, Remote Work, Work-Life Balance, Right to Disconnect.

JEL Classification Codes : J01, J80, J81.

Öz

Bu araştırmada esnek çalışma türlerinden birisi olan uzaktan çalışma ile iş-yaşam dengesi arasındaki ilişki nitel araştırma yöntemi kullanılarak derinleştirilmiştir. Alanyazında konuya yönelik yapılan araştırmalarda iş-yaşam dengesinin standart çalışma şekliyle arasındaki ilişkiye odaklanıldığı görülmektedir. Bu araştırmada ise uzaktan çalışmanın sağladığı zamansal ve mekânsal esnekliğe şüpheci bir bakış açısıyla yaklaşılarak bu iki esneklik türünün iş-yaşam dengesiyle olan ilişkisi irdelenmiştir. Kuramsal yaklaşımlardan yola çıkılarak uzaktan çalışmanın iş-özel yaşam arasındaki fiziksel ve zamansal sınırı bulanıklaştırabilen potansiyeli, neden-sonuç ilişkisine dayandırılarak araştırmanın sınırlılıkları içerisinde sorgulanmıştır. Bu bağlamda elde edilen bulgularda teori ile uygulama arasında farklılık olduğu sonucuna ulaşılmıştır.

Anahtar Sözcükler : Esneklik, Uzaktan Çalışma, İş-Yaşam Dengesi, Erişilememe Hakkı.

1. Introduction

Flexibility has shaped the labour market by reorganising work life due to growing market competition, along with advancements in information and communication technologies. Consequently, a flexible labour market and adaptable working styles have appeared. Moreover, the development of these technologies has increased their utilisation and become deeply embedded in many facets of daily existence. The opening of competitive markets in the post-Fordism era has changed the nature of work and modified its requirements through these technological progressions. Heightened competition has reached unpredictable levels, and the widespread utilisation of information and communication technologies has simplified access, gradually shifting the working hours of flexible workers away from the traditional standard.

The Fordist era is characterised by standardised work processes and the dominance of mass production methods. During this period, strict and standardised working hours and a designated workplace location were key elements shaping the work-life balance. However, global developments prompted the shift to post-Fordism towards the end of the 20th century, resulting in the spread of flexible working arrangements (David, 1989: 141). This transition introduced new practices such as flexible work hours, remote working, and temporary employment, driven by both economic and social changes. These developments have created important opportunities and risks for individuals' work-life balance.

From the post-Fordist era to the present, various factors such as technological advancements affecting work life, changes in production, service, and demand perceptions, and increasing competition have driven policies aimed at enhancing productivity. Following the industrialisation period, developments impacting industrial relations—such as globalisation, shifts in work practices, and deregulation (liberalisation)—have fostered a competitive global environment. As a result, external influences have encouraged companies to modify their management strategies and develop practices to better adapt to market dynamics. These practices, focused on the interests of the business, have led to employees becoming increasingly physically and mentally exhausted due to intense workloads.

Between Fordism and post-Fordism, Elton Mayo's (1998) research highlighted the psychological aspects of modern work life. In his studies, Elton Mayo suggested that employees' productivity varies depending on working conditions or wages, influenced by social and psychological factors. With the advent of the post-Fordism era, which arose from the crisis caused by mass production's failure to meet market demands, the concept of motivation has become central to work life (Roethlisberger & Dickson, 1939: 385-386; Mayo, 1998: 167-169; Bendiz & Fisher, 1949: 312). Such developments have shifted organisational focus towards tools that foster motivation and have led to the realisation that people are much more than mere tools in the production and service processes.

Flexible working arrangements, such as remote work, which have become widespread through technological advancements, can blur the physical and temporal

boundaries between work and private life, depending on individual and environmental factors. As a result of these boundaries becoming more complex, studies aiming to make the intangible balance between work and private life visible are included in the literature. However, it is more difficult for studies conducted in this field of work-life balance, a subfield of work psychology, to establish concrete measurements. This is because work psychology concerns abstract concepts such as individuals' values, attitudes, and behaviours at work (Keser & Güler, 2020).

Today's remote jobs can often be done independently from any location. This offers workers flexibility in both time and space. However, the impact of remote work on work-life balance can be either positive or negative, depending on environmental factors such as border crossers. With flexible working, working hours can be arranged according to the employee's preferences. Employees using this system can complete their tasks during their most productive hours (Çakır, 2001). If no barriers are preventing an employee from optimising their time through flexible work, it can be advantageous for both the employee and the employer, as the freedom to adjust working hours may increase productivity. However, flexible working systems can also introduce uncertainties regarding working hours. This uncertainty highlights some disadvantages for employees—increased stress from working outside planned hours may result in work-life conflict.

One disadvantage of flexible working is the increased workload from household chores, childcare, etc., and the reduced productivity at work caused by these factors, especially for women who work flexibly from home (Serinikli, 2021: 282). The loneliness individuals experience away from social environments due to remote work, along with the weakening of their social skills, are among the negative impacts that flexible working can bring.

Remote work saves time by removing daily commutes. This enables individuals to spend more quality time with their families and strengthen family bonds. It also provides temporal autonomy, allowing people to allocate more time to responsibilities such as housework, caring for the elderly, or childcare (Fedáková & Ištoňová, 2017: 78). However, working remotely can negatively affect teamwork over the long term. This situation may reduce team motivation and make remote workers feel a sense of belonging.

The advantages and disadvantages of the flexible working system affect both employers and employees, directly or indirectly. For instance, it is argued that employees' productivity in a firm with part-time work could be higher since they work fewer hours than full-time employees. Additionally, the extra wages paid to full-time employees are not given to part-time workers, which may reduce employers' costs (Öztürkoğlu, 2013: 114). Furthermore, part-time work can be a disadvantage for the employer. Individuals working fewer hours than full-time employees may perform at a lower level when they do not feel a sense of belonging in their work. This situation may keep the company's profit below expectations.

In a company operating remotely, many cost-related factors such as travel, clothing, and food are not relevant for organisations with flexible working arrangements. This situation gives an advantage to employers by reducing organisational expenses. Additionally, it is often more difficult for employers or managers to monitor employees in remote working setups than it is within an office environment. When monitoring employees becomes challenging, communication breakdowns between employers and staff can negatively affect business processes and make flexible working less advantageous for employers.

Although flexibility in time and space provides employees and employers with significant autonomy, it may also make the boundaries between work and private life more unclear. This confusion can normalise boundary violations by those crossing boundaries, such as employers, managers, or customers. As a result, employees might find themselves constantly accessible (Derks et al., 2015: 157-158). The right to be unavailable is an approach created to prevent boundary breaches. It is based on the idea that employees have the right not to respond to work requests outside working hours. In this way, it seeks to protect and maintain individuals' work-life balance in legal terms. This study aims to highlight the patterned relationship between the right of disconnect, work-life balance, and remote work from the perspective of boundary theory.

2. Flexibility and Remote Working

The idea of flexibility has remained popular, especially from the 1980s onwards, due to rising international competition driven by factors such as slow economic growth in the 1970s, globalisation, and technological progress, and it has been described in various ways in the literature. Nonetheless, the common theme in these definitions emphasises the ability to adjust to changes with minimal cost (Parlak & Özdemir, 2011: 3). In this context, it can be argued that the term 'changeability' underpins the concept of flexibility (Tokol, 2017: 194).

Today, the scope of remote work, which is viewed as flexible, is broader than in the past. This is because, in many sectors, depending on technology, work can be done in various locations and manners, away from the traditional work environment. Remote work is defined as a type of work conducted outside the organisation's premises, using tools such as smartphones, tablets, and laptops. (Eurofound and International Labour Office, 2017: 1-9). At this point, it can be stated that the main criterion of remote work is jobs that can be performed independently of the physical work setting. Bellmann and Hübler (2020) described remote work as a flexible work arrangement in which employees do not commute to their workplace but work from home through teleworking (Bellmann & Hübler, 2020: 424). It can be said that this definition remains current in scope regarding remote work.

In previous studies, remote work is primarily associated with telework, while working from home is analysed under a different heading. However, today, teleworking and working from home are intertwined with advances in information technology, making it

increasingly difficult to differentiate between the two. In Türkiye, to eliminate this confusion, the title of this article was changed to 'On-Call Work and Remote Work' following the amendment to Article 14 of the Labour Law No. 4857 in 2016. After this amendment, according to Article 14, remote work is defined as 'a work relationship established in writing and based on the principle that the employee performs the work at home or outside the workplace through technological communication tools within the scope of the work organisation established by the employer' (Labour Law No. 4857, Article 14, Additional paragraph: 6/5/2016-6715/2 Art). Based on this law, participants in the study may be classified as teleworkers, even though they all work from home. Therefore, in this study, teleworking and working from home are encompassed within the broader definition of 'remote work'.

Individuals working remotely benefit from information technology regardless of time or location. The ability for employees to choose their working hours and environment is a primary reason for favouring this working arrangement. Employers support this approach when it provides a competitive edge through remote working.

This study investigates the relationship between remote work, a flexible working arrangement, and work-life balance. While most literature focuses on the relationship between work-life balance and traditional working methods, studies suggest that remote work offers advantages over standard practices due to its spatial and temporal flexibility. However, this research adopts a sceptical perspective on the flexibility offered by remote work, analysing the link between these types of flexibility and work-life balance. Using theoretical approaches, it questions whether remote work can genuinely blur the physical and temporal boundaries between work and private life, within the constraints of a cause-and-effect framework.

3. Work-Life Balance

Work-life balance essentially refers to individuals' efforts to achieve a conceptual harmony between their work and personal lives (Greenhaus & Allen, 2011: 166). It is a crucial topic in social sciences because it influences people's health, happiness, and overall well-being. Consequently, numerous theoretical frameworks on work-life balance have been developed over time, including the boundary theory.

In boundary theory, an important approach to work-life balance, Clark (2000) suggested that role conflicts in achieving work-life balance can be prevented by establishing boundaries between work and personal life. These boundaries mainly fall into two categories: physical and temporal. The physical boundary involves separating a person's workspace from their private living space. The temporal boundary differentiates the time designated for work from that allocated to personal life (Clark, 2000: 756).

Clark (2000), who introduces boundary theory, bases this model on Kurt Lewin's Field Theory. According to Lewin, work and family life form individuals' psychological

domains. These domains interact depending on the strength of the boundary between them (Clark, 2000: 751-752; Kıcı, 2015: 46). Through this boundary theory, Clark (2000) suggests that individuals can shape their environment or that the environment can influence them.

According to boundary theory, individuals move between work and private lives. When switching from one to the other, they must adapt to the new environment. The conceptual framework of boundary theory helps explain this process more easily. The core concepts of this theory include "domains," "boundaries," "border-crossers," and "border-keepers" (Clark, 2000: 753).

Domains are classified into two categories: home and work. These spheres serve different purposes for individuals. While the work domain focuses on success and job satisfaction, the home domain emphasises the well-being of close relationships and personal happiness. However, at times, the objectives in these two areas can conflict. This situation, closely linked to conflict theory, arises from differing expectations in home and work environments (Kapız, 2002: 147).

According to boundary theory, three types of boundaries exist between domains. These boundaries are divided into physical, temporal, and psychological boundaries. A physical boundary refers to the location where an individual's behaviour occurs within a field. The temporal boundary determines when work and private life responsibilities are fulfilled. The psychological boundary consists of the rules an individual creates, influenced by their feelings and thoughts. These rules help individuals decide which behaviour is appropriate for each domain (Clark, 2000: 756). Although these types of boundaries are beneficial for belonging to different areas within standard work, they may be much more complex in the context of remote work. In remote work systems, home is often where individuals manage both their work and private lives in a shared space. It can be argued that maintaining both work and family life in a single environment can blur physical and temporal boundaries. At this point, researchers aim to make the complex relationships created by remote work more visible. In this regard, the current research seeks to contribute to the literature.

Border-crossers are individuals who shift daily between work and personal life. They include centralised and peripheral participants within a given area. Centralised participants assume greater responsibilities at their current location than peripheral participants. Peripheral participants are more removed from duties specific to that place (Keser & Güler, 2021: 275). An example of border-crossers is female individuals, who are often central participants, whereas male individuals tend to be more peripheral, especially in societies where everyday domestic responsibilities are common.

Border-keepers are people who separate different areas in their personal and professional lives. In domestic settings, relatives, children, spouses, or parents act as border-keepers. At work, managers and colleagues serve as border-keepers. Situations related to

border-keepers at home in business life—such as family pictures, phone calls, etc.—and bringing work home, like customer calls, are called ‘permeants’ (Kıcır, 2015: 46).

Clark (2000) describes work-life balance as the satisfaction individuals achieve by prioritising both work and non-work aspects of life. According to Clark (2000), people's involvement in balancing work and private life is influenced by environmental factors and is not entirely within their control. This definition aims to promote work-life balance by reducing the conflict between individuals' roles at work and outside of work (Clark, 2000: 751).

Within boundary theory, Clark (2000) proposes that individuals can influence their environment, or that the environment can impact them. In this study, the concept of work-life balance is grounded in Clark's (2000) boundary theory. The physical and temporal boundaries that define work and personal life are highlighted, and the connection between these boundaries and remote work is examined. The boundary theory is further expanded in the following sections of the study, supported by the findings.

Nowadays, the unpredictable nature of global competition has pushed employers towards the less costly remote work system. The literature shows that the advantages of remote work surpass its disadvantages. This situation reduces awareness of the adverse effects remote work may have on work-life balance. Generally, although it is argued that remote workers benefit more than office workers due to the flexibility of remote work, since most of them work from home, the boundaries between work and private life—which should be separate—tend to overlap, making the distinction unclear. The blurred boundary between work and personal life, particularly regarding work-life balance, is a significant issue that can diminish the quality of both professional and personal well-being.

Before 2019, remote working was less preferred by many companies, but it temporarily became necessary worldwide due to the COVID-19 pandemic. After this period, many organisations continued their operations remotely. According to a study conducted by Arikboğa et al. on white-collar employees in 2020, 63% of the participants worked remotely for the first time during the Covid-19 pandemic (Arikboğa et al., 2020: 5). In light of this information, remote work can now be characterised as part of the process known as the ‘new normal’ (Yalçın & Akıncı-Vural, 2021: 131-132).

4. Methodology

In this study, the qualitative research approach was selected to benefit from the experiences of individuals working remotely. Qualitative research emphasises the depth of human characteristics and the authenticity of information. In this regard, detailed and specific data obtained from a smaller sample than in quantitative research can be analysed through the qualitative method (Baltacı, 2019: 369).

In qualitative research, the researcher interprets the subjects' insights. In this approach, the researcher and subjects maintain a closer connection compared to quantitative

methods. As a result, the researcher's perspective on the subject is more insider-like than in quantitative research. The researcher relates the theories and concepts relevant to the subject and the research through the subjects. Consequently, the data structure in qualitative research is deeper and richer (Tarkun, 2000: 33).

Given the limited literature on the relationship between remote work and work-life balance, it was thought that more comprehensive data could be gathered through a qualitative method. The connection between remote work and work-life balance depends on individuals' personal experiences. It can be argued that a qualitative approach is suitable for this research, which aims to explore the relationship between the two variables (remote work and work-life balance) by focusing on personal experiences rather than specific measurements.

4.1. Research Design

In qualitative research, the design is defined as a framework that determines the research approach and guides the stages of the study to ensure consistency within this approach (Yıldırım & Şimşek, 2021: 63). In qualitative research, the process of data collection, analysis, and interpretation varies depending on the chosen design. The design selected for the research provides direction to the researcher and simplifies the analysis process (Çelik et al., 2020: 82). In this context, the research design should be determined by the researcher before collecting and analysing the data. After choosing the appropriate design, the researcher begins to develop suitable data collection techniques for the study and to plan how to analyse the resulting dataset, adopting a flexible approach.

In this study, the phenomenology design was deemed appropriate. Phenomenology explores phenomena encountered in social life but does not offer extensive, detailed information. These phenomena can take various forms, such as experiences, perceptions, situations, or concepts. The phenomenological design provides a framework well-suited to research aimed at understanding phenomena that are not entirely unfamiliar to us but whose meanings we cannot fully grasp (Yıldırım & Şimşek, 2021: 66).

4.2. Data Collection Methods

Three main types of data are primarily collected in qualitative research. These are data on the environment, the process, and perceptions. Environmental data relate to the social, cultural, and demographic characteristics of the research setting. Process-related data refer to what occurs during the research and how it impacts the sample. Data on perceptions, on the other hand, are insights gained from individuals in the research group about the process (Yıldırım & Şimşek, 2021: 38). The researcher uses various data collection tools to access these three types of data. Examples of such tools include interviews, observations, and the examination of written documents (Baltacı, 2019: 374-376).

The data for this study were collected through 'interviews'. An interview is a method of gathering data that helps understand individual situations through verbal communication. The aim at this stage is to collect information on the subject using research questions. The

semi-structured interview technique was considered more appropriate for this study. Semi-structured interviews gather and evaluate participants' ideas and experiences related to the research topic. This method uses headings derived from participants' experiences to help the researcher gain insights into the subject. Before conducting semi-structured interviews, the researcher prepares guiding questions to obtain detailed information on the topic (Genç, 2019: 105). Semi-structured interviews provide the researcher with flexibility (autonomy) to explore the subject in greater depth.

The interview questions for this study were developed based on the study's purpose by analysing and integrating the questionnaire and interview questions from existing literature on the relationship between remote work and work-life balance. During the interviews, the researchers aimed to ask open-ended questions to obtain more in-depth information. Before the interviews, a pilot interview was conducted to assess the clarity of the prepared questions. After this, questions that did not contribute to the research were removed, and new questions were introduced.

4.3. Conducting Process

Before the interviews, participants were briefly informed about the research and the study's primary purpose. The researcher also completed a form to collect participants' demographic details. Using these questions, the researchers aimed to gather information on participants' age, gender, marital status, parenting status, professional experience, and household composition (whether they lived with relatives or alone).

Interviews were conducted at a time and place convenient for the participants. The participants were informed that their personal data would be kept confidential, that their names or the organisations they represent would not be included in the study, and that they would remain anonymous in the research. To respect participants' privacy, they were numbered as P1, P2, P3, P4, P5, P6, P7, P8, P9, and P10. The researchers stated that participation was voluntary and that participants could withdraw from the interview at any time. The interviews were recorded with a voice recorder after obtaining the participants' permission. Participants were informed that the recordings would be transcribed later and securely stored. Interviews were conducted either face-to-face or by telephone.

4.4. Data Analysis Procedure

In this study, the deductive analysis method was selected for data processing. As a content analysis approach, deductive analysis depends on the researchers' predefined conceptual framework to guide the content analysis (Yıldırım & Şimşek, 2021: 240).

Given the study's preferred deductive analysis method, a list of codes and themes was developed in line with the conceptual framework before collecting the raw data. However, thanks to the autonomy afforded by the deductive analysis approach, the codes varied according to the guiding questions posed to participants during the interviews and were reflected in the themes.

Raw data were collected from verbal interviews with 10 individuals working remotely in the software, information technology, and banking sectors, and the data analysis process began. To ensure data reliability, the interviews were recorded with participants' permission using a voice recorder. The researchers then re-listened to and transcribed these recordings.

Direct quotations from the participants are often included in the 'Findings' section to present their ideas and experiences objectively. Therefore, the raw data were organised systematically and transparently.

4.5. Sample

Since this study relies on qualitative methodology, the purposive sampling method was employed in line with the qualitative tradition. Purposive sampling facilitates the discovery and explanation of phenomena and events. The technique, also known as snowball or chain sampling, was used to form the research sample. In the snowball technique, potential participants are identified through recommendations from individuals believed to possess relevant experience and knowledge of the research topic (Yıldırım & Şimşek, 2021: 116-120). In this study, most participants in the software and information technology sector were recruited through a snowball sampling approach. After interviews with P1, P2, and P3, P1's colleagues were contacted. Following interviews with P4, P5, P6, and P7—who are employed at different organisations—these participants were reached via P4. Participants P8, P9, and P10 were also recruited directly by the researchers and included in the sample.

As mentioned earlier, this qualitative research design is phenomenological and more specifically, an interpretative phenomenological analysis. In interpretative phenomenological analysis, it is accepted that in-depth analysis of fewer participants is more important than superficial information from a larger group. There is no fixed number of participants required for a qualitative study. Interpretative phenomenological analysis emphasises detailed examination of each case; therefore, sample sizes are generally small (Smith & Osborn, 2007: 522). In the literature, different sample sizes such as 1, 4, 5, 9, 15, 25 are seen in phenomenological studies (Pietkiewicz & Smith, 2014: 9, Creswell, 2007: 61). Additionally, in qualitative research, the interview process concludes when the researchers' discourses begin to repeat and the categories reach saturation (Charmaz, 2006: 113).

In this context, the study's sample size was limited to 10 remote participants, selected through the snowballing technique, in accordance with the decision of three members of the Kocaeli University Social and Human Sciences Ethics Committee at its meeting on 28/03/2024, reference number 2024/04. Interviews concluded when participants' responses became similar and data reached saturation.

Table: 1
Demographic Characteristics of Participants

Participants	Age/Gender	Sector	Seniority
P1	34 / Male	Software and Information Technology	2 years
P2	32 / Female	Software and Information Technology	7 years
P3	40 / Male	Software and Information Technology	16 years
P4	29 / Male	Software and Information Technology	7 years
P5	28 / Male	Software and Information Technology	8 years
P6	27 / Female	Software and Information Technology	7 years
P7	24 / Male	Software and Information Technology	2 years
P8	43 / Male	Software and Information Technology	18 years
P9	27 / Female	Software and Information Technology	4 years
P10	39 / Male	Banking	15 years

Since the study's qualitative research instruments guided its path, it would not be appropriate to make definitive judgments about the effects of participants' demographic characteristics on work-life balance. It was believed that using the instruments of the quantitative research method to focus on the impact of individual factors, which are the demographic characteristics of the participants, on work-life balance would produce more accurate results. Therefore, this study concentrated on the influence of environmental factors (employer, manager, customer) on work-life balance rather than on individual characteristics (such as age/gender, marital status).

4.6. Limitations of the Study

No sectoral restrictions were imposed to provide more comprehensive results on the study's subject. In this context, the research is limited to individuals working remotely.

This study offers a holistic view by concentrating on the work-life balance of 10 remote workers in Türkiye. However, restricting the research to Türkiye is a limitation.

Additionally, one limitation of this study is that it was not possible to reach employees who find it more difficult to maintain a work-life balance due to the intense demands of boundary protectors (employers, managers, or customers) in the work-life field.

5. Key Findings and Discussion

The data collected from the research were categorised into main and sub-themes as shown in Table 2.

Table: 2
Themes and Sub-themes

THEMES	SUB-THEMES
Remote Work	• Work Routine • Advantages of Remote Work - Transportation - Temporal and Spatial Flexibility* • Disadvantages of Remote Work - More Work Hours - Less Break Times - Inefficiency and Decline in Work Motivation - Lack of Communication and Work Adaptation Process - Social Isolation - Reimbursement of Compulsory Expenses • Right to Disconnect
The Relationship Between Remote Work and Work-Life Balance	• Environmental Factors Related to Work-Life Balance - Job Demands and Organisational Culture • Work-Life Boundary - Physical Boundary - Temporal Boundary - Strategies to Prevent Boundary Blurring • Role Conflict - Time-based Role Conflict - Strain-based Role Conflict

** Based on the participants' experiences in the interviews, temporal and spatial flexibility is one of the benefits of remote work. However, this flexibility can also pose disadvantages for participants, as some reported that their work hours have become uncertain.*

As shown in Table 2, the study identifies two primary themes. In the initial stage of the guiding questions, the researchers inquired about participants' work routines, their satisfaction with remote work, its advantages and disadvantages, and the right to disconnect. Based on the responses, four sub-themes emerged under the central theme of “Remote Work”: “Work Routine”, “Advantages of Remote Work”, “Disadvantages of Remote Work”, and “Right to Disconnect”. When the researchers posed questions to understand the relationship between remote work and work-life balance, the central theme “The Relationship between Remote Work and Work-Life Balance” emerged. This relationship was categorised into three sub-themes: “Environmental Factors Related to Work-Life Balance”, “Work-Life Boundary”, and “Role Conflict”.

In this part of the study, rather than providing detailed information on all the identified themes, the subject was highlighted by creating headings from the themes that support the research's argument. To maintain the consistency of the subject, a general assessment was conducted by comparing our findings with those from similar studies in the literature. Consequently, direct quotations from the interviews with participants were frequently included, and the subject was elaborated upon by referencing parallel studies. Based on the main and sub-themes, four primary headings were identified: advantages of remote work; temporal and spatial flexibility (divided into two categories: the boundary in work-life balance and the right to disconnect); strategies to prevent boundary blurring; and covering necessary expenses.

5.1. Advantages of Remote Working

The flexibility in timing offered by remote working is recognised as an advantage in the literature (Ipsen et al., 2021: 14; Allen et al., 2021: 78). When participants were asked

about the benefits of remote work, their typical response was that the time saved on commuting was utilised more effectively due to the elimination of traffic and transportation issues, along with the flexibility that remote work provided.

P1, an SAP Consultant, said, "I generally prefer working remotely. When I think about the times I worked in an office environment, working from home suits my style better. Since I do not enjoy working in crowded places, remote work is an advantage. Besides that, I do not have to worry about waking up early and rushing to the office. The office of the institution I work for is on the opposite side. They call me to the office occasionally for meetings about new projects. It takes me almost one and a half to two hours to commute from home to the office. If I went to the office every day, I would have to wake up at 6 a.m. and get ready for work. Our working hours start at 9 a.m. At least for now, I wake up around 8 a.m. Since I don't have a long commute, I can have breakfast comfortably in an hour and start work at 9 a.m." This highlights the time saved on the commute.

For P8, the benefits of remote work include: "...I don't have to get up early to go to work. Since I live in Istanbul, I avoid wasting time in heavy traffic. As I manage my own time, I can work flexibly. Therefore, I can allocate time to my personal activities during the week. I also believe I eat healthier."

5.2. Temporal and Spatial Flexibility

Participants highlighted the advantages of remote work, noting that it provides temporal and spatial flexibility depending on job requirements and organisational culture. This flexibility means being able to work at preferred times and locations. Four participants in the study mentioned this benefit of remote working. However, the interviews revealed that environmental factors could also make this flexibility a drawback. The pressure to be constantly available online, driven by expectations of continuous accessibility from remote workers, can negatively affect work-life balance by causing uncertainty about working hours and increased work-related stress. Therefore, the flexibility related to time and place, which underpins the relationship between work-life balance and the right to disconnect, remains one of the most significant findings of the study.

P9 also described a period when his work hours became unpredictable, stating: "...I experienced this a lot at one point. I know that I used to train business partners from iftar to sahur. I say from iftar to sahur. Actually, my shift ended at 6. Is it possible for me to do something like this normally?" Later in the conversation, he mentioned, "...a customer calls and says, 'I am available at this time.' Since everything is online now, you must deal with the customer more. For example, when there is a problem, they say, 'Let's connect on Zoom right away.' This uncertainty inevitably makes it harder to maintain a consistent work mentality," which clarifies the unpredictability of his working hours while maintaining the original meaning, tone, and style.

P5, a team leader at his software company, said, "...working hours are flexible for us. Normally, people work 8-5, 9-6 in the office, but with the comfort of working remotely, some people can work at night. There are currently five people in my team. Since work hours are flexible, some work during the day and others at night. After a while, it becomes something like this: we are expected to provide instant support for each employee 24/7. I support these people all day as part of my responsibilities. I must be the first to start work and the last to finish. Over time, I feel like I can't work efficiently." Later in the interview, he said, "...the concept of day and night has blended with the different working hours of the team. My sleep schedule has been disrupted because I had to support the team during the day. I am at home, but my life feels more irregular than before." He emphasised that he is happy to work remotely due to his parenting situation, but he prefers a hybrid work arrangement. After this meeting, the flexibility in time and space was viewed as a disadvantage for P5, the team leader.

P1, while discussing the disadvantages of remote work, said, "I think the biggest disadvantage is that you work more in this system. Since you are always at home in front of the computer, after a while, this situation starts to become normal in the eyes of the employer." He emphasised that working more has become a common feature of the so-called 'new normal'.

Stating that flexible jobs have emerged due to constantly evolving technologies and that this situation has gradually reduced reliance on physical workplaces, Naswall et al. (2008) noted that employees can now perform their tasks anytime and anywhere. It has been suggested that this arrangement might pose a challenge for employees in setting boundaries between work and personal life outside of work (Naswall et al., 2008: 5; Allen & Shockley, 2009: 273; Allen et al., 2021: 79). In the study, participants also emphasised temporal and spatial flexibility when discussing the benefits of remote work. However, as Naswall et al. (2008) indicated, this flexibility also made work hours less predictable, and 6 of our participants (P1, P2, P3, P4, P5, P10) worked more.

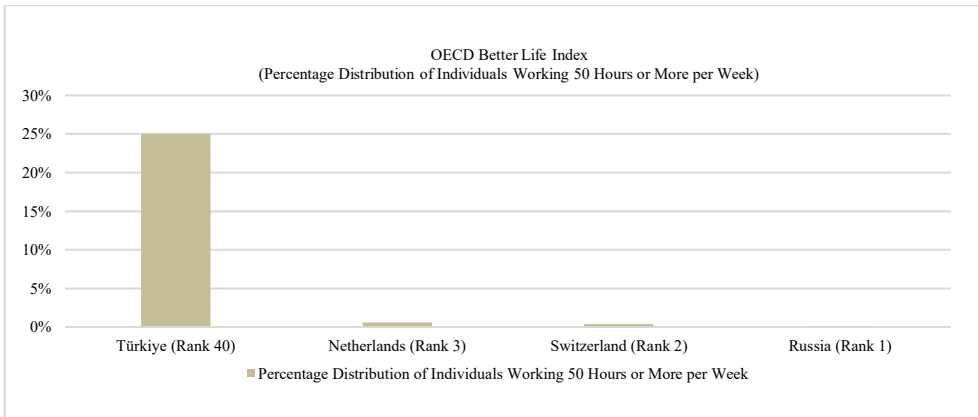
5.2.1. The Boundary in Work-Life Balance

When asked about the boundaries between work and private life due to the unpredictable hours of remote work, most participants described their experiences of blurred boundaries. P6, a team leader at the institution, shared his insight into how the intense work pace blurred the lines between work and personal life: "...when I first started working, there was no such thing as 'work-life balance', only a 'work-work balance' [laughs]. There was a period when we worked until 11 o'clock and started early the next day. Prioritisation was adjusted over time as a result. During that period, many employees resigned, citing reasons like 'we work too hard, we don't get what we deserve for our efforts'. When people resign, we conduct an exit interview: 'Why did you quit? What could have improved your stay?' This isn't meant to persuade but to gather 'feedback'. Everyone mentions these issues: 'We work too hard.'

P10, who viewed the blurring of boundaries between work and private life from the perspective of constant accessibility for remote workers, shared their experience during the interview: "You write to me from the chat at work if your computer is on. You can send an email. If email is not enough, you can reach me via WhatsApp. If that is not enough, you can call me. What I mean is, if your manager is at a point where he can reach you from anywhere and order you to do work, that boundary you mentioned blurs not only when working from home but also when working in an office." Other studies have also shown that the boundaries between work and life are blurred when work is performed at home, and at least no door can be closed (e.g., a separate home office) (Süß & Sayah, 2013: 255).

The population of this study is limited to Türkiye, but it should be noted that there is overlap between the data from the OECD's 2020 Better Life Index report and the findings of this research. The OECD Better Life Index (2020) enables comparison of countries' welfare levels by assessing criteria such as income, work and earnings, housing, social communication, life satisfaction, and work-life balance. Graph 1, Graph 2, and Graph 3 are compiled from the OECD Better Life Index report for 2020. The graphs below are crucial to this research, as they help us understand the relationships among remote work, work-life balance, and the right to disconnect.

Graph: 1
Proportions of Employees Working 50 or More Hours Weekly in OECD Countries

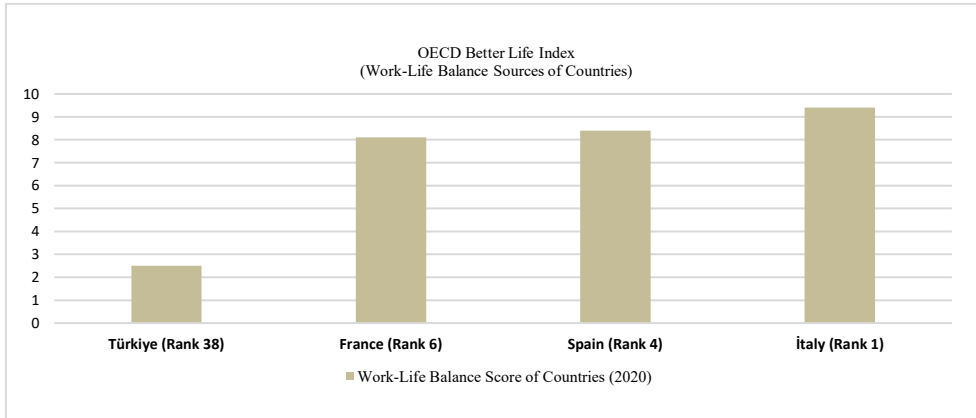


Source: (OECD, 2020: <https://www.oecdbetterlifeindex.org/>).

Graph 1 shows the percentages of people working an average of 50 hours or more per week across 41 countries. According to this report, Türkiye ranks 40th among OECD countries with a rate of 25%. Based on this data, it can be said that one in every four people in Türkiye exceeds the 45-hour weekly work limit. However, it should be emphasised that there is no difference in labour relations between remote work and office work. The findings suggest that, because of the widespread use of information and communication technologies in daily life and their constant accessibility, working hours are becoming unpredictable, and

overwork is becoming normalised. This situation can adversely affect the work-life balance by blurring the boundaries between individuals' professional and private lives. The graph below shows Türkiye's work-life balance score among OECD countries in 2020.

Graph: 2
Work-Life Balance Scores Across OECD Countries



Source: (OECD, 2020: <https://www.oecdbetterlifeindex.org/>).

According to this report, Türkiye ranks 38th among OECD countries, with a score of 2.5 out of 10 for work-life balance among 41 nations. France ranks 6th among OECD countries with a score of 8.1, while Spain is 4th with 8.4. The report states that Italy has the best work-life balance, with a score of 9.4. Based on the graph above, one of the most significant factors behind the high scores of France, Spain, and Italy is the right to disconnect.

5.2.2. Right to Disconnect

The right to disconnect is a specific regulation that can remove the obligation for employees to use telephone, e-mail, or other work-related communication tools outside working hours. This regulation protects employees' break periods from interference by supervisors, managers, or clients. It allows individuals to detach themselves from work life (Müller, 2020: 2). In this context, the right to disconnect enables individuals to safeguard their personal space outside working hours. This right becomes particularly important in flexible working arrangements such as remote work, where there is a risk of being constantly reachable due to technological advancements.

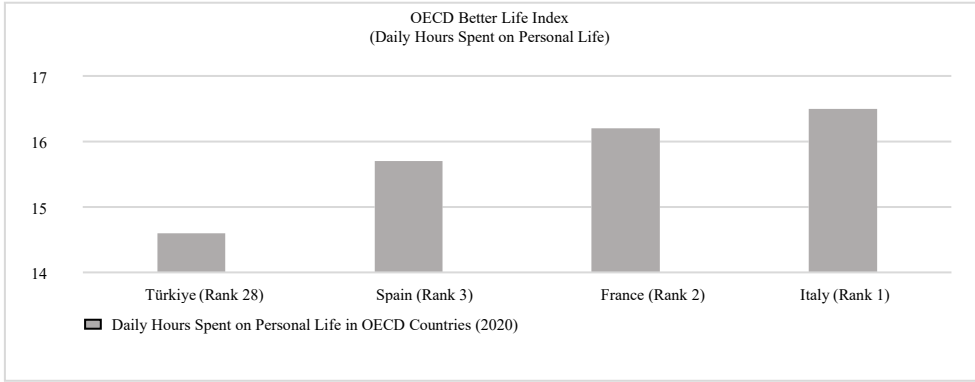
The private life area encompasses times and places where an individual has the autonomy to act or refrain from acting on obligations that are solely theirs. Violations of boundaries resulting from work relationships or other external interventions against the individual's will are akin to direct intrusions into personal privacy. In this context, the right to disconnect aims to protect the boundary of the private life area within the work-private

life balance from encroachers such as employers, managers, colleagues, or customers (Özveri, 2021: 369-370).

France was the first country to establish legislative regulations regarding employees' accessibility outside of working hours. With the 'Droit à la Déconnexion' (right to disconnect from work-related digital connections) law, enacted in France on 1 January 2017, employees in France gained the right to disconnect outside designated working hours. Following France, Italy formally recognised this right on 14 June 2017. On 5 December 2018, Spain incorporated the right to disconnect within its legal framework for protecting personal data and digital rights (Secunda, 2019: 27-29). Although the "Regulation on Remote Working" was introduced in 2021, there appears to be no specific regulation protecting employees' right to disconnect outside working hours (Resmi Gazete, 2021). However, according to Article 3 of the Working Hours Regulation under Labour Law No: 4857: "Breaks are arranged by taking into account the climate, season, local traditions and the nature of the work, and taking into account the uninterrupted twelve-hour rest period within twenty-four hours. The provision of the last paragraph of Article 69 of the Labour Law No. 4857 is reserved" (Resmi Gazete, 2004). Based on this article, it can be inferred that employees' break periods should be continuous. In this context, it could be argued that employees in our country have an indirect right to disconnect. Nevertheless, based on the participants' experiences in this research, it appears the current situation is different.

The physical, mental, and social aspects of employees covered by employment contracts are considered in such agreements. Alongside the employment contract, these personality traits are partly within the employer's influence. However, these traits also fall under the employer's duty of care towards the employee. It remains unclear in employment contracts which elements of employees' personalities are beyond the employer's authority and to what extent. In institutions without union representation, violations by employers—who are the dominant parties—may also occur. For example, one aspect of an employee's personality, their private life, remains outside the employer's control. Employers are obliged not to interfere in their employees' private lives unlawfully. Furthermore, under the 'obligation to look after the employee,' employers must also protect staff from interference by other employees or customers (Sevimli, 2006: 338). According to the study's findings, interference in employees' private lives outside working hours has become commonplace. Phone calls or requests for work beyond usual hours from border guards (employers, managers, or customers) within employees' workspaces suggest that their personal boundaries are being crossed. The normalisation of these violations stems from the fact that legislation has yet to recognise the right to disconnect. The graph below is discussed in relation to this right.

Graph: 3
Daily Hours Spent on Personal Life in OECD Countries



Source: (OECD, 2020: <https://www.oecdbetterlifeindex.org/>).

According to Graph 3, when analysing the time spent on non-work life during the day, Türkiye ranks 28th among OECD countries with 14.6 hours. Spain ranks third with 15.7 hours, while France is second with 16.2 hours. Italy spends the most time on non-work life among OECD nations, with 16.5 hours per day. The positive effects of the right to disconnect are more clearly apparent in Graph 3. In Spain, France, and Italy, employees have the right to disconnect. Graph 3 demonstrates how this right positively impacts employees' non-work lives. The right to disconnect is crucial in preventing the blurring of the boundary between work and private life. Such regulations aimed at protecting this boundary also benefit work-life balance. As discussed earlier in Graph 2, countries like France, Spain, and Italy that score highly in work-life balance are closely linked to this issue.

In addition to France, which leads the way on the right to disconnect, Germany is also a pioneer in the practices companies implement to prevent permanent disconnection. Many German companies have voluntarily granted their employees the right to be unreachable without any legal regulation or sanction (Kaya, 2024: 241-246; Yıldız, 2024: 276). For example, Volkswagen decided in 2016 that its employees could be contacted and announced that there is no expectation of responding outside these hours. Other companies have protected weekends and holidays through delayed delivery systems. Daimler's Mail on Holiday programme deletes messages received on holidays from inboxes and transfers them to other responsible individuals (Syversten, 2020: 62).

In Turkish law, although there is no legal regulation recognising the right to disconnect, it is possible to address the issue of continuous accessibility of workers within the scope of existing rules protecting employees (Article 66 and Article 68 of Labour Law No. 4857; Article 4, Article 11 of the Working Hours Regulation; Article 413 of the Law of Obligations; Article 9 of the Remote Work Regulation, etc.). What is missing in Turkish law

is a regulation that treats continuous access to workers as a condition and recognises disconnect as a right (Kaya, 2023: 257).

5.3. Strategies to Prevent Boundary Blurring

Since there is no specific regulation on the right to disconnect in Türkiye, individuals working remotely tend to take their own precautions to protect the boundary between work and private life. Participants try to prevent the blurring of boundaries by setting physical or time-based boundaries between work and private life or by developing behavioural strategies.

When participants were asked about the precautions they took to maintain the boundary between work and private life, SAP Consultant P2 explained, "...creating a comfort zone for yourself is very important. To replicate the comfort we have in the office at home, I designed a room in the house as an office, and now I use it only for work. I have been doing this since I started working to feel like I am in the office, not at home. Before creating this comfort zone, I noticed my attention was more easily distracted while working. I can focus better on my work by working this way.", indicating that he establishes a physical boundary between work and private life.

P4's statement, "...during periods when communication with customers increases significantly, I request a company phone from the company so that I can turn it off after 6 p.m. Or sometimes I don't turn it off and put it on aeroplane mode. This has the following advantage: I can continue messaging with my colleagues on WhatsApp, but no one can reach me by phone, and after a while, people understand that if I call this person after six about work, he won't answer. This actually teaches people a behaviour. It shows that he developed a behavioural strategy based on the temporal boundary between work and private life. Similarly, P1's statement, "Sometimes I get emails from customers on weekends for non-urgent work. They call me right away. Sometimes I don't answer the phone on purpose. I respond with emails during the day. For example, last Sunday at 11 a.m., the customer called me twice. I didn't answer. I provided support via email during the day and solved his problem. I didn't answer the phone again when he called me again at 5 p.m. for the same problem." It can be said that this experience he conveyed is an example of a behavioural strategy developed to protect the temporal boundary.

P9's statement is as follows: "My manager is not someone who has any sense of time. He is not the kind of person who says, 'I won't write to the group because people are sleeping.' He writes at midnight, calls you at midnight. I warned him about this a few times. I guess these warnings have worked because he no longer calls me on weekends. More accurately, he no longer calls as much as possible at night." Later in the interview, K9 said, "...if there is an email from a customer after 6 o'clock, I don't answer it. I tell myself I'll do it tomorrow. I set limits for myself in that way."

Kıcıır (2015), in his doctoral study on the work-life balance of 12 translators working from home, mentioned three types of precautions the participants took to prevent the blurring of work-life boundaries. These precautions are setting physical boundaries, establishing temporal boundaries, and developing behavioural tactics. Kıcıır (2015) stated that the participants living alone set physical boundaries by organising their homes according to their work schedules. Conversely, he noted that the participants established temporal boundaries between work and non-work life by arranging their working hours according to their preferences (Kıcıır, 2015: 113-114). Participants in this study also developed physical, temporal, and behavioural tactics to prevent blurring of work-life boundaries. At this point, it should be noted that the participants in Kıcıır's (2015) study work remotely on their own behalf. All participants in this study work remotely for their employers. Therefore, the boundary keepers in the work areas of the participants in our research—namely the employer, manager, or customers—play a decisive role in the work-life balance.

5.4. Covering Necessary Expenses

While discussing the disadvantages of remote work, participants in this study stated that they bear many of the necessary work-related expenses. Essentially, essential expenses refer to basic costs such as electricity, water, and internet required to run an office. With the remote work system, individuals may need to cover these expenses themselves. The participants' views on this matter during the interviews are as follows:

...when you work in an office, the company covers expenses such as food, internet, electricity, or heating. Right now, we only have a meal card. Other than that, work-related costs, such as electricity, heating, water, and internet, are paid out of my own pocket. I have even heard of companies that pay up to 100% of their employees' electricity or natural gas bills, but, of course, they must have gone a bit further.

“...even during my normal working hours, even if I go to work every day, the company does not cover my travel expenses. Only my food expenses are reimbursed. But right now, when I work from home, that is not covered either. I have received a small extra fee a few times related to these costs. I mean electricity, water, and natural gas bills; apart from that, I do not currently receive any payments. I pay for all of it myself. We should be paid for travel, food, heating, electricity, water—whatever you spend.” (P9)

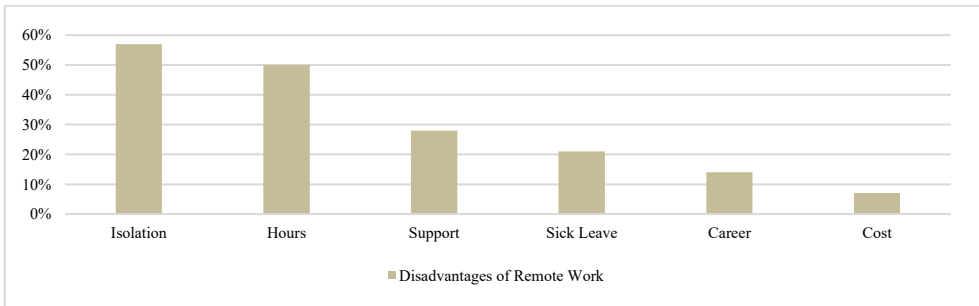
...Our company provided tables and chairs as a one-time ergonomic support two years ago. Other than that, we now only have a meal card. When people stayed at home during the pandemic, their consumption also increased. For example, we used the dishwasher more because we were always at home. The company did not provide us with any support on these issues.

“...electricity, air conditioning, food, this and that. I don't know about tea, coffee, or the kettle, but I don't know about the internet. There are many things. All of these were left for us. For example, I had to buy a table and a chair and get a monitor because of a back

injury. Our bank paid for the monitor up to a certain point, but no payments were made for other items. In other words, the employer reduced their costs at our expense.” (P10)

In the study by Mann et al. (2000), which involved 14 participants working remotely, it was observed that employees in remote work arrangements had their necessary work-related expenses covered by the employer, just as in office work. The data from this study are shown in Graph 4.

Graph: 4
Disadvantages of Remote Working



Source: (Mann et al., 2000: 678).

The area marked as ‘Cost’ in Graph 4 represents the employer's mandatory expenses—such as electricity, heating, and internet—that employees cover when work shifts to a home setting. In this research, participants noted they are bearing the costs typically borne by the office while discussing the disadvantages of remote work. It is relevant to mention the Remote Work Regulation, published in the Official Gazette in 2021, which establishes comprehensive procedures and principles for remote work. The participants' descriptions of mandatory expenses appear to relate to Article 8 of this regulation. Article 8 states: “Issues regarding the determination and coverage of mandatory expenses directly related to the production of goods or services arising from the performance of the job are specified in the employment contract” (Remote Work Regulation, Article 8). Although the article lacks explicit clarity on whether the employer or employee should cover these expenses, the issue remains unsettled. A more critical perspective might phrase it as: “Issues regarding the coverage of necessary expenses are specified in the employment contract.” This indicates that it is common for employment contracts to specify how employees will cover necessary work-related expenses incurred during remote work, given the differing economic capacities of employers and employees. Therefore, it can be argued that this aspect of the regulation is ‘vague’.

6. Conclusion

Flexibility is a phenomenon that has impacted the labour market by restructuring work life due to increasing competition. In the current system, where flexibility—defined as

the ability to adapt to change—offers a competitive advantage, the working conditions of flexible employees have also become adaptable. Remote work, which has emerged with advancements in information and communication technologies and is recognised as one of the flexible working styles, exemplifies this flexibility. Its effects, which detach working conditions from standard norms, influence the abstract balance between work and non-work life. As a result of this research, it has been observed that the remote working style, which extends beyond physical boundaries, can transcend them by going beyond mere time flexibility.

Temporal and spatial flexibility is a form of autonomy that remote work offers to individuals. However, recent advances in information and communication technologies make it much easier for people to be contacted through various channels and can undermine these forms of flexibility. Based on interviews with participants, the perception of excessive freedom provided by temporal and spatial flexibility can lead to the remote work system being viewed as irregular, especially when legislation is insufficient to protect temporal boundaries, such as the right to disconnect. This situation may adversely affect the work-life balance of remote workers.

The interviews with participants revealed that remote work raises awareness by offering flexibility in both time and space. However, this also presents a 'partial' benefit. Participants' experiences added depth to the topic and highlighted some drawbacks of temporal and spatial flexibility for remote workers. Depending on the nature of the job, one environmental factor affecting work-life balance is the absence of clear boundaries in the work environment, which makes actual working hours unpredictable. This also blurs the temporal boundary between work and private life, complicating efforts to maintain a healthy balance. A specific regulation to safeguard this boundary, as seen in France, Italy, and Spain (such as *Droit à la Déconnexion*), could help go beyond the mere 'right to disconnect' (as defined in Article 3 of the Working Hours Regulation). Implementing such legislation in our country could address current uncertainties, as employers often exploit legislative gaps or ambiguities in labour laws in institutions lacking union representation.

It would be appropriate to mention trade unions at the point where collective movements based on communication can also be realised in the virtual environment, as information and communication technologies develop. Due to the lack of collective consciousness, it may be considered utopian to see union movements in institutions based on remote work. On the other hand, the fact that forms of organisation focusing on adapting to the changes created by new technologies, such as 'e-union' or 'cyber union', which managed to become a trend in the early 2000s and then gradually lost popularity, have become a topic of discussion again, may contribute to the inclusion of trade union activities in areas based on remote work and create a new competitive environment. As a result of the impact of the competition phenomenon, which raises current standards, the way may be paved for collective bargaining, where negotiations over work-life balance are carried out within institutions that operate remotely. A strong connection exists between work-life balance and the right to disconnect, since both aim to protect individuals' personal lives,

maintain their privacy, and reduce work-related stress and pressure. Based on Clark's perspective, work-life balance entails maintaining equilibrium with minimal role conflict by preserving the boundaries between work and private life. The right to disconnect serves to protect and support this balance. Additionally, the right to disconnect can safeguard employees' right to rest and increase work efficiency, as a balanced work-life nurtured by this right will positively influence individuals' motivation and productivity. For this reason, institutions need to prioritise 'employee-friendly' policies regarding work-life balance. This is especially crucial for organisations operating in the software and information technology sector, where most of the research sample is located. In this sector, where innovation is vital, creativity is perhaps the most fundamental element providing organisations with a competitive edge. One essential need for creativity is high motivation. As mentioned above, when the productivity and motivation-enhancing effects of work-life balance are reconsidered from this perspective, the core issue becomes clear. In summary, examining the impact of the creativity factor, driven by employee motivation, in companies in the software and information technology sector reveals that gains from employee creativity are directly reflected in the company's profits. In this sense, it can be anticipated that the advantages of work-life balance for employees will also translate into financial profitability for companies and serve as a competitive advantage in the market.

Consequently, legal regulations in Türkiye recognising the right to disconnect are necessary. In this context, further details about workers' right to disconnect can be incorporated into employment contracts. Additionally, similar to Germany, companies could be provided with clear procedures for communication outside working hours.

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Creative Economy and City: Institutionalisation and the Awareness Problem

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Yaratıcı Ekonomi ve Kent: Kurumsallaşma ve Farkındalık Sorunu

Abstract

The United Nations recognises creative industries as essential for economic growth, employment, social inclusion, and cultural diversity. However, policymakers and local stakeholders often lack awareness of these industries' potential. This study focuses on the Taskışla Design LAB (TDL) project, supported by the İstanbul Development Agency (İSTKA), which aims to promote collaboration among design-based sectors in İstanbul. TDL addresses issues related to institutionalisation, capacity building, and funding, engaging 741 actors, conducting 37 activities, and launching five pilot projects. Findings indicate a lack of institutional awareness, emphasising the need for stronger collaborations, innovative management, and diverse funding sources.

Keywords : Creative Economy, Awareness, Institutional Capacity, Collaborations, Funding, Türkiye.

JEL Classification Codes : H1, H5, O2, R1.

Öz

Birleşmiş Milletler, yaratıcı endüstrileri ekonomik büyüme, istihdam, sosyal kapsayıcılık ve kültürel çeşitlilik için hayati öneme sahip olarak tanımaktadır. Ancak, politika yapımcılar ve yerel aktörlerin bu endüstrilerin potansiyelinin yeterince farkında olmadığı ortaya çıkmaktadır. Bu çalışma, İstanbul Kalkınma Ajansı tarafından desteklenen Taşkısla Design LAB (TDL) projesine odaklanmaktadır. TDL, İstanbul'daki tasarım odaklı endüstriler arasında iş birliğini teşvik etmeyi amaçlamıştır. Proje, kurumsallaşma, kapasite geliştirme ve finansman konularını ele alarak 741 aktörle iletişime geçmiştir. Proje kapsamında, 37 etkinlik düzenlenmiş ve 5 pilot proje yürütülmüştür. Sonuçlar, kurumsal kapasite ve farkındalık eksikliğini ve iş birlikleri, yenilikçi yönetim ve çeşitlendirilmiş finansman kaynaklarına olan ihtiyacı ortaya koymuştur.

Anahtar Sözcükler : Yaratıcı Ekonomi, Farkındalık, Kurumsal Kapasite, İşbirlikleri, Fon Kaynakları, Türkiye.

1. Introduction

Creativity can be seen as an economic concept if the final product generates economic value, as a sociological concept if it relates to the creation of cultural and spiritual values, and as a business concept if it is linked to the product development process of firms or combines all these aspects (UNCTAD, 2021). A recent debate in the creative economy centres on its connection to sustainable economic growth and development. Sectors within the creative economy attract investment and labour because they support economic growth by producing high-value products. These sectors are also highly adaptable and sustainable, driven by intangible resources such as talent and ideas (Florea et al., 2022). Because of their nature, the economic dynamism they bring to urban areas is significant not only for diversifying the urban economy and fostering a sustainable structure but also for creating social and spatial diversity alongside their economic contributions to urban development. In this study, while highlighting the importance of the creative economy in urban areas, a general overview of the İstanbul Design Industry and the TDL project is presented. Institutional structures and related regulations fundamentally support the presence of the creative economy in urban settings. While awareness of the subject is essential for related urban policies, the mechanisms that promote awareness should be explored.

Urban policies develop strategies that nurture cities' cultural and creative potential (Alpan, 2021). Both policies and practices must address the needs of economies at all scales, and the institutions that are fundamental to economies must adapt to change accordingly. However, creating opportunities involves developing advanced urban infrastructure, leveraging human capital and institutional capacity, adopting a flexible, modern management approach at all levels, and establishing sustainable policies. Furthermore, investing in human capital development is essential for transforming institutions. Better institutionalisation and sustainable development require careful planning and long-term capacity building. In creative industries, individual creativity, skills, and knowledge are crucial for economic diversity and sustainability. Therefore, all stakeholders must collaborate and work across disciplines and institutions through networks. The right policies can only originate from the right actions. Incorporating creativity into urban policymaking has been introduced to the planning field previously. However, policies continue to be refined to meet the evolving needs and issues of different periods.

This study investigates issues of awareness and institutionalisation using the TDL project as a tool, within a framework emphasising the importance of the creative economy in urban areas and the need to develop it alongside urban development policies. The activities within the project's scope were designed to assess the state of institutionalisation and awareness. The project's findings provide valuable contributions to this subject. Supported by İSTKA, the TDL project brought together stakeholders from design-oriented industries that support the growth of İstanbul's creative economy and aimed to boost the role of creative industries in the city's economy through collaborative development. The main aim was to establish collaborative structures among researchers, students, entrepreneurs, design industry players, the private sector, policymakers, local authorities, and civil society,

thereby strengthening the design-based industries ecosystem. The project's outcomes are analysed to evaluate levels of awareness and institutionalisation among actors. Institutionalisation is discussed in relation to awareness within the context of institutional capacities, collaborations, organisational capabilities, and funding. The following sections include conceptual discussions, the research background in Türkiye, and the project's findings. It is expected that insights into levels of institutionalisation and awareness will inform future studies.

2. Creative Economy, City and Institutionalisation Debates

One of the most essential requirements for promoting the creative economy in urban areas is the tangible development of this sector, which should be incorporated into urban policies and practices. In this context, the most basic needs are awareness, followed by institutionalisation. While this study aims to add to the existing literature by examining the clarity of these mutual relationships, the number of studies specifically focused on the creative economy in Türkiye remains relatively limited. Therefore, the study's contribution to raising awareness is significant. Within this framework, the literature has been reviewed with a focus on the importance of the creative economy and the necessity of institutionalising and raising awareness of its role in urban development. There is a research gap regarding the factors that influence the development of the creative economy in a specific city. Exploring Türkiye's position, potential, and the necessary steps for the future concerning the creative economy is crucial, especially in light of global development trends (Kerimoğlu, 2024).

2.1. Creative Economy and the City

The immediate effects of economic developments are clearly experienced in urban areas and fast-track environmental, social, and institutional transitions. While urban policies create new forms of urban management, urban planning and policies are constantly debated and amended (Rotmans et al., 2000).

The creative economy is defined as the transformation of creativity and intellectual capital into goods and services (UNCTAD, 2022). The UN-UNCTAD (2021) declared 2021 the 'International Year of Creative Economy for Sustainable Development.' The creative economy is a strong force, including the fastest-growing sectors of the global economy in terms of income, employment, and exports (UN, 2019). Its impact spans many areas, including policymaking, economic development, domestic and international investment, technology and communications, arts and culture, tourism, social welfare, and education (UNCTAD, 2008). Therefore, cooperation and the development of tools and models for implementation become vital. Current development models emphasise sustainable urban growth, social and ecological considerations, and the promotion of innovation and creativity. Creativity is an essential element in urban policies for economic progress (Hamdouch et al., 2017; Kerimoğlu, 2017).

Creativity is the primary source of innovation, connecting with accessibility, social life, culture, and knowledge-based business models to promote economic and social development in cities. Creative industries and a creative workforce are especially vital for areas experiencing stagnation, where traditional sectors such as manufacturing and agriculture dominate (Sundbo, 2011; Piergiovanni et al., 2012; cited in Khlystova & Kalyuzhnova, 2023). This indicates that creative industries help build resilience against external threats, risks, and challenges. Research has demonstrated that skill-intensive economic sectors, such as creative industries, contribute to urban and regional development by increasing the skilled workforce (Brakman et al., 2015; Chapain et al., 2010; Duranton & Puga, 2014). UNESCO (2019) recommends that promoting creative industries through policies, support, incentives, and investments, alongside international cooperation and partnerships, can lead to inclusive development (Fazlagic & Szczepankiewicz, 2020). Creative cities aim to nurture open-mindedness, free thinking, and creativity. This, in turn, fosters social and economic progress by creating an environment that attracts new businesses and start-ups. The diverse community enhances the creative atmosphere, boosts creative and knowledge industries, connects into global networks, and spurs new initiatives (Florea, 2015; Hahn, 2010; Kerimoglu, 2024). Urban policies focus on introducing new economic activities in cities, ensuring urban economic sustainability, and developing appropriate intervention strategies, all of which can be achieved only through institutionalisation (Kerimoglu, 2024).

2.2. Raising Awareness and Building Institutional Capacities

Raising awareness and building institutional capacities form the basis for institutionalisation and sustainability. While institutional capacity development supports urban sustainability by fostering local dynamics, it also enables the creation of effective organisational structures that contribute to development (Akin, 2015).

Institutionalisation ensures the effective use of resources by providing a transparent and systematic control loop. To achieve institutionalisation, it is essential to develop institutional capacities, establish collaborations, create and utilise new funding sources, and adopt flexible management models. The level of awareness among local administrations and policymakers directly impacts the sustainability of institutional structures. Sustainable urban development is only possible by integrating global economic changes into urban policymaking processes. Therefore, developing policies for the creative economy cannot be achieved successfully by a single administrative unit alone; it requires the involvement of a broad range of stakeholders concerned with economic development, local and international investment, technology, community, arts, culture, tourism, social welfare, and education (Leitner, 1990). Institutional capacity is necessary not only for crisis management but also for all stages of urban development. A robust, strategic institutional capacity includes the ability to engage in cross-sectoral thinking, flexibility in resource allocation, clarity, and transparency (OECD, 2016).

Capacity building is vital for tackling challenges in urban development, globalisation, localisation, public-private partnerships, and sector-specific trends. In the process of capacity building in urban governance, key elements include financial resources, the role and competence of experts, institutionalisation, and capacity development (Akin, 2015). Establishing collaborations is also a fundamental part of the institutional approach. Collaboration involves sharing resources and managing diverse interests and ideas to find standard solutions to shared problems. A collaborative system institutionalises actor networks with shared governance on a multi-actor platform (Wolfe, 2010; Sorensen & Torfing, 2021, cited in Khlystova & Kalyuzhnova, 2023). Working in partnership with related industries supports infrastructure development, resource utilisation, solution implementation, and adaptation to change. This can benefit industries by providing skilled talent and a supportive local environment (Boschma, 2015; Basilico et al., 2022; Kogler et al., 2023; cited in Khlystova & Kalyuzhnova, 2023). Collaboration among government, civil society, and the private sector can promote job creation and foster networking. The creative economy brings together experts from diverse sectors, fostering cooperation and awareness (Buchoud et al., 2021).

It is crucial to update management approaches and policies to handle changes in an integrated, comprehensive, and flexible way, as economic production systems influence all social, cultural, demographic, and environmental aspects. Public institutions, in particular, may find it challenging to keep pace with developments and deliver effective services during global crises (Emerson & Nabatchi, 2015, cited in Kovanen et al., 2023). Inadequate or insufficient human resources, combined with a lack of organisational and institutional maturity, often lead to the failure of development projects in many developing countries.

3. On the Creative Economy, Institutionalisation and Awareness in Türkiye

The transformation of traditional industries in the developed world has been driven by innovation and creativity, making the positive contribution of creative industries to cities' economic, social, and spatial transformation undeniable. This trend alone underscores the importance of creative industries to Türkiye's economic development. As Türkiye transitions to a knowledge economy, creativity becomes vital in urban areas to develop, transform, and strengthen cities' economic structures, as observed in the developed world. For cities to achieve sustainability, their economic, social, political, administrative, cultural, physical, and spatial frameworks must align with global developments. Innovative and adaptable management approaches, along with the responsibilities assumed by relevant authorities and institutions, are of crucial importance (Kerimoğlu, 2017).

As of 2017, data on the creative economy in Türkiye shows a turnover of 28 billion dollars and an added value of 7 billion dollars. The share of the creative economy in Türkiye's total turnover is 2%, which is relatively low compared to manufacturing (27%) and construction (8%). In 2017, the value added by the creative economy accounted for around 3% of Türkiye's total value added. Again, this figure is very low compared to construction (8%) and manufacturing (35%). In 2015, the top five regions with the highest

creative economy turnover were TR10 (İstanbul, 73.9%), TR51 (Ankara, 9.7%), TR42 (Kocaeli, Sakarya, Düzce, Bolu, Yalova, 3.4%), TR31 (İzmir, 2.6%) and TR61 (Antalya, Isparta, Burdur, 2.5%) (İZKA, 2021).

In Türkiye, the institutions responsible for policymaking and funding in the creative economy are the Ministry of Culture and Tourism, the Ministry of Industry and Technology, and the Ministry of Trade. Furthermore, two institutional bodies are the TOBB Creative Industries Council, established in 2017 as part of the Union of Chambers and Commodity Exchanges of Türkiye (TOBB), and the Creative Industries Council (YEKON), an umbrella organisation of related professional groups, set up in 2012 on a project basis (with İSTKA support).

The TOBB Creative Industries Council is a sub-organisation representing the creative industries with a public face, including representatives from companies, civil society organisations, and related public institutions. It aims to facilitate communication between the public and private sectors. Conversely, YEKON is a structure that organises professional bodies of the creative industry. Its establishment seeks to propose strategies, policies, and actions for the sector (YEKON, 2023b). YEKON's roles include fostering collaboration, promoting innovation, training industry professionals, facilitating research, and serving as a centre for national and international experience (YEKON, 2023c). The presence of these two institutions is crucial for institutionalising the creative sector; therefore, recognising their active status and contributions is essential to provide a comprehensive overview.

The economic contribution of copyright-based cultural industries in Türkiye was first measured by a study conducted between 2015 and 2018 under the leadership of the Ministry of Culture and Tourism, with support and cooperation from the World Intellectual Property Organization (WIPO) (Ministry of Culture and Tourism, 2021). The four key industries of the creative economy are defined as Software, Computer Games and Data Services, Advertising, Books/Press, and Radio and Television. The Ministry of Industry and Technology's 'Competitive Sectors Programme' supports projects under the Creative Industries theme. It is important to note that these supports aim to strengthen the connection between the creative and manufacturing industries (YEKON, 2023b). The Ministry of Trade contributes to the creative economy by incentivising exports.

While preparing Türkiye's 12th Development Plan (2024-2028), a workshop was organised with the participation of sector representatives (YEKON, 2023b). It is essential to discuss how the outputs are reflected in the plan. Concerning the creative economy and institutionalisation, Development Agencies play a vital role in providing financial support to central and local governments, universities, SMEs, entrepreneurs, non-governmental organisations, and others. After the Ministry of Development was dissolved in 2018, its agencies were transferred to the Ministry of Industry and Technology.

Supporting innovative approaches and sectoral contributions in regional plans is crucial for developing these areas (Akın, 2015). Development Agencies already have

strategic plans, projects, and activities aimed at improving institutional capacity, creating a skilled workforce, restructuring institutions, establishing an environment of inter-institutional trust, facilitating effective communication, raising awareness of common inter-regional issues, formulating strategies for economic and social development, generating funding resources, and setting goals that aid regional growth. In addition to building institutional capacity, efforts are underway to foster a collaborative environment in which public institutions, NGOs, and universities contribute to regional development, share knowledge, and exchange experiences.

3.1. Policy Documents and Awareness

BAKKA (Zonguldak, Karabük, Bartın), İZKA (İzmir), İSTKA (İstanbul), and ANKARAKA (Ankara) have planned strategies and actions to develop creative industries within their regional plans for 2024 and 2028. CKA (Adana-Mersin), AHİKA (Kırşehir, Nevşehir, Niğde, Aksaray, Kırıkkale), KUZKA (Kastamonu, Çankırı, Sinop), GMKA (Balıkesir, Çanakkale), and İZKA's 2023 regional plans address activities related to creative industries, creative productions, and fostering a culture of creativity. In the plans of other development agencies, creativity is mentioned in connection with developing tourism alternatives and increasing innovative capacity (digitalisation, innovative models in industrialisation, R&D, clustering, development of information technologies, strengthening the entrepreneurship ecosystem, branding). The 12th Development Plan of Türkiye, covering 2024-2028, prioritises agriculture and food, energy, defence industry, and tourism for development, while information technologies, innovative sectors, and creative industries are not included.

The regional plans prepared by 26 development agencies include objectives, approaches, and general statements about actions to enhance regional economic development and strengthen the economy. However, there is no comprehensive explanation of how to achieve economic sustainability and growth in the regions holistically, including the tools to be used.

3.2. Sources of Funding

Besides development agencies, the institutions funding creative industries include the Ministry of Culture and Tourism, the Ministry of Industry and Technology (affiliated with Development Agencies, TÜBİTAK, and KOSGEB), the General Directorate of the Turkish Radio and Television Corporation (TRT), the Scientific and Technological Research Council of Türkiye (TÜBİTAK), the Small and Medium Enterprises Development Organisation (KOSGEB), and the Ministry of Trade (Annex 1).

Agencies other than İSTKA that directly support innovation, technological development, and innovative practices are İZKA and ANKARAKA (Table 1). However, the funds allocated to these agencies are relatively small compared to those assigned to İSTKA (Table 2).

Table: 1
İZKA and ANKARA Funds - Categories and Amounts

	Categories	Amount (million TL)
İZKA	Digital Transformation in the Public Sector	30
	Transformation into Information Society: Information and Communication Technologies	15
	Technological Production and Innovation	14
	The Competitiveness in Tourism and Innovation	12
ANKARAKA	Innovative Applications	10
	High-tech Product Commercialisation	10
	Social Entrepreneurship and Social Innovation	7

Source: compiled from development agencies' web pages by the author.

İstanbul Development Agency (İSTKA)

This paper examines the development of the creative economy through the example of the TDL project supported by İSTKA. To provide a comprehensive overview, a summary of İSTKA's support and activities, as the leading entity in developing the creative economy and innovation-related initiatives in Türkiye, will be included, along with a significant funding budget.

Since 2012, İSTKA has run a support programme called 'Creative Industries and Innovative İstanbul.' Between 2012 and 2018, a total of 2,563 projects were submitted. Of these, 898 (35%) were applications for the 'Creative Industries and Innovative İstanbul' programme, and 214 (23.83%) received support. As shown in Table 2, 61 projects were supported in 2021.

Table: 2
İSTKA Funds

Year	Application Categories	Total Applications	Number of Successful Projects	Amount (million TL)
2012	Disaster Readiness	54	15	
	Small-Scale Infrastructure for Social Inclusion	110	19	
	Developing Creative Industries	97	20	15
	Information and Communication Technologies	153	54	50
2014	Disaster Readiness	57	25	
	Efficient and Clean Energy	102	27	
	Innovative İstanbul	116	27	--
	Children and Youth	215	49	
2015	Global Tourism İstanbul	101	16	
	Health Tourism Centre İstanbul	60	27	
	Innovative İstanbul	149	48	-
	Developing Creative Industries	126	26	20
	Increasing Women's Employment	83	19	
	Fighting Addiction	134	31	
2016	Entrepreneurship	96	17	
	Innovative and Creative İstanbul	229	56	50
	Children and Youth	216	48	
2018	Entrepreneurship	52	17	
	Innovative and Creative İstanbul	181	37	80
	Children and Youth	232	35	
2021	Entrepreneurship	-	12	
	Innovative İstanbul	-	36	80
	Creative Industries	-	25	20
	Children and Youth	-	74	
	Feasibility Support	-	3	
2023	Talent İstanbul	-	20	

Source: İSTKA, <<https://www.ISTKA.org.tr/projeler/tamamlanan-projeler/>>.

According to the İSTKA Regional Plan 2024-2028, one of the four strategies shaping İstanbul's vision is 'Creativity: Developing creative industries across İstanbul and strengthening the ecosystem globally'. İSTKA (2023) details the key conditions necessary for developing creative industries in İstanbul. This includes diversifying financial resources, integrating with technological advancements, creating data production systems, enhancing the city's focus on creativity, and ensuring the effective utilisation of creative spaces in the town. Industries face significant challenges in accessing financial resources. Small-scale and individual activities are not funded due to strict criteria.

4. The Problem of Institutionalisation and Awareness: Taskisla Design LAB Project Experience

Developing the creative economy, especially in urban areas, cannot be the sole responsibility of policymaking bodies. It requires awareness and suitable capacity from all city actors, including universities, professional chambers, NGOs, various industry associations, civil initiatives, private sector organisations, and the local community.

The TDL project concentrates solely on design-based industries for several reasons. Due to the size of İstanbul and time constraints, it was necessary to limit both the scope of the study and the subject matter. Additionally, the aim was to establish connections with the educational programmes of the İTÜ Faculty of Architecture (including Architecture, Urban and Regional Planning, Landscape Architecture, Interior Architecture, and Industrial Design), all of which are design-related. Finally, since this study assesses an urban area, it focuses on the city and urban stakeholders.

The project aims to strengthen İstanbul's creative industries ecosystem by fostering a supportive environment for the establishment of independent cooperative structures. It also seeks to raise awareness about the creative economy, enhance institutional capacities through developing collaborative frameworks among various stakeholders, and influence urban development policies by creating investment and funding tools to promote sustainability. The project took place from November 2021 to December 2022, focusing mainly on joint activities, collaborations, and building relationships with other actors. Its primary goal was to establish integrated and sustainable cooperation structures.

Various activities were carried out to raise awareness among stakeholders about sectoral development and ecosystem challenges, including product development, knowledge and experience sharing, capacity building, developing human resources, designing transformational approaches, implementing digital transformation, and creating participatory, inclusive, and innovative pathways to enhance the sector's added value. Additionally, issues such as institutional capacity, funding mechanisms, investment, industry-specific expectations, and the relationship between education and the labour force were addressed.

4.1. Methodology

This study assesses the outcomes of the TDL project activities, workshops, and meetings, with an emphasis on institutionalisation and awareness. A total of 741 actors were contacted during the project, of whom 135 participated in the activities. While some actors did not respond, others contacted the project team during the first phase to request information but did not participate in any activities. The individuals and groups contacted included: 50 civil initiatives, 33 graduate entrepreneurs from the İTÜ Faculty of Architecture, 35 professional chambers, 23 publications, 60 award-winning groups from various competitions, 32 fellow project owners (from İstanbul, national, and international levels), 27 laboratories (from İstanbul and nationwide), local governments (İstanbul Metropolitan Municipality, İstanbul District Municipalities, Union of Municipalities of Marmara (MBB), Union of Municipalities of Türkiye (TBB)), 40 academics from outside İTÜ, 241 academics from İTÜ, 50 organisations funding similar projects, 35 representatives of capital groups (umbrella organisations), ministries, 26 development agencies (national), and 20 national and international organisations (see Table 3). The activities listed below thoroughly explored the themes of awareness and institutionalisation within the development of the creative economy across a diverse and extensive platform. The comprehensive evaluation derived from the collective project activities—each designed to enhance understanding of the importance of institutionalisation and awareness—forms the core methodology of this study. The specified activities introduced discussion topics outlined in Table 5, and the meetings were recorded and transcribed under the identified headings.

Table: 3
Actor Groups and Participant Numbers

Actor Groups	Contacted	Attended
Civil Initiatives	50	11
Private Sector	20	4
Entrepreneurs of the Faculty of Architecture	33	5
Professional Chamber Organisations	35	2
Publishing Companies	23	2
Awarded Groups	60	6
Similar projects (national/international)	32	4
Similar Labs (National)	27	7
Other Academic Institutions (İstanbul-İzmir-Ankara / Other than İTÜ)	40	15
İTÜ	241	41
Organisations funding similar projects	50	
Capital Organisations/Ministries	35	2
Local Authorities	42	6
İstanbul GM +District municipalities + MBB+TBB	26	5
Development Agencies (National)	7	7
UNESCO Türkiye Cities	20	18

Source: compiled from the TDL Project Activity Reports by the author.

As part of the project, 37 activities and five pilot projects were undertaken. These included introductory meetings, awareness workshops, urban development workshops, pilot projects (both at spatial and product scales), creative development and entrepreneurship seminars, national and international experience-sharing sessions, workshops in İstanbul and Türkiye, as well as the project launch and closing meetings (see Tables 3-4). Six activities

were specifically organised to raise awareness and strengthen the capacity of sectors and institutions. These activities aimed to promote the production of innovative products through interdisciplinary relationships and novel processes, as well as to develop human resources by linking education with the labour market. Policy discussions were held to guide the formulation of accurate and realistic policies. Several workshops were held to foster sectoral development, increase value-added production, and enhance human resource capacity through knowledge and experience sharing. These workshops offered insights into innovative design, production, and product development processes. Additionally, Urban Policy Development Workshops brought together local governments and professional organisations to raise awareness, build institutional capacity, and encourage stakeholder participation. Pilot Projects represented the initiative's implementation phase. They aimed to support collaborative production by facilitating dialogue and shared learning among actors within İstanbul's design industry. The concept was applied at two levels—spatial and product scale. The goal was to provide students with practical work experience and hands-on learning opportunities, while also emphasising the importance of interdisciplinary collaboration and cooperation between the university and design industry stakeholders. The spatial-scale pilot projects lasted 9 months, while the product-scale projects lasted 7 months. Professionals held several seminars and meetings to share knowledge and build expertise. Various workshops and experience-sharing sessions were organised to help participants understand the industry's significance, develop human resources, and identify opportunities to produce and launch innovative products to market.

Table: 4
TDL Activities and Participant Numbers

Activities	The number of activities	The number of participants	Predominantly Participating Actors
Introduction Meetings	8	41	Undergraduate/Master's/PhD Students and ITÜ Faculty of Architecture Faculty Members
Creative Entrepreneurship seminar	1	12	Undergraduate Students
Creative Development Seminar	5	41	Undergraduate Students National Labs
Awareness Workshops	6	60	NGOs + Academia + Undergraduate Students
Urban Development Workshop	4	25	National Labs-Local Governments
İstanbul Workshop	1	15	Local Governments-Similar Projects
Türkiye Workshop	1	21	NGOs-Students-National Labs
National Experience Sharing	2	13	Local Governments + Academy
International Experience Sharing	3	14	Academy + Undergraduate Students
Pilot Projects	5	100	Faculty of Architecture Undergraduate Students
Project Launch & Closing Meeting	2	60	İTÜ Faculty of Architecture

Source: compiled from the TDL Project Activity Reports by the author.

The participation of a broad and diverse group of actors makes the findings more realistic. The project itself functions as the methodology for this study. The findings from its activities offer essential insights into awareness and institutionalisation within the design ecosystem, which plays a significant role in Türkiye's creative economy, particularly in İstanbul. These findings are expected to attract the attention of policymakers and infrastructure developers. Another critical issue to discuss is the level of awareness among policymakers.

4.2. Findings

The project's main achievement is gaining substantial experience in addressing the issues described above. The outcomes are assessed to gauge the level of institutionalisation and awareness among the actors, as well as their access to funding resources and ability to forge collaborations. The TDL Project uncovered a significant lack of institutionalisation and awareness related to the development of the creative economy.

Table: 5
Activity Groups and Events

Activity Groups	Events	Event Outcome
Introduction Meetings	Introduction Meetings	
Creative Entrepreneurship Seminar	Entrepreneurs on Stage	
Creative Development Seminar	How to Do It? Building Sustainable Relationships between Designers, Artists and Technologists in the Entrepreneurship Ecosystem	C
	The Concept of Intellectual Property Rights and the Role of Technology Transfer Offices for Inventions at Universities	
	İTÜ Entrepreneurship Ecosystem on Campus: GİNOVA	
	Life Transformed by the Pandemic and the Technological Future Post-Pandemic Digital Society	
	İTÜ Anı Technocity Entrepreneurship Ecosystem and İTÜ Magnet Advanced Entrepreneurship Centre	
Awareness Workshops	Urbanized Technologies	
	What's new in İstanbul? Is Taşkılla Design Lab a Tool for Urban Creativity and Industrial Development?	IC
	Creativity Urban Policy Practices and Tools	IC
	Between Mass Production Norms and Everyday Life: The Secret Life of Dining Tables	
	Policy Transfer and Funding in the Creative Industries	FS
Urban Development Workshop	Awareness and Design Thinking in Social Entrepreneurship	
	Where do NGOs and Professional Organisations stand as Stakeholders in Urban Development?	C
	Education, Workforce, Funds, Institutionalisation, Actors and Roles. What is Possible and What is Not?	IC -FS
	Creative Cities and Stakeholders: The level of awareness in local authorities? Policy Development Tools, Relationships and Networks	C
	Creative Cities and Stakeholders: What are the Most Effective Collaboration Models for Creative Cities and Actors	C
İstanbul Workshop	Creative İstanbul: The level of awareness of actors	IC -C
Türkiye Workshop	Creative Türkiye: Visions and Policies for the Future	IC -C
National Experience Sharing	UNESCO Creative Cities and Türkiye's Experience	C
	Creative Economy: Design Industries Education - Labour Relationship	IC
International Experience Sharing	Trends and Challenges for Planning Knowledge Dialogue and Power	
	Culture City Design	
	Open Talk Urban Tries, Creative Places/Place Making	
Pilot Projects	Rethinking Fatih	IC
	Creating Space for Creative Alternatives in İstanbul	
	Another Kind of Workshop: Gömeç/Balıkesir	
	Product Phase I	
Project Launch & Closing Meeting	Product Phase II	
	Project Launch	
	Project Closing Meeting	

4.2.1. Institutional Capacities (IC)

When assessing institutional capacity, it becomes clear that workforce training is a key issue. Universities lack the flexibility, expertise, and awareness needed to support the industry, and their training programmes and tools are inadequate (Table 5). Furthermore, these programmes cannot be updated to reflect industry changes, and modern training methods and tools are not utilised. Organised workshops by various organisations, including non-governmental organisations, serve as an alternative to vocational training. During

various student activities, participants highlighted the educational value and engaging nature of these events. As part of the project's activities, the 'Rethink: Fatih' workshop selected 50 students from 150 applicants. All participants expressed 100% satisfaction with their learning and skill development. The workshops encouraged collaboration across subjects and attracted many students. Notably, students involved in the project activities reported that learning about models from different perspectives beyond their university studies broadened their outlook. During the İstanbul Workshop titled 'Creative İstanbul Who is Aware of What and How Much?', an interactive survey was conducted with local government and NGO participants, revealing the main challenges faced by the creative economy. These include communication problems, lack of institutional capacity, semi-independent structures, and cohesion among local government bodies. The findings indicate that the creative economy needs attention to institutional capacity, sectoral development, innovative approaches, and sustainable partnerships. Public institutions must focus on capacity building, and local authorities should formalise the development of creative tools and effective collaborations. For the sector's growth and sustainability, policymakers must be involved in this process. Universities also play a crucial role in this regard.

4.2.2. Cooperation (C)

The activities related to cooperation (Table 5) highlight the need for governing institutions to establish efficient and prompt response mechanisms to address new developments. Although rigid legal structures are often seen as the main barriers to growth, it is emphasised that differing understandings of institutions hinder both systemic organisation and sustainability. It appears that institutions' capacities are negatively affected by factors such as a lack of activity, outdated institutional frameworks, insufficient understanding and expertise to manage complex legal situations, ageing staff, and structures that cannot be updated. Furthermore, the lack of knowledge in establishing cooperation structures that align with the institutional vision and in recognising the importance of disciplines, institutions, and international communication often leads to unsatisfactory outcomes. Cities within the UNESCO Creative Cities Network can participate through their local governments and implement the process accordingly. It has been observed that Turkish cities joining the network exhibit different institutional structures during the application and process management phases. Despite being part of an international network, they have developed unique structures and institutional approaches. The fact that these city administrators and stakeholders are visionary and have steered their cities towards international cooperation and global competition is a notable achievement for both the towns and Türkiye.

Many organisations lack an understanding of the importance of corporate responsibilities and roles, which leads to issues in organising, collaborating, and networking. Moreover, many organisations appear unaware of alternative cooperation structures. Specialised NGOs are still struggling to establish relations with the public sector, and inter-organisational relations, sustainable collaborations, and interdisciplinary work are not possible. Additionally, the informality of industries and the lack of unionisation hinder

workforce mobilisation. Therefore, addressing the need for a more legal, measurable, controllable, and auditable production system through alternative systems or different tax regulations is crucial.

4.2.3. Funding Sources (FS)

The study reveals a significant shortage of financial resources across the country, and combined with limited accessibility, it hampers the growth of the creative economy. This is mainly due to a lack of awareness about legal entities and the various types of project support available for funding applications. Additionally, the scarcity of high-impact actors capable of creating economic value makes it difficult to generate, utilise, and access funding sources. Development Agencies tend to favour financially sustainable institutions when providing support, often excluding individual actors in the industry who are not foundations, cooperatives, or companies. While it is recognised that alternative funding mechanisms are limited, bureaucratic obstacles can be overcome with swift decisions that do not require significant structural changes to mobilise resources and provide lower but sufficient funding for individuals. Resource transfer in creative industries primarily flows from traditional sectors to manufacturing and industry, supporting the idea that institutions maintain their traditional structures and that social, cultural, and artistic added value does not receive adequate economic recognition or attention.

4.2.4. Awareness and Evaluation

It has become clear that there are significant weaknesses in institutional capacities, collaborations, and the establishment of an effective communication network between institutions. This situation hampers sector development and restricts internal innovation structures. The issues are being tackled in a fragmented way, with only temporary solutions, which shows inadequate methods for ensuring long-term sustainability. A significant obstacle to the sector's progress is the lack of alignment between academic trends and global developments. For the industry to grow and make a meaningful contribution to the city's economy, educational institutions must recognise the need to adapt their programmes to better prepare graduates for the job market.

İSTKA (2023) has identified several challenges in the creative industry, including a lack of awareness among stakeholders of available funding sources, the inadequacy of current resources, and bureaucratic barriers that obstruct access to these funds.

The policymaking events brought together various stakeholders, including government representatives, academics, district administration officials, leaders of similar projects, NGOs, and business representatives. Specifically, local government representatives from seven cities in Türkiye, all members of the UNESCO Creative Cities Network, participated, alongside three representatives from 39 district administrations in İstanbul (including Maltepe-Kadıköy and Fatih municipalities), one Central Government representative from the Ministry of Trade, one representative from the Turkish Industry and

Business Association (TUSIAD), and one from the Turkish Union of Chambers and Commodity Exchanges (TOBB). However, the İstanbul Metropolitan Municipality (except for two departments), as well as the İstanbul Chamber of Industry (ISO) and the İstanbul Chamber of Commerce (ITO), which are key actors in İstanbul's development, did not participate in the events.

5. Discussion and Conclusion

This study explores the development of İstanbul's creative economy through the İSTKA-funded TDL project, which emphasises institutionalisation and awareness. It is worth noting that this subject has received limited attention, especially from academia, students, and public institutions.

In Türkiye, policies and objectives related to the creative economy are not incorporated into national, regional, or urban planning efforts. Furthermore, awareness about this issue remains limited. Different stakeholder groups tend to operate independently, and collaboration is often neglected because its importance is not fully recognised. Consequently, mechanisms for participation need strengthening. Engagement in project activities, including those of the İTÜ Faculty of Architecture, where the project is being implemented, has been substantially low. Work is carried out in isolation, leading to wasted resources—time, labour, and costs—as similar tasks are redundantly repeated. This reflects that academic institutions lack coordinated action and clear division of responsibilities, and updating training programmes to align with industry needs is often required.

Development agencies are recognised as having a significant influence on future policies and practices. However, it is essential to recognise that institutions supporting the creative economy, including TÜBİTAK and KOSGEB, operate under the Ministry of Industry and Technology. Consequently, the decisions and support provided are centralised in a single body. To facilitate effective policymaking, awareness-raising, and fundraising efforts, it is essential to involve a broader range of stakeholders.

Many NGOs and civic organisations are established and managed by young people who are highly active and aware in their efforts. Their skills and experiences often extend beyond what they have learned at universities. However, despite their efforts to collaborate with public sector entities such as local governments and universities, they are frequently misunderstood or unrecognised by these institutions. Enhancing the institutional capacities of public organisations is vital, and it is necessary to diversify human resources with a range of specialisations and involve younger generations in decision-making processes. Policymakers must update their agendas, stay informed about developments, recognise legal barriers, and work to develop and implement innovative, practical tools for policy development and implementation.

YEKON and the TOBB Creative Industries Council were expected to play essential roles in developing creative sectors. However, despite their promising starts, these

institutions have not been effective in promoting industry growth. The quality of their activities and outputs is not sufficient to support and guide industry development. Modern economic structures require the simultaneous advancement of innovative sectors, their related workforce, and policies at the urban, regional, and national levels. Sadly, there is a lack of awareness about these economic sectors in Türkiye, and traditional economic approaches and sectors continue to dominate development plans and implementations.

To successfully carry out multidimensional transformation processes, institutions of all sizes and responsibilities must develop, adapt, and manage their existing capacities. A key tool for doing so is creating and utilising funding resources. This can be directly supported by increasing awareness and implementing innovative, flexible institutional structures and management practices.

Regarding institutionalisation and awareness, Turkish cities within the UNESCO network serve as positive examples for all the issues discussed.

Institutional capacity involves developing human and intellectual assets, encouraging awareness and collaboration, and deploying innovative, adaptable, and decentralised management models and policies. By leveraging institutional competence, implementations can be executed efficiently, ensuring cooperation between all stakeholders and delivering outcomes that realise the intended benefits.

According to YEKON's (2023a) research on creative industries, the main challenges facing the sector are the lack of financial support, awareness, and consciousness. Despite recent advancements in İstanbul's creative industries, the sector has not yet reached the desired level of maturity. The stagnation of sub-sectors is attributed to insufficient incentives, demand, and training. Implementing educational policies that develop a skilled workforce is essential to meet the increasing demand in creative industries. Clarifying the value of tangible outputs — such as services, products, information, and promotional activities — can help address the serious issue of a lack of awareness across sectors.

Policy-making institutions must continually update their human capital, develop adaptable sub-structures for specialisations, and keep abreast of the latest advances. They should plan funding sources and distribution methods, and explore future alternatives and tools. Additionally, it is vital to develop flexible, realistic policies at various levels, including at the intersection of urban space and sectors. Institutions should also design interventions and concrete tools to mitigate vulnerabilities and establish sustainable cooperation frameworks. Finally, they must offer incentives, mechanisms, and legal regulations to encourage participation from diverse actors and disciplines.

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ANNEX: 1 The Institutions Funding Creative Industries

Ministry of Culture and Tourism	
Events and projects support	Animation film production support
Intellectual Property & Cultural Industries support	Documentary film production support
Scientific Research Projects support	Post Shooting support
Scientific Meetings / Participation in Scientific Events / Excavation Surveys	Distribution & Promotion support
Incentive for Writing Domestic Works	Series support
Theatre games support	First Feature Fiction Film Production Support
Cultural Entrepreneur / Investor Certified Facility Incentives	Short film production support
Cultural centre construction supports	Co-Production Support
Literary Works Support Project	Project development support
Sponsorship Subsidy	Scenario & Dialogue Writing Support
Event & Project Support in Cinema	Feature Film Production Support
Ministry of Industry and Technology	KOSGEB
R&D Centre support	Business development support
Design Centre support	Support for International markets
Support for software registration projects	Collaboration supports
Supports for development agencies (26)	Support for the development of SMEs
	Technology development support for business
	R&D for SMEs and innovation programs support
General Directorate of Turkish Radio and Television Corporation	TÜBİTAK
Support for the Ministry of Trade	Patent Support Programme
Foreign Currency Earning Service Trade Support - IT Sector	SME R&D Start-up Support Programme
Foreign Currency Earning Service Trade Support-Design Sector	Call for SME Support for Order-Based R&D Projects 2020
Turquility and Trademark Support Programme	Patent-Based Technology Transfer Support Call Patent Licence

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Re-examining the ‘Resource Curse’ Concept in Resource-Rich Post-Soviet States: The Cases of Azerbaijan and Kazakhstan

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Doğal Kaynak Zengini Post-Sovyet Ülkelerde ‘Kaynak Laneti’ Kavramının Yeniden İncelenmesi: Azerbaycan ve Kazakistan Örneği

Abstract

The article reexamines the “resource curse” concept for the resource-rich post-Soviet states (RRPSSs), focusing on Kazakhstan and Azerbaijan, both nations with substantial oil and gas reserves that significantly influenced their post-Soviet economic trajectories. The authors aim to explore the causes, effects, and transmission channels of the “resource curse” after 33 years (1991-2024) of independence and sovereignty in these countries. The article considers their specific institutional contexts, fiscal policy peculiarities, and economic performance, including GDP growth paths and levels of economic and export diversification. Besides economic growth, the study also examines the volatility of GDP growth in Kazakhstan and Azerbaijan, highlighting it as a noteworthy indicator or symptom of the “resource curse.” One key finding is that the defining feature of the economic growth trend in the resource-rich post-Soviet states, related to the “resource curse,” is not necessarily outperformance or underperformance but rather the volatility of real GDP growth relative to the long-term trends of less oil-dependent countries. The research employed various quantitative methods, including correlation analysis and comparative data analysis.

Keywords : Resource Curse, Azerbaijan, Kazakhstan, Post-Soviet, Oil, Gas, Diversification.

JEL Classification Codes : Q33, Q34, Q35, Q38.

Öz

Bu çalışmada, doğal kaynaklar açısından zengin olan post-Sovyet ülkeler için “kaynak laneti” kavramı, önemli petrol-gaz rezervlerine sahip olan Kazakistan ve Azerbaycan örneğinde yeniden incelemek ve 1991-2024 yılları arasındaki 33 yıllık bağımsızlık ve egemenlik döneminde “kaynak laneti”nin nedenleri, etkileri ve iletim kanalları araştırılmaktadır. Ayrıca, bu ülkelerin kurumsal özellikleri, maliye politikaları, GSYİH’nın büyümesi, ekonominin ve ihracatın çeşitlendirilme düzeyi de dahil olmak üzere ekonomik performansları da değerlendirilmektedir. Ekonomik büyüme performansına ek olarak, Kazakistan ve Azerbaycan için GSYİH büyümesinin volatilitesi “kaynak laneti”nin önemli bir göstergesi ve belirtisi olarak incelenmiştir. Makalenin temel bulgularından biri, doğal kaynaklar açısından zengin eski Sovyet ülkelerindeki ekonomik büyüme eğiliminin “kaynak laneti” olgusuyla ilgili temel ayırt edici özelliğinin, yüksek veya düşük ekonomik performans değil, uzun vadeli perspektifte petrol dışı veya “daha az petrol” zengini ülkelerin ekonomik büyüme eğilimleriyle karşılaştırıldığında reel GSYİH büyüme oranının volatilitesi olduğudur. Makalede korelasyon analizi ve karşılaştırmalı veri analizi teknikleri de dahil olmak üzere çeşitli nicel araştırma yöntemleri kullanılmıştır.

Anahtar Sözcükler : Kaynak Laneti, Azerbaycan, Kazakistan, Post-Sovyet, Petrol, Gaz, Çeşitlendirme.

1. Introduction

The “resource curse” hypothesis holds that ongoing political, economic, and governance challenges in resource-rich countries, particularly those that export fossil fuels, such as declining economic growth, limited democratic space for non-state actors, and rising civil tensions (Rosser, 2006). Through a review of open research repositories, the authors noted that the concept of the “resource curse” in Resource-Rich Post-Soviet States (RRPSS) has received less focus from academia and think tanks in recent years, especially amid the shift from fossil fuels to renewables and changes in energy demand structures. Nonetheless, some articles and reports indicate that energy transitions and climate-related impacts offer a new perspective on the resource curse (Lahn & Stevens, 2017; Bradley et al., 2018). Significant changes have occurred in energy markets, technologies, and price volatility levels driven by factors such as a boom in fossil fuel production, private upstream and downstream investments, technological innovations, regulatory frameworks, and geopolitical shifts (Dabbar, 2024).

Technological developments and advances in the global energy industry, higher volatility in energy prices driven by various economic and geopolitical factors, and rapid changes in countries' energy consumption and production structures indicate that a global energy transformation is underway (IEA, 2023). The shifting energy landscape following the worldwide pandemic, the Russia-Ukraine war, subsequent conflicts in the Caucasus and the Middle East, and the ongoing competition and “trade wars” between the USA and China could also affect the flow of natural resources and the social, economic, and political situations in resource-rich states. Significant changes in energy markets, technologies, and prices could create new concerns and uncertainties for RRPSSs, given how they have managed their resource wealth to date. The existing institutional model couldn't guarantee steady management of these changes in energy markets and the shifting geopolitical landscape of energy (Ahmadov et al., 2013).

In the context of increasing external complexities in energy markets and geopolitical uncertainties, the governments of Azerbaijan and Kazakhstan are increasingly compelled to consider extrinsic factors in economic decision-making, thereby exacerbating manifestations of the “resource curse.” Political-economic burdens outweigh pure economic rationalism, and institutional frameworks suffer more than the economy itself. The “resource curse” concept will be reassessed for RRPSSs, which have experienced several economic and political transformations alongside various boom-bust cycles of commodity prices. RRPSSs (especially fossil-fuel-rich states) attracted foreign investment in the 1990s to boost their hydrocarbon reserves. In the 2000s and 2010s, they strengthened their raw-material economies through revenues from rising hydrocarbon and mineral exports. During this period, resource-rich post-Soviet economies faced collapses in raw material and energy

prices, followed by price surges during crises such as 2008-2009, 2014-2015, and 2020-2021. The behaviour of governments and various private-sector actors during these boom-bust cycles shaped the complex performance of national economies and the status of political systems.

Azerbaijan and Kazakhstan were unable to achieve average GDP growth rates higher than those of most of their non-extractive, exporting former Soviet neighbours. However, economic growth volatility was relatively higher over the past 30 years. Kazakhstan also needs to diversify its export composition and the geographical structure of its export basket. Yet, the commodity and geographical concentration ratios are even more extreme in Azerbaijan's export basket. Both countries have implemented some policy measures to steady public expenditures and avoid pro-cyclical fiscal policies. Benefiting from political regime stability over the last 30 years, they performed differently in terms of government effectiveness. Nevertheless, Kazakhstan and Azerbaijan exhibited a stronger negative correlation between government effectiveness and political rights, which may signal a "social contract" warranting closer scrutiny.

The current research aims to address a gap in the existing literature by comprehensively assessing the "resource curse" phenomenon in resource-rich post-Soviet states, analysing long-term economic and political trends across long cycles. The article seeks to reexamine the causes, effects, and transmission channels of the "resource curse" after 33 years (1991-2024) of independence and sovereignty in post-Soviet Kazakhstan and Azerbaijan. In this study, we reassess the impacts of the "resource curse" on Azerbaijan and Kazakhstan across 30 years. We explore whether and how the "resource curse" phenomenon influences these countries, and what the implications are for their capacity to manage resource wealth amid rapidly evolving energy markets.

2. Literature Review

Since the last decade of the twentieth century, the "resource curse" has been the most debated topic among politicians, economists, academics, and opinion leaders in civil society. Briefly, the "resource curse" explains the strong correlation between the abundance of natural resources and poor political economy and governance performance (Auty, 1993). The "resource curse" is the term used to describe the failure of resource-rich countries to benefit from their natural wealth, a paradox of plenty (Karl, 1997). Moreover, this term indicates negative economic effects for resource-rich countries, such as excessive government spending, neglect of competitive principles, corruption, and political outcomes such as authoritarian governance (Sachs, 2001; Collier, 2010; Hilson, 2008).

The negative correlation between the abundance of natural resources and economic growth was highlighted in some research (Torvik, 2009; Stevens, 2015). Some authors specifically emphasise the alleged symptoms of the resource curse, such as lower economic growth, increased inequality of wealth, entrenchment of undemocratic regimes, poor decision-making, the failure to create a productive, efficient economy (crowding out),

increased conflict in society, and degradation of the environment and human rights. The "resource curse" transmission channels between the extractive and the non-extractive sectors in resource-rich economies were discussed by various scholars (Stevens et al., 2015).

Frankel (2012) described the possible six channels of causation of the resource curse, including long-term trends in world prices, energy price volatility, permanent crowding out of manufacturing, autocratic/oligarchic institutions, anarchic institutions, and cyclical Dutch Disease. He emphasises explicitly that a permanent commodity boom, which crowds out the manufacturing sector, is very harmful to economic prospects from a sustainability perspective. Addison and Roe (2018) highlighted the fiscal aspect of the resource curse—the so-called spending effect—and extractive government behaviour. Arezki (2009) highlighted another aspect of the resource curse linkage, or resource curse channels, including the presence of natural resources, institutions, non-resource growth, income effects, fiscal policy, and Dutch disease. Torvik (2009) examined the causal relationship between resource abundance and slow economic growth.

Ross (2001) examined the relationship between the "resource curse" and the institutional capacities of extractive countries, a topic discussed in the literature since the late 1990s. Furthermore, Ross (2012) contends that "the political and economic problems of the oil states can be traced to the unusual properties of petroleum revenues". Four specific features of petroleum revenues—scale, source, stability, and secrecy—along with the performance and role of state-owned oil companies, influence the political systems and economic models of oil-exporting nations, regardless of the efficiency of government spending mechanisms or of how oil revenues are utilised.

Lashitew, Ross, & Werker (2021) link the "resource curse" to the economic diversification performance of resource-rich countries using metrics such as manufacturing value added per capita, public capital accumulation, human capital, and intellectual capital. Karanfil and Omgba (2023) have found that oil-exporting countries with greater export diversification can reduce vulnerability and sensitivity during oil price collapses and promote a more stable economic trajectory during the energy transition.

The initial instances of the "resource curse" were predominantly observed in resource-rich African countries and later in some impoverished Middle Eastern nations, South America, and South Asia. Paul Collier published a well-known book titled "The Bottom Billion: Why the Poorest Countries Are Failing and What Can Be Done About It" in 2007, which provided an extensive analysis of the "resource curse" through examples from African economies. Collier (2007) argued that "the heart of the resource curse is that resource rents make democracy malfunction" as a consequence of price-revenue volatility and institutional factors. He highlighted the "natural resource" trap as a key reason for persistent poverty and underdevelopment, alongside the conflict trap, "bad governance" trap, and "landlocked with bad neighbours" trap in African, Asian, and Latin American countries.

However, in the early 2000s, the resource curse became a widely accepted explanation for the obstacles to successful natural resource development, and post-Soviet countries also fell within its scope. Some other researchers examined different aspects of the resource curse in resource-rich countries, particularly Russia, Kazakhstan, and Azerbaijan (Pleines et al., 2016; Kalyuznova, 2006; Movchan et al., 2017; Polterovich et al., 2007).

Ahmadov, Mammadov, & Aslanli (2013) found that revenues from total natural resources harmed government effectiveness in Azerbaijan, Russia, Kazakhstan, and Turkmenistan from 1996 to 2011. Countries with higher average oil rents (% of GDP) and total natural resource rents (% of GDP) tend to have lower rates of government effectiveness. Compared to the previous research conducted in 2013, this article extends the timeframe (from 1991 to 2024) to update performance and correlations. It narrows the focus to two natural resource-rich countries, Azerbaijan and Kazakhstan. The article focuses on the macroeconomic, diversification, fiscal, and institutional linkages between resource abundance and economic (and other) performance indicators, suggesting the presence or absence of "resource curse" symptoms. As a limitation, the scope of the current article does not include the social tension dimension of the "resource curse" concept due to a lack of reliable data to measure the extent of conflicts among various social groups.

3. Research Methodology

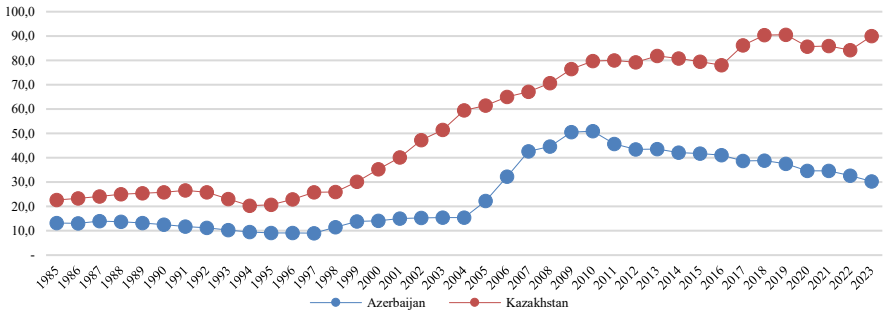
In this article, the authors aim to identify the manifestation of the "resource curse" in two resource-rich post-Soviet states, considering the emerging circumstances of the early twenty-first century, which have significantly expanded the ways this "disease" can manifest. The current research analyses economic, political, and governance indicators for Azerbaijan and Kazakhstan to reveal contemporary manifestations of the "resource-rich" phenomenon. At the same time, a political-economic approach was employed as the methodological basis for the research design. This approach most accurately helps avoid extreme assessments of the presence or absence of the disease's symptoms in new circumstances. It also explains the gap between macroeconomic indicators and the socio-political context of governance. Statistical indicators from both countries, as well as global indices such as polity scores and the government effectiveness index, were used as secondary sources based on time-series data, cross-sectional data, and longitudinal panel data from official reports of the governments of Azerbaijan and Kazakhstan, alongside international organisations (e.g., World Bank's Updated Worldwide Governance Indicators 2024). The rationale for selecting the timeframe for data analysis in Azerbaijan and Kazakhstan (1991-2024) is to uncover long-term and cyclical trends in relevant parameters that indicate symptoms of a "resource curse". The authors conducted a correlation analysis of relevant political, economic, and governance parameters, identifying similarities among hydrocarbon-rich post-Soviet countries and differences from neighbouring resource-poor countries.

4. Macroeconomic Linkages

4.1. Fossil Fuels (Oil and Gas) Reserves and Production: Azerbaijan and Kazakhstan

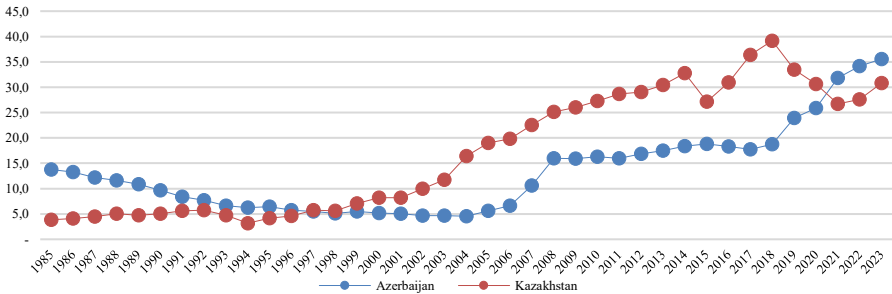
Azerbaijan and Kazakhstan are key oil and gas producers in the Caspian Basin and Eurasia. Azerbaijan has around 7 billion barrels of proven oil reserves, while Kazakhstan possesses about 30 billion barrels (2020). Combined, the two countries hold 2% of the world's verified oil reserves. Oil production in Kazakhstan steadily grew from 1994 to 1995 and reached 90 million tonnes annually in 2018-2019. In Azerbaijan, oil production has been increasing since 2004, peaking at 51 million tonnes in 2010 (BP Energy Institute, 2024). After this peak, crude oil production in Azerbaijan has been in a continuous decline (see Figure 1).

Figure: 1
Oil Production (Million Tonnes)



Source: BP Energy Institute (2024).

Figure: 2
Natural Gas Production (Billion Cubic Metres)



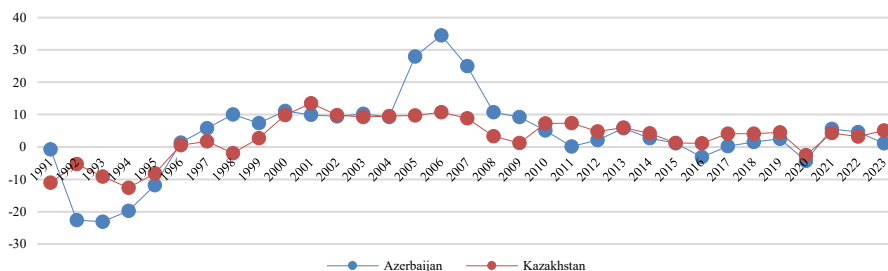
Source: BP Energy Institute (2024).

Azerbaijan owned 2,5 trillion cubic metres and Kazakhstan owned 2,3 trillion cubic metres of total proved gas reserves in 2020 (BP Energy Institute, 2024). Two countries possess 2,5% of the global proved gas reserves. Azerbaijan almost doubled its gas production from 17,5 billion cubic metres in 2013 to 35,6 billion cubic metres in 2023 (an average annual growth of more than 7%). Meanwhile, Kazakhstan’s gas production fluctuated significantly between 2013 and 2023, averaging around 30 billion cubic metres (see Figure 2). Volatility in oil and gas production in Kazakhstan and Azerbaijan was accompanied by sharp price fluctuations, negatively affecting GDP growth and other socio-economic indicators.

4.2. Economic Growth: Azerbaijan and Kazakhstan

The “resource curse” is a paradoxical phenomenon in which countries rich in natural resources, such as fossil fuels, minerals, and metals, often experience slower economic growth and poorer development outcomes than nations with fewer resources. Consequently, one of the most significant signs of the “resource curse” in resource-rich nations is the decline in long-term economic growth. Over 33 years after independence, the growth paths of Azerbaijan and Kazakhstan's economies were quite similar, specifically from 1991 to 2023. The correlation between their 33-year economic growth trends is relatively high (around 0,8). In other words, their economies expanded and contracted roughly during the same periods. The average economic growth during this period was also quite close; Azerbaijan's economy grew by an average of 3,91% annually, while Kazakhstan's grew by 2,95% (see Figure 3). However, during the last three crises - the global financial crisis of 2008-2009, the collapse of oil prices in 2015-2016, and the global pandemic of 2020-2021 - Kazakhstan's economy recovered more quickly, with less fluctuation in growth rates than Azerbaijan's. This difference can probably be explained by the level of economic diversification and the composition of their export baskets.

Figure: 3
GDP Growth (Annual %) Comparison: Azerbaijan vs. Kazakhstan

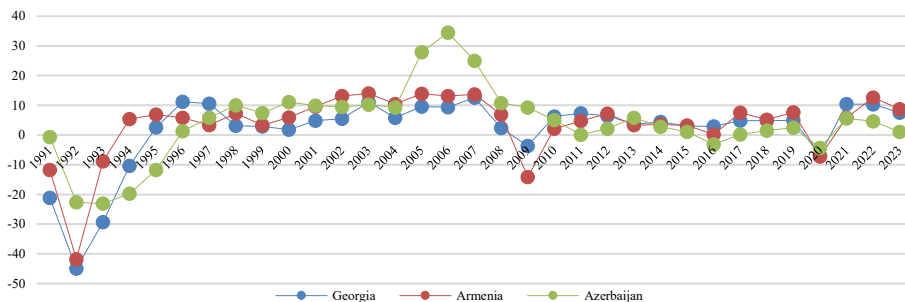


Source: World Bank Open Data (2024).

4.3. The Comparison of Azerbaijan and Kazakhstan's Economic Performances with Their Respective Neighbours

We can compare the two countries by analysing the economic performance of their neighbours. Although these neighbouring countries export other raw materials, such as metals, ores, and gas, they are not oil-rich like Azerbaijan and Kazakhstan. Among the three South Caucasus countries, Georgia demonstrated the weakest performance from 1991 to 2023 (see Figure 4). Its average annual economic growth over these 33 years was 1,64%. Despite lacking oil and natural gas, Armenia's average yearly economic growth rate over the same period is roughly the same as Azerbaijan's (average GDP growth from 1991 to 2023: 3,67%), where metals and precious stones account for a significant 40% of exports. The fact that oil- and gas-rich Azerbaijan exhibited approximately the same economic growth as resource-poor Armenia during these 33 years could be viewed as a moderate sign of the "resource curse". Countries rich in natural resources, especially crude oil, such as Azerbaijan, often experience an initial surge in economic growth driven by resource extraction and exports. However, this growth can be unsustainable if it leads to over-dependence on resource sectors. When resource prices decline, such countries may face severe economic downturns due to their lack of economic diversification.

Figure: 4
GDP Growth in South Caucasus (Annual %)

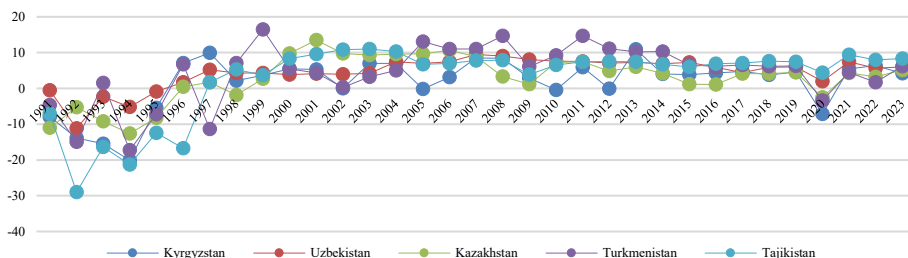


Source: World Bank Open Data (2024).

In Central Asia, the GDP growth rates of natural gas-rich Turkmenistan and Uzbekistan outperformed those of oil-rich Kazakhstan (see Figure 5). The national economies of Uzbekistan and Turkmenistan grew by an average of 4,45% annually from 1991 to 2023, while Kazakhstan's economy grew by 2,95%, Tajikistan's by 2,78%, and Kyrgyzstan's by 1,76%. Turkmenistan was the fastest-growing economy in the region between 2005 and 2014, but after 2015, Tajikistan took the lead. Tajikistan, a country rich in precious metals, especially gold, had an average economic growth of 7,4% over the 25 years from 1998 to 2023. During the same period, oil-rich Kazakhstan's average annual growth was 5,4%. Fluctuations in oil prices have also increased volatility in Kazakhstan's economic growth trend. However, since most Central Asian countries are rich in natural

resources, it is difficult to conclude that any one country shows signs of the “resource curse” solely on the basis of economic growth figures.

Figure: 5
GDP Growth in Central Asia (Annual %)



Source: World Bank Open Data (2024).

We must recognise that the emphasis on resource curse metrics that measure economic growth as a performance indicator is a widely debated topic in the current literature (Lahn & Stevens, 2018). For some scholars, GDP growth is only one measure of progress towards specific goals, such as societal prosperity and development, but not the ultimate aim. It has limitations regarding sustainability and its ability to reflect the actual performance of national economies. To address this gap, we can conceptually incorporate an income distribution dimension and human-centric metrics into the analytical framework (Aslanli, 2022).

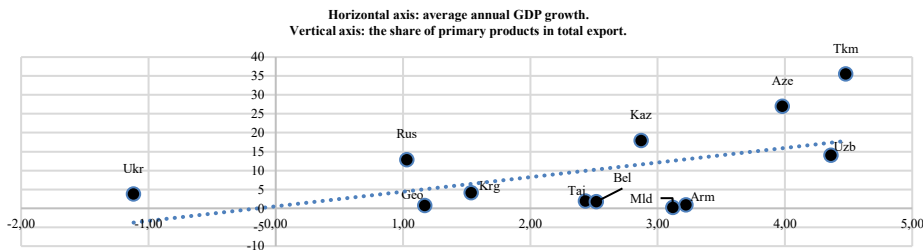
4.4. The Correlation Between Economic Growth and Natural Resources

When we analyse the relationship between the average economic growth (shown on the horizontal axis in Figure 6) over approximately 30 years (from 1991 to 2021) and the ratio of total natural resource rent to GDP (vertical axis in Figure 6) in 12 countries within the former Soviet region (excluding the Baltic states), we can draw a meaningful conclusion. There is a noticeable moderate positive correlation between natural resource wealth and the economic performance of these countries, with a correlation coefficient of 0,53 (1991-2021) (see Figure 6).

Additionally, there is a positive (though not strong) correlation between the average annual GDP growth from 1991 to 2023 and the share of primary products (fossil fuels, ores and metals, agricultural raw materials) in a country's exports (2022) within resource-rich and resource-poor countries of the post-Soviet region. Countries with a relatively higher proportion of primary products in their export baskets showed slightly higher economic growth (correlation coefficient: 0,5) after the collapse of the USSR. Natural resources partly supported GDP growth rather than hindering the economic success of the post-Soviet states. However, there was an evident exception in the “resource-growth” relationship, as well.

Resource-rich Kazakhstan and resource-poor Moldova experienced similar average economic growth rates during the years of independence (see Table 1).

Figure: 6
Resource Abundance and Economic Performance in Post-Soviet States



Source: UNCTAD (2024); World Bank Open Data (2024).

Table: 1
Natural Resources and Economic Growth

	Average annual GDP growth for 1991-2023 (%)	Share of primary products in a country's exports (2022)
Georgia	1,64%	22%
Armenia	3,67%	31%
Kyrgyzstan	1,76%	19%
Uzbekistan	4,45%	25%
Azerbaijan	3,91%	93%
Kazakhstan	2,95%	76%
Turkmenistan	4,45%	89%
Tajikistan	2,78%	55%
Russia	1,01%	67%
Belarus	2,34%	13%
Ukraine	-1,77%	8%
Moldova	2,74%	14%

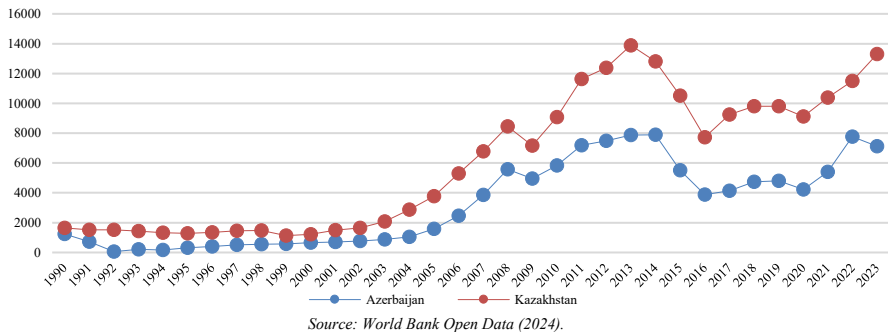
Source: UNCTAD (2024); World Bank Open Data (2024).

4.5. The Correlation Between Natural Resources and GDP Per Capita

There is no significant correlation between the ratio of total natural resource rent to GDP and GDP per capita in Azerbaijan and Kazakhstan (in current USD). GDP per capita in Azerbaijan and Kazakhstan fluctuates within a specific range. GDP per capita in Kazakhstan ranged between 8000 and 14000 dollars from 2008 to 2023. Similarly, GDP per capita in Azerbaijan fluctuated between 4000 and 8000 dollars during the same period (see Figure 7). This phenomenon may also serve as an early warning of the “middle-income trap” in natural resource-rich countries that have not been sufficiently explored in the literature. Lee (2013) argues that although the transition from low to middle income tends to involve trade-based specialisation in sectors inherited from developed nations, the subsequent move from middle to high income involves deeper, technology-based specialisation in sectors with short cycle periods, where new technologies often emerge. It can be argued that dependence on extractive industries may hinder high-technology specialisation due to a combination of factors: incentives for rent-seeking behaviour, increasing reliance on imports, volatility in the current account affecting inputs to production, subsidised fuel prices that impact

efficiency by favouring energy-intensive preferences, and a lack of sustainable motivation for private sector innovation.

Figure: 7
GDP Per Capita (Current USD): Azerbaijan and Kazakhstan



4.6. Economic Growth Volatility in Azerbaijan and Kazakhstan

Oil-rich Azerbaijan has experienced some of the highest levels of volatility in economic growth among post-Soviet states from 1991 to 2023. Other countries in the same group with relatively higher volatility were those rich in precious minerals and metals, as well as those facing military conflicts with neighbouring nations, such as Georgia, Armenia, Tajikistan, and Ukraine. Azerbaijan recorded the highest levels of economic volatility from 2000 to 2023 (and from 2003 to 2023), partly due to its heavy reliance on crude oil in its GDP, public finances, and total exports, driven by significant fluctuations in oil prices and resulting volatility in oil revenues. However, Kazakhstan, which depends less on crude oil for its GDP, budget, and exports, has experienced fewer economic fluctuations. This trend appears to support Ross’s (2012) argument that the main distinguishing feature of the economic growth trend in oil-rich countries is not outperformance or underperformance, but the volatility of real GDP growth relative to the long-term trends of non-oil or “less-oil” economies. Such volatility, stemming from the “resource curse,” can hinder sustainable development and reduce private-sector innovation incentives, potentially leading to diversification in various ways.

Countries rich in natural resources often experience rapid economic growth initially from the extraction and sale of resources such as oil and gas (Table 2). However, this growth may not be sustainable if it leads to excessive dependence on the resource sector, as seen in Azerbaijan. Such reliance can overshadow other industries, reducing economic diversity and making the economy vulnerable to commodity price fluctuations, including oil prices. When resource (oil and gas) prices fall, these countries can face significant economic challenges because they lack a diversified economic base.

Table: 2
Volatility in Economic Growth*

Countries	Standard Deviation (p) or Volatility in Economic Growth		
	1991-2023	2000-2023	2003-2023
Georgia	11,99	4,31	4,54
Armenia	10,57	6,54	6,78
Kyrgyzstan	7,20	3,65	3,77
Uzbekistan	4,27	1,76	1,63
Azerbaijan	11,96	9,30	9,88
Kazakhstan	6,38	3,72	3,31
Turkmenistan	7,98	4,32	4,29
Tajikistan	10,02	1,68	1,58
Russia	6,02	4,04	4,01
Belarus	6,14	4,36	4,63
Ukraine	9,49	8,88	9,19
Moldova	5,39	4,96	5,18

* Volatility in economic growth was calculated through the standard deviation from the average real GDP growth.
Source: World Bank Open Data (2024).

4.7. Preliminary Assessment of Economic Growth Dimension of the ‘Resource Curse’

Azerbaijan and Kazakhstan could not demonstrate higher average growth than most of their non-extractive, former-Soviet exporting neighbours. Also, they exhibited relatively higher levels of economic growth volatility over the last 30 years. Oil-rich Kazakhstan and oil-and-gas-rich Azerbaijan have not managed to outperform their neighbours, which are rich in metals, minerals, and natural gas. Therefore, it would be an overstatement to claim that the abundance of natural resources generally has a negative effect on the long-term economic growth of post-Soviet states and that the symptoms of the “resource curse” are immediately evident. Perhaps we can discuss the “oil curse” in the specific cases of Kazakhstan and Azerbaijan, where oil wealth did not notably boost economic growth. However, when comparing resource-rich countries with each other or with resource-scarce nations, it is crucial to recognise that they experience different rates of economic growth at various periods. As Ross (2012: 13) states, “while economic growth in the oil states has been unusually volatile, in the long run it has been neither faster nor slower than in the rest of the world”.

5. Diversification Linkages

5.1. Economic Diversification in Kazakhstan and Azerbaijan

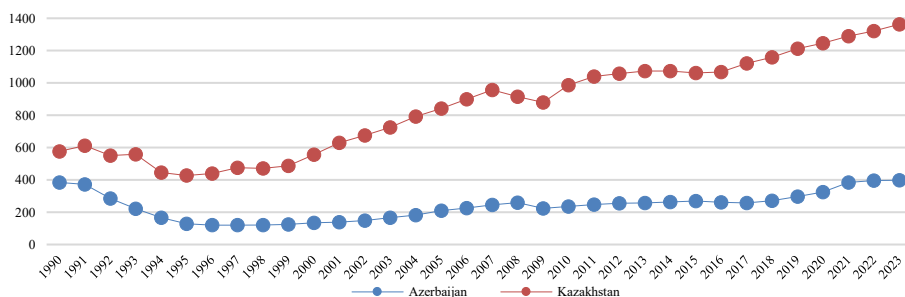
The economies of Azerbaijan and Kazakhstan depend heavily on the oil sector, making their fiscal and trade balances susceptible to fluctuations in oil prices. This remains true despite ongoing efforts to diversify their economies and foreign trade through various policies and programmes. The oil and gas sector makes up about 20% of GDP, over 50% of exports, and more than 30% of government revenues in Kazakhstan (2023) (S&P Global, 2024). The structural non-oil deficit reached 8,7% of GDP due to strong spending growth in 2023 (expansionary fiscal policy) (IMF, 2024a). Additionally, the non-oil fiscal balance accounted for 8% of GDP in 2022 (IMF, 2024b).

In Azerbaijan, the oil sector contributed 48% of GDP in 2022 and 37% in 2023. The non-oil-gas industry accounted for only 8% of GDP in 2023 (İqtisadiyyat Nazirliyi, 2023). Nearly 30% of investments in fixed capital were allocated to the oil sector, while 70% went to the non-oil sector in 2023. The ratio of the central budget's non-oil primary deficit to non-oil GDP was 22,5% in 2023, which is 2,5 percentage points below the target of 25% for 2023 (17,5% by the end of the medium-term period or 2026). The public debt-to-GDP ratio was 21,8%, remaining within the target set for the medium-term period (30%) (Maliyyə Nazirliyi, 2024). Diversification of national economies remains a crucial prerequisite and condition for fiscal sustainability and a balanced foreign trade structure in Kazakhstan and Azerbaijan.

We could use alternative indicators to compare the economic and export diversification performance of Azerbaijan and Kazakhstan, based on the methodology suggested by Lashitew, Ross, & Werker (2021) for the nexus between the “resource curse” and economic and export diversification. We can use manufacturing value added (MVA) per capita for economic diversification and manufactured exports per capita for export diversification, based on the World Bank and UNECE’s statistical data. UNSTAT defines manufacturing as an economic production sector or “units engaged in the physical, or chemical transformation of materials, substances, or components (or raw materials) into new products” (UNSTATS, 2002; World Bank, 2024).

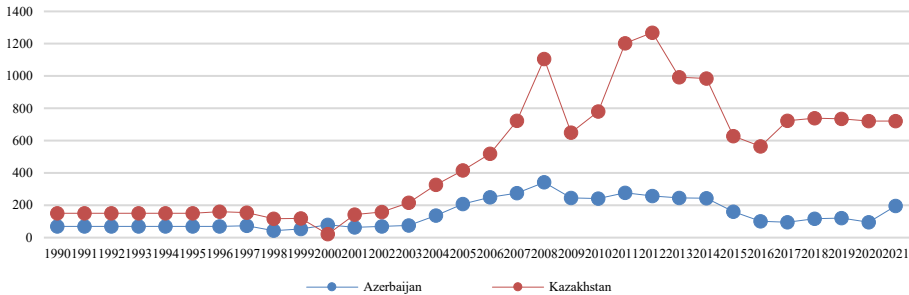
Manufacturing value added (MVA) per capita is calculated by dividing MVA (constant 2010 USD) by the population of Azerbaijan and Kazakhstan (see Figure 8-9). The MVA per capita in Azerbaijan is significantly lower (approximately 400 USD in 2023) than in Kazakhstan (approximately 1400 USD in 2023) (UNECE, 2024; WB Prosperity Data, 2024). Additionally, from an export diversification perspective, manufactured exports per capita in Kazakhstan (approximately 700 USD in 2021) were considerably higher than in Azerbaijan (approximately 200 USD in 2021) (UNIDO 2024). When analysing the shares of manufacturing value added in total GDP and of manufacturing exports in total exports for both countries, it is evident that Azerbaijan underperforms Kazakhstan.

Figure: 8
Manufacturing Value Added Per Capita (Constant 2010 USD)



Source: UNECE Data Portal (2024), World Bank Open Data (2024) and authors' calculations.

Figure: 9
Manufactured Exports Per Capita (USD)

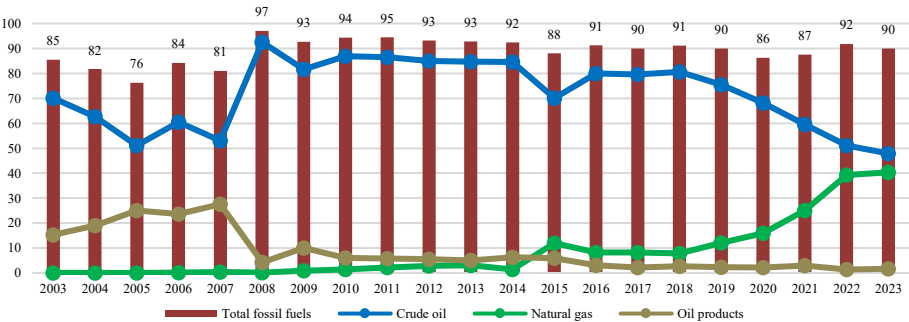


Source: UNECE Data Portal (2024), World Bank Open Data (2024) and authors' calculations.

5.2. Export Diversification in Azerbaijan

Azerbaijan's export basket heavily depends on crude oil and natural gas. The share of crude oil in the total annual exports decreased from 92,5% in 2008 to 48% in 2023 due to declining crude output and resource depletion. Meanwhile, the share of natural gas increased from 1,5% in 2014 to 40% in 2023 (see Figure 10). Additionally, the share of processed oil products in total exports declined from 27,5% in 2007 to 1,7% in 2023, reflecting a shrinking capacity of oil-processing facilities. Although the share of crude oil and oil products decreased, and that of natural gas increased, the overall share of fossil fuels in Azerbaijan's export basket has not changed significantly. The average annual share of total hydrocarbon exports in Azerbaijan's export basket was approximately 90% between 2003 and 2023.

Figure: 10
The Share of Crude Oil, Natural Gas, and Oil Products in Azerbaijan's Total Exports (%)



Source: Trade Map Platform (2024).

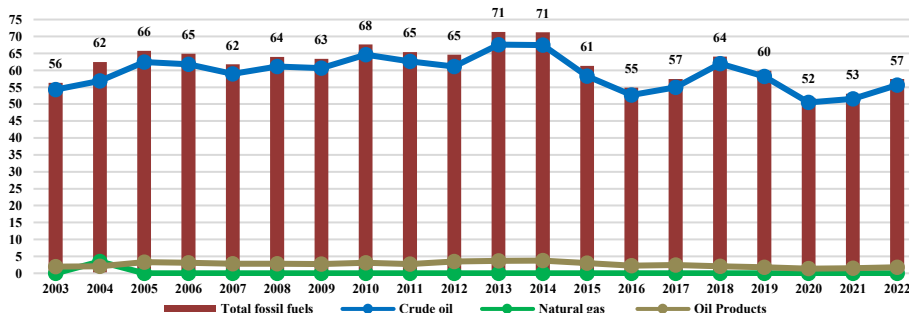
Azerbaijan's non-oil and gas exports mainly consist of agricultural products like fruits and vegetables, chemical industry products (such as methanol and nitrogen fertiliser),

plastics and their derivatives (e.g., polyethene and polypropylene), cotton fibre and yarn, electricity, ferrous metals, and aluminium. Besides the concentration at the product level, there is also a geographic concentration in Azerbaijan's exports. Italy is a key export destination, accounting for around 45% of exports on average from 2022 to 2023. Other significant markets for Azerbaijan's oil and gas exports include Turkey, Israel, Greece, and India. The primary traditional markets for Azerbaijan's limited non-oil and gas exports are Russia, Turkey, and Georgia. It is clear that Azerbaijan urgently needs to diversify both the composition of its export basket and its geographical distribution.

5.3. Export Diversification in Kazakhstan

Kazakhstan's export portfolio depends less on fossil fuels, especially crude oil, than Azerbaijan's does. The share of total fossil fuels—crude oil, natural gas, and oil products—in the export portfolio hovered around 62% from 2003 to 2022 (see Figure 11). Natural gas and oil products have traditionally played a minor role in Kazakhstan's exports. The average annual proportion of crude oil in Kazakhstan's total exports was approximately 60% during 2003-2022. The peak of crude oil's share in total exports occurred in 2013-2014, reaching 67-68%. The lowest levels were observed in 2016 and 2020, due to declines in the volume and prices of exported oil.

Figure: 11
The Share of Crude Oil, Natural Gas, and Oil Products in Kazakhstan's Total Exports (%)



Source: Trade Map Platform (2024).

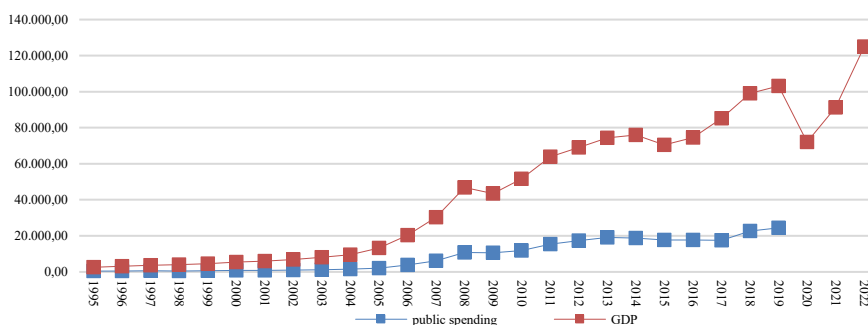
Kazakhstan's export basket is relatively more diverse than Azerbaijan's. It includes commodities such as copper, ferroalloys, radioactive chemical elements, radioactive isotopes, wheat and meslin, coal, zinc, iron and steel, sulphur, aluminium, silver, and precious metal ores, which constitute a significant part of its exports. The geographical structure of Kazakhstan's exports is also more varied than that of Azerbaijan's. In 2023, Kazakhstan's main export partners were Italy (19%), China (19%), Russia (12%), the Netherlands (5%), Turkey (5%), and South Korea (5%). Its main import partners were China (27%), Russia (27%), Germany (5%), the USA (4%), South Korea (3,6%), and Turkey

(3,3%) (Kazakhstan Byuro Natsionalnoy Statistiki, 2023). Overall, it is evident that Kazakhstan also needs to diversify both the composition of its commodities and the geographical structure of its export basket. However, its concentration ratio is less extreme than Azerbaijan's.

6. Fiscal Linkages

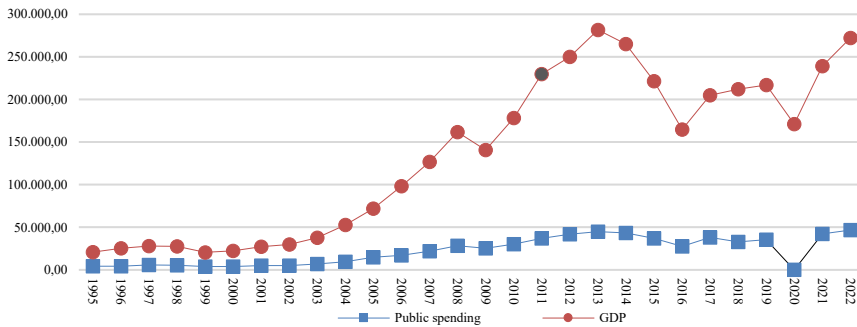
Experts often cite the spending effect as a typical symptom of the resource curse. This phenomenon occurs when resource-rich countries, using extra income usually called "windfall" money, unnecessarily increase state budget expenditures (Arezki & Alich, 2009). The main reason is that, due to the appreciation of the national currency, export of non-oil commodities becomes more difficult for resource-rich countries, making them less competitive with imports (Humphreys et al., 2007). Experts highlight the high level of current expenditures in resource-rich countries, driven by budget surpluses, which create additional market demand. However, these opportunities are primarily used for non-tradable sectors and ineffective maintenance of employment in the public sector. Therefore, in oil-dependent countries, the state usually acts as the employer of first resort (Tamirisa & Duenwald, 2018). The level of public expenditure as a percentage of GDP in Kazakhstan and Azerbaijan does not differ significantly from that of other post-Soviet, poor, resource-rich countries (see Figures 12-13). It should be noted that, as a legacy of the Soviet era, budget expenditure levels hover around 30%, which remains an average indicator for post-Soviet countries.

Figure: 12
Azerbaijan: GDP and Public Spending (Mln. AZN) (1995-2022)



Source: State Statistical Committee of the Republic of Azerbaijan (2024).

Figure: 13
Kazakhstan: GDP and Budget Spending (Mln. USD) (1995-2022)

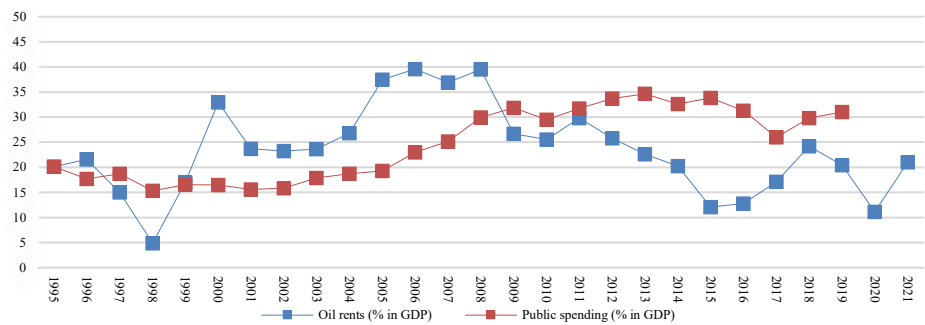


Source: Bureau of National Statistics, Kazakhstan (2024).

Another more significant and widely recognised characteristic of the spending effect symptom is the typical procyclical behaviour of budgeting, its reliance on the overall oil price, and its sensitivity to income volatility. In general, procyclicality has been a feature of budgeting in resource-rich countries (Frankel, 2012). The boom-bust spending volatility effect was evident in purely oil-dependent countries, such as during the 1980s, where Venezuela and Nigeria's expenditure volatility closely followed revenue volatility (NRGI, 2015). Today, amid increasingly turbulent global and regional circumstances, the issue of procyclicality is becoming even more severe. Uncertainties surrounding the energy transition and social pressures lead to higher spending, which, in turn, drives inflation and macroeconomic imbalances (IMF, 2024b).

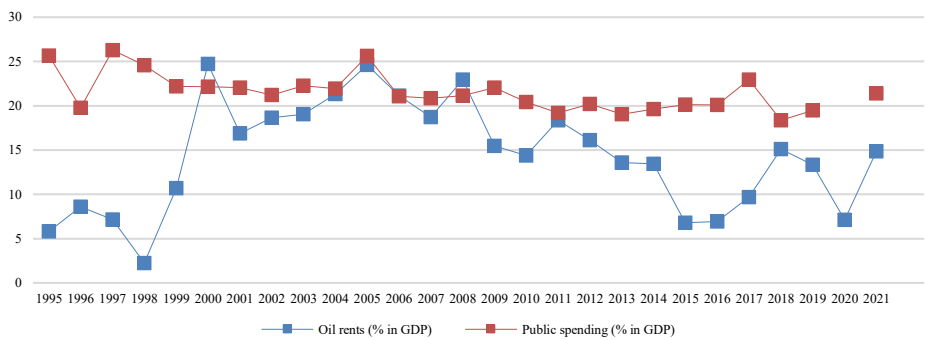
However, when we examined the cases of Azerbaijan and Kazakhstan over the past 30 years, we did not observe these symptoms manifesting in their pure forms in either country. Moreover, the level of budget expenditure in resource-rich and neighbouring resource-poor countries does not differ significantly. The relationship between oil rents and public spending in both countries shows a weak correlation. In other words, the dynamics of public expenditures in both countries appear smooth despite the volatility of oil rents (see Figure 14-15).

Figure: 14
Azerbaijan: Trends of Oil Rents and Public Spending (as % in GDP) (1995-2021)



Source: World Bank Data Azerbaijan (2024).

Figure: 15
Kazakhstan: Trends of Oil Rents and Public Spending (as % in GDP) (1995-2021)



Source: World Bank Data Kazakhstan (2024).

The mitigation of procyclicality is mainly due to the presence of sovereign wealth funds in both countries. The Azerbaijan State Oil Fund (SOFAZ), established in 1999, and the Kazakhstan National Fund, founded in 2000, are actively incorporated into public budgets. Since 2003, SOFAZ has made annual transfers to the budget, with the current transfers accounting for around half of state budget revenues.

However, as shown on the graph, the dynamics of public expenditures in Azerbaijan differ slightly from those in Kazakhstan. Azerbaijan exhibits an upward trend, while Kazakhstan shows a downward trend. Another distinctive feature is the volume of oil fund assets used in public spending, which will be discussed below. Both characteristics stem from Azerbaijan's greater reliance on oil than Kazakhstan's.

The existence of SWFs substantially alters the symptoms of the resource curse. Sterilisation and withdrawal of funds for domestic use break the direct link between oil rent and key macroeconomic indicators, thereby significantly mitigating the adverse effects of the “resource curse” on the economy. However, this is a short-term effect that still reflects the current relatively prosperous situation, like a distorting mirror, postponing the problem for the long term.

A similar practice exists in Kazakhstan (see Table 3). In 2005, the government approved the first medium-term concept for the formation and use of funds of the National Fund of the Republic of Kazakhstan (NFRK). The concept specified a guaranteed transfer to the republican budget of 8,0 billion USD and included an option to adjust it by 15%, depending on economic conditions. Additionally, the concept established a minimum balance for the NFRK of 20% of gross domestic product (GDP), which was later increased to 30% of GDP in 2016 (ADB, 2020).

Table: 3
The Key Characteristics of the Fiscal Rules in Azerbaijan and Kazakhstan

	Key Targets	Measurement
Azerbaijan	Non-oil primary deficit of the consolidated budget	- Ratio of non-oil primary deficit of the consolidated budget to non-oil GDP - Ratio of public debt to GDP (%)
Kazakhstan	Non-oil deficit in % of GDP	- “Guaranteed” and “targeted” transfers to the budget - Assets are to be maintained at least at 30% of GDP - Public debt is not to exceed the size of NFRK assets.

Source: Milli Meclis (2021); World Bank Kazakhstan (2024).

In 2017, Kazakhstan adopted a new fiscal rule. According to this revised rule, “i) the non-oil deficit, the main anchor of fiscal policy, was to be progressively decreased to 7% of GDP by 2020, and 6% by 2025; ii) guaranteed transfers from the NFRK were to be reduced from the 8 billion USD of the time to the equivalent of 6 billion USD by 2020; iii) the NFRK assets are to be maintained at least at 30% of GDP” (ADB, 2020). As in the case of Azerbaijan, Kazakhstan is trying to break the direct link between the volatility of budget revenues and the volatility of crude oil prices on world markets, as well as the cyclical nature of budget revenues. Thus, the parameters of the state budget in both countries exhibit relatively stable dynamics, in contrast to the more volatile dynamics of oil rents.

SWFs of both countries serve as shock absorbers against volatility. Consequently, budgets in both nations remain relatively comfortable, and the test of cyclicity here is even less rigorous than in resource-poor countries with similar conditions. Generally, weak institutional quality exerts a greater influence on fiscal procyclicality than any purely economic factors, such as the level of oil dependence or the structural model (Çiçekçi & Gaygısız, 2023).

7. Political and Institutional Linkages

7.1. Polity Scores of Oil-Rich and Oil-Poor Post-Soviet States

In addition to the subtle interaction between oil revenues and institutional quality, oil abundance (reserves, wealth, assets, and revenues) can shape the character of political regimes. Ross (2012) highlights that "Polity" is a measure of a country's regime type within its political institutions. The "Polity5" dataset is a widely used comparative academic resource for measuring and examining democracy and autocracy metrics, or "authority characteristics of states in the world system" (Centre for Systemic Peace, 2024). The Centre produces the "Polity5" dataset for Systemic Peace (USA) and offers information on the levels of democratic and autocratic authority within governing institutions. The "Polity5" dataset assigns numerical scores to states based on their political regime characteristics, including the degree of competition, openness, and institutionalisation of the political systems.

These scores range from -10 (fully institutionalised autocracies) to +10 (fully institutionalised democracies), with 0 representing a neutral, hybrid or mixed regime. The "Polity5" dataset for Azerbaijan, Kazakhstan, and other post-Soviet states covers the period from 1991 to 2018 (see Table 4). The "Polity Score" can also be translated into political regime categories in a proposed 3-block classification of "autocracies" (-10 to -6), "anocracies" (-5 to +5), and "democracies" (+6 to +10).

The average "Polity Scores" of oil-rich Azerbaijan and Kazakhstan from 1991 to 2018 were almost identical (-6), indicating that their political regimes were classified as "autocracies". The scores of Azerbaijan and Kazakhstan have changed little since 1995, the year when autocratic institutions were partly institutionalised. Consequently, there is no need to calculate the correlation between "Polity Scores" and fluctuating oil revenues in both countries. A strong correlation (0,92) exists between Azerbaijan's and Kazakhstan's "Polity Scores" from 1991 to 2018. This suggests that the oil-rich states of the South Caucasus and Central Asia followed similar trajectories in terms of political regime quality during their periods of political independence.

Regarding the "authority characteristics of states", two oil-poor neighbours of Azerbaijan and Kazakhstan, namely Armenia and Kyrgyzstan, were classified as "anocracies" that combine key aspects of both democracies and autocracies. The average "Polity Score" for Armenia was 4, and for Kyrgyzstan, it ranged from 1991 to 2018. However, if we focus on the "Polity Scores" for 2018 — 7 for Armenia and 8 for Kyrgyzstan, the latest available data, both countries' political regimes were identified as "democracies". The correlation between "Polity Scores" for Azerbaijan and Armenia was nearly zero, whereas between Kazakhstan and Kyrgyzstan, it was approximately -0,4 from 1991 to 2018. This indicates that oil-rich and oil-poor pairs in the South Caucasus and Central Asia followed markedly different paths in terms of power concentration, power competition, and the institutionalisation of their political systems after the collapse of the Soviet Union.

Table: 4
Comparative “Polity Scores” for Azerbaijan, Kazakhstan, and Their Oil-Poor Neighbours

	Azerbaijan	Kazakhstan	Armenia	Kyrgyzstan
1991	-3	-3	6	-3
1992	1	-3	6	-3
1993	-3	-3	6	-3
1994	-3	-3	6	-3
1995	-6	-6	1	-3
1996	-6	-6	-6	-3
1997	-6	-6	-6	-3
1998	-7	-6	5	-3
1999	-7	-6	5	-3
2000	-7	-6	5	-3
2001	-7	-6	5	-3
2002	-7	-6	5	-3
2003	-7	-6	5	-3
2004	-7	-6	5	-3
2005	-7	-6	5	3
2006	-7	-6	5	4
2007	-7	-6	5	3
2008	-7	-6	5	3
2009	-7	-6	5	1
2010	-7	-6	5	0
2011	-7	-6	5	7
2012	-7	-6	5	7
2013	-7	-6	5	7
2014	-7	-6	5	7
2015	-7	-6	5	7
2016	-7	-6	5	7
2017	-7	-6	5	8
2018	-7	-6	7	8

Source: Centre for Systemic Peace (2024).

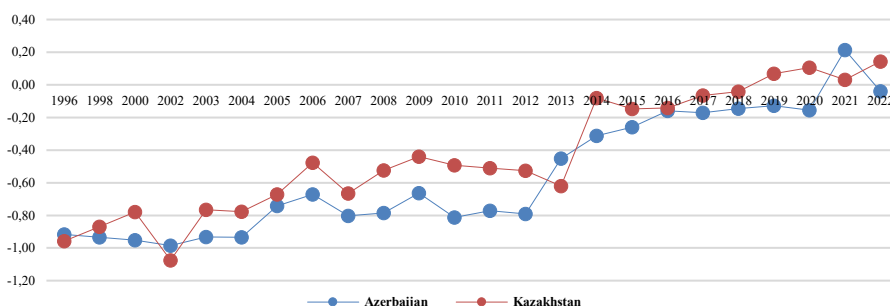
Given the stable, consistent trends in “Polity Scores” for oil-rich post-Soviet states from the 1990s to the 2010s, we cannot determine the impact of oil revenues on the nature of political regimes in these countries. The volatility of “Polity Scores,” as measured by standard deviation, was considerably higher in Armenia (3,05) and Kyrgyzstan (4,55) than in Azerbaijan (1,89) and Kazakhstan (1,07). This clearly demonstrates the long-term stability of political regimes in oil-rich post-Soviet states compared to oil-poor states. Therefore, we will refer to the World Bank’s (WB) Worldwide Governance Indicators (WGI) to explore any correlation between oil revenues and institutional qualities.

7.2. Government Effectiveness in Azerbaijan and Kazakhstan

The World Bank’s Worldwide Governance Indicators (WGI) measure perceptions of governance across various actors. The WGI includes six aggregate governance indicators for more than 200 countries, covering 1996-2022: voice and accountability; political stability and absence of violence/terrorism; government effectiveness; regulatory quality; rule of law; and control of corruption. In this research, we focus on two relevant indicators from WGI to evaluate institutional quality: government effectiveness and regulatory quality. The government effectiveness indicator “reflects perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies” (Kaufmann & Kraay, 2023). The regulatory

quality indicator "reflects perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development" (Kaufmann & Kraay, 2023). The scores for government effectiveness and regulatory quality range methodologically from weak (-2,5) to strong (2,5) governance capacity.

Figure: 16
Government Effectiveness: Azerbaijan vs. Kazakhstan

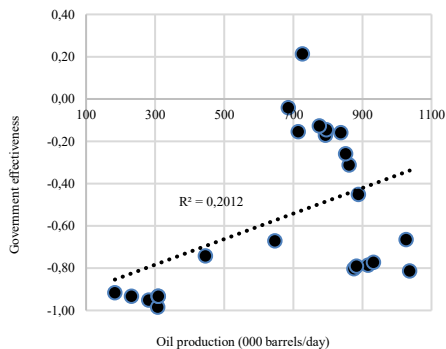


Source: Kaufmann & Kraay (2023); authors' calculations.

The performance of Azerbaijan and Kazakhstan in government effectiveness followed a very similar trajectory (correlation coefficient: 0,93) and volatility (approximately 0,37 standard deviation) (see Figure 16). In terms of cyclicality, 2012-2013 marked a turning point for the governments of Azerbaijan and Kazakhstan, with the start of rapid improvements. There is a positive correlation between government effectiveness and oil prices in Azerbaijan (0,7) and Kazakhstan (0,8) from 1996 to 2011. Conversely, a negative correlation exists between government effectiveness and oil prices in both countries from 2012 to 2022.

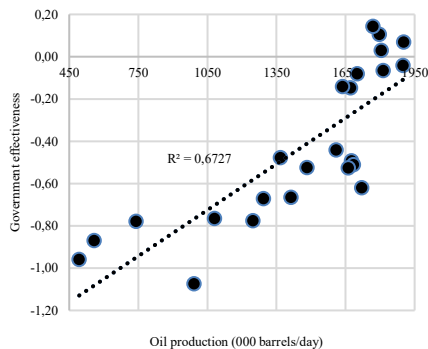
In the first period, increasing government effectiveness was marked by rising crude oil prices. During the second period, government effectiveness continued to improve despite more volatile oil prices. Unlike oil prices, Azerbaijan (0,45) and Kazakhstan (0,82) show differing correlations between government effectiveness and oil production from 1996 to 2022 (see Figures 17 and 18). There is a weak positive correlation between government effectiveness and the share of fuel exports (mainly crude oil and oil products) in Azerbaijan's (0,38) and Kazakhstan's (0,34) total merchandise exports. However, the correlation between government effectiveness and the share of oil rents in GDP was slightly negative in Azerbaijan (-0,42) and Kazakhstan (-0,36).

Figure: 17
Government Effectiveness and Oil Production in Azerbaijan (1996-2022)



Source: Kaufmann & Kraay (2023); BP Energy Institute (2024); authors' calculations.

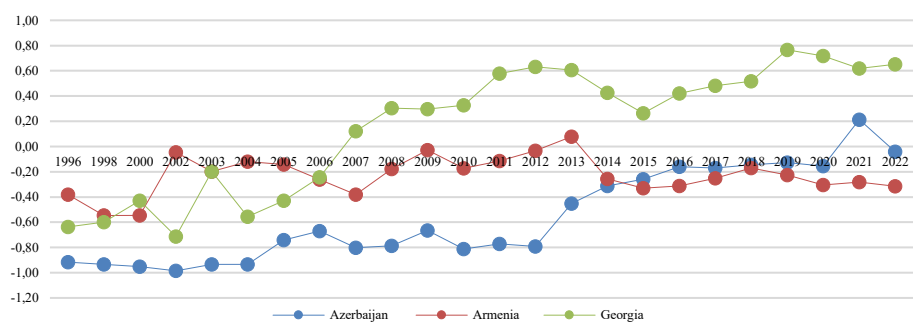
Figure: 18
Government Effectiveness and Oil production in Kazakhstan (1996-2022)



We can conclude that the effectiveness of the governments in Azerbaijan and Kazakhstan has improved, especially since the 2010s. This improvement is evident in the quality and political independence of public services and the civil service, as well as in the quality of public policy formulation and implementation, and in bureaucratic credibility. However, this does not imply that government effectiveness declined in Azerbaijan and Kazakhstan between 1996 and 2011. On the contrary, the efficacy of governments either remained stable or increased slightly before the early 2010s. Nonetheless, oil production, oil prices, oil rents as a share of GDP, and the share of fuel exports in Azerbaijan and Kazakhstan showed different trends from 1996 to 2022. The only exception is the strong positive correlation between Kazakhstan's oil production and government effectiveness scores during the entire period (the accumulated effect of oil on institutions).

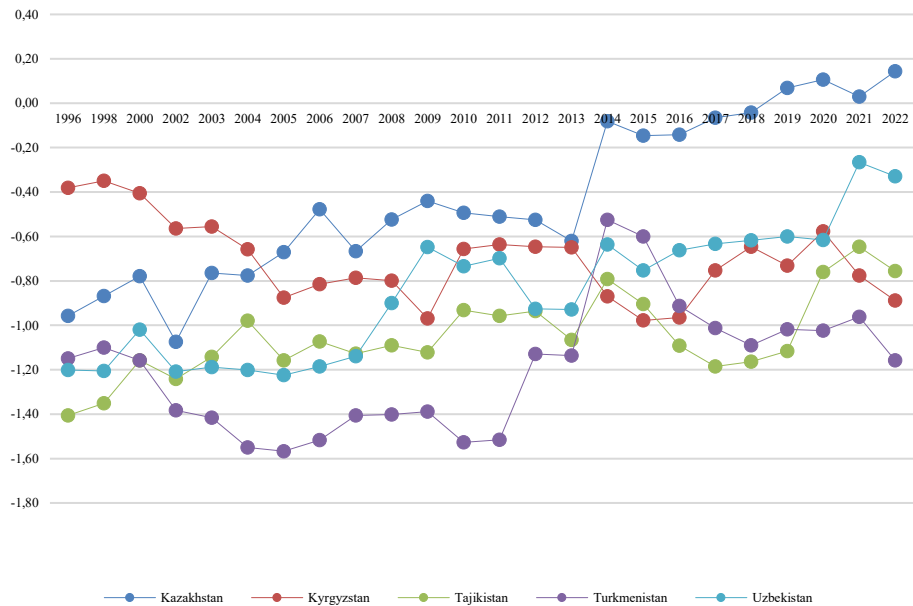
Let's compare Azerbaijan's government effectiveness scores with those of other South Caucasus states. We can see that, despite being oil-rich, Azerbaijan had lower government effectiveness scores than oil-poor Georgia between 1996 and 2022 and lower scores than oil-poor Armenia between 1996 and 2014 (see Figure 19). However, when we compare the effectiveness of governments in Central Asian countries, we see a different picture between oil-rich and oil-poor countries compared to the South Caucasus. Since 2005, Kazakhstan's government effectiveness rating has been higher than that of other oil-rich and oil-poor Central Asian countries. Countries in the region rich in natural gas, such as Uzbekistan and Turkmenistan, performed very differently between 1996 and 2022 (see Figure 20).

Figure: 19
Government Effectiveness in the South Caucasus States



Source: Kaufmann & Kraay (2023); authors' calculations.

Figure: 20
Government Effectiveness in Central Asia



Source: Kaufmann & Kraay (2023); authors' calculations.

7.3. The New ‘Social Contract’ and Institutional Settings in Azerbaijan and Kazakhstan

The correlation between “Voice and Accountability” scores (which include political rights such as the freedom to vote, freedom of expression, freedom of association, and free media) and “Government Effectiveness” scores (which encompass the quality of public services, the calibre of the civil service, its independence from political pressures, the quality of policy formulation and implementation, and the reliability of the government's commitments to such policies) is demonstrated in Table 5 from the World Bank's Worldwide Governance Indicators (WGI) database for the South Caucasus (Azerbaijan and neighbouring countries), Central Asia (Kazakhstan and neighbours), and Russia. These countries combine oil-rich and oil-poor post-Soviet states.

Table 5 also illustrates the share of oil rents in GDP for the countries mentioned above. Countries with relatively higher proportions of oil rents or revenues in GDP, such as Azerbaijan and Kazakhstan, also exhibit a stronger negative correlation between government effectiveness and political rights. This higher negative correlation indicates that these countries improved government effectiveness while restricting political rights. It was a “social contract” that envisioned more effective social-economic and stabilisation policies, thanks to substantial oil revenues, in exchange for limited political rights. Oil-poor countries like Georgia had a different “social contract” due to the lack of significant oil revenues and a distinct political landscape. These countries improved government effectiveness alongside the expansion of political rights.

Table: 5
The Correlation Between Political Rights, Government Effectiveness Scores, and Oil Rents' Shares in GDP

Countries	Correlation	Oil rents (% in GDP)
Azerbaijan	-0.89	21%
Kazakhstan	-0.56	15%
Russia	-0.47	10%
Armenia	-0.29	0%
Kyrgyzstan	-0.28	0.1%
Tajikistan	-0.26	0.3%
Turkmenistan	-0.21	6%
Uzbekistan	0.39	0.9%
Georgia	0.68	0%

Source: Kaufmann & Kraay (2023); World Bank Comparative (2024); authors' calculations.

8. Discussion of the Findings

The current research used a quantitative method to collect and analyse data to identify characteristic patterns in resource-rich post-Soviet economies and to test causal relationships between natural resources and selected institutional, economic, and political variables. The study particularly focused on three economic features of the “resource curse” phenomenon:

- (a) volatility in the long-term economic growth performances of Azerbaijan and Kazakhstan.

- (b) Inadequate contribution of natural resources (particularly oil) to economic growth.
- (c) There is an urgent need to diversify the structure of national economies and export portfolios.

The statistical analysis of selected quantitative data and related conclusions support the argument that the main distinguishing feature of the economic growth trend in oil-rich countries is not outperformance or underperformance, but the volatility of real GDP growth relative to the long-term GDP growth trends of non-oil or "less-oil" countries. Volatility, as one of the key features of the "resource curse," accompanies resource-rich post-Soviet countries such as Kazakhstan and Azerbaijan throughout the entire value chain of extractive industries, including oil and gas production, fiscal revenues from resource exports, and economic growth performance. Volatility in oil prices has increased fluctuations in economic growth in Kazakhstan and Azerbaijan.

The comparison between resource-rich Azerbaijan and Kazakhstan with their resource-poor neighbours showed that they experienced similar economic growth from 1991 to 2023, indicating a moderate manifestation of the "resource curse". Data analysis revealed that while natural resources did not necessarily hinder the economic success of resource-rich post-Soviet states, their contribution to GDP growth was limited. Azerbaijan and Kazakhstan did not outperform many of their non-extractive, former Soviet neighbours in average growth rates, and both countries exhibited notably higher economic growth volatility over the past 30 years.

Despite ongoing efforts to diversify their economies and foreign trade through various policies and programmes, Azerbaijan and Kazakhstan continue to heavily rely on the oil sector, making their fiscal and trade balances vulnerable to fluctuations in oil prices. Diversification of their national economies is vital not only for stable, long-term economic growth but also for ensuring fiscal policy sustainability and a balanced export structure in both countries. By comparing the share of manufacturing industry value added in total GDP and the share of manufacturing industry exports in total exports, it becomes evident that Azerbaijan lags behind Kazakhstan in terms of diversification. While Kazakhstan also needs to diversify the composition and geographic structure of its export basket, its level of dependence is lower than Azerbaijan's.

Kazakhstan and Azerbaijan struggle between procyclical and countercyclical fiscal policy behaviours, with sovereign wealth funds (SWFs) in both countries acting as mitigators of procyclicality and shock absorbers against volatility. Fiscal policy functions as a "transshipment belt" connecting the economic and political symptoms of the "resource curse" through public expenditures. Oil revenues have solidified political regimes and reinforced power concentrations in Azerbaijan and Kazakhstan. In both countries, the current "social contract" indicates relatively socio-economic improvements, long-term stabilisation policies, and better public services funded by substantial oil revenues, in

exchange for political rights. Azerbaijan and Kazakhstan have relatively strengthened government effectiveness while delimiting political rights.

Testing for all symptoms of the resource curse in post-Soviet oil-rich countries, we identified specificities that can be interpreted only from a political economy perspective. Thus, while the apparent economic symptoms, such as slow economic growth and spending effects, manifest as subtle signals, the institutional and governance indicators primarily reflect the significant impact of this disease on the country's environment. In other words, the primary focus of the "resource curse" is on the political rather than the economic framework. Shifting the focus of the "resource curse" from a purely economic framework to a political-economic one complicates, to some extent, the way to measure this "disease".

In this context, fundamental macroeconomic indicators that initially suggest a benign economic outlook can be misleading. Furthermore, weak but relatively stable economic growth combined with fiscal "soundness" may lead to complacency in the government, as there are no apparent concerns about stability. However, such a drastic "transshipment" could worsen the political economy outlook, delay the essential diversification of the economy, and hinder the government's reform efforts. Volatility in economic growth and oil and gas revenues also limits the long-term planning capacity of governments in resource-rich post-Soviet states.

Alongside governments, various actors, such as oil and gas companies and non-state actors, can serve as transmission channels between natural resources and different institutional settings, influencing "resource curse" symptoms. The article does not adopt actor-specific or agent-centred approaches to identify the institutional factors behind the "resource curse" in resource-rich post-Soviet countries. This limitation can be seen as a path for future research. Conversely, the findings presented here can assist both researchers and policymakers in reconsidering the "resource curse" and viewing the phenomenon from a fresh perspective. Undoubtedly, further research and the development of new tools are necessary for a more detailed analysis of all aspects of the "resource curse" in today's context.

9. Conclusion and Recommendations

The article has analysed macroeconomic, diversification, fiscal, and institutional linkages and transmission channels between natural resources, more specifically oil, and economic and other symptoms of the "resource curse" in Kazakhstan and Azerbaijan. Oil and gas production volatility in Kazakhstan and Azerbaijan was accompanied by severe price volatility, negatively affecting GDP growth and other socio-economic indicators. Kazakhstan's economy recovered more quickly, and its economic growth rates fluctuated less during periods of monetary crisis than Azerbaijan's did. This could probably be explained by the level of diversification in the economies and export baskets of both countries. However, oil-rich Kazakhstan and oil-and-gas-rich Azerbaijan have not

demonstrated better long-term economic growth than their neighbouring countries, which are rich in metals, minerals, and gas.

Besides economic growth, GDP volatility is also an essential indicator of the "resource curse". Oil-rich Azerbaijan experienced one of the highest levels of volatility in GDP growth among post-Soviet states from 1991 to 2023. Kazakhstan, with a lower dependence on crude oil in its GDP, state budget, and exports, has seen less volatility in economic growth. This tendency partly confirms Ross's (2012) argument that the main distinguishing feature of the economic growth trend in oil-rich countries is not necessarily outperformance or underperformance, but rather the volatility of real GDP growth compared to the long-term economic growth patterns of non-oil countries.

Diversification linkage transmits crude oil dependence into underperformance in economic growth. Azerbaijan's economy shows a greater need for diversifying its GDP structure. Additionally, Azerbaijan must diversify not only its commodity composition but also the geographical aspects of its export basket. Compared to Azerbaijan, Kazakhstan's GDP composition and export portfolio depend less on fossil fuels, particularly oil. Kazakhstan also needs to diversify its commodity composition and the geographical structure of its export basket, but its concentration ratio is not as extreme as in Azerbaijan.

Kazakhstan and Azerbaijan now have genuine opportunities to diversify their economies more steadily, considering the energy transition and the expansion of renewable energy projects. As hosts of COP29 in 2024, Azerbaijan showcases its commitment to broadening its energy mix and pursuing ambitious renewable energy initiatives with leading global companies. However, for successful diversification, the government should particularly focus on strengthening the competitive environment, safeguarding investments, and boosting the private sector's role. Effective market mechanisms, a simplified investment process, and reduced bureaucratic hurdles will help unlock domestic potential for economic and export diversification. The energy transition could indeed serve as a vital driver for reshaping both the economy's structure and exports in the current context. Nevertheless, to realise this, the governments of both nations need to fundamentally reform the rules of engagement with business and institutional frameworks, prioritising the safeguarding of property rights, the principle of competition, and the predictability of the state's medium- and long-term stance towards business.

Fiscal linkage exposes the institutional weaknesses in managing oil revenue volatility through counter-cyclical budgetary policies. The level of public expenditure as a share of GDP in Kazakhstan and Azerbaijan does not differ significantly from that of other post-Soviet resource-rich, low-income countries. The relationship between annual oil rents and public expenditures in both countries shows a weak correlation. In other words, public expenditure patterns in both nations remain steady despite fluctuations in oil rents. The mitigation of procyclicality is mainly due to the presence of sovereign wealth funds in both countries. Governments should particularly prioritise the medium-term expenditure

framework (MTEF) and aim for a gradual reduction in the proportion of oil and gas revenues in total budget income by implementing effective counter-cyclical fiscal policies.

Azerbaijan and Kazakhstan followed similar paths in terms of power concentration, competition, and the institutionalisation of their political systems after the Soviet Union's collapse. Their performances in government effectiveness showed similar patterns and levels of volatility. Post-Soviet countries with a higher share of oil rents or revenues in GDP, such as Azerbaijan and Kazakhstan, also exhibit a stronger negative correlation between government effectiveness and political rights. This higher negative correlation indicates that these countries improved government effectiveness while constraining political rights. This can be seen as a "social contract" that aims for more effective social, economic, and stabilisation policies, driven by substantial oil revenues, in exchange for limiting political rights. Given new geopolitical risks and challenges, both governments should devise long-term strategies to strengthen the institutional frameworks of these relatively young states to improve governance effectiveness.

Although Kazakhstan and Azerbaijan moderately improved the effectiveness of government institutions as the share of oil rent in the national economy soared, as Ross (2012) asserted, oil-rich countries need "powerful" government institutions to manage the intertwined volatility challenges of crude oil prices, oil revenues, fiscal balances, and economic growth.

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Appendix: 1

Socioeconomic Comparison Indicators of Azerbaijan and Kazakhstan

Indicators (2023)	Azerbaijan	Kazakhstan
1. GDP per capita (current US\$)	7155	13137
2. GDP growth (annual %)	1,1	5,1
3. Unemployment (% of total labour force)	5,6	4,8
4. Personal remittances, received (% of GDP)	2,6	0,1
5. Inflation, consumer prices (annual %)	8,8	14,7
6. Central government debt, total (% of GDP, 2021)	16,9	22,4
7. Foreign direct investment, net inflows (% of GDP)	0,3	2,0
8. Population growth (annual %)	-0,3	1,3
9. Proportion of seats held by women in parliaments (%)	19	18
10. CO ₂ emissions (metric tons per capita, 2020)	3,4	11,3

Source: World Bank Data for Azerbaijan & Kazakhstan (2024).

Determinants of Happiness in Türkiye during and after the COVID-19 Pandemic

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COVID-19 Dönemi ve Sonrasında Türkiye’de Mutluluğun Belirleyicileri

Abstract

The study aims to compare factors influencing happiness in Türkiye during the pandemic and post-pandemic periods. To do this, data from the Life Satisfaction Survey were divided into two separate timeframes: 2020-2021 and 2022-2023. The generalised ordered logistic regression method was used for analysis. The findings show that in the post-COVID-19 period, only satisfaction with Social Security Institution services and having people available for help positively affect happiness. During the pandemic, lower income and the need to purchase cheaper products negatively impacted happiness, while positive employment expectations had no significant effect. Common factors affecting happiness in both periods include satisfaction with health, optimistic outlooks, having a child, satisfaction with social relationships, and marital status. The study demonstrates that the COVID-19 pandemic differentially influenced the determinants of happiness in Türkiye.

Keywords : COVID-19 Pandemic, Happiness in Türkiye, Determinants of Happiness.

JEL Classification Codes : D60, D90, I10.

Öz

Çalışmanın amacı, Türkiye’de mutluluğu etki eden faktörleri, pandemi ve sonrası dönemde karşılaştırmalı olarak araştırılmıştır. Bu amaç için Yaşam Memnuniyeti Araştırması’nın verileri, 2020-2021 ve 2022-2023 şeklinde iki farklı döneme ayrılarak genelleştirilmiş sıralı lojistik regresyon yöntemiyle analiz edilmiştir. Analiz sonucuna göre sadece COVID-19 sonrası dönemde SGK hizmetlerinden memnun olmak ve yardım alınabilecek kişilerin varlığı mutluluğu olumlu yönde etkimektedir. Pandemi sürecinde, gelirin azalması ve ucuz ürün tüketmek mutluluğu olumsuz yönde etkilerken, çalışma durumuna yönelik iyi beklentilerin mutluluk üzerinde hiçbir etkisi yoktur. Her iki dönemde bireyleri mutlu eden ortak faktörler sağlıktan memnuniyet, umutlu beklentiler, çocuk sahibi olmak, sosyal ilişkilerden memnuniyet ve evli olmaktır. Çalışma, COVID-19 pandemisinin, Türkiye’de mutluluğun belirleyicilerini farklılaştırdığını göstermektedir.

Anahtar Sözcükler : COVID-19 Pandemisi, Türkiye’de Mutluluk, Mutluluğun Belirleyicileri.

1. Introduction

Happiness is humanity's most fundamental goal, and throughout history, in every era and every country, people have sought it. While goals such as human development, solidarity, friendship, and justice are highly valued, they are often seen as means to attain happiness. For example, the ancient Greek philosopher Aristotle identified elements such as a healthy, virtuous life and material wealth as essential prerequisites for happiness. Similarly, medieval thinkers such as Thomas Aquinas emphasised the importance of happiness, which they believed could be achieved after worldly life, whereas ethical, ideological and political traditions in China and East Asia placed happiness at the centre of interpersonal relationships (Frey, 2018: 1-2). More recently, the idea of happiness has been incorporated into the American Declaration of Independence as "the pursuit of happiness," and the Kingdom of Bhutan has given priority to the maximisation of "Gross National Happiness".

The COVID-19 pandemic, which started in Wuhan, China, in 2019, significantly impacted happiness, a vital element of human existence. The quarantine measures put in place to curb the virus's spread caused financial difficulties, social isolation, and psychological stress, leading to a decline in happiness in many nations. According to the World Happiness Report (2023), more than one-third of countries saw a substantial increase in negative emotions during the COVID-19 period of 2020-2022. In 2020, a year marked by uncertainty, the percentage of people worldwide reporting feelings of anxiety and sadness rose by 1%, anger by 2%, and stress by 5% compared to the previous year. By 2021, perceptions of happiness worsened further in 20 countries. Overall, the pandemic has been viewed as an external threat, provoking similar emotional reactions in most individuals.

In Türkiye, the COVID-19 pandemic has affected people's happiness by suddenly disrupting their daily routines. After the first COVID-19 case was reported in Türkiye on 11 March 2020, the government quickly introduced measures to reduce physical contact. Initially, quarantines were implemented, face-to-face education was suspended, public events were cancelled, and gathering places were temporarily shut down. As case numbers increased, travel restrictions were enforced and border crossings were closed. In March 2021, controlled steps towards normalisation were taken with the introduction of vaccines; however, the rapid rise in cases led to lockdowns in April. These measures continued until 2 March 2022, when outdoor mask mandates were lifted. Throughout these two years, individuals faced many challenges, including worries about their health and that of their relatives, and the loss of loved ones. While private-sector workers experienced economic hardships such as income loss and unemployment, technological shortcomings disrupted online education. Factors such as prolonged periods at home, the suspension of social activities, and ongoing uncertainty negatively affected mental well-being.

These difficulties caused a decline in happiness among individuals in Türkiye during the COVID-19 pandemic. According to the United Nations, based on an assessment of 156 countries, the World Happiness Report (WHR) shows that Türkiye, ranked 93rd in the global

happiness index from 2017 to 2019, fell 13 places to 106th between 2020 and 2022 due to the pandemic's effects (WHR, 2020; 2023). Besides this shift in happiness levels during the pandemic, this decline emphasises the different influences of factors such as education, health, income, social connections, and hope on happiness. Considering the ongoing economic and social repercussions of the pandemic in the post-COVID-19 period, it is expected that the effects of various socio-economic, socio-demographic, conceptual, and situational factors on happiness will vary. Therefore, this study explores the factors that influence individual happiness in Türkiye during and after the pandemic.

The existing literature on the economics of happiness includes limited research on the determinants of happiness in Türkiye during the COVID-19 pandemic (see Polat & Kılıç, 2022; Yıldırım & Yılmaz, 2022; Alkan & Kavalcı, 2023; Özay et al., 2023; Şehribanoğlu, 2024). These studies primarily focus either on a specific factor, such as consumer preferences, or are confined to the pandemic period. Unlike the national literature, the present research categorises the factors affecting happiness into seven dimensions and examines them comparatively across the pandemic and post-pandemic periods. This broad framework facilitates a comparative analysis of the factors contributing to happiness among individuals in Türkiye.

Following the introduction, the study first examines the channels through which the COVID-19 pandemic influenced happiness and then analyses changes in happiness levels during and after the pandemic in Türkiye. Subsequently, the dataset and variables used in the analysis are defined, and the findings are interpreted. Finally, the paper concludes with an evaluation of the results, a discussion of the limitations, and recommendations for policymakers.

2. The Effect of the COVID-19 Pandemic on Happiness

The COVID-19 pandemic emerged as a complex crisis, deeply impacting both personal and societal well-being. The measures governments have adopted to curb the spread of the virus and reduce fatalities have significantly changed people's daily routines and quality of life. During this time, various factors, including health concerns, economic uncertainties, and social isolation, placed considerable pressure on individuals and negatively affected their happiness.

Many people lost their lives globally due to the contagious and rapidly spreading coronavirus disease. A study estimating COVID-19 mortality rates in China indicated that the fatality rates of the disease ranged from 3,8% to 14,6%. While the risk of hospitalisation and mortality among young and middle-aged individuals was approximately 20%, these rates increased exponentially among the elderly and those with chronic illnesses (Mi et al., 2020). The World Health Organization (WHO) reported that the mortality rate of COVID-19 was approximately 10 times higher than that of seasonal influenza (Gülmez, 2020: 50). Despite being 10 times more deadly than influenza, people developed optimistic views about the disease as mortality rates were relatively low and recovery rates high at the beginning of

COVID-19. However, as the pandemic progressed, people became more anxious, and optimistic views replaced a negative outlook. As the number of deaths from COVID-19 increased, there was a marked rise in negative emotions (Greyling et al., 2021: 2). In particular, the emergence of new variants, combined with concerns about contracting the virus and death, created a widespread source of stress that negatively affected people's psychological well-being.

The reality of physical threat, combined with the sudden onset and uncontrollable nature of the pandemic, created a "perfect storm" for stress (Fassett-Carman et al., 2020). Added to these elements, the challenges that most people face—such as mobility limitations, high health risk, current isolation, or financial vulnerability—further compounded the psychological impact of COVID-19. In particular, quarantine and "social distancing" rules have heightened the risk of loneliness, fostering a sense of sameness. The unpredictability of who might contract the disease, how long it might last, and its potential long-term effects heightened feelings of uncertainty and a lack of control, making stress an unmanageable feeling (Whitehead & Torossian, 2021: 37). Collectively, the COVID-19 pandemic transformed into a devastating mental health crisis, marked by a 25% increase in stress-induced anxiety and depression worldwide (WHO, 2022). These health issues resulted in a significant decline in individual happiness within a short period.

The COVID-19 pandemic also had severe contractionary effects on global economies. Travel restrictions disrupted international supply chains, negatively impacting key industries such as tourism, aviation, retail, and entertainment. Economic activities that require physical proximity slowed, and production declined. Within the first 30 days after full implementation of the curfew, global industrial production fell by approximately 10% (Deb et al., 2022: 31). Consequently, in sectors with high levels of physical interaction, work was suspended or even halted. This situation led employers to delay layoffs or hiring. Job losses have increased, particularly for those in temporary or low-paid jobs. According to the International Labour Organisation (2020) report, total global employment involving unemployed workers or those leaving the workforce declined by 114 million in 2020 compared to 2019, while global working hours decreased by 8.8% in 2020. This is equivalent to the annual workload of 255 million full-time employees. Workers who are laid off or whose working hours change are increasingly concerned about their household finances. Loss of income has negatively affected their mental health and reduced their quality of life.

In addition to job losses, the COVID-19 pandemic brought about significant changes in working life, especially in working styles. To protect employees' health, many countries adopted remote or home-based work. Those working from home full-time had to manage both their daily activities and work simultaneously, often alongside multiple family members. During this period, children also stayed at home as distance education was introduced. Consequently, the boundaries between work and private life became blurred, leading to work-family conflicts. In particular, the flexibility of remote work led to overlapping work and leisure hours, disrupting work-life balance for many employees (D'Andrea, 2022: 10-11). Additionally, remote workers experienced professional and social

isolation due to the lack of in-person contact with colleagues. The absence of face-to-face communication increased misunderstandings, confusion, and work-related stress. As a result, mutual support and solidarity among employees declined (Raišienė et al., 2020: 5335). Moreover, without direct contact with coworkers while working at home, social bonds outside of work cooperation weakened. These factors collectively diminished individuals' motivation, productivity, and job satisfaction (Belzunegui-Eraso & Erro-Garcés, 2020: 10-13).

Strict quarantine measures and prolonged physical distancing during the pandemic's peak periods also disrupted social integration and increased social isolation (Peng & Roth, 2022). Individuals often tend to select and narrow their social networks based on the quality of relationships, with more supportive and intimate ties (e.g., marital ties) more likely to remain in networks, while other ties (e.g., non-resident family members and friends) may break more easily in stressful situations (Carstensen, 1992). This was clearly evident during the pandemic. Many people had to reduce their engagement and closeness in relationships with non-residents, such as family members and friends who did not live in the same household. In other words, reduced contact frequency and increased pandemic-related stressors (e.g., financial difficulties, worry about contracting the disease) created challenges in maintaining relationships. Typically, individuals may receive more financial and emotional support from family and friends. However, during the pandemic, physical distancing made such relationships less functional and accessible. This led to decreased support from close relationships, poorer mental health, and greater unhappiness (Liu & Hsieh, 2023: 475-478).

3. The Course of Happiness in Türkiye during and after COVID-19

The COVID-19 pandemic significantly affected individual happiness in Türkiye, as it did worldwide. Findings from the Life Satisfaction Survey (2023) reveal that the proportion of people reporting happiness declined in 2020 as the pandemic posed a substantial threat to public health in Türkiye. Table 1 indicates that the percentage of individuals aged 18 and older who reported being happy decreased from 45,7% in 2019 to 39,4% in 2020. Simultaneously, the rate of those who identified as unhappy increased slightly from 9,9% in 2019 to 10% in 2020. With ongoing uncertainty regarding the pandemic's duration, vaccination rollouts, and the normalisation process, this rate rose by 3,1 percentage points to 13,1% in 2021. By 2022, when restrictions and curfews were largely lifted, the proportion of individuals who reported being unhappy fell to 12,3%, a decrease of 0,8 points compared to the previous year. By 2023, this figure further declined to 10,8%, nearing the levels observed at the onset of the pandemic in 2020. Concurrently, the proportion of individuals reporting happiness increased to 48,3% in 2023. These trends suggest that happiness levels in Türkiye improved as individuals resumed their normal activities following the COVID-19 pandemic.

Table: 1
Overall Happiness Levels in Türkiye (2019-2023)

	2019	2020	2021	2022	2023
Total					
Very happy	6,6	8,8	5,3	5,9	4,4
Happy	45,7	39,4	44,1	43,8	48,3
Neither happy nor unhappy	34,6	37,3	34,0	34,5	33,6
Unhappy	9,9	10,0	13,1	12,3	10,8
Very unhappy	3,1	4,5	3,5	3,6	2,9
Male					
Very happy	6,1	7,8	4,8	5,6	4,0
Happy	41,5	35,5	39,1	40,9	46,3
Neither happy nor unhappy	37,1	39,2	36,3	35,2	34,3
Unhappy	11,5	12,2	15,6	14,4	12,1
Very unhappy	3,8	5,4	4,2	3,9	3,3
Female					
Very happy	7,1	9,7	5,7	6,1	4,7
Happy	49,9	43,3	49,0	46,6	50,4
Neither happy nor unhappy	32,2	35,4	31,9	33,8	32,9
Unhappy	8,4	7,9	10,8	10,2	9,6
Very unhappy	2,4	3,6	2,8	3,3	2,5

Source: (TurkStat, 2023).

According to Table 1, the happiness rate among males in 2019 was 41,5%, compared to 49,9% among females. However, in 2020, these rates fell to 35,5% for males and 43,3% for females, reflecting the impact of the pandemic. In 2021, happiness rates increased for both genders. This was an unexpected result during the COVID-19 period. 2021 was a year when vaccine availability became widespread in many countries. The hope that the pandemic would end with vaccines may have led individuals to view the future more positively. Additionally, after the initial shock of the pandemic, many people's adaptation to the “new normal” may have contributed to increased happiness. By 2022, the proportion of males reporting happiness rose by 1,8 points to 40,9%, while the proportion of females declined by 2,4 points to 46,6%. By 2023, with the effects of the pandemic significantly waning, happiness rates for males and females increased compared to 2022 to 50,4% and 46,3%, respectively. Similarly, the percentage of females and males reporting unhappiness in 2023 decreased to 9,6% and 12,1%, respectively. Overall, the rate of unhappy individuals decreased and approached pre-COVID-19 levels. The notable result in the table is that females have higher happiness rates than males both during and after the pandemic.

An analysis of happiness by age group reveals that individuals aged 65 and older had the highest levels of happiness in 2019, at 58,5%, while individuals in the 45-54 age group reported the lowest levels of happiness. In 2020, happiness levels declined across all age groups, while unhappiness levels rose. The most significant decline in happiness occurred among individuals aged 18-24, whose happiness rate fell by 9,6 points. This was followed by the 25-34 and 35-44 age groups, which experienced declines of 5,2 points each. Similarly, unhappiness levels increased most sharply among the 18-24 and 35-44 age groups. In 2021, when COVID-19 spread rapidly, happiness rates decreased only among young people. While the rate of those reporting happiness in the 18-24 age group was 47,1% in 2020, it dropped by 2,6 points to 44,5% in 2021. In 2021, the proportion of unhappy people increased in all age groups. Again, the highest rise was seen in young and middle-aged individuals. It is understood that young and middle-aged individuals are the most affected by the COVID-19

pandemic. The closure of schools and restrictions on social activities during the pandemic may have negatively impacted the education and social lives of young people, leading to feelings of hopelessness. Since middle-aged individuals are responsible for providing for their families, they may have felt economic pressures more acutely and experienced difficulties in their daily lives, leading to a decrease in their happiness.

Table: 2
Happiness Levels across Age Groups (2019-2023)

Year		Age Group					
		18-24	25-34	35-44	45-54	55-64	65+
2019	Happy	56,7	52,0	50,6	49,7	48,7	58,5
	Neither happy nor unhappy	33,8	34,3	37,2	35,7	35,5	29,2
	Unhappy	9,6	13,7	12,2	14,6	15,8	12,2
2020	Happy	47,1	46,8	45,4	46,2	49,0	57,7
	Neither happy nor unhappy	38,6	38,1	39,4	38,5	36,5	30,4
	Unhappy	14,2	15,1	15,2	15,3	14,5	11,8
2021	Happy	44,5	46,6	50,2	48,8	50,9	56,2
	Neither happy nor unhappy	35,1	36,4	33,5	33,9	33,7	30,8
	Unhappy	20,4	17,1	16,3	17,3	15,4	13,0
2022	Happy	47,9	46,8	47,9	48,0	52,5	57,7
	Neither happy nor unhappy	36,4	36,6	35,7	35,7	31,7	28,6
	Unhappy	15,7	16,6	16,3	16,3	15,8	13,7
2023	Happy	54,0	50,7	53,0	53,6	49,7	56,0
	Neither happy nor unhappy	33,3	34,9	35,2	33,0	33,5	30,4
	Unhappy	12,7	14,4	11,9	13,4	16,8	13,5

Source: (TurkStat, 2023).

In 2022, as COVID-19 restrictions were widely eased, happiness levels increased across most age groups outside the middle-aged cohort. For example, the proportion of individuals who reported being happy in 2022 compared to the previous year rose by 3,4 percentage points to 47,9% in the 18-24 age group and by 1,6 percentage points to 52,5% in the 55-64 age group. However, the economic recovery from the pandemic remained slow for many middle-aged individuals. Those unable to return to work continued to face financial difficulties and, as a result, might have felt unhappy about their future. In contrast, by 2023, happiness rates among middle-aged individuals began to recover, with the most significant increase seen in the 35-44 age group, where happiness rose by 5,1 points. Meanwhile, happiness among young people continued to improve, reaching 54%, approaching pre-pandemic levels. In 2023, the proportion reporting unhappiness decreased, except in the 55-64 age group. Overall, happiness levels in Türkiye increased following COVID-19. A notable point in the data is that in 2021, when case numbers were particularly high, the unhappiest age group was young people. In other years, consistent with the literature, young and older adults reported the highest levels of happiness, while middle-aged individuals reported the lowest. Therefore, these findings suggest that COVID-19 influenced the differences in happiness between age groups.

As shown in Tables 1 and 2, individuals' happiness in Türkiye has changed during and after the COVID-19 period. Alongside these changes in happiness, the influence of demographic, economic, and social factors on happiness may also vary. In this context, the study aims to compare the factors affecting happiness in Türkiye during the pandemic and post-pandemic periods. To this end, the Life Satisfaction Survey data were analysed for two

periods: 2020-2021 (pandemic period) and 2022-2023 (post-pandemic period), using generalised ordered logistic regression. Existing studies on happiness using similar analysis methods include (e.g., Boes & Winkelmann, 2010; Kaufman & Taniguchi, 2010; Timur & Akay, 2017; Hayat & Özden, 2021; Alkan & Kavalcı, 2023; Karaaslan & Çalmaşur, 2023; Yang et al., 2023; Çomaklı-Duvar et al., 2025). Consistent with the literature, the methodology and data set employed in this study are described in detail in the empirical analysis section.

4. Empirical Analysis

4.1. Data Set and Variables

The analysis used data from the Life Satisfaction Survey (LSS) conducted annually by TurkStat since 2003. The main aim of the LSS, carried out every year, is to collect information on the social structure, behaviour patterns, and living conditions of Turkish citizens. The LSS offers comprehensive data on a wide range of topics, including overall life satisfaction, happiness, work life, education, health, national issues, the environment, satisfaction with public services, and individual expectations. Data collection is conducted with individuals aged 18 and over using a standardised questionnaire. Between 2003 and 2012, the sample size was designed to produce estimates at the rural-urban level, while from 2014 to 2023, it was adjusted to provide national estimates for Türkiye as a whole. In 2013, only provinces were included in the survey sample.

During the COVID-19 pandemic period from 2020 to 2021, the LSS was conducted with approximately 20,176 participants, while in the post-COVID-19 period from 2022 to 2023, interviews were conducted with some 19,436 persons. Survey participants answered questions using a Likert scale. In the analyses, responses to these questions were converted into dummy variables and grouped into various dimensions as determinants of individual happiness. Table 3 provides a detailed overview of the variables included in the analysis, including their classifications, questions, survey options, and scales.

Table: 3
List of Variables Used in the Analyses

Variable Group	Variables	Descriptions/Scale
Dependent Variable	“When you think of your life as a whole, how happy are you?”	Likert Scale, 3 Categories*: 1. Happy, 2. Moderately Happy, 3. Unhappy
Socio-economic and Socio-demographic Variables	Age	Numerical variable
	Gender	Dummy variable: Female, Male
	Marital status	Dummy variable: Married, Single
	Educational status	Dummy variable: No school completed, Primary School, Secondary School, Higher School
	Job status	Dummy variable: Worked, Did not work, but interest continues with work, Did not work
Income Variables	Income group	Dummy variable: Low-income group, Middle-income group, High-income group
	Satisfaction with household monthly income	Dummy variable: Satisfied, Moderately Satisfied, Not Satisfied
	Relative Income	10 Steps Cantril Ladder
Health Variables	Satisfaction with health	Dummy variable: Satisfied, Moderately Satisfied, Not Satisfied
	Satisfaction with health services	Not Satisfied
	In the last year, having a health problem	Dummy variable: Yes, No

Social Relations Variables	Satisfaction with social life	Likert Scale, 5 categories: 1. Very satisfied 2. Satisfied, 3. Neither satisfied nor unsatisfied, 4. Not Satisfied, 5. Not satisfied at all
	Satisfaction with the time allocated	
	Satisfaction with relatives relationships	
	Satisfaction with friends relationships	
	There are people (relatives, friends or neighbours) who help when needed	Dummy variable: Yes, No
Public Service Variables	Satisfaction with judicial services	Likert Scale, 5 categories: 1. Very satisfied 2. Satisfied, 3. Neither satisfied nor unsatisfied, 4. Not Satisfied, 5. Not satisfied at all
	Satisfaction with the services of education	
	Satisfaction with the services of the Social Security Institution (SSI)	
Expectation/Hope Variables	Hopeful about the future	Dummy variable: Hopeful, Not Hopeful
	Work/business conditions will be next year in Türkiye	Dummy variable: Will be better,
	The economic condition will be next year in Türkiye	Will remain the same, Will be worse, No idea
Situational Changes in the Past Year Variables	Lost job	Dummy variable: Yes, No
	Income decreased	
	Got into debt	
	Had a child	
	Consumption of cheaper products	

* The answers provided by individuals to the happiness question in the LSS were categorised as "1. Very happy, 2. Happy, 3. Neither happy nor unhappy, 4. Unhappy, 5. Not happy at all". In the analyses, in accordance with the data's frequency distribution, the responses were condensed into three categories: "Happy" by combining the first and second options, and "Unhappy" by combining the fourth and fifth options. Similarly, Alkan and Kavalcı (2023) and Çomaklı-Duvar et al. (2025) simplified the responses to the happiness question in the LSS into three categories in their studies.

4.2. Methodology

Happiness, as a valid and empirically robust measure of an individual's well-being, can be modelled using a micro-econometric happiness function. To examine the factors affecting individuals' happiness in Türkiye, a micro-econometric happiness model has been employed.

$$H_{i,t} = \vartheta + \varphi X_{i,t} + \pi_i + \varepsilon_{i,t}$$

In the model, $H_{i,t}$ represents the reported happiness of individual i at time t , $X_{i,t}$ denotes the determinants of happiness, π_i represents time fixed effects, $\varepsilon_{i,t}$ refers to the error term. Time-fixed effects are included in the model to account for variation across survey waves.

Responses to the happiness question are categorised as "1. Happy, 2. Moderately happy, 3. Unhappy". For ordinal dependent variables, an ordinal logistic regression model can be used as the analysis method. However, this method requires that relevant regression coefficients remain consistent across all categories of the dependent variable. In other words, the parallel regression assumption must be met. If this assumption is violated, the parallelism of the categories is disrupted, leading to differences in slope. In this case, the results of the ordered logistic regression model become unreliable, and alternative models must be considered (Kiren-Gürler, 2021: 133). In general, the multinomial logit model is applied. Applying an unordered multinomial logit model to a model with an ordered dependent variable will cause deviations in the estimation results. Therefore, the generalised ordered logit model, which accommodates the ordered structure of the dependent variable while relaxing the parallel regression assumption, can be used as an analysis method. This model was developed as an alternative to the ordered logit model (Timur & Akay, 2017: 94-95).

Assuming that the dependent variable Y_i takes the value 0,1,2,3,...,M, i.e. an ordinal dependent variable with m categories, the generalised ordered logit model can be expressed as follows (Williams, 2006: 59):

$$P(Y_i > j) = g(X_i\beta_j) = \frac{\exp(\alpha_j + X_i\beta_j)}{1 + \{\exp(\alpha_j + X_i\beta_j)\}}, j = 1, 2, \dots, M - 1$$

In the model, X_i represents the vector of predictors and β_j denotes the vector of coefficients to be estimated. The probabilities of Y taking the values 1,...,M respectively can be expressed as follows:

$$P(Y_i = 1) = 1 - g(X_i\beta_1)$$

$$P(Y_i = j) = g(X_i\beta_{j-1}) - g(X_i\beta_j), j = 2, \dots, M - 1$$

$$P(Y_i = M) = g(X_i\beta_{M-1})$$

When $M = 2$, the generalised ordered logit model is equivalent to the logistic regression model. When $M > 2$, the generalised ordered logit model becomes equivalent to a series of binary logistic regressions. In the generalised ordered logit model, the coefficients cannot be interpreted directly because they represent the logit values. Instead, interpretation can be based on odds ratio values. When $M = 3$, the coefficients are analysed by comparing category 1 against category 2 and 3, and category 1 and 2 against category 3.

To apply the generalised ordered logit model during both the COVID-19 pandemic and the post-COVID-19 period, the parallel regression assumption was tested (see Appendix). The test results showed that the assumption was not satisfied for either period. Therefore, the generalised ordered logit model, which does not require the parallel regression assumption, can be used.

4.3. Empirical Results During the COVID-19 Pandemic

Table 4 shows the LSS-based estimates for the pandemic period. The analysis is based on the difference ratios of the variables.

Table: 4
Generalised Ordered Logit Estimation Results During the COVID-19 Pandemic

Variables	Happy		Moderately Happy	
	Coefficient	Odds Ratio	Coefficient	Odds Ratio
Age	-0.002 (0.003)	0.998 (0.003)	-0.000 (0.002)	1.000 (0.002)
Female	0.482*** (0.074)	1.619*** (0.120)	0.444*** (0.054)	1.559*** (0.084)
Married	0.658*** (0.076)	1.931*** (0.148)	0.662*** (0.056)	1.938*** (0.109)
Primary School	0.101 (0.148)	1.107 (0.164)	-0.334*** (0.105)	0.716*** (0.075)
Secondary School	0.336** (0.166)	1.399** (0.232)	-0.247** (0.116)	0.781** (0.091)
Higher School	0.130 (0.167)	1.139 (0.190)	-0.159 (0.118)	0.853 (0.101)

Worked	0,196**	1,216**	0,016	1,016
	(0,078)	(0,095)	(0,057)	(0,058)
Middle-income Group	0,204	1,227	0,071	1,073
	(0,127)	(0,156)	(0,091)	(0,098)
High-income Group	-0,015	0,985	0,009	1,009
	(0,102)	(0,101)	(0,076)	(0,076)
Satisfied with Monthly Income	0,416***	1,516***	0,606***	1,833***
	(0,095)	(0,145)	(0,054)	(0,100)
Relative Income	0,245***	1,277***	0,125***	1,133***
	(0,019)	(0,024)	(0,014)	(0,015)
Satisfied with Health	0,382***	1,465***	0,648***	1,911***
	(0,075)	(0,110)	(0,057)	(0,110)
Satisfied with Health Services	0,185**	1,203**	0,266***	1,305***
	(0,074)	(0,089)	(0,056)	(0,073)
Having a Health Problem	-0,095	0,909	0,023	1,023
	(0,090)	(0,081)	(0,073)	(0,074)
Satisfaction with Social Life	0,372***	1,451***	0,325***	1,384***
	(0,044)	(0,063)	(0,033)	(0,045)
Satisfaction with the Time Allocated	0,120***	1,127***	0,135***	1,145***
	(0,044)	(0,049)	(0,034)	(0,039)
Satisfaction with Relatives Relationships	0,153***	1,166***	0,130***	1,139***
	(0,044)	(0,051)	(0,037)	(0,043)
Satisfaction with Friends Relationships	0,117**	1,124**	0,109**	1,115**
	(0,056)	(0,063)	(0,050)	(0,056)
Some People Help	0,091	1,096	-0,024	0,976
	(0,085)	(0,093)	(0,068)	(0,066)
Satisfaction with Judicial Services	0,068**	1,070**	0,045**	1,046**
	(0,026)	(0,028)	(0,021)	(0,022)
Satisfaction with Education Services	0,064**	1,066**	0,075***	1,078***
	(0,031)	(0,033)	(0,024)	(0,026)
Satisfaction with SSI Services	-0,036	0,965	0,040	1,041
	(0,031)	(0,030)	(0,026)	(0,027)
Hopeful about the Future	1,212***	3,360***	0,740***	2,095***
	(0,078)	(0,262)	(0,056)	(0,117)
Work Conditions will be Better	0,025	1,025	-0,031	0,970
	(0,156)	(0,160)	(0,088)	(0,085)
Economic Conditions will be Better	0,265*	1,303*	0,173**	1,189**
	(0,152)	(0,199)	(0,086)	(0,102)
In the Last Year, Lost Job	-0,202*	0,817*	-0,250**	0,779**
	(0,115)	(0,094)	(0,105)	(0,082)
In the Last Year, Income Decreased	-0,278***	0,757***	-0,102*	0,903*
	(0,076)	(0,057)	(0,056)	(0,051)
In the Last Year, Got into Debt	-0,059	0,943	-0,141***	0,869***
	(0,076)	(0,071)	(0,054)	(0,047)
In the Last Year, Had a Child	0,302	1,353	0,237*	1,268*
	(0,209)	(0,283)	(0,137)	(0,173)
In the Last Year, Consumed Cheaper Products	-0,005	0,995	-0,198***	0,821***
	(0,093)	(0,093)	(0,057)	(0,047)
Year 2021	-0,043	0,958	0,220***	1,246***
	(0,085)	(0,082)	(0,061)	(0,076)
Constant	-3,962***	0,019***	-5,455***	0,004***
	(0,334)	(0,006)	(0,280)	(0,001)
Observations	9,532	9,532	9,532	9,532
Pseudo R-squared	0,203	0,203	0,203	0,203
LR chi2	3867	3867	3867	3867
Prob> chi2	0	0	0	0

Note: Figures in brackets indicate standard errors. Significance levels: *** $p < 0,01$, ** $p < 0,05$, * $p < 0,1$.

The findings indicate that socio-economic and socio-demographic variables show expected signs, consistent with previous research. Notably, females report higher levels of happiness than males, being 1,619 times more likely to be “happy” and 1,559 times more likely to be “moderately happy”. Similarly, marital status positively affects happiness: married individuals are 1,931 times more likely to be satisfied and 1,938 times more likely to be moderately delighted than singles. Regarding educational status, individuals who have completed secondary education are 1,399 times more likely to report being happy than those

who have not. Among education variables, secondary education is the only factor that is statistically significant and positively correlated. This result may reflect the simultaneous inclusion of both education and income variables in the happiness model.

When analysing the estimation results of income variables, satisfaction with monthly income levels significantly boosts the likelihood of happiness. Individuals satisfied with their monthly income are 1,516 times more likely to report being happy and 1,833 times more likely to be moderately confident than those with other satisfaction levels. Additionally, individuals whose income levels surpass those of their reference group are 1,277 times more likely to be happy and 1,133 times more likely to be moderately happy. As individuals' welfare levels increase relative to those they compare themselves with, their happiness tends to rise.

Health-related factors also significantly impact individual happiness. Satisfaction with health increases the likelihood of happiness by 1,465 times and moderate happiness by 1,911 times compared to individuals who are moderately satisfied or dissatisfied. As Frey (2018) notes, human health is the most critical factor in happiness surveys. People satisfied with healthcare services are 1,203 times more likely to report happiness and 1,305 times more likely to report moderate happiness compared to others. Having had a health problem in the past year does not significantly influence happiness. The pandemic has profoundly affected both physical and mental health. While such health issues were expected to lower happiness levels, the findings showed this was not the case.

When happiness is examined in relation to social relationships, increased satisfaction with social life boosts the likelihood of happiness by 1,451 times and moderate happiness by 1,384 times. Similarly, furthermore, greater satisfaction with the time dedicated increases the chances of reporting happiness by 1,127 times and moderate happiness by 1,145 times. Satisfaction with relationships with relatives and friends positively influences happiness, raising the probability by 1,166 and 1,124 times, and making individuals 1,139 and 1,115 times more likely to be moderately happy, respectively, compared to those who are moderately satisfied or dissatisfied. However, the presence of supportive relatives, friends, or neighbours during times of need (material or moral) does not significantly affect happiness levels.

Regarding satisfaction with public services, greater satisfaction with judicial and educational services significantly increases the likelihood of happiness by 1,070 and 1,066 times, respectively, and moderate happiness by 1,046 and 1,078 times, respectively. However, satisfaction with services provided by the SSI does not show a significant impact on individuals' happiness. During the COVID-19 pandemic, when layoffs and unemployment rose, the support and incentives offered by SSI were expected to positively influence individuals' perceptions of happiness by alleviating anxiety about meeting basic needs. Nevertheless, the psychological issues caused by the pandemic may have hindered this perception, leading to increased dissatisfaction with life.

The results for the expectation and hope variables that influence happiness indicate that individuals who are hopeful about their future are 3,360 times more likely to be happy and 2,095 times more likely to be moderately satisfied than those who lack hope. People with positive expectations about the economic conditions in Türkiye in the coming year are 1,303 times more likely to be happy and 1,189 times more likely to be moderately delighted than others. Positive expectations about the future are among the significant sources of happiness. However, expectations related to work or business prospects in Türkiye in the coming year do not have a statistically significant impact on happiness.

Changes in an individual's life over the past year also significantly influence happiness. Job loss and declining income in the past year reduced the likelihood of happiness by 0.817 and 0.757, respectively, and lowered the probability of experiencing moderate happiness by 0.779 and 0.903, respectively. Additionally, being in debt in the past year decreased the chances of moderate happiness by 0,869 times compared to being debt-free. The pandemic exerted substantial pressure on the labour market, leading to increased income loss and unemployment. Income reductions may have heightened individuals' concerns about financial security, prompting them to borrow and consequently become less happy.

The purchase of cheaper products in the previous year decreases the likelihood of moderate happiness by 0,821 times compared to those who did not buy more affordable products. The pandemic-related uncertainty might have affected the quality of the goods consumed, leading individuals to seek greater financial security and adopt a saving mindset. People with children in the past year are 1,268 times more likely to report moderate happiness compared to those without children. Having children during crises such as pandemics can strengthen family bonds and boost feelings of belonging and solidarity. Since individuals spent most of their time at home during the pandemic, caring for their children may have contributed to their happiness by providing emotional support.

4.4. Empirical Results Following the COVID-19 Pandemic

Table 5 shows the factors affecting personal happiness in Türkiye in the post-pandemic era.

Table: 5
Generalised Ordered Logit Estimation Results for the Post-COVID-19 Pandemic

Variables	Happy		Moderately Happy	
	Coefficient	Odds Ratio	Coefficient	Odds Ratio
Age	-0,006** (0,003)	0,994** (0,003)	0,001 (0,002)	1,001 (0,002)
Female	0,431*** (0,076)	1,539*** (0,116)	0,306*** (0,053)	1,358*** (0,072)
Married	0,711*** (0,076)	2,036*** (0,155)	0,606*** (0,056)	1,833*** (0,102)
Primary School	0,193 (0,144)	1,212 (0,174)	-0,404*** (0,107)	0,667*** (0,071)
Secondary School	0,397** (0,163)	1,487** (0,242)	-0,189 (0,120)	0,828 (0,099)
Higher School	0,470*** (0,165)	1,601*** (0,264)	-0,153 (0,120)	0,858 (0,103)

Worked	0,298*** (0,083)	1,347*** (0,111)	0,010 (0,058)	1,010 (0,058)
Middle-income Group	0,014 (0,153)	1,014 (0,155)	-0,070 (0,102)	0,932 (0,095)
High-income Group	0,074 (0,109)	1,076 (0,118)	0,018 (0,073)	1,018 (0,075)
Satisfied with Monthly Income	0,466*** (0,099)	1,594*** (0,157)	0,437*** (0,055)	1,547*** (0,085)
Relative Income	0,257*** (0,019)	1,293*** (0,025)	0,149*** (0,013)	1,161*** (0,015)
Satisfied with Health	0,342*** (0,078)	1,407*** (0,110)	0,662*** (0,058)	1,940*** (0,113)
Satisfied with Health Services	0,074 (0,076)	1,076 (0,082)	0,197*** (0,054)	1,218*** (0,066)
Having a Health Problem	-0,240** (0,094)	0,787** (0,074)	-0,006 (0,076)	0,994 (0,076)
Satisfaction with Social Life	0,344*** (0,048)	1,410*** (0,068)	0,226*** (0,036)	1,253*** (0,045)
Satisfaction with the Time Allocated	0,136*** (0,046)	1,146*** (0,053)	0,148*** (0,035)	1,160*** (0,041)
Satisfaction with Relatives Relationships	0,121** (0,049)	1,129** (0,056)	0,210*** (0,041)	1,233*** (0,051)
Satisfaction with Friends Relationships	0,062 (0,064)	1,064 (0,068)	0,171*** (0,057)	1,187*** (0,068)
Some People Help	0,221** (0,091)	1,247** (0,113)	0,052 (0,072)	1,053 (0,076)
Satisfaction with Judicial Services	0,097*** (0,027)	1,102*** (0,030)	0,022 (0,021)	1,023 (0,022)
Satisfaction with Education Services	0,059* (0,031)	1,061* (0,032)	0,058** (0,024)	1,060** (0,025)
Satisfaction with SSI Services	0,004 (0,030)	1,005 (0,030)	0,056** (0,024)	1,058** (0,026)
Hopeful about the Future	1,068*** (0,079)	2,909*** (0,229)	0,797*** (0,056)	2,218*** (0,124)
Work Conditions will be Better	-0,351** (0,155)	0,704** (0,109)	-0,083 (0,091)	0,921 (0,084)
Economic Conditions will be Better	0,379** (0,158)	1,461** (0,231)	0,226*** (0,086)	1,254*** (0,108)
In the Last Year, Lost Job	-0,351*** (0,133)	0,704*** (0,094)	-0,189* (0,113)	0,828* (0,094)
In the Last Year, Income Decreased	-0,078 (0,076)	0,925 (0,071)	0,019 (0,055)	1,019 (0,056)
In the Last Year, Got into Debt	-0,226*** (0,076)	0,798*** (0,061)	-0,274*** (0,055)	0,760*** (0,042)
In the Last Year, Had a Child	0,136 (0,226)	1,146 (0,258)	0,291** (0,142)	1,338** (0,190)
In the Last Year, Consumed Cheaper Products	0,106 (0,100)	1,112 (0,112)	-0,096 (0,061)	0,908 (0,056)
Year 2023	0,288*** (0,096)	1,334*** (0,128)	0,153** (0,065)	1,166** (0,076)
Constant	-4,012*** (0,371)	0,018*** (0,007)	-5,525*** (0,308)	0,004*** (0,001)
Observations	9,395	9,395	9,395	9,395
Pseudo R-squared	0,189	0,189	0,189	0,189
LR chi2	3461	3461	3461	3461
Prob> chi2	0	0	0	0

Note: Figures in brackets indicate standard errors. Significance levels: *** $p < 0,01$, ** $p < 0,05$, * $p < 0,1$.

The results demonstrate that the estimation outcomes of socio-economic and socio-demographic variables in the post-COVID-19 period align with findings from the broader economics of happiness literature. The data reveal that with each additional year of age, the likelihood of being happy decreases by a factor of 0,994, indicating a decline in happiness as individuals grow older. Females are 1,539 times more likely to report being happy and 1,358 times more likely to report being moderately happier than males. Similarly, married individuals are 2,036 times more likely to be satisfied and 1,833 times more likely to be

moderately delighted compared to singles. In terms of educational attainment, completing secondary and tertiary education significantly increases happiness. Individuals with secondary and tertiary education are 1,487 and 1,601 times more likely to report being happy, respectively, compared to those with no formal education. However, primary education does not exhibit a statistically significant effect on happiness. Job status also plays a role, with having worked the previous week increasing the likelihood of unhappiness by 1,347 times compared to those who did not work the previous week. This finding suggests that employment provides material and moral benefits that contribute to happiness.

In line with findings from the pandemic period, satisfaction with monthly income levels significantly boosts happiness. Individuals satisfied with their income are 1,594 times more likely to report being happy and 1,547 times more likely to be moderately delighted compared to others. Moreover, an increase in relative income levels raises the chances of being happy by 1,293 times and moderately happy by 1,161 times. These results highlight that social comparison with one's reference group is a significant source of information about happiness. People often assess their joy in relation to their reference group's circumstances. Such comparisons are vital for self-evaluation.

During the post-COVID-19 period, individuals who are satisfied with their health are 1,407 times more likely to report happiness and 1,940 times more likely to report moderate happiness than others. Satisfaction with healthcare services increases the probability of being moderately happy by 1,218 times compared to those who are moderately satisfied or not satisfied. However, unlike during the pandemic, experiencing a health problem in the last year reduces the likelihood of happiness by 0,787 times compared to individuals who did not face any health issues. This result may indicate that the lingering physical, psychological, and social impacts of COVID-19 continue to affect individuals. Those who have experienced COVID-19 may fear a recurrence of the illness. Anxiety about the future can diminish work productivity and motivation. Stress and dissatisfaction may also increase alongside the financial difficulties this situation causes.

As during the pandemic, increased satisfaction with social life significantly boosts the chances of happiness by 1,410 times and moderate happiness by 1,253 times. Satisfaction with time dedicated to oneself enhances the likelihood of happiness by 1,146 times and moderate happiness by 1,160 times. Personal time helps with mental relaxation by easing daily stress, while social connections strengthen a sense of belonging through external links, leading to higher life satisfaction and increased happiness. Moreover, greater satisfaction with relationships with relatives and friends raises the probability of moderate happiness by 1,233 and 1,187 times, respectively. This may be because relationships with family and friends allow individuals to receive emotional support during tough times and combat loneliness. Unlike during the pandemic, having access to supportive relatives, friends, or neighbours raises the chance of happiness by 1,247 times. When social isolation was severe after COVID-19, having a support network helped reduce fears about the future and fostered a sense of security. This likely increased the overall happiness by cultivating a positive outlook on life.

Similar to the COVID-19 period, increased satisfaction with judicial and educational services significantly increases the likelihood of happiness by 1,102 and 1,061 times, respectively. Unlike the COVID-19 period, satisfaction with the services provided by the Social Security Institution (SSI) raises the chance of moderate happiness by 1,058 times. This indicates that, after a difficult period like COVID-19, the SSI's support measures have reduced the lingering effects of the pandemic and helped individuals feel economically secure. This sense of security eased the post-pandemic process and enhanced the positive perception of happiness.

After the pandemic, optimism about the future increased the likelihood of being happy by 2,909 times compared to being not hopeful, while the chance of being moderately happy rose by 2,218 times. Following crisis periods such as the pandemic, positive expectations about the future can help individuals distance themselves from negative thoughts and lead to happier daily lives. People who hold positive expectations about Türkiye's economic future are 1,461 times more likely to be satisfied than others. After a period of heightened economic uncertainty, such as COVID-19, the belief that economic conditions will improve may help people recover from trauma and foster a stronger sense of happiness. Interestingly, the expectation that work and business market conditions in Türkiye will improve in the future decreases the likelihood of happiness by 0,704 times and does not significantly affect moderate happiness. This is surprising because hopeful expectations about the future are generally a strong motivator that promotes happiness.

In the post-pandemic period, losing a job and incurring debt over the past year decreased the probability of happiness by 0,704 and 0,798 times, respectively, and lowered the chances of moderate happiness by 0,828 and 0,760 times, respectively. Unlike during the COVID-19 period, reductions in income levels and consumption of inexpensive products in the past year do not have statistically significant effects on individuals' happiness. Following the lifting of COVID-19 restrictions, businesses reopened, service sector activity increased, and supply chains returned to normal. This boosted job opportunities and a sense of financial security. In light of these developments, individuals may view the decline in income and reduced consumption of cheaper products as a temporary situation. As during the pandemic, having children in the last year increases the odds of being moderately happy by 1,338 times compared to not having children. Having children also brought parents happiness after the pandemic, when hopes for the future increased.

5. Conclusion and Discussion

Various factors that influence individuals' life satisfaction and overall happiness are essential determinants of personal well-being. These factors, including economic, social, and environmental conditions, can vary across time and situations. The COVID-19 pandemic was an extraordinary event that significantly disrupted individuals' daily routines and lifestyles. During and after this period, the impact of factors such as employment status, health education, income satisfaction, and interpersonal relationships on happiness in

Türkiye showed considerable variability. This study examines these changes through a comparative analysis of LSS data covering 2020-2023.

The analysis found that females were happier than males in both periods. Similar results were observed in studies conducted in Türkiye (e.g., Caner, 2015; Eren & Aşıcı, 2017; Kanhoğlu & Dumludağ, 2022; Çomaklı-Duvar et al., 2025). The fact that females are happier than males may be related to differences in socialisation experiences, as emphasised by Nolen-Hoeksema and Rusting (1999). Accordingly, males are socialised not to experience or express affect as intensely as females. Plagnol and Easterlin (2008) demonstrate that females experience greater happiness early in adulthood, as they are more likely than males to fulfil their aspirations for family life. However, Montgomery (2022) and Blanchflower and Bryson (2024) have shown that males are happier than females. According to these researchers, women are generally less satisfied with various aspects of their lives, including income, education, health status, and democracy. Blanchflower and Bryson (2024) stated that, especially during the COVID-19 pandemic, since females typically took on childcare responsibilities due to school closures and faced more adverse labour-market conditions, the burden of the pandemic fell heavily on them, resulting in lower happiness levels than among males.

Both during and after the COVID-19 pandemic, married people experienced higher levels of happiness than single individuals. The financial and emotional support that spouses provided each other while managing the challenges of the pandemic may have strengthened family bonds. The increased time couples spent together during quarantine could have improved their relationships and contributed to their happiness. Beydağ and Dal (2024) also noted that the support married women in Türkiye received from their spouses during the pandemic enhanced their relationship happiness. Dilmaç et al. (2023) further found that the negative impact of state anxiety on relationship happiness among married individuals who engaged in family activities during COVID-19 in Türkiye was less than among those who did not. Solmaz et al. (2024) found that work-family conflict decreased during the pandemic in Türkiye, which boosted the life satisfaction of married people. However, Coşkun-Aktaş and Çiçek (2024) found that individuals' marital, family, and overall life satisfaction in Türkiye were negatively affected by financial stress during COVID-19.

It was found that completing secondary education during the COVID-19 period and continuing higher education after the pandemic contributed to individuals' happiness. While completing secondary education is often a step towards entering working life and pursuing higher education, completing higher education is frequently associated with personal development and improved career prospects. During the pandemic, such an achievement can reduce anxiety and foster a sense of security about the future. Following the uncertainties caused by the pandemic, completing education can bring happiness by providing a new direction in life. Büyükçolpan and Özdemir (2023) also demonstrated that learning skills play a significant role in happiness by reducing intolerance to uncertainty. Different outcomes have been reported in studies on education and happiness in the existing literature. While a higher level of education generally correlates with increased happiness (e.g., Frey

& Stutzer, 2002; Caner, 2015; Nikolaev, 2018; Polat & Kılıç, 2022; Çomaklı-Duvar et al., 2025), some studies suggest that education does not influence happiness (e.g., Cuñado & De Gracia, 2012; Eren & Aşıcı, 2017; Araki, 2022). Based on the findings of this study, it can be interpreted that individuals who enhance their knowledge and skills through education tend to be happier, as they feel more competent and economically secure.

In both periods, having employment was shown to influence happiness positively. Economic uncertainties and job losses increased during the pandemic period. Since working during and after this period provides financial security, it may have boosted trust and peace among individuals, contributing to their happiness. Alkan and Kavalcı (2023) also found that men working in the private sector during the COVID-19 period in Türkiye were more likely to be very happy or happy. Şehribanoğlu (2024) observed that in the post-COVID-19 period, factors such as job satisfaction and unemployment became more prominent in perceptions of happiness. Conversely, Alkan et al. (2024) demonstrated that wage-earners, whether salaried or casual employees in Türkiye, were more likely to be satisfied with their jobs during the pandemic.

In happiness studies, it is generally observed that an individual's happiness rises when their income increases relative to their reference group. Conversely, when income falls below the reference group, happiness declines (see McBride, 2001; Ferrer-i-Carbonell, 2005; Senik, 2009; Paul & Guilbert, 2013; Caner, 2015; Dumludağ et al., 2016; Önemli & Potter, 2021; Dumludağ & Gökdemir, 2022). Consistent with the existing literature, this study finds that, both during and after the COVID-19 pandemic, an increase in an individual's income compared to their reference group has a positive effect on their happiness. When an individual's situation surpasses that of the reference group, it positively influences their joy. Therefore, in addition to absolute income, relative income also plays a significant role in individuals' happiness.

Analyses conducted during and after the COVID-19 period have once again shown that health is among the most influential factors affecting happiness. In their study, Alkan and Kavalcı (2023) also found a positive correlation between overall health satisfaction and happiness levels among both females and males during the COVID-19 period in Türkiye. Similarly, Özmen et al. (2021) noted that individuals' fear of COVID-19 negatively impacted their perceptions of well-being in Türkiye. Aslan and Zengin (2022) demonstrated that individuals who reported their health status as good across Eastern European countries during the COVID-19 pandemic mainly lived in Türkiye; however, the health-related quality of life for those in quarantine was significantly lower.

Similar empirical findings were observed for variables related to social relations during and after the pandemic. Satisfaction with social life, personal time, and relationships with relatives and friends positively influences happiness. However, it is only in the post-COVID-19 period that the presence of individuals who can be relied upon for help when needed has a positive effect on happiness. This result is somewhat surprising. Economic hardships and increased social isolation during the pandemic prompted individuals to seek

more support. While financial assistance from friends or family members helped reduce their economic stress, emotional sharing strengthened them. Therefore, receiving both financial and emotional support during the pandemic is likely to alleviate financial worries and enhance happiness by decreasing feelings of loneliness.

In accordance with expectations, Kabasakal and Aktaş (2021) demonstrated in their study that support from family, friends, and a special person positively influenced domestic relations and cognitive consonance during the COVID-19 pandemic in Türkiye. Likewise, Özer et al. (2021) found that multidimensional social support (support from family, friends, and a special person) significantly reduced perceived stress levels in Türkiye. Erk and Fırat (2023) also noted that, during the COVID-19 pandemic in Türkiye, positive perceptions and support for family members and family integrity played a regulatory role in family relationships. According to Gui (2013) and Donati (2019), the support individuals provide to one another is a social need that fosters feelings of safety and happiness. They should develop positive relationships with their families and friends to satisfy these needs. Failure to meet socialisation needs can lead to negative emotions such as anxiety, loneliness, and pessimism. Therefore, establishing social relationships and feeling satisfied with them enhances individuals' well-being and happiness.

Satisfaction with public services was a key factor influencing happiness in both periods. Specifically, satisfaction with judicial and education services positively affected happiness levels. However, satisfaction with the SSI's services did not affect happiness during the COVID-19 period. During the pandemic, the extended isolation of employees from their workplaces and colleagues may have reduced their dedication to work and social interactions, leading to work-related stress. This could have resulted in feelings of loneliness, weakened social bonds, diminished the influence of SSI services on individuals, and increased unhappiness. Polat and Kılıç (2022) also indicated that the proportion of people reporting happiness and feeling very happy was relatively low among those who believed public services were insufficient during the COVID-19 pandemic in Türkiye. Similarly, Gezer and Aysan (2023) found that individuals with low satisfaction with public services in Türkiye were more likely to experience unhappiness. International studies further emphasise the link between satisfaction with health services and personal happiness during the COVID-19 period (see Dorji, 2020; DiCosimo & Kelly, 2023; Easterlin & O'Connor, 2023).

Several studies show that positive expectations for the future boost happiness (e.g., Stutzer 2004; Van Praag & Ferrer-i-Carbonell, 2008; Bartolini & Sarracino, 2018; Önemli & Potter, 2021; Kanlioğlu & Dumludağ, 2022). In this study, positive expectations for the future and optimism about economic prospects increased the chances of being happy during and after the COVID-19 pandemic. Mansur and Doğuç (2021) observed that the general hope levels of university students studying in Türkiye during the COVID-19 period were above average. Satici et al. (2023) also found that individuals who show resilience to stress in the fight against COVID-19 and believe they can find ways to cope will overcome the fear of COVID-19, thereby enhancing their subjective happiness.

The findings show that expectations about employment or work status during the COVID-19 period are not significantly associated with individuals' happiness. This result is expected. As in many countries, Türkiye experienced a decline in demand and production capacity in most sectors due to the pandemic. Employers reduced their existing workforces and halted new hiring due to economic uncertainty. Such a crisis environment might have negatively affected individuals' future job expectations. In his study, Güven (2021) found that negative expectations of academics in Türkiye regarding their profession during the pandemic were among the key factors impacting their quality of life. Similarly, Yalman et al. (2021) demonstrated that the COVID-19 pandemic affected the employment sector and expectations of change in Türkiye.

Life changes in the previous year also significantly impacted happiness. Job loss and debt accumulation during and after the pandemic negatively affected happiness. However, purchasing cheaper products only after the pandemic did not influence happiness. During the pandemic, buying cheaper products made individuals unhappy. It is understood that the financial difficulties experienced during COVID-19 led people in Türkiye to buy more affordable products and caused unhappiness. Timur and Akay (2017) similarly found that buying cheaper products and being in debt reduced happiness levels in both genders in Türkiye during the previous year. Ertürk and Koç (2021) emphasised that individuals who lost their jobs and accumulated debts in the last year in Türkiye were unhappy. Özmen et al. (2021) demonstrated that unemployed individuals living in Türkiye during the pandemic experienced low levels of happiness and life satisfaction, while their fear of COVID-19 was high. Copur and Dogan (2023) revealed that a good household economic situation during the COVID-19 pandemic was a key factor for life satisfaction.

Having children during both periods in the last year has been associated with greater happiness. Uğur (2018) also found that having two children is positively correlated with happiness in Türkiye. According to Margolis and Myrskylä (2011), becoming a parent increases solidarity, love, and satisfaction in couples' relationships and strengthens family ties. Kohler (2015) stated that as parents age, children become a source of financial and emotional support. When non-family institutions providing old-age security are inadequate, as is often the case in developing countries, children can act as social protection or insurance in old age. Ramia and Voicu (2022) showed that, in Europe, older adults becoming parents would bring them happiness by providing the necessary care in case of illness. Duran and Ömeroğlu (2022) found that parents in Türkiye engaged in various activities with their children at home during the pandemic; however, they still experienced negative emotions and effects. Usluoglu et al. (2023) noted that the most significant positive impact of the COVID-19 pandemic on social life in Türkiye was observed in relationships, such as spending time with family and having enjoyable moments with spouses and children.

In conclusion, the study shows that the COVID-19 pandemic, which spread rapidly worldwide, and the subsequent recovery process significantly affected the factors shaping happiness in Türkiye. As a result, happiness levels varied among individuals, reflecting the profound social, economic, and psychological impacts of this extraordinary period.

6. Recommendations

This study presents the following recommendations to policymakers to enhance individuals' happiness in Türkiye during crisis periods that significantly impact daily life, such as the COVID-19 pandemic and its subsequent recovery phase. Firstly, employers can promote short-time working allowances and flexible working arrangements to ensure employees retain their jobs. After the pandemic, government-supported employment programmes can be established to boost hiring by employers. Findings indicate that employees are happier than the unemployed. In this regard, skill development and vocational training programmes can be launched to help unemployed individuals prepare for new job opportunities post-pandemic. Additionally, low-interest loans can help those who have lost their jobs start their own businesses. During the COVID-19 period, the SSI provided financial aid to employers and insured workers through the Employment Return Incentive scheme. Continuing and expanding these supports can foster positive expectations for future employment prospects in Türkiye, thereby contributing to individuals' happiness.

The study shows that satisfaction with education and healthcare services during and after the COVID-19 pandemic is vital for personal happiness. In difficult times like a pandemic, investments can be made to improve the resilience of the healthcare system, ensuring all citizens can access healthcare services, and to bolster the supply chain for medical equipment and pharmaceuticals. To make healthcare more accessible, the government can also cover insurance premiums. Throughout the pandemic, the SSI did not charge extra fees for diagnosing and treating COVID-19 cases and covered the costs of medication and medical supplies for high-risk groups. In the post-pandemic period, these supports can be expanded. Similarly, when restricted from leaving home, the necessary technology for online education can be provided to ensure access in areas with poor internet infrastructure. For example, expanding fibre optic networks through collaboration with the private sector can be beneficial. During the COVID-19 period, the Ministry of National Education distributed tablets with internet access to support students in need, but this was not enough for all. To prevent this, free digital content can be offered on online platforms like EBA. Consequently, individuals' satisfaction with health and education services, and their overall happiness, can be improved.

According to the findings, losing one's job and experiencing income decline during the COVID-19 pandemic have made individuals unhappy. In such cases, financial support can be offered to unemployed individuals who have lost their income to help ease their economic hardship. For instance, social support programmes can be developed to help them meet basic needs such as food and shelter. Household expenses can be reduced by deferring credit repayments and providing government assistance for utility bills. Additionally, lowering income tax could reduce the financial strain on individuals and boost their happiness.

The study indicates that marriage and satisfaction with social life, family, relatives, and friends are essential for individuals' happiness. However, the COVID-19 pandemic has

decreased individuals' contact with their immediate environment and led them to live in a socially isolated life. Social support programmes can be developed to keep individuals in touch and help them cope with isolation, thereby preventing them from experiencing the same problems. For example, online social activity platforms, such as music and language courses, can be created. Training and support programmes can be organised for married individuals to improve their communication and problem-solving skills during periods when family members must stay home all day. Moreover, family counselling services can be expanded to overcome issues within families and strengthen family ties.

7. Limitations

The findings of this study offer valuable insights into the happiness of individuals living in Türkiye during the COVID-19 pandemic. They also enable an examination of how the factors influencing happiness changed during and after the pandemic. In this regard, the study serves as a valuable resource for researchers interested in the economics of happiness. However, there are some limitations. The first limitation is that the LSS conducted by TurkStat during the pandemic did not include questions about whether respondents had contracted COVID-19. Consequently, the impact of the coronavirus on happiness could not be assessed.

The second limitation concerns the challenge of measuring long-term effects and establishing causal direction with cross-sectional data. When individuals report unhappiness, their perceptions of all assessed aspects may be negative. For instance, unhappy individuals might feel even more hopeless about their future. Consistent with the existing literature, it is assumed that causality flows from variables to happiness, so the estimation results should be interpreted as indicators of correlation rather than causal relationships.

Another limitation is the lack of data on respondents' psychological states in the LSS. As a result, the link between individuals' mental health and their happiness, especially during the pandemic, could not be examined. The COVID-19 pandemic led to increased stress and anxiety caused by concerns about livelihoods, fear of infection, and uncertainty about the future. The widespread psychological disorders and their long-term consequences likely reduced personal happiness. Additionally, the existing dataset does not include information on respondents' occupations. For example, certain groups, such as food and construction workers, farmers, and artisans, faced financial hardships because they could not work from home. Healthcare workers, meanwhile, experienced prolonged stress due to their demanding working conditions. These occupational challenges negatively affected the overall satisfaction of individuals unable to work remotely. These limitations may represent a potential area for future research.

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Appendix: 1

Test Results of the Parallel Regression Assumption for the COVID-19 Period

	Chi2	d.f	Prob > Chi2
Wolfe Gould	175.2	31	0.000
Brant	171.8	31	0.000
Score	173.4	31	0.000
Likelihood ratio	174.8	31	0.000
Wald	176	31	0.000

Based on all the test results in Appendix 1, it can be stated that the parallel regression assumption is not satisfied for the COVID-19 pandemic period ($p < 0.001$).

Appendix: 2

Test Results for the Parallel Regression Assumption in the Post-COVID-19 Period

	Chi2	d.f	Prob > Chi2
Wolfe Gould	161.4	31	0.000
Brant	159.3	31	0.000
Score	161.9	31	0.000
Likelihood ratio	161.8	31	0.000
Wald	166.6	31	0.000

In Appendix Table 2, it is observed that the parallel regression assumption is not satisfied for the post-COVID-19 period, as $p < 0.001$ in all tests.

Altun-Erdoğan, K. (2026), “Determinants of Happiness in Türkiye during and after the COVID-19 Pandemic”, *Sosyoekonomi*, 34(67), 175-201.

Analysis of the Foreign Trade Performance of Transportation Types Using Multi-Criteria Decision-Making Methods: The Case of Türkiye¹

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Taşımacılık Türlerinin Dış Ticaret Performansının Çok Kriterli Karar Verme Yöntemleri ile Analizi: Türkiye Örneği²

Abstract

This study examines the foreign trade performance of different modes of transport in Türkiye over the period 2014-2023, employing Multi-Criteria Decision-Making methods, specifically the LOPCOW and CoCoSo techniques. The results of the LOPCOW analysis indicate that the foreign trade balance is the most important criterion across all transportation modes. The CoCoSo analysis suggests that the best-performing years are 2022 for road and maritime transportation, 2023 for railway transportation, 2021 for air and overall transportation, and 2017 for other transportation types.

Keywords : Foreign Trade, Transportation Types, LOPCOW, CoCoSo, Performance Analysis.

JEL Classification Codes : L90, L91.

Öz

Bu araştırmada; Türkiye'nin 2014-2023 yılları arasındaki 10 yıllık dönemi kapsayan taşıma türlerine göre dış ticaret performansı Çok Kriterli Karar Verme Yöntemlerinden LOPCOW ve CoCoSo Teknikleri ile analiz edilmiştir. LOPCOW Analizi sonucunda dış ticaret dengesi, tüm taşıma türlerinde en yüksek önem derecesine sahip kriter olarak belirlenmiştir. CoCoSo Analizi sonucunda ise karayolu taşımacılığı ve denizyolu taşımacılığında 2022 yılı, demiryolu taşımacılığında 2023 yılı, havayolu taşımacılığı ve toplam taşıma türlerinde 2021 yılı ve diğer taşıma türleri taşımacılığında 2017 yılı en iyi performansa sahip yıllar olarak tespit edilmiştir.

Anahtar Sözcükler : Dış Ticaret, Taşımacılık Türleri, LOPCOW, CoCoSo, Performans Analizi.

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1. Introduction

Since the dawn of humanity, the concept of trade has served the demands of individuals (Aydın, 2023: 2). In ancient times, trade took place along the Silk Road and the Spice Route, acting as vital arteries in a world where commercial exchanges extended over thousands of miles (Usul, 2023: 1784). In the past, needs were met through barter, whereas today the use of digital currency is seen as an indicator of development and change in trade (Yücekaya & Özçimbit, 2023: 330). It is well known that the invention of the steam engine accelerated both production and transportation, enabling the movement of larger loads across greater distances (Güdek, 2023: 1136). This development has made it easier and faster to transport larger loads, reinforcing the idea that trade and transportation are closely connected.

The concept of foreign trade originated with the start of commerce not only between nations but also across entire continents. Foreign trade is usually seen as the business of selling domestically produced goods and services in excess of domestic demand to foreign consumers, or of acquiring goods and services from abroad that are not produced locally or are produced only in limited quantities (Öztürk, 2003: 121). Put simply, foreign trade involves the buying and selling of goods and services between two or more countries (Batmaz, 2023: 12). All activities related to importing and exporting goods are part of foreign trade (Özmen, 2014: 46). There are many ways foreign trade benefits the national economy. It provides the government with a significant source of revenue and helps address market inefficiencies. Trading with other nations clearly promotes international development and offers numerous social benefits. Additionally, it enhances diplomatic relations with other countries. Therefore, plans for sustainable economic growth should be grounded in the foundation that foreign trade provides.

The concepts of foreign trade and logistics are mutually nourishing and complementary systems that, when integrated, form a well-functioning foreign trade structure. Today, the rapid pace of technological advancement, the growing global population, and the rise of new urban areas demand that commercial and transportation activities be conducted more efficiently (Demir & Tanyıldızı, 2017: 96-97).

The main modes of transport that shape efficient international trade are road, maritime, air, and rail. This study concentrates on the variables of Türkiye's foreign trade. The dataset spans 2014 to 2023 and includes components such as exports and imports, foreign trade balances, trade volumes, and coverage ratios relevant to Türkiye's foreign trade. The research utilises the LOPCOW and CoCoSo techniques. The originality of this study lies in the integrated approach to the dataset and the application of recently developed analytical techniques, thereby enriching the literature. Analysing how Türkiye's exports and imports vary across modes of transportation over time can assist decision-makers and policymakers in devising more effective strategic plans for foreign trade and logistics from multiple perspectives. They can also monitor progress toward the Sustainable Development Goals and determine the most effective ways to support economic growth.

2. Literature Review

Today's global economy relies on two key and inseparable elements: foreign trade and logistics. Halaszovich and Kinra (2020) asserted that transportation systems positively influence trade and foreign direct investment, with logistics being essential to economic growth, especially in these areas. In their 2021 study, Ma et al. found that logistics infrastructure not only supports the formation of international trade but also acts as a regional equaliser, reducing development disparities across regions within a country. As Górecka et al. (2021) pointed out, the better logistics perform, the more energy trade is facilitated; improved logistics also contribute to a more secure energy supply, aiding the transition to domestic and renewable resources. The work of Song and Lee (2022) showed that growth in logistics services directly impacts the expansion of international trade, and that a country's logistics development is a necessary condition for increasing its trade volume with other nations. Zhao et al. (2023) stated that developing the logistics sector can not only boost trade volume but also improve a country's position within the global value chain. Overall, these findings demonstrate that adopting a comprehensive, well-ordered system of foreign trade and logistics is much more likely to promote the sustainable development of international trade.

2.1. Literature Review on International Trade

The literature review shows that most research on foreign trade focuses on the relationship between trade and economic growth. Helpman (1999) noted that factors such as economies of scale and product differentiation are important in determining international trade, emphasising that theories of international trade may need further development. The research by Daudin et al. (2006) sheds light on how vertical transformation in international trade could promote economic growth, arguing that the economy requires further structural changes to achieve a modest increase in the ratio of foreign trade to GDP. Çolpan-Nart (2010) found that the Customs Union increased the total trade volume between countries. Soukiazis and Antunes (2011) and Purnama and Yao (2019) highlighted the importance of external trade for regional growth.

Foreign direct capital is one of the most crucial building blocks of foreign trade growth; it enhances export potential, thereby enabling a country to integrate more effectively into the global economy. In a 2009 study, Altıntaş found that foreign direct capital not only increased exports but also imports. An alternative perspective is offered by Esener & Yereli (2025), who argued that it was not foreign direct investment that influenced a country's economic growth, but rather a country's economic growth that attracted foreign direct investment.

Genuinely sustainable foreign trade policies promote long-term growth, enabling nations to become increasingly competitive in the global economy. According to Sezgin (2009), foreign trade growth during specific periods was much faster than gross national product growth, and foreign trade had a very significant and influential impact in those years.

Şerefli (2016) identified a causal relationship between foreign trade and economic growth. Aytaç & Akduğan (2012) found a relationship between imports, exports, and GDP. They discovered that exports increased GDP. Kızıldere (2020) suggested an alternative sequence among these variables, indicating that causality runs from economic growth to imports and from exports to imports. The study also noted that economic growth was associated with higher exports. Although Ersungur and Doru (2014) demonstrated a bidirectional relationship between foreign trade and economic development, Korkmaz and Aydın (2015) further revealed a bidirectional relationship between imports and economic growth. According to Akcan and Metin (2018), exports and imports drove economic growth before the global crisis, whereas in the post-crisis period, imports had no significant causal effect on economic growth. Ata and Eren (2017) and Ganiev (2015) argued that the impact of imports and exports on economic growth was largely positive, whereas Madzínová (2011) and Purnama & Yao (2019) identified a long-term relationship between foreign trade and economic growth, with foreign trade having notable effects. These findings suggest that foreign trade, including both exports and imports, positively affects economic growth. However, the outcomes are not entirely consistent. Whether foreign trade benefits a particular country at a given time depends on the types of traded goods, the mode of trade, and the analytical methods employed.

2.2. Literature Review on Logistics

The body of research concerning transportation modes tends to focus on road transport. Within that area, it primarily emphasises factors such as economic growth, the competitive positioning of road transport, and passenger preferences when choosing to travel by road. Although Özer et al. (2006) found that demographic and socioeconomic factors played a decisive role in determining passenger preferences, Ivanova and Masarova (2013) stated that road infrastructure had the "broadest and heaviest impact" of any factor on an economy's growth and competitiveness. By establishing a stronger link between sectoral development and economic growth, Macit (2020) argued that road freight transport was significantly associated with trade and that this relationship was also reflected in GDP.

Navas-Anguita et al. (2019) and Merkisz-Guranowska et al. (2013) highlighted the need to assess road transportation not only from an economic perspective but also with respect to environmental and energy considerations. Kiziltan et al. (2023) indicated that renewing the vehicle fleet would have produced several positive outcomes beneficial for the economy, public health, and the environment.

Various aspects of railway transportation, such as sustainable energy use, economic growth, and efficiency, are examined in the literature. Emirkadı & Balcı (2023) provided substantial evidence linking road and railway transport to economic growth. Kabasakal & Solak (2011) discussed the efficiency of railway transport and ways to improve it. Nazir (2019) observed the technical and economic feasibility of meeting railways' energy needs with solar power, highlighting that the use of renewable energy significantly supports

sustainability. Bayane et al. (2020) stated that developing the railway system would have stimulated long-term economic growth and trade.

Research on air transportation indicates that it plays a strategic and increasingly important role in economic growth, competition, and job creation. Kiracı (2018) found a strong causality between airline demand and economic growth. Kundak & Aktop (2018) noted that air transportation offers significant opportunities for employment and economic development. Eren et al. (2020) demonstrated that air transportation is strongly associated with economic growth. Additionally, Altuntaş & Kılıç (2021) found that air passenger traffic has a strong bilateral causality with economic growth. According to Fu et al. (2010), liberalisation policies have boosted competition within the aviation industry. Vennix (2017) states that the air transportation sector has had a positive economic impact. Heshmati et al. (2018) aimed, however, to examine airline efficiency.

In maritime transportation, factors such as economic growth, sustainability, efficiency, and safety may appear to be at odds. Fratila et al. (2021) found that maritime transportation is positively associated with economic growth, whereas Jin et al. (2022) found that optimising maritime transportation systems is an effective means of enhancing sustainability and efficiency. Psaraftis & Kontovas (2010) highlighted the importance of reducing greenhouse gas emissions in marine transportation for environmental benefits. Rawson & Brito (2023) found that machine learning and big data techniques in the maritime sector yield more reliable estimates of accident probability and severity.

In the literature, transportation modes are predominantly treated as single modalities (e.g., road, air, and sea) in relation to concepts such as foreign trade, economic growth, the environment, and sustainability. This study addresses a gap in the literature by comprehensively examining all transportation modes, both individually and collectively, and integrating these analyses to highlight how this research differs from prior work in the field. Furthermore, it has been identified that analyses such as Panel Data Analysis, Granger Causality Test, VAR Analysis, Johansen Cointegration Test, and ARDL Bounds Test are commonly employed in research concerning foreign trade and logistics topics (Altıntaş, 2009; Soukiazis & Antunes, 2011; Aytaç & Akduğan, 2012; Ganiev, 2015; Boakye & Gyamfi, 2017; Purnama & Yao, 2019; Fratila et al., 2021; Esener & Yerehi, 2025). Most existing studies aim to determine the directionality of the variables examined. The application of MCDM methods, recently introduced to this area, offers a strong analytical tool based on quantitative weighting for assessing the foreign trade performance of transportation modes. Consequently, identifying the relative importance of variables and their weights in the decision-making process distinguishes this research from other works in the literature.

3. Methodology

The decade-long foreign trade performance of Türkiye has been evaluated across transportation modes using MCDM methods. The research is divided into several sections.

It begins by stating the study's purpose and scope, then explains why the research is important. This is followed by a discussion of the study's limitations. Next, it describes the data and variables employed. Afterwards, the methodology is outlined, and finally, the research findings are presented.

3.1. Purpose and Scope of the Research

This study aims to achieve two objectives: first, to analyse ten years of Türkiye's foreign trade data by mode of transportation; and second, to comprehensively evaluate the data. The techniques employed for this MCDM analysis are LOPCOW and CoCoSo.

Research Questions:

1. To determine the years in which Türkiye experienced the best and worst foreign trade performance in road transportation from 2014 to 2023.
2. To identify the years in which Türkiye experienced the best and worst foreign trade performance in railway transportation from 2014 to 2023.
3. To determine the years in which Türkiye experienced the best and worst foreign trade performance in air transportation between 2014 and 2023.
4. To identify the years in which Türkiye experienced the best and worst foreign trade performance in maritime transportation between 2014 and 2023.
5. To identify the years in which Türkiye experienced its best and worst foreign trade performance in other transportation types between 2014 and 2023.
6. To identify the years in which Türkiye experienced the best and worst overall foreign trade performance across all transportation types from 2014 to 2023.

Performance is essential not only for achieving set objectives and maintaining success (Karaman, 2009: 411) but also for monitoring failures, understanding their causes, and implementing necessary measures (Atukalp, 2019: 216). High performance success confers a competitive advantage both in national and international markets (Karcioğlu et al., 2020: 361). Therefore, this research is based on the hypothesis that assessing foreign trade performance can clearly highlight a country's strengths and weaknesses and serve as an effective method for comparing its processes of change and development. Analysing foreign trade performance annually by transportation types is believed to offer a preliminary opportunity to identify factors that enhance or hinder success at the micro level for companies and at the macro level for countries.

3.2. Importance of the Research

This research is necessary because it examines key concepts in international trade and transportation that could promote sustainable economic development and growth.

3.3. Limitations of the Research

This research is limited by the dataset used, the variables considered, the time period, and the analytical methods applied. The dataset, variables, and methods were selected within a specific timeframe and scope in accordance with the study's objectives. The study's limitations include a lack of a detailed examination of external shocks, such as the pandemic, and of regional differences in transportation modes.

3.4. Data and Variables Used in the Research

To construct the dataset, the foreign trade performance of Türkiye's various transportation modalities was first evaluated. Annual performance assessments were performed using foreign trade data (exports, imports, trade balance, trade volume, and trade coverage ratio). Consequently, actual export and import data, sourced from the Turkish Statistical Institute (TSI), were used to calculate the score points. The study employed an extensive dataset, which, because the TSI data are pre-audited, presented in standard formats, and show no apparent quality concerns, can be used without modification or the addition of any missing components.

3.5. Methodology of the Research

The multitude of techniques embedded within MCDM can be seen as a spectrum centred around the core process of modelling maximising utility (Kocadüz, 2023: 37). They are practical problem-solving tools and are also suitable for identifying the most favourable alternative within a specific objective framework using several techniques to achieve that result (Süzülmüş & Polat, 2022: 26; Mercan, 2023: 6-8). MCDM facilitates the pursuit of the best decision among the given alternatives and arranges them according to predetermined goals (Akginel, 2019: 24). In this investigation, the LOPCOW method was utilised for criteria weighting and the CoCoSo method for ranking the alternatives.

3.5.1. LOPCOW (Logarithmic Percentage Change-driven Objective Weighting) Method

The formulas used in the application phase of the method include the following variables (Ecer & Pamucar, 2022: 4-6; Lukic, 2023: 107-112; Ayçin, 2023: 480-481; Dhruva et al., 2024: 75-82; Rong et al., 2024: 23-27; Simic et al., 2023: 5-8). Developed by Ecer and Pamucar in 2022, the LOPCOW method has a distinctive way of assigning weights to the criteria being assessed (Ecer & Pamucar, 2022: 3; Kahreman, 2023: 1). Unlike some other weighting methods, LOPCOW employs a combination of the standard deviation and the percentage values of the criteria to produce objective criterion weights (Gülcemal & İzci, 2024: 122). The LOPCOW method was chosen for application in this study due to its ability to handle logarithmic change rates, its proven track record of generating weights that give more importance to criteria showing greater variation, and, perhaps most notably, its capacity to produce weights without bias from the decision-maker (Rong et al., 2024: 4).

Stages of the LOPCOW Method

The LOPCOW Method comprises four stages:

Stage 1: Formation of the Initial Decision Matrix

(1). The decision matrix, with m alternatives and n criteria, is generated using Formula

$$BKM = \begin{matrix} & C_1 & C_2 & \cdots & C_n \\ \begin{matrix} A_1 \\ A_2 \\ \vdots \\ A_m \end{matrix} & \begin{bmatrix} X_{11} & X_{12} & \cdots & X_{1n} \\ X_{21} & X_{22} & \cdots & X_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ X_{m1} & X_{m2} & \cdots & X_{mn} \end{bmatrix} \end{matrix} \quad (1)$$

Stage 2: Normalisation of the Initial Decision Matrix

The elements in the decision matrix were normalised by assigning values within the range $[0,1]$, as shown in Formula (2).

$$R = \begin{matrix} & C_1 & C_2 & \cdots & C_n \\ \begin{matrix} A_1 \\ A_2 \\ \vdots \\ A_m \end{matrix} & \begin{bmatrix} r_{11} & r_{12} & \cdots & r_{1n} \\ r_{21} & r_{22} & \cdots & r_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ r_{m1} & r_{m2} & \cdots & r_{mn} \end{bmatrix} \end{matrix} \quad (2)$$

The criteria for benefit maximisation and cost minimisation were determined using Formulas (3) and (4), respectively.

$$r_{ij} = \frac{X_{ij} - \min X_{ij}}{\max X_{ij} - \min X_{ij}} \quad (3)$$

$$r_{ij} = \frac{\max X_{ij} - X_{ij}}{\max X_{ij} - \min X_{ij}} \quad (4)$$

Stage 3: Calculation of Percentage Values for Each Criterion (PV_{ij})

The mean square values of all percentages for each criterion, calculated using Formula (5), are determined to fill gaps caused by data deficiencies.

$$PV_{ij} = \left| \ln \left(\frac{\sqrt{\frac{\sum_{i=1}^m r_{ij}^2}{m}}}{\sigma} \right) \cdot 100 \right| \quad (5)$$

In the formula, the standard deviation is represented by σ , while m indicates the decision alternative.

Stage 4: Obtaining Objective Significance Weights for the Criteria

In the final stage, the objective weights are determined using the PV_{ij} values identified in the earlier stages, following the method outlined in Formula (6).

$$w_j = \frac{PV_{ij}}{\sum_{i=1}^n PV_{ij}} \quad (6)$$

3.5.2. CoCoSo (Combined Compromise Solution) Method

The CoCoSo Method conducts a comprehensive analysis of potential compromise solutions for decision-makers (Popović, 2021: 81). It outperforms other integrated and compromise methods in resolving differences among decision-makers and more effectively identifies, in terms of resolution, the compromise solutions needed when making overall judgments (Wang et al., 2022: 7; Chen et al., 2022: 2-4). It combines the advantages of arithmetic means through a hybrid approach (Lai et al., 2020: 414-415) and merges simple additive weighting with an exponential multiplication model. The CoCoSo method is preferred for its innovative integration of multiple aggregation strategies, making it well-suited to translating preferences from ranking results. This is especially useful when conducting a holistic analysis that combines various methods. CoCoSo's capacity to rank alternatives with nuance makes it particularly valuable for decision-making scenarios. Its logical robustness in supporting decision-makers also makes it highly appropriate for analysis (Khan & Haleem, 2021: 358-359).

The variables included in the formulas used during the application phase of the method are as follows (Yazdani et al., 2019: 2507; Ayçin, 2023: 434-436; Wang et al., 2022: 7-8).

Stages of the CoCoSo Method

The CoCoSo Method comprises five stages:

Stage 1: Formation of the Decision Matrix

The decision matrix, comprising m alternatives and n criteria, is computed using Formula (7) and is presented below.

$$X = \begin{matrix} & \begin{matrix} C_1 & C_2 & \cdots & C_n \end{matrix} \\ \begin{matrix} A_1 \\ A_2 \\ \vdots \\ A_m \end{matrix} & \begin{bmatrix} X_{11} & X_{12} & \cdots & X_{1n} \\ X_{21} & X_{22} & \cdots & X_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ X_{m1} & X_{m2} & \cdots & X_{mn} \end{bmatrix} \end{matrix} \quad (7)$$

In this formula, the x_{ij} values denote the j -th criterion related to the i -th alternative.

Stage 2: Normalisation of the Decision Matrix

The normalisation process for the elements in the decision matrix is performed by mapping values to [0,1], yielding the arrangement shown in Formula (8).

$$X = \begin{matrix} & C_1 & C_2 & \dots & C_n \\ \begin{matrix} A_1 \\ A_2 \\ \vdots \\ A_m \end{matrix} & \begin{bmatrix} r_{11} & r_{12} & \dots & r_{1n} \\ r_{21} & r_{22} & \dots & r_{2n} \\ \vdots & \vdots & \vdots & \vdots \\ r_{m1} & r_{m2} & \dots & r_{mn} \end{bmatrix} \end{matrix} \quad (8)$$

In the normalisation process, maximisation criteria are calculated using Formula (9), while minimisation criteria are addressed using Formula (10).

$$r_{ij} = \frac{X_{ij} - \min X_{ij}}{\max X_{ij} - \min X_{ij}} \quad (9)$$

$$r_{ij} = \frac{\max X_{ij} - X_{ij}}{\max X_{ij} - \min X_{ij}} \quad (10)$$

Stage 3: Calculation of (S_i) and (P_i) Values

The total weighted comparable index value S_i and the power-weighted comparability index value P_i are calculated as shown in Formulas (11) and (12), respectively.

$$S_i = \sum_{j=1}^n (w_j r_{ij}) \quad (11)$$

$$P_i = \sum_{j=1}^n (r_{ij})^{w_j} \quad (12)$$

Additionally, the w_j value in this formula indicates the degree of significance weight of the j-th criterion.

Stage 4: Calculation of Relative Performance of Alternatives

The values of the options at this stage are determined using three distinct evaluation strategies outlined in Formulas (13-15).

$$k_{ia} = \frac{P_i + S_i}{\sum_{i=1}^m (P_i + S_i)} \quad (13)$$

$$k_{ib} = \frac{S_i}{\min_i S_i} + \frac{P_i}{\min_i P_i} \quad (14)$$

$$k_{ic} = \frac{\lambda(S_i) + (1-\lambda)(P_i)}{\lambda \max_i S_i + (1-\lambda) \max_i P_i} \quad (15)$$

Formula (13) calculates the arithmetic mean of the WSM and WPM values, while Formula (14) sums the relative values of WSM and WPM compared to the best, and Formula (15) is used to determine the balanced optimisation of WSM and WPM model scores.

Although the literature generally adopts the value of “ λ ” as 0.50, a different λ parameter may be chosen by the decision-maker.

Stage 5: Ranking of Alternatives

In the final stage, ranking is conducted using Formula (16), and based on the results, the k_i criteria are ordered from highest to lowest, with the highest value corresponding to the best alternative.

$$k_i = (k_{ia} + k_{ib} + k_{ic})^{\frac{1}{3}} + \frac{1}{3}(k_{ia}k_{ib}k_{ic}) \quad (16)$$

4. Findings of the Research

The research findings are presented under two headings: the LOPCOW Method and the CoCoSo Method.

4.1. Findings of the LOPCOW Method

The LOPCOW Method was employed to analyse Türkiye’s ten-year foreign trade data by transportation mode, with criterion weights assigned to road, railway, air, maritime, and other modes, as well as to the overall transportation types. The results are presented in tabular form, with the steps of the LOPCOW analysis for road transportation shown in Tables 1, 2, 3, and 4. The objective significance weights for the foreign trade performance criteria for railway, air, maritime, other transportation types, and the total of transportation types are presented in Table 5.

The stages for determining the criterion weights for Türkiye’s ten-year foreign trade data related to road transportation, using the LOPCOW Method, are summarised in the tables below. Foreign trade data on road transportation was used to build the decision matrix, as shown in Table 1, employing Formula (1).

Table: 1
Road Transportation Decision Matrix

Criteria Directions	Export	Import	Foreign Trade Balance	Foreign Trade Volume	Foreign Trade Coverage Ratio
Criteria / Years	Max	Max	Max	Max	Max
2023	83066065.92	66942046.74	16124019.17	150008112.7	124.0865345
2022	78837774.67	59447024.84	19390749.82	138284799.5	132.618537
2021	68749375.68	48896681.49	19852694.19	117646057.2	140.601312
2020	53127587.69	41883476.8	11244110.88	95011064.49	126.8461736
2019	54461859.56	37177011.92	17284847.65	91638871.48	146.4933752
2018	52222467.59	39129379.96	13093087.63	91351847.56	133.4610148
2017	50988407.8	40374083.04	10614324.76	91362490.85	126.2899463
2016	49537436.35	36716500.27	12820936.08	86253936.62	134.9187313
2015	51946112.73	37840931.75	14105180.98	89787044.48	137.2749304
2014	61133175.85	40577283.08	20555892.78	101710458.9	150.6586228

The import and export data by year are shown in Table 1. The data on foreign trade performance should be as focused as possible. The normalisation matrix for road

transportation has been calculated using Formula (2) and Formula (3) and is presented in Table 2.

Table: 2
Road Transportation Normalised Decision Matrix

Criteria Directions	Export	Import	Foreign Trade Balance	Foreign Trade Volume	Foreign Trade Coverage Ratio
Criteria / Years	Max	Max	Max	Max	Max
2023	1.0000	1.0000	0.5542	1.0000	0.0000
2022	0.8739	0.7520	0.8828	0.8161	0.3211
2021	0.5730	0.4030	0.9293	0.4924	0.6215
2020	0.1071	0.1709	0.0633	0.1374	0.1039
2019	0.1469	0.0152	0.6710	0.0845	0.8432
2018	0.0801	0.0798	0.2493	0.0800	0.3528
2017	0.0433	0.1210	0.0000	0.0801	0.0829
2016	0.0000	0.0000	0.2220	0.0000	0.4077
2015	0.0718	0.0372	0.3511	0.0554	0.4963
2014	0.3458	0.1277	1.0000	0.2424	1.0000

All criteria have been calculated as percentage values using Formula (5). To perform this calculation, the squares of all values in the normalised matrix were taken, and the PV_{ij} value was computed. The calculated PV_{ij} values are presented in Table 3.

Table: 3
Road Transportation PV_{ij} Values

Criteria Directions	Export	Import	Foreign Trade Balance	Foreign Trade Volume	Foreign Trade Coverage Ratio
Criteria / Years	Max	Max	Max	Max	Max
2023	1.0000	1.0000	0.3071	1.0000	0.0000
2022	0.7637	0.5655	0.7793	0.6660	0.1031
2021	0.3283	0.1624	0.8635	0.2425	0.3863
2020	0.0115	0.0292	0.0040	0.0189	0.0108
2019	0.0216	0.0002	0.4502	0.0071	0.7111
2018	0.0064	0.0064	0.0622	0.0064	0.1245
2017	0.0019	0.0146	0.0000	0.0064	0.0069
2016	0.0000	0.0000	0.0493	0.0000	0.1662
2015	0.0052	0.0014	0.1233	0.0031	0.2463
2014	0.1196	0.0163	1.0000	0.0588	1.0000
PV_{ij}	1.0000	1.0000	0.3071	1.0000	0.0000

In the final stage, the objective significance weights of the criteria were calculated using Formula (6), and the resulting values are shown in Table 4.

Table: 4
Objective Significance Weights of Road Transportation Criteria

Criteria Directions	Export	Import	Foreign Trade Balance	Foreign Trade Volume	Foreign Trade Coverage Ratio
Criteria / Years	Max	Max	Max	Max	Max
w_j	0.1552	0.1248	0.2954	0.1438	0.2808

According to the LOPCOW Analysis, the most significant criterion for assigning weights to road transportation factors was the foreign trade balance, which accounted for 29.54%. The relative weights of the requirements are as follows: trade coverage ratio (28.08%), exports (15.52%), trade volume (14.38%), and imports (12.48%). The weights of the foreign trade performance criteria derived from the LOPCOW Analysis are collectively

presented in Table 5, covering road, railway, air, maritime, other transportation modes, and the overall total.

Table: 5
Foreign Trade Performance Criteria: Objective Significance Weights of Transportation Types

Criteria w _j Values	Max Export	Max Import	Max Foreign Trade Balance	Max Foreign Trade Volume	Max Foreign Trade Coverage Ratio
Road Transportation	0.1552	0.1248	0.2954	0.1438	0.2808
Railway Transportation	0.1294	0.1319	0.3191	0.1268	0.2929
Air Transportation	0.1862	0.1719	0.2683	0.1195	0.2541
Maritime Transportation	0.1939	0.1736	0.2386	0.1562	0.2377
Other Transportation Types	0.1728	0.1206	0.4055	0.1267	0.1744
Total Transportation Types	0.1611	0.1381	0.3189	0.1515	0.2304

As shown in Table 5, the results of the LOPCOW Analysis demonstrate that the foreign trade balance criterion is the most significant for determining the weights of foreign trade performance criteria, with values of 29.54% for road transportation, 31.91% for railway transportation, 26.83% for air transportation, 23.86% for maritime transportation, 40.55% for other transportation types, and 31.89% for the total of transportation types. Furthermore, the study identified the import criterion as the least significant, with values of 12.48% for road transportation, 12.06% for other transportation types, and 13.81% for the total of transportation types, while the trade volume criterion was found to be the least significant, with values of 12.68% for railway transportation, 11.95% for air transportation, and 15.62% for maritime transportation.

4.2. Findings of the CoCoSo Method

The year-by-year performance ranking of Türkiye's ten-year foreign trade data by transportation modes, obtained from TÜİK using the CoCoSo Method, is presented separately for road, railway, air, maritime, other, and total transportation modes. The findings are displayed in tabular form, with the steps of the CoCoSo Analysis for road transportation shown in Tables 6, 7, 8, 9, and 10. The foreign trade performance scores and rankings for railway, air, maritime, and other modes of transport, as well as the total, are presented in Table 11.

Table: 6
Road Transportation Decision Matrix

Criteria Directions	Export	Import	Foreign Trade Balance	Foreign Trade Volume	Foreign Trade Coverage Ratio
Criteria / Years	Max	Max	Max	Max	Max
2023	83066065.92	66942046.74	16124019.17	150008112.7	124.0865345
2022	78837774.67	59447024.84	19390749.82	138284799.5	132.618537
2021	68749375.68	48896681.49	19852694.19	117646057.2	140.601312
2020	53127587.69	41883476.8	11244110.88	95011064.49	126.8461736
2019	54461859.56	37177011.92	17284847.65	91638871.48	146.4933752
2018	52222467.59	39129379.96	13093087.63	91351847.56	133.4610148
2017	50988407.8	40374083.04	10614324.76	91362490.85	126.2899463
2016	49537436.35	36716500.27	12820936.08	86253936.62	134.9187313
2015	51946112.73	37840931.75	14105180.98	89787044.48	137.2749304
2014	61133175.85	40577283.08	20555892.78	101710458.9	150.6586228

The steps for calculating Türkiye's ten-year foreign trade performance ranking in road transportation using the CoCoSo Method are outlined in the tables. Foreign trade data on road transportation were used to construct the decision matrix shown in Table 6, as specified in Formula (7). The maximisation process for the normalised matrix in road transportation was carried out using Formulas (8) and (9), and the results are presented in Table 7.

Table: 7
Road Transportation Normalised Decision Matrix

Criteria Directions	Export	Import	Foreign Trade Balance	Foreign Trade Volume	Foreign Trade Coverage Ratio
Criteria / Years	Max	Max	Max	Max	Max
2023	1.0000	1.0000	0.5542	1.0000	0.0000
2022	0.8739	0.7520	0.8828	0.8161	0.3211
2021	0.5730	0.4030	0.9293	0.4924	0.6215
2020	0.1071	0.1709	0.0633	0.1374	0.1039
2019	0.1469	0.0152	0.6710	0.0845	0.8432
2018	0.0801	0.0798	0.2493	0.0800	0.3528
2017	0.0433	0.1210	0.0000	0.0801	0.0829
2016	0.0000	0.0000	0.2220	0.0000	0.4077
2015	0.0718	0.0372	0.3511	0.0554	0.4963
2014	0.3458	0.1277	1.0000	0.2424	1.0000

The S_i value for road transportation, obtained using the criterion weights determined by the LOPCOW Method, is calculated with Formula (11) and shown in Table 8.

Table: 8
Road Transportation S_i Values

Criteria Directions	Export	Import	Foreign Trade Balance	Foreign Trade Volume	Foreign Trade Coverage Ratio	S_i
Criteria / Years	Max	Max	Max	Max	Max	
2023	0.1552	0.1248	0.1637	0.1438	0.0000	0.5875
2022	0.1357	0.0939	0.2608	0.1173	0.0902	0.6978
2021	0.0889	0.0503	0.2745	0.0708	0.1745	0.6591
2020	0.0166	0.0213	0.0187	0.0197	0.0292	0.1056
2019	0.0228	0.0019	0.1982	0.0121	0.2368	0.4718
2018	0.0124	0.0100	0.0737	0.0115	0.0991	0.2066
2017	0.0067	0.0151	0.0000	0.0115	0.0233	0.0566
2016	0.0000	0.0000	0.0656	0.0000	0.1145	0.1800
2015	0.0112	0.0046	0.1037	0.0080	0.1394	0.2669
2014	0.0537	0.0159	0.2954	0.0349	0.2808	0.6807
W_i	0.1552	0.1248	0.2954	0.1438	0.2808	

The P_i values for road transportation were calculated using Formula (12), and the results are shown in Table 9.

Table: 9
Road Transportation P_i Values

Criteria Directions	Export	Import	Foreign Trade Balance	Foreign Trade Volume	Foreign Trade Coverage Ratio	P_i
Criteria / Years	Max	Max	Max	Max	Max	
2023	1.0000	1.0000	0.8400	1.0000	0.0000	3.8400
2022	0.9793	0.9651	0.9638	0.9712	0.7269	4.6063
2021	0.9172	0.8928	0.9786	0.9032	0.8750	4.5667
2020	0.7069	0.8021	0.4426	0.7517	0.5294	3.2329
2019	0.7425	0.5932	0.8888	0.7010	0.9533	3.8787
2018	0.6758	0.7294	0.6635	0.6955	0.7463	3.5105
2017	0.6142	0.7683	0.0000	0.6957	0.4970	2.5752
2016	0.0000	0.0000	0.6411	0.0000	0.7773	1.4183
2015	0.6645	0.6631	0.7341	0.6598	0.8214	3.5428
2014	0.8481	0.7735	1.0000	0.8157	1.0000	4.4372

The P_i values for road transportation were calculated using Formula (12), and the results are shown in Table 9. The relative performances of the options for road transportation have been assessed using the three different criterion strategy evaluations specified in Formulas (13), (14), and (15). The K_i values and performance rankings, calculated with $\lambda = 0.5$ using Formula (16), are shown in Table 10.

Table: 10
Alternative Relative Performance Rankings of Road Transportation

Criteria/Years	K_{ia}	K_{ib}	K_{ic}	K_i	Ranking
2023	0.1120	13.0828	0.8347	2.8197	4
2022	0.1342	15.5704	1.0000	3.2529	1
2021	0.1322	14.8586	0.9852	3.1638	2
2020	0.0845	4.1439	0.6294	1.7671	8
2019	0.1101	11.0673	0.8202	2.6224	5
2018	0.0941	6.1238	0.7008	2.0400	7
2017	0.0666	2.8157	0.4962	1.5315	10
2016	0.0404	4.1795	0.3013	1.6705	9
2015	0.0964	7.2106	0.7183	2.1685	6
2014	0.1295	15.1494	0.9649	3.1636	3

The decade of data on road transportation has been analysed using the CoCoSo Method. The final results and annual rankings are shown in Table 10. When evaluating the ranked results, the year with the best performance in road transportation from 2014 to 2023 was 2022, while the year with the poorest performance was 2017. The scores and rankings for foreign trade performance by transportation mode, obtained through the CoCoSo Analysis, are presented collectively for road, railway, air, maritime, other, and total transportation, as shown in Table 11.

Table: 11
Foreign Trade Performance Scores and Ranking Values of Transportation Types

Criteria	Road Transportation		Railway Transportation		Air Transportation		Maritime Transportation		Other Transportation Types		Total Transportation Types	
Yıllar	K _i	PS	K _i	PS	K _i	PS	K _i	PS	K _i	PS	K _i	PS
2023	2.8197	4	2.8027	1	1.9776	4	2.3681	3	1.7737	5	1.9588	3
2022	3.2529	1	2.7519	2	2.0076	3	2.5186	1	1.5301	9	1.8794	6
2021	3.1638	2	1.9977	6	2.0651	1	2.4629	2	1.9145	2	2.2090	1
2020	1.7671	8	2.0648	5	1.3865	10	2.0874	6	1.8364	3	1.8945	5
2019	2.6224	5	2.0720	3	1.7967	8	2.1917	4	1.7881	4	2.0741	2
2018	2.0400	7	1.8544	8	1.7549	9	2.1181	5	1.7648	6	1.9192	4
2017	1.5315	10	1.7031	9	1.8742	6	1.7644	7	1.9490	1	1.7069	7
2016	1.6705	9	1.3629	10	2.0558	2	1.4511	8	1.4253	10	1.4506	10
2015	2.1685	6	1.9447	7	1.8884	5	1.4104	10	1.6745	7	1.6579	8
2014	3.1636	3	2.0698	4	1.8120	7	1.4400	9	1.6736	8	1.5681	9
λ	0,5											

The ten-year data for road transportation has been analysed using the CoCoSo Method. The final results and year-by-year rankings are shown in Table 11. When evaluating the ranked outcomes, the year with the best performance in road and maritime transportation between 2014 and 2023 was 2022, while the year with the top performance in railway transportation was 2023. The year 2021 was recognised as the best for air transportation and overall transportation, whereas 2017 was identified as optimal for other types of transportation. The study also revealed that road transportation performance in 2017 was the lowest, whilst railway transportation and other modes performed the worst in 2016. Air transportation underperformed in 2020, but maritime transportation hit its low point in 2015.

5. Discussion

In global competition, the success of foreign trade also depends on the actual conduct of trade. The modes of transportation directly affect several vital components of foreign trade, such as cost, speed, safety, and sustainability. Foreign trade conducted via different modes of transport should also be considered.

6. Conclusion and Evaluation

Foreign trade and transportation issues are emerging as significant areas of study in the contemporary global economy due to their social, cultural, and environmental effects. This study examines the relationship between foreign trade and transportation, specifically how different modes of transportation affect the performance of foreign trade. The research focuses on Türkiye and uses 10 years of foreign trade data (2014-2023), disaggregated by mode of transport, and evaluates them separately and in total. Two MCDM methods are particularly useful in this context: LOPCOW, which is used to derive weights for the problem's criteria, and CoCoSo, which is used to perform the actual ranking. The LOPCOW analysis identified the most significant criterion influencing all modes of transportation and the foreign trade balance. By raising the standard of living and the quality of life worldwide, foreign trade benefits everyone in every country. Goods, services, and capital are the three main categories of foreign trade, and globalisation increases both the quantity and the quality of foreign trade. Consequently, there is a steady increase in the foreign trade of such

countries, which boosts their national income and accelerates economic growth. Therefore, countries in the process of economic development must place particular emphasis on their foreign trade (Çalışkan, 2023: 68).

The finding that the foreign trade balance, which reflects the difference between exports and imports, is the main criterion for assessing foreign trade supports the conceptual theory. The import criterion was the least significant among the road, other, and total transportation types, whereas the trade volume criterion was the least significant across railway, air, and maritime transportation. Changes in import and export prices indicate whether trade terms are shifting in favour of or against the country (Yıldırım & Dura, 2007: 145). Domestic price increases are directly proportional to imports and exports; that is, when domestic prices rise, both imports and exports tend to increase. An inverse relationship exists between the exchange rate and imports: as the exchange rate increases, imports decrease (Sarı, 2010: 41). As shown, both exports and imports are important in determining commercial performance. However, in foreign trade, exports are of greater significance and should be emphasised over imports. The positive impact of foreign trade on total demand occurs only if exports exceed imports (Kurt & Zengin, 2016: 72). This supports the conclusion that the trade volume—defined as the sum of exports and imports—and the import criterion are the least significant.

According to the CoCoSo Analysis, the years with the highest performance rankings in foreign trade by transportation type were 2022 for road and maritime transport; 2023 for railway transport; 2021 for air and total transport; and 2017 for other transport. The years with the lowest performance rankings were 2017 for road transport; 2016 for railway transport, other transport types, and total transport; 2020 for air transport; and 2015 for maritime transport.

In analysing foreign trade performance by transportation types, the year 2022 can be identified as the best for road transportation due to several effective factors: regulations outlined in the Transport Organizer (TİO) document (Yalçınkaya & Say, 2022: 552), the level of exports being twice that of imports, and the reduction of negative impacts on trade after the pandemic (Bayram & Köse, 2022: 78-79). Additionally, the acceleration of new road and bridge construction, along with the prioritisation of maintenance and expansion of existing roads (General Directorate of Highways 2022 Activity Report, 2022: 11; Access Date: 11.06.2024), contributed to this performance. The increase in Türkiye's foreign trade volume, which heightened demand for road transportation (Öztaş, 2022: 27-32), also played a significant role. Conversely, 2017 stands out as the worst year for road transportation performance, linked to the depreciation of the Turkish Lira, the adverse effects of rising inflation and interest rates on trade (Boduk, 2022: 62), diplomatic tensions with oil and natural gas-rich countries (Doğan, 2021: 152-164), and the rise in fuel prices (Competition Authority Fuel Sector Review Report, 2024: 29, Access Date: 11.06.2024).

Upon analysing foreign trade performance by transportation mode, it is clear that 2023 is shaping up to be the best year for railway transportation. This is likely due to recent

substantial investments in railways, which are regarded as a more environmentally friendly, cost-effective, and secure mode of transportation compared with other options, particularly during the pandemic (Erkekoğlu & Şahin, 2023: 363; Akalan, 2023: 60; Arslan & Öztürk, 2023: 265).

The identification of 2016 as the worst year for railway transportation performance can be attributed to the negative impact of maintenance, repair, and renewal activities on railway transportation capacity and efficiency (Strategy Development Department Railway Sector Report, 2016: 11-12, Access Date: 07.06.2024), high inflation rates, and fluctuations in exchange rates that create cost pressures in the railway transportation sector (Central Bank of the Republic of Türkiye, Monetary Policy Committee Meeting Summary, 2016: 3).

In analysing foreign trade performance by transportation types, 2021 is identified as the best year for air transportation, attributable to the easing of pandemic restrictions. This led to increased tourism, enabling the development of air transportation and more frequent flights (Ünivar & Aktaş, 2022: 133). Additionally, discounts offered by businesses in tourist areas during the pandemic contributed to a rise in tourists and air travel (Ünver, 2021: 53-55), alongside capacity increases at Istanbul Airport and the addition of new destinations (Mor & Ilıcalı, 2022: 78). Conversely, 2020 is seen as the worst year for air transportation, mainly due to a significant decline in passenger numbers caused by travel restrictions and quarantine measures during the pandemic (Tüysüz & Sarıışık, 2024: 376; Erkekoğlu & Şahin, 2023: 359-360).

In the analysis of foreign trade performance by transportation types, the identification of 2022 as the best year for maritime transportation performance can be attributed to the sudden increase in exports resulting from the collective export of products that were held in ports during the pandemic as pandemic rules eased (Oran & Gökmen, 2021: 378-385), as well as the cost advantages of maritime transportation for heavy tonnage loads (Pehlevan & Ricci, 2022: 107) and the increase in port infrastructure capacity (Tunalı & Akarçay, 2022: 109). The designation of 2015 as the worst year for maritime transportation performance can be attributed to the explosion of hazardous materials in Tianjin, China (Ünal & Usluer, 2015: 17), and the rise in passenger volumes transported in Turkish ports from 2008 to 2015, followed by a downward trend after 2015 (Bozkurt et al., 2018: 4).

In analysing foreign trade performance by transportation types, the recognition of 2017 as the most successful year for other transportation categories can be linked to the strategic processing of oil discovered by the Turkish Petroleum Corporation (TPAO) in collaboration with foreign firms during 2017-2018 (Tepealtı, 2009: 33). Additionally, it relates to the potential of becoming a transit hub for energy routes such as the Eastern Mediterranean line (Güneş & Arslan, 2018: 33-44; Alnour & Önden, 2023: 639) and the Turkish Stream Gas Pipeline (Usman et al., 2022: 7287-7258; İlder & Kınık, 2017: 194-196). Conversely, 2016 is identified as the worst year for other transportation categories, primarily due to declining oil prices, which adversely affected the energy transportation sector, and

rising costs of oil and natural gas transported via pipelines (TPAO Crude Oil and Natural Gas Sector Report, 2016: 15-17).

In analysing foreign trade performance by transportation mode, 2021 stands out as the best year for total transportation activities. This can be attributed to efforts to develop the Middle Corridor, which has a capacity of 10 million tons of cargo and 200,000 containers, managed by members of the Organisation of Turkic States (OTS). These efforts resulted in a 101% increase in cargo volume in 2021 compared to the previous year (Baghirov, 2022: 62-63). Additionally, as the effects of the COVID-19 pandemic began to lessen, the recovery process contributed to increased trade and tourism, thereby benefiting the transportation sector (Taşkın & Akıncı, 2021: 767). Conversely, 2016 was identified as the worst year for total transportation types. This downturn can be traced to the downing of a Russian warplane on 24 November 2015, by Türkiye, which was one of Türkiye's largest trading partners, due to violations of Turkish airspace (Keser & Meral, 2016: 31). This incident led to the imposition of an embargo and the decision to halt exports (Güleç, 2016: 36-40).

This research assesses Türkiye's foreign trade performance across transport modes and provides a comprehensive overview of the current situation. Drawing on foreign trade theories such as Comparative Advantage and Factor Proportions, which position Türkiye in relatively advantageous positions, the study provides a foundation for policymakers to determine the most suitable transportation modes for conducting foreign trade more efficiently, swiftly, and cost-effectively. It also offers guidance, based on the same research, for making better strategic investments in logistics infrastructure and implementing more effective transportation policies.

The results focus on six specific modes of transportation: road, railway, air, maritime, and a few others, as well as a total for all types of transport, alongside five foreign trade indicators: exports, imports, trade balance, overall trade volume, and trade extent. All data covers ten years and is analysed using two techniques: LOPCOW and CoCoSo. Taken as a whole, the findings align with the existing literature and strongly support the conceptual theory. Additionally, the unique approach of examining transportation and foreign trade together adds an innovative aspect to the research.

This research employed MCDM methods to evaluate how different transportation modes influenced foreign trade performance, utilising five criteria: exports, imports, trade balance, trade volume, and trade coverage ratio. It is also advisable that future research employing MCDM methods incorporate additional criteria. Three alternative criteria that could serve as bases for future assessments are transportation costs, the Logistics Performance Index (LPI), and the environmental impact of transportation modes. The findings offer a clear overview of how different modes of transportation, both collectively and individually, perform in foreign trade over time. The research outcomes act as a guide for decision-makers and policymakers.

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The Relationship Between Consumer Loans and the Macroeconomy in the Turkish Banking Sector (2007-2023)

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Türkiye Bankacılık Sektörü Tüketici Kredileri ve Makroekonomi İlişkisi (2007-2023)

Abstract

Consumer loans are financial instruments that enable individuals to finance needs such as housing, automobiles, education, healthcare, holidays, and daily expenses. These instruments both influence and are influenced by the macroeconomy. This study explores the relationship between consumer loans and macroeconomic factors. Specifically, it examines the connection between consumer loans, economic growth, and credit risk using sector and bank group data on consumer loans, non-performing loan ratios, GDP, interest rates on consumer loans, CPI, real exchange rate, and money supply from 2007 to 2023, employing ARDL (Autoregressive Distributed Lag) and Granger causality analyses. The findings indicate that while consumer loans support short-term growth, they do not promote long-term growth, except for consumer loans from foreign bank groups. Nevertheless, the role of consumer loans in reducing credit risk through distribution remains significant.

Keywords : Consumer Loans, Macroeconomy, Growth, Credit Risk, ARDL Method.

JEL Classification Codes : C5, E2, E5.

Öz

Tüketici kredileri, bireylerin konut, otomobil, eğitim, sağlık, tatil veya günlük harcamalar gibi ihtiyaçlarını finanse etmelerine olanak tanıyan finansal araçlardır. Bu finansal araçlar hem makroekonomiden etkilenir hem de etkiler. Bu çalışmada tüketici kredileri makroekonomi ilişkisi ele alınmaktadır. Özellikle tüketici kredileri, ekonomik büyüme ve kredi riski ilişkisi sektör ve banka grupları tüketici kredileri, takipli kredi oranı, GSYİH, tüketici kredisi faiz oranı, TÜFE, reel kur ve para arzı 2007-2023 dönemi verileri kullanılarak, ARDL (Gecikmesi Dağıtılmış Oto Regresif) ve Granger nedensellik analizleri ile incelenmektedir. Analiz sonuçlarına göre, tüketici kredileri kısa vadede büyümeyi desteklerken uzun vadede yabancı banka grubu tüketici kredileri hariç büyümeyi desteklememektedir. Ancak tüketici kredilerinin kredi riskini dağıtarak azaltmadaki rolü anlamlıdır.

Anahtar Sözcükler : Tüketici Kredileri, Makroekonomi, Büyüme, Kredi Riski, ARDL Yöntemi.

1. Introduction

Consumer loans are financial instruments that enable individuals to finance needs such as housing, cars, education, healthcare, vacations, or daily expenses. Credit card debts also fall into this category. Consumer loans, including credit card borrowing, allow individuals to utilise their future income today, thereby boosting demand and consumption. As a result, consumer loans directly influence economic growth, enhance individuals' standard of living, and aid the economy's recovery. As is well known, consumption is the most significant component of GDP. However, excessive use and uncontrolled expansion of consumer loans (rapid credit growth) can increase credit risk, threaten macroeconomic stability, and trigger crises. Findings suggest that, unlike commercial loans, consumer loans can instigate crises (Demirezen, 2015: 34; Büyükkarabacak & Valev, 2006). For instance, the 2008 global financial crisis was initiated by the excessive growth of housing loans in the USA, leading to significant losses for financial institutions and a worldwide economic downturn. Therefore, the expansion of consumer loans may be restricted in many countries, including Türkiye.

Another significant macroeconomic impact of consumer loans is on inflation. Increased credit use can drive demand-driven inflation. When demand surpasses supply in the economy, prices rise, and inflation occurs. Central banks may tighten monetary policy to prevent inflation from becoming uncontrollable. This might involve raising interest rates and, as seen in Türkiye's current economic management, restricting credit use. Naturally, spending decisions are also influenced by inflation. In summary, inflation and consumption affect the macroeconomy and are influenced by macroeconomic policy choices (Altan & Göktürk, 2007: 32).

One of the key factors in understanding the macroeconomic impacts of consumer loans is interest rates. Interest rates are among the most significant determinants of the cost of credit. Low interest rates tend to promote credit use, whereas high interest rates tend to decrease credit demand. During times of economic stagnation, central banks may lower interest rates to encourage consumer borrowing, including credit card purchases and cash advances, aiming to stimulate economic activity. However, sustained low interest rates can lead to increased lending over the long term, thereby creating economic vulnerabilities. Notably, rising household debt can increase fragility in the face of financial shocks. For these reasons, it is essential to carefully examine the macroeconomic effects of consumer loans. Nevertheless, research on this topic remains limited (Beaton, 2009: 4; Chrystal & Mizen, 2005; Coricelli et al., 2006; Altan & Göktürk, 2007; Tiryaki, 2014; Sandalcılar & Altın, 2014). Therefore, this study aims to contribute to the literature by providing the first comprehensive analysis of the relationship between consumer loans and the macroeconomy, considering individual consumer loans and macroeconomic effects across Turkish banking sectors and bank groups.

This study investigates the macroeconomic effects of consumer loans, their relationship with economic growth, and their role in credit risk using data from 2007 to 2023.

The data include total consumer loans, credit card expenditures, and information from the sector's domestic private deposit banks, public banks, and foreign banks, including non-performing loan ratios, GDP, weighted consumer loan interest rates in Turkish lira, CPI, real exchange rate, and money supply. The research utilises ARDL (Autoregressive Distributed Lag) cointegration and Granger causality. Following this brief introduction, the second section discusses the development of consumer loans in Türkiye. The third section presents a literature review, and the fourth section details the study's empirical methods and data. The fifth section presents the empirical findings, and the study concludes with a final section.

2. The Development of Consumer Loans in Türkiye

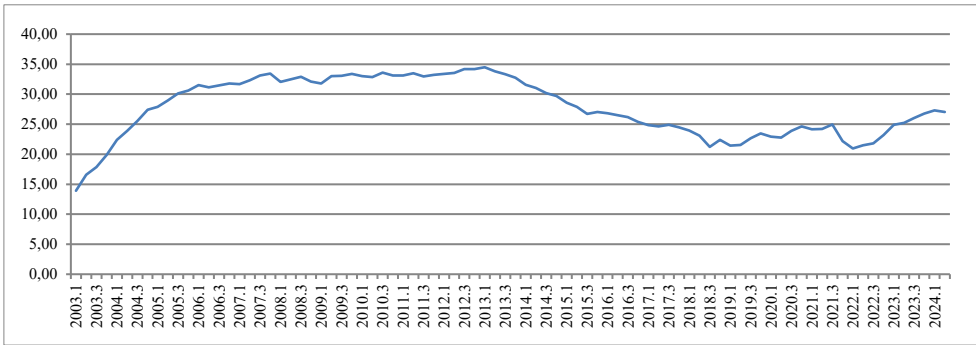
Consumer loans are credit extended by banks to individuals to meet various financial needs. According to the Regulation on the Uniform Chart of Accounts and the Explanatory Notes issued by the Banking Regulation and Supervision Agency (BDDK) in 2019, it states that: "Loans extended to individual consumers for purposes unrelated to their professional or commercial activities, for the purchase of goods or services, are recorded in the relevant 'Consumer Loans' accounts. Loans that do not qualify as consumer loans are excluded from these accounts. Loans extended to consumers for the purpose of acquiring housing are recorded in the 'Housing Loans' account, loans extended under housing collateral are recorded in the 'Housing Collateralised Consumer Loans' account, vehicle loans are recorded in the 'Vehicle Loans' account, loans extended to individuals for the purchase of real estate other than housing are recorded in the 'Other Real Estate Loans' account, and all other consumer loans aimed at financing durable goods, semi-durable goods, as well as needs such as marriage, education and healthcare, are recorded in the 'Personal Loans' sub-account. Receivables arising from the financial leasing of houses to consumers and loans extended to finance the purchase of securities are not recorded in this account." This provides the broadest definition of "consumer loans" in Türkiye.

In Türkiye, where the financial system is predominantly bank-based, the development of consumer loans has been influenced by economic fluctuations, regulatory changes, and sectoral shifts. In this context, consumer loan rates have served as a valuable indicator of credit restrictions, especially during financial crises (Holmes, 2011: 71).

Following the financial liberalisation process in the 1980s, the banking sector in Türkiye expanded rapidly, and individual loans became more common. In fact, the growth rate of consumer loans exceeded that of commercial loans (Bahadır & Gümüş, 2013: 2). For example, in 2000, a 77 % annual increase in vehicle loans sparked an import boom, which led to a decrease in savings and an increase in the current account deficit before the 2001-2002 crises (Demirezen, 2015: 31, 35, 60). After the 2001-2002 crisis, the implementation of IMF-supported programmes brought economic stability, reduced inflation, lowered interest rates, strengthened the banking system, improved access to finance, and, relative to pre-crisis levels, increased the spread of consumer loans, resulting in a significant rise in the volume of individual credit. As shown in the graph below (Figure 1), which illustrates the credit composition, the share of consumer loans and credit card expenditures in total loans

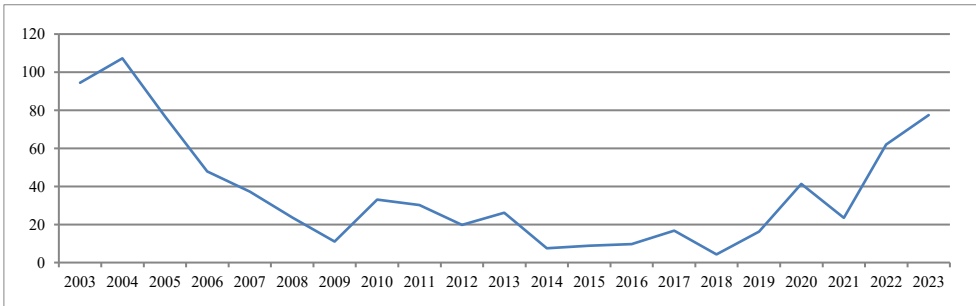
grew rapidly between 2003 and 2006. The share of consumer loans, which was 13,91 % at the start of 2003, increased to 31,77% by the end of 2006. Notably, during 2003-2004, the growth rate of consumer loans was higher than in other years (Figure 2). These increases suggest that consumption also expanded during this period. Indeed, a positive relationship has been observed between the growth of consumer loans and consumption in Türkiye (Demirezen, 2015: 44-48).

Figure: 1
Consumer Loans / Total Loans Ratio (%)



Resource: BRSA (BDDK).

Figure: 2
Growth Rate of Consumer Loans (%)

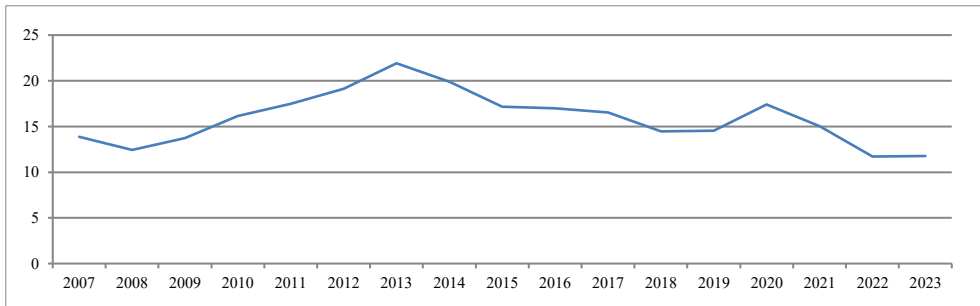


Resource: BRSA (BDDK).

The 2008 financial crisis had significant effects on the individual credit market. Due to monetary policy and macroprudential measures, banks tightened their credit policies, making it more difficult for individuals to access credit (Başçı & Kara, 2011). However, during this period, the presence of strong public banks and a resilient banking system in Türkiye limited the decline in credit volume. For example, the share of consumer loans, which was 33,43% in the fourth quarter of 2007, decreased to 31,80% in the first quarter of 2009. From the third quarter of 2009 to the third quarter of 2013, this ratio remained above 33% (Figure 1). Conversely, the ratio of total consumer loans to GDP increased, as shown

in the accompanying graph. In 2013, the consumer loans-to-GDP ratio reached its highest historical level at 21.91% (Figure 3). The rapid growth in individual loans in 2013 significantly slowed down in 2014.

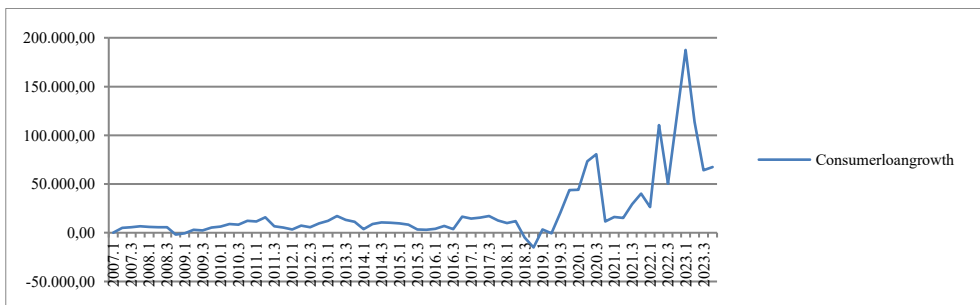
Figure: 3
Consumer Loans / GDP Ratio (%)



Resource: BRSA (BDDK), TSI (TÜİK).

Following 2013, as a result of macroprudential measures targeting economic imbalances, the share of consumer loans in total loans and the ratio of consumer loans to GDP declined (Figures 1 and 3). Notably, the COVID-19 pandemic profoundly affected credit demand and the banking system. Consumers became cautious about borrowing during periods of economic uncertainty, whereas central bank incentives and low-interest-rate policies led to a renewed increase in credit use, as shown in Figure 4. Consequently, the consumer loans-to-GDP ratio declined during the pandemic, as shown in Figure 3.

Figure: 4
Changes in Consumer Loans



However, the rise in inflation and interest rates after 2022 led to a decline in credit demand. From the fourth quarter of 2022 onwards, there were again observed relative increases in the share of consumer loans (Figure 1). Macroeconomic measures and policy interest rate hikes targeting individual loans weakened the growth of consumer credit. In the first quarter of 2024, amid rising uncertainty, credit demand accelerated, with consumer

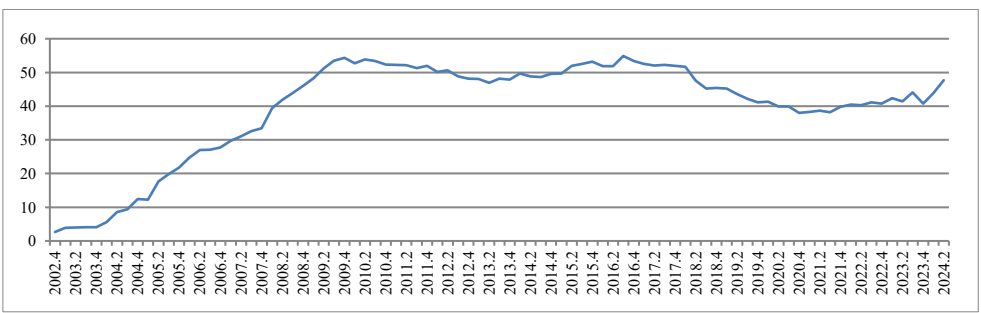
loans driven by credit cards and personal loans. During this period, Türkiye's household debt-to-GDP ratio stood at 11.4%, considerably lower than that of comparable countries (TCMB, 2024a: 1, 19). When housing loans are excluded, this ratio decreases to 9,7% (TCMB, 2024a: 1, 19). With tight monetary policy and additional macroprudential measures, growth in individual loans slowed in the second quarter of 2024. By the third quarter of 2024, Türkiye's household debt-to-GDP ratio (9,8%) remained well below that of comparable countries and the average for 2012-2022. Continuation of macroprudential measures on individual loans in 2024, combined with stringent financial conditions, has limited the increase in debt (TCMB, 2024b: 19).

As of November 2024, the total consumer loans, comprising individual consumer loans and individual credit card expenditures, amount to 3.712.999,59 million TRY. Of this, 37% are personal loans, 13% are housing loans, 2% are vehicle loans, 31% are non-instalment individual credit card expenditures, and 16% are instalment individual credit card expenditures. The total non-performing consumer loans, amounting to 101.961,85 million TRY, consist of 50% personal loans, approximately 12% housing loans, and 49% individual credit card debts.

As of November 2024, the total amount of instalment commercial consumer loans (including those indexed to foreign currency) and corporate credit card expenditures amounted to TRY 2,624,184.88 million. Of this, 69,11% consists of personal loans, 0,8% of business loans, 8,3% of vehicle loans, and 21,7% of corporate credit card expenditures.

There is a parallel between the share of consumer loans in total loans (Figure 1) and the consumer credit risk-to-total credit risk ratio shown below (Figure 5). However, due to the COVID-19 pandemic, the rapid increase in inflation, and the resulting deterioration in macroeconomic conditions, a sharp rise in total consumer loan risk, particularly in 2024, has been observed.

Figure: 5
Ratio of Non-Performing Consumer Loans to Total Non-Performing Loans
(Consumer Credit Risk/Total Credit Risk)



Resource: BRSA (BDDK).

3. Literature Review

As is well known, credits were first examined in economic literature as the "monetary transmission mechanism credit channel." The monetary transmission mechanism describes how monetary authorities, particularly through reserves, influence the overall credit supply and how changes in credit supply affect other macroeconomic variables, mainly national income and inflation. Initially, this mechanism was viewed solely as affecting investment and consumption through changes in the money supply and interest rates; however, excessive economic fluctuations led some economists to regard this view as insufficient. Especially after the 1980s, the monetary transmission mechanism was no longer considered only in terms of financial aggregates, but also in relation to the role of credit, especially concerning banks and the banking system began to be discussed (Bernanke, 1983; Bernanke & Blinder, 1988, 1992, 1995; Kiyotaki & Moore, 1997a, 1997b).

Specifically, Bernanke (1992) examined the role of credit and the credit-creation process in macroeconomics, arguing that fluctuations in the quality of credit creation affect cumulative variables such as output, employment, and investment (1992: 51).

According to Mishkin (1999), who, in studies from 1978 to the present, has highlighted the vital role of banks in financial markets as "financial intermediation", i.e., "credits". The credits provided influence the macroeconomy and are affected by macroeconomic policies since they are "the financing of production and consumption.

In this context, numerous studies have examined the relationship between credit and economic growth (Apaydın, 2018; Koç, 2015; Korkmaz, 2015; Çonkar et al., 2018; Sarı, 2023a; Sarı, 2023b; Karaöz & Aksu, 2024; Altun & Yağcılar, 2024). Some of these studies have concluded (Demirezen, 2015:143; Eren, 2024) that "credits contribute to economic growth" (Ermışoğlu et al., 2013; Yetiz & Ünal, 2021; Sarı, 2023a; Sarı, 2023b), while others have found that "economic growth increases credits" (Ceylan & Durkaya, 2010) or that "economic growth accelerates financial development" (Özcan & Ari, 2011).

Examining other studies on the relationship between credit and macroeconomics, for instance, Korkmaz (2015) investigated whether credits generated by the banking sector influenced macroeconomic variables such as inflation and economic growth across 10 European countries (Spain, Finland, France, Germany, Greece, Hungary, Italy, Poland, Türkiye, and the United Kingdom) using annual data from 2006 to 2012. The analysis found that, across 10 European countries, credit did not affect inflation during the period but did influence economic growth.

Chrystal and Mizen (2005) modelled "consumption, money, and lending equations as an interdependent system" and tested the significance of lending for consumption and money. The study, using data from the UK household sector, finds that "a stable credit equation exists in parallel with the money demand and consumption equations, and that

interactions modelled in a conditional vector error correction system were preferred over independent equations."

In their study, Coricelli et al. (2006) examined the main determinants of retail credit growth in a newly formed European region. They analysed the potential correlation between credit booms, consumption booms, and a country's external account position. The study concluded that, under liquidity constraints, the household consumption function largely reflects an equilibrium phenomenon, and that household credit increased rapidly from very low initial levels when liquidity constraints were relaxed. The growth rate of credit responds to changing market conditions on the supply side and positive expectations for income growth. However, it emphasised that loosening credit market conditions in such an environment could significantly affect consumption and lead to macroeconomic imbalances, including a current account deficit and inflationary pressures.

Beaton (2009) examined the relationship between total consumer spending and access to credit in the US. He found that significant changes in access to credit are essential determinants of consumers' spending decisions, and that when access to credit is limited, consumption spending decreases.

Beck et al. (2012) divided credits into business and individual credits and analysed their effects on economic growth using data from 45 countries, including Türkiye, for the period 1994-2005, employing the Least-Squares (LS) method and regression analysis. Their findings indicate that regression analyses by country reveal that only business credit has a positive and significant effect on per capita GDP growth, whereas household credit does not.

Bahadır and Gümüş (2013) investigated the impact of household and business credit shocks on the business cycle in a small open economy using a dynamic stochastic general equilibrium model. Their results demonstrated that household credit expansions reduce labour supply, production, and investment, whereas business credit expansions increase these variables. In both scenarios, consumption rose, and the trade balance worsened.

Tiryaki (2014) analysed the relationship between individual and other credit indicators with GDP and the current account balance in Türkiye, using data from 1999-2014. The results showed a positive causal relationship between individual credits and GDP growth, whereas a strong negative causal relationship was observed between the volume of personal credit and the current account balance (i.e., the current account deficit).

Sandalcılar and Altınar (2014) examined the relationship between the banking sector's consumer credits and the current account deficit in Türkiye, using data from 2003.1 to 2013.2. They applied the Augmented Dickey Fuller and Phillips-Perron unit root tests, along with the Granger causality test. The findings showed that in Türkiye, there is a causal relationship between total banking-sector credits, total consumer credits (the most significant subcategory), housing credits, and the current account deficit. However, no

causality relationship was observed between the other subcategories of consumer credits, such as personal loans, car loans, and other credits, and the current account.

Altan and Göktürk (2007) investigated how credit card expenditure, alongside other factors, influences total private final consumption expenditure in Türkiye. In their analysis, they employed multiple regressions with disposable income, market interest rates, inflation rates, and credit card consumption expenditures as independent variables, and total private final consumption expenditures as the dependent variable. The findings indicated that credit cards were the most significant factor in increasing total private final consumption expenditures, followed by disposable income; inflation and interest rates were not substantial.

Demirezen (2015) examined the impact of credits on private consumption expenditures. Using cointegration tests, error-correction models, and VAR analysis, the study found that, contrary to the Life-Cycle Permanent Income Hypothesis and the Random Walk Model, credit significantly influences private consumption expenditures. The findings revealed that consumer credits have a more significant role than commercial credits in driving private consumption and economic growth.

Bilgin and Kartal (2009) investigated changes in Turkish banking-sector credit during the period of inflation targeting from 2002 to 2008, when relatively low inflation was achieved. Their study concluded that during 2002-2007, an environment of trust and growing optimism encouraged both households and businesses to meet their investment and consumption needs. However, it was observed that the relatively stable environment created by low inflation led banks to focus on individual credits that finance consumption, rather than on investment and commercial credits for project financing.

Sakarya (2020) examined the relationship between credit expansion and inflation in Türkiye using data from 2003 to 2019 and the ARDL methodology. The results indicated that, although there is no long-term association between financial deepening and inflation in Türkiye, short-term increases in credit expansion exert only limited pressure on prices.

Islam's study (2017) builds on recent research examining the link between financial systems and economic outcomes by extending the range of outcomes affected by finance and by distinguishing among borrower types. In this study, panel data analysis covering 42 countries over the period 1964-2013 is used. According to the analysis results, the composition of borrowers, whether households or firms, matters for how credit affects economic outcomes.

Ekinci and Omay (2020) examine the impact of total credit growth on the current account for 43 countries, using panel data from 1986 to 2015. According to their study, an increase in total credit growth significantly deteriorates the CA balance. Additionally, a rise in household credit results in a statistically and economically significant decline in the CA balance, whereas an increase in business loans has no significant effect on the CA balance.

Eren (2024) also examined the impact of commercial and consumer credit on production in Türkiye, using data from 2003 to 2023 and employing cointegration analysis, error-correction models, and causality tests. The study revealed that, among commercial credit subtypes, export and business credits, and among consumer credit subtypes, only housing credits had a significant influence on production. Furthermore, the relationship between housing credit and production was bidirectional.

4. Data & Model

The ARDL method was used in this study. Unlike other cointegration tests, which require variables to be integrated of the same order, the Auto-Regressive Distributed Lag (ARDL) model developed by Pesaran et al. (2001) offers robust results even when time series are not integrated of the same order, i.e., when they are I(0) and I(1). This approach can also be applied with small sample critical values developed by Narayan (2005: 1987-1990) for small sample estimation, and it permits long-term analysis even when the variables are at different levels of stationary, such as I(0), I(1), or a combination of both (Pesaran & Shin, 1998: 23; Pesaran et al., 2001: 290). The ARDL method reduces the likelihood of spurious regression by considering lagged values. Therefore, with its broad dynamic structure, the ARDL method also addresses the potential issue of spurious regression (Ghose et al., 2018).

The ARDL method is based on the standard Ordinary Least Squares (OLS) regression, in which both the dependent variable and lagged independent variables are included. Accordingly, the ARDL($p, q_1, q_2, \dots, q_k$) model with y_t as the dependent variable and $x_{j,t}$ $j=1,2,\dots,k$ as the independent variables is as follows.

$$y_t = \alpha_0 + \alpha_1 t + \sum_{i=1}^p \varphi_i y_{t-i} + \sum_{j=1}^k \sum_{l_j=0}^{q_j} \beta_{jl_j} x_{j,t-l_j} + \varepsilon_t$$

Here, α_0 represents the constant term, α_1 is the coefficient of the linear trend, φ_i represents the coefficients of the lagged values of the dependent variable ($i=1, p$), β_{jl_j} represents the coefficients of the lagged values of the k independent variables, and ε_t is the error term. In the ARDL model, the number of lags is determined using criteria such as the Akaike Information Criterion (AIC), Schwarz Criterion (SC), Hannan-Quinn (HQ) Criterion, or the adjusted R^2 value (Mert & Çağlar, 2019: 280).

In the ARDL bounds testing approach, the first stage tests for a long-term relationship among the variables in the analysis. If cointegration is found, both the long- and short-term relationships are examined.

In this study, the restricted constant and trendless model (Case 2) and the constant and trendless error-correction model (Case 3) were used. The restricted constant and trendless model (Case 2) is as follows:

$$\Delta y_t = a_0 + b_0 y_{t-1} + \sum_{j=1}^k b_j x_{j,t-1} + \sum_{i=1}^{p-1} c_{0,i} \Delta y_{t-i} + \sum_{j=1}^k \sum_{l_j=1}^{q_{j-1}} c_{j,l_j} \Delta x_{j,t-l_j} + \sum_{j=1}^k d_j \Delta x_{j,t} + \varepsilon_t \quad (1)$$

The constant and trendless error correction model (Case 3, unrestricted constant and no trend) is as follows:

$$\Delta y_t = a_0 + b_0 y_{t-1} + \sum_{j=1}^k b_j x_{j,t-1} + \sum_{i=1}^{p-1} c_{0,i} \Delta y_{t-i} + \sum_{j=1}^k \sum_{l_j=1}^{q_{j-1}} c_{j,l_j} \Delta x_{j,t-l_j} + \sum_{j=1}^k d_j \Delta x_{j,t} + \varepsilon_t \quad (2)$$

The error correction equation obtained from these models is as follows:

$$EC_t = y_t - \sum_{j=1}^k \frac{b_j}{b_0} x_{j,t} \quad (3)$$

To investigate the presence of a cointegration relationship among the variables, the null hypothesis $H_0: b_0 = b_j = 0, \forall j$ (no cointegration) is tested using the F-test. If the calculated F value is greater than the upper bound critical value $I(1)$, the "no cointegration" hypothesis is rejected, and it is concluded that there is a cointegration relationship among the variables. However, for unrestricted models (Cases 1, 3, and 5), the calculated t-bound test values are also examined. The t-bound test is used to assess the statistical significance of the error correction coefficient (Mert & Çağlar, 2019: 280-283).

Quarterly data from 2007 to 2023 were used in all models. The model variables and their sources are summarised below. Since studies have shown that credit availability is an important determinant of consumption expenditures (Beaton, 2009: 3, 17; Demirezen, 2015), consumer credit can be treated as a proxy for consumption in this study. It should also be noted that the credit variables have been subjected to a logarithmic transformation. In the survey, credit variables and the ratio of non-performing loans are used as the dependent variable, while GDP, interest rate, CPI, real exchange rate, and broad money supply are used as independent macroeconomic variables. All models and tests were conducted using EViews 10 software.

Table: 1
Variables and Resources

Variables	Explanation	Resource
TCONCRD	Total Consumer Credit and Credit Card Expenditures*	BRSA
PRVCRD	Domestic and Private Deposit Banks' Consumer Credit and Credit Card Expenditures	BRSA
PUBCRD	Public Deposit Banks' Consumer Credit and Credit Card Expenditures	BRSA
FORCRD	Foreign Deposit Banks' Consumer Credit and Credit Card Expenditures	BRSA
GDP	Gross Domestic Product (GDP)	Presidency of the Republic of Türkiye, Directorate of Strategy and Budget
IR	Weighted Consumer Credit Interest Rate (Personal+Vehicle+Housing)	CBRT
CPI	Consumer Price Index Change Compared to December of the Previous Year (2003=100)	Presidency of the Republic of Türkiye, Directorate of Strategy and Budget
REELKUR	Real Effective Exchange Rate	Presidency of the Republic of Türkiye, Directorate of Strategy and Budget
M3	Money Supply	CBRT
NPL	The ratio of non-performing loans representing the total individual and commercial credit risk = Non-performing Loans (Gross) / Total Cash Loans (%)	BRSA

All consumer credit and credit card expenditures have been considered without distinguishing between individual and commercial.

5. Empirical Findings

As is well known, to obtain econometrically meaningful relationships and make effective and consistent predictions between economic time series, the series must be stationary. In ARDL bounds testing, stationarity is not required; however, if the second differences of the variables are stationary, the model cannot be applied, and therefore, a unit root test, that is, a stationarity test, is necessary. In the Granger causality test, a unit root test must also be conducted first.

In all models, the Phillips-Perron unit root test results for the levels and first differences of the analysed variables, using a trendless model (since a constant and trendless error correction model is used), are presented in the table below (Table 2). As observed, the first differences of all non-stationary variables at the levels have become stationary. In other words, all variables are stationary at the I (1) level. Under these conditions, the Johansen, Engle, and Granger (1987) cointegration analysis method could also have been chosen. However, owing to its consideration of lagged variables, its ability to yield reliable results even with small sample sizes, and its reduction of the likelihood of spurious regression, the ARDL method has been preferred.

Table: 2
Stationary Analysis Results of Series

Series	Phillips-Perron(H0:There is unit root)					
	At the Level			At First Difference		
	Test Stat. (NonTrend)	.05 Critical Value	Result	Test St. (Non Trend)	.05 Critical Value	Result
LOG TCONCRD	2,28	-2,90	Non Stationary	-7,22	-2,90	Stationary
LOGPRVCRD	1,25	-2,90	Non Stationary	-3,22	-2,90	Stationary
LOGPUBCRD	0,07	-2,90	Non Stationary	-4,57	-2,90	Stationary
LOGFORCRD	0,90	-2,90	Non Stationary	-6,81	-2,9	Stationary
LOGGDP	2,28	-2,90	Non Stationary	-7,22	-2,90	Stationary
IR	0,53	-2,90	Non Stationary	-7,33	-2,90	Stationary
CPI	-2,53	-2,90	Non Stationary	-10,55	-2,90	Stationary
REALEX	-0,31	-2,90	Non Stationary	-10,13	-2,90	Stationary
LOGM3	5,26	-2,90	Non Stationary	-5,57	-2,90	Stationary
NPL	-1,70	-2,90	Non Stationary	-3,85	-2,90	Stationary

5.1. The Relationship Between Consumer Credit and GDP for the Sector and Bank Groups (Models 1, 2, 3, 4)

The first step in the ARDL model is to select the appropriate lag length. Based on the tests, the most suitable lag length was identified as 4. This value corresponds with the lowest Akaike Information Criterion (AIC). As shown in Table 3, since $LM > 0.05$, there is no autocorrelation issue in the models selected for this lag length and the specified criteria.

Table: 3
Determining the Appropriate Lag Length for ARDL Models (Based on Case 3)

Model 1					Model 2			
Lag Number	AIC	SC	HQ	LM	AIC	SC	HQ	LM
1	-2.33	-2.20	-2.20	0.99	-2.29	-2.06	-2.20	0.65
2	-2.37	-2.00	-2.22	0.43	-2.35	-1.98	-2.20	0.95
3	-2.66	-2.26	-2.50	0.81	-2.41	-2.00	-2.25	0.92
4	-2.66	-2.26	-2.50	0.29	-2.39	-1.99	-2.23	0.18
Model 3					Model 4			
1	-2.30	-1.97	-2.17	0.99	-2.36	-2.10	-2.26	0.73
2	-2.35	-1.99	-2.21	0.85	-2.45	-2.11	-2.32	0.80
3	-2.46	-1.92	-2.25	0.99	-2.53	-2.06	-2.35	0.16
4	-2.45	-1.95	-2.25	0.28	-2.53	-2.06	-2.35	0.24

To estimate ARDL(p,q1,q2,q3) models, the maximum lag length is set to 4. The ARDL models, selected using the Akaike Information Criterion (AIC) with the unrestricted constant (C) and trendless error-correction specification, are summarised in Table 4.

Table: 4
ARDL Models

Models	ARDL	Dependent Variable	Independent Variable	Lag Numbers	Criteria	R ²	F	p
Model 1	(1,3,0,1,0,1)	LOGGDP	LOGTCONCRD, IR, CPI, REALEX, LOGM3	4	AIC	0,99	1527,88	0,00
Model 2	(3,0,0,3,0,0)	LOGGDP	LOGPRVCRD, IR, CPI, REALEX, LOGM3,	4	AIC	0,99	1171,49	0,00
Model 3	(1,3,0,3,0,2)	LOGGDP	LOGPUBCRD, IR, CPI, REALEX, LOGM3	4	AIC	0,99	1010,15	0,00
Model 4	(2,0,2,3,0,1)	LOGGDP	LOGFORCRD, IR, CPI, REALEX, LOGM3	4	AIC	0,99	1166,06	0,00

However, it is necessary to determine whether there is serial correlation or changing variance in the model residuals, and to perform a series of diagnostic tests for specification error, normality, and parameter stability. The results of these tests are summarised in Table 5. As seen, there is no serial correlation in the models. Since $P > 0.05$, the null hypothesis¹, which states that there is no serial correlation up to a lag of 4, cannot be rejected. Therefore, there is no serial correlation problem in Models 1, 2, 3, and 4. The Breusch-Pagan-Godfrey test was used to assess the presence of heteroscedasticity in the models. According to the test results summarised below, since $P > 0.05$, the null hypothesis², that the variance is constant, cannot be rejected. Therefore, it can be concluded that there is no issue of heteroscedasticity in the models. The Ramsey RESET test was used to check for specification errors in the models. According to the test results, since $P > 0.05$, there is no specification error in the models. The Jarque-Bera test was applied to check whether the assumption of normality holds in the models. Based on the test results, $P > 0.05$, indicating that the model residuals are normally distributed.

¹ Null hypothesis: No serial correlation at up to 4 lags.

² Null hypothesis: Homoscedasticity.

Table: 5
Diagnostic Test Results

Model 1			
Purpose	Test	F	P
Serial Correlation	Breush-Godfrey	1,27	0,30
Model Specification	Ramsey RESET	0,75	0,39
Normality	Jarque-Bera = 0,95		0,62
Heteroscedasticity	Breush-Pagan-Godfrey	0,81	0,63
Model 2			
Serial Correlation	Breush-Godfrey	1,60	1,19
Model Specification	Ramsey RESET	2,45	0,12
Normality	Jarque-Bera = 0,19		0,90
Heteroscedasticity	Breush-Pagan-Godfrey	1,07	0,40
Model 3			
Serial Correlation	Breush-Godfrey	1,31	0,28
Model Specification	Ramsey RESET	2,41	0,13
Normality	Jarque-Bera = 0,42		0,80
Heteroscedasticity	Breush-Pagan-Godfrey	1,25	0,25
Model 4			
Serial Correlation	Breush-Godfrey	1,41	0,25
Model Specification	Ramsey RESET	0,03	0,86
Normality	Jarque-Bera = 1,08		0,58
Heteroscedasticity	Breush-Pagan-Godfrey	0,75	0,70

Additionally, CUSUM and CUSUM square tests were conducted to assess the stability of the model parameters. All estimates fall within the confidence interval and satisfy the stability condition.

Although the models have passed all diagnostic tests, it is also necessary to perform the F-bound and t-bound tests. As previously noted, the model was selected using the conditional (unrestricted and trendless) error-correction model. The F-bound and t-bound tests are also applied to this conditional error-correction model to assess the existence of cointegration among the variables (Mert & Çağlar, 2019: 283, 295, 331). The test results are presented in Table 6.

Table: 6
Model 1, 2, 3, 4 Boundary Test Results

H0: There is no cointegration								
Model 1					Model 2			
Test Statistics	Value	α	I(0)	I(1)	Value	α	I(0)	I(1)
			Asymptotic: n=1000				Asymptotic: n=1000	
F	6,68	10%	2,26	3,35	8,39	10%	2,26	3,35
K	5	5%	2,62	3,79	5	5%	2,62	3,79
		2,5%	2,96	4,18		2,5%	2,96	4,18
		1%	3,41	4,68		1%	3,41	4,68
Actual Sample Size	65		Finite Sample: n=45		65		Finite Sample: n=45	
		10%	2,39	3,54		10%	2,39	3,54
		5%	2,83	4,09		5%	2,83	4,09
		1%	3,78	5,3		1%	3,78	5,3
t	-4,61626	10%	-2,57	-3,86	-4,32315	10%	-2,57	-3,86
		5%	-2,86	-4,19		5%	-2,86	-4,19
		2,5%	-3,13	-4,46		2,5%	-3,13	-4,46
		1%	-3,43	-4,79		1%	-3,43	-4,79
Model 3					Model 4			
Test Statistics	Value	α	I(0)	I(1)	Value	α	I(0)	I(1)
			Asymptotic: n=1000				Asymptotic: n=1000	
F	5,83	10%	2,26	3,35	10,60	10%	2,26	3,35
k	5	5%	2,62	3,79	5	5%	2,62	3,79
		2,5%	2,96	4,18		2,5%	2,96	4,18
		1%	3,41	4,68		1%	3,41	4,68
Actual Sample Size	65		Finite Sample: n=45		65		Finite Sample: n=45	
		10%	2,39	3,54		10%	2,39	3,54
		5%	2,83	4,09		5%	2,83	4,09
		1%	3,78	5,3		1%	3,78	5,3
t	-4,70	10%	-2,57	-3,86	-6,32	10%	-2,57	-3,86
		5%	-2,86	-4,19		5%	-2,86	-4,19
		2,5%	-3,13	-4,46		2,5%	-3,13	-4,46
		1%	-3,43	-4,79		1%	-3,43	-4,79

As demonstrated above, the calculated F-values from the F-bound test are higher than the upper critical values for all significance levels [$F > I(1)$], indicating that the variables are cointegrated. According to the upper critical values calculated by Narayan (2005: 1981) for small samples with 30-80 observations, the variables are also cointegrated.

To verify whether this cointegration is valid, the (t) bound test must be conducted. The results of the (t) bound test are also shown in the table above. As observed, in Model 4, the (t) value exceeds the upper critical value in absolute terms at all error levels. For Models 1 and 3, the (t) value is greater than the upper critical value in absolute terms at all error levels, except at the 1% significance level. For Model 2, the (t) value surpasses the upper critical value in absolute terms at all error levels, except at the 1% and 2,5% significance levels. In summary, the (t) values of all models are higher than the critical values at the 5% significance level. Therefore, the cointegration between the series is confirmed. The estimation results for the long-term equilibrium relationship among the series are presented in Table 7.

Table: 7
Model 1, 2, 3, 4 Long-Term Results

Model 1					Model 2				
Dependent Variable: LOGGDP	Coefficient	St. Error	t	P	Dependent Variable: LOGGDP	Coefficient	St. Error	t	P
LOGTCONCRD	0,13	0,15	0,83	0,41	LOGPRVCRD	-0,07	0,08	-0,88	0,38
IR	0,013	0,00	3,72	0,00	IR	0,00	0,00	1,36	0,18
CPI	0,00	0,00	2,19	0,03	CPI	0,01	0,00	2,85	0,00
REALEX	0,00	0,00	0,17	0,86	REALEX	0,00	0,00	1,42	0,16
LOGM3	0,79	0,20	3,93	0,00	LOGM3	1,02	0,10	9,87	0
Model 3					Model 4				
Dependent Variable: LOGGDP	Coefficient	St. Error	t	P	Dependent Variable: LOGGDP	Coefficient	St. Error	t	P
LOGPUBCRD	-0,18	0,15	-1,20	0,24	LOGFORCRD	0,18	0,05	3,73	0,00
IR	0,00	0,00	0,97	0,34	IR	0,00	0,00	3,19	0,00
CPI	0,01	0,00	2,63	0,01	CPI	0,00	0,00	5,03	0
REALEX	0,00	0,00	0,33	0,74	REALEX	0,00	0,00	1,14	0,26
LOGM3	1,16	0,20	5,77	0	LOGM3	0,73	0,07	10,55	0

In the long-term results for Model 1, the relationship between the sector's total consumer loans (LOGTCONCRD) and GDP is not statistically significant. In other words, consumer loans do not support growth. In Models 2 and 3, the relationships between total consumer loans of private bank groups (LOGPRVCRD), consumer loans of public banks (LOGPUBCRD), and GDP are not statistically significant, indicating that these variables do not support growth. The lack of a significant long-term relationship between private and public bank loans and GDP growth suggests that credit allocation may not optimally support economic growth. These findings are consistent with those of Bahadır and Gümüş (2013), who stated that "household credit expansions do not support production", Beck et al. (2012), who found that "individual loans do not have a positive and significant effect on growth", and Eren (2024), who concluded that "consumer loans, except for housing loans, are not growth-friendly." Only foreign bank groups (Model 4) show a statistically significant and positive relationship between consumer loans and GDP. It is observed that the consumer loans provided by these foreign bank groups support GDP growth, aligning with Tiryaki's (2014) observation. As Bernanke (1992: 51) noted, "fluctuations in the quality of credit creation affect cumulative variables such as output, employment, and investment" (1992:51). In this regard, the credit appraisal standards of foreign bank groups merit further examination. Studies have shown that if credit contributes to capital accumulation, it increases GDP (Galor & Zeira, 1993; De Gregorio, 1996, cited by Beck et al., 2012: 1). The asset quality, banking performance, capital structure, as well as the vision and mission differences of the bank groups may have led to differences in results over the long term (Kevser, 2021; Soygür, 2018). Consequently, the absence of a statistically significant long-term relationship between consumer loans and GDP suggests that consumer loans may not play a central role in driving economic growth. This could be due to consumer loans being used primarily for consumption rather than investment, or to structural or cyclical factors that limit the effectiveness of credit in boosting long-term output.

When examining the relationship between GDP and other macroeconomic variables, the association between CPI and GDP is positive and statistically significant. It is well-known that an increase in the general price level raises GDP. Similarly, an increase in the money supply boosts GDP. This finding is consistent across all models. The relationship

between the interest rate (IR) and sectoral GDP is positive and statistically significant. An increase in the interest rate, as a result of inflation, nominally elevates GDP. This outcome is also evident in the model that analyses foreign bank group loans. However, in Models 2 and 3, which examine consumer loans from private and public banks, respectively, the results are not statistically significant. The relationship between the real exchange rate and GDP appears positive across all models, but the findings are not statistically significant. If these results were statistically significant, it could be argued that an increase in the real exchange rate would stimulate exports and consequently raise GDP. Nonetheless, other factors influence exports, so this cannot be attributed solely to the increase in the real exchange rate.

Below, the F, t, and p statistics, as well as the error correction coefficient (negative CointEq(-1) coefficient), based on the short-term regression estimation results of Models 1, 2, 3, and 4, are summarised in Table 8. As shown, these results indicate that the error correction coefficient is both negative, as expected, and statistically significant. Deviations from the short-term equilibrium will correct themselves within 6 months, converging to the long-term equilibrium. Particularly in Model 4, deviations from the short-term equilibrium will be rectified within 3 months, converging to the long-term equilibrium.

Table: 8
Short-Term Results

	F	t	CointEq(-1)	P	Short-Term Deviations
Model 1	6,68	-6,62	-0,52	0,00	1,92 period ~ 6 month
Model 2	8,39	-7,42	-0,65	0,00	1,53 period ~ 4,5 month
Model 3	5,83	-6,2	-0,6	0,00	1,66 period ~ 5 month
Model 4	10,6	-8,35	-1,1	0,00	0,9 period ~ 3 month

5.2. Relationship Between Sector and Bank Group Consumer Loans and Credit Risk (Models 5, 6, 7, 8)

In this section, the relationship between the sector's consumer loans, bank groups, and credit risk is examined. As is well known, the failure of loans to be repaid, i.e., an increase in credit risk, can threaten the financial system and consequently, macroeconomic stability.

In the models, the "ratio of non-performing loans" is used to represent "credit risk". Because the ratio of non-performing loans is one of the best indicators of the asset quality, in other words, "credit risk". The lower credit quality increases the ratio of non-performing loans, and so it is used as "the measure of credit risk" in many studies (Gönenç and Kılıçhan, 2004: 60; Castro, 2012: 8; Chen et al., 2013; Ganioglu & Us, 2014:5; Tunay, 2015).

As mentioned before, the first stage of the ARDL model is to determine the appropriate lag length. For Models 5, 6, 7, and 8, the optimal lag length is 4. This length corresponds to the lowest value under the Akaike Information Criterion (AIC). As shown in Table 9, because $LM > 0.05$, there is no evidence of autocorrelation in the models selected at this lag length and under the specified criteria.

Table: 9
Determining the Appropriate Lag Length for ARDL Models (Based on Case 2)

Model 5					Model 6			
Lag Number	AIC	SC	HQ	LM	AIC	SC	HQ	LM
1	-0,22	0,04	-0,12	0,00	0,01	0,31	0,13	0,00
2	-0,43	-0,13	-0,31	0,42	-0,33	0,03	-0,19	0,26
3	-0,43	-0,06	-0,29	0,10	-0,37	0,13	-0,17	0,29
4	-0,60	-0,09	0,40	0,62	-0,41	0,03	-0,24	0,31
Model 7					Model 8			
1	-0,08	0,18	0,02	0,00	0,11	0,41	0,23	0,00
2	-0,40	-0,04	-0,26	0,31	-0,28	0,10	-0,13	0,35
3	-0,45	-0,05	-0,29	0,16	-0,28	0,12	-0,13	0,03
4	-0,45	-0,05	-0,29	0,24	-0,28	0,12	-0,13	0,053

In this section, unlimited constant and trendless models (Case 3) were initially tested as described above, but they failed the diagnostic tests. Then, using a maximum lag length of 4, a restricted constant-and-trendless error-correction model (Case 2) was employed to determine the ARDL models based on the Akaike Information Criterion (AIC). The selected ARDL models are summarised in Table 10.

Table: 10
ARDL Models

ARDL Models		Dependent Variable	Independent Variables	Lag Number	Criteria	R ²	F	p
Model 5	(2,3,0,4,1)	NPL	LOGTCONCRD IR CPI REALKUR	4	AIC	0,97	133,6	0,00
Model 6	(3,0,0,4,1)	NPL	LOGPRVCRD IR CPI REALKUR	4	AIC	0,96	125,25	0,00
Model 7	(3,2,1,1,0)	NPL	LOGPUBCRD IR CPI REALEX	4	AIC	0,96	140,13	0,00
Model 8	(3,0,1,1,2)	NPL	LOGFORCRD IR CPI REALEX	4	AIC	0,99	118,33	0,00

The diagnostic test results for Models 5, 6, 7, and 8 are summarised in Table 11. As seen, there is no serial correlation in the models. Since $P > 0.05$, the null hypothesis³, which states that there is no serial correlation up to a lag of 4, cannot be rejected. Therefore, there is no serial correlation problem in Models 1, 2, 3, and 4. The Breusch-Pagan-Godfrey test was used to assess the presence of heteroscedasticity in the models. According to the test results summarised below, since $P > 0.05$, the null hypothesis that the variance is constant cannot be rejected. Therefore, it can be concluded that there is no issue of heteroscedasticity in the models. The Ramsey RESET test was used to check for specification errors in the models. According to the test results, since $P > 0.05$, there is no specification error in the models. The Jarque-Bera test was applied to check whether the assumption of normality holds in the models. Based on the test results, the model residuals are normally distributed ($P > 0.05$).

³ Null hypothesis: No serial correlation at up to 4 lags.

Table: 11
Diagnostic Test Results for Models 5, 6, 7, and 8

Model 5			
Purpose	Test	F	P
Serial Correlation	Breush-Godfrey	0,66	0,63
Model Specification	Ramsey RESET	0,00	0,95
Normality	Jarque-Bera = 0,29		0,86
Heteroscedasticity	Breush-Pagan-Godfrey	1,17	0,33
Model 6			
Serial Correlation	Breush-Godfrey	1,24	0,31
Model Specification	Ramsey RESET	1,11	0,30
Normality	Jarque-Bera = 0,86		0,65
Heteroscedasticity	Breush-Pagan-Godfrey	1,31	0,24
Model 7			
Serial Correlation	Breush-Godfrey	1,43	0,24
Model Specification	Ramsey RESET	0,24	0,63
Normality	Jarque-Bera = 3,76		0,15
Heteroscedasticity	Breush-Pagan-Godfrey	1,27	0,27
Model 8			
Serial Correlation	Breush-Godfrey	2,52	0,053*
Model Specification	Ramsey RESET	0,96	0,34
Normality	Jarque-Bera = 1,56		0,45
Heteroscedasticity	Breush-Pagan-Godfrey	1,62	0,12

* 0,053 > 0,05.

Additionally, based on the results of the CUSUM and CUSUM square tests applied to the models, all predictions lie within the confidence interval and satisfy the stability condition.

The F-bound test results for Models 5, 6, 7, and 8 are also displayed below (Table 12). It should also be noted that t-bound tests are not calculated in these conditional error correction models.

Table: 12
Boundary Test Results for Models 5, 6, 7, and 8

H0: There is nocointegration								
Model 5					Model 6			
Test stat.	Value	α	I(0)	I(1)	Value	α	I(0)	I(1)
			Asymptotic: n=1000				Asymptotic: n=1000	
F	8,39	10%	2,2	3,09	7,02	10%	2,2	3,09
k	4	5%	2,56	3,49	4	5%	2,56	3,49
		2,5%	2,88	3,87		2,5%	2,88	3,87
		1%	3,29	4,37		1%	3,29	4,37
Actual Sample Size	64		Finite Sample: n=45		65		Finite Sample: n=45	
		10%	2,34	3,25		10%	2,34	3,25
		5%	2,75	3,76		5%	2,75	3,76
		1%	3,73	4,94		1%	3,725	4,94
			2,32	3,27		10%	2,32	3,27
			2,74	3,79		5%	2,74	3,79
			3,71	4,97		1%	3,71	4,97
Model 7					Model 8			
Test stat.	Value	α	I(0)	I(1)	Value	α	I(0)	I(1)
			Asymptotic: n=1000				Asymptotic: n=1000	
F	4,99	10%	2,2	3,09	4,12	10%	2,2	3,09
k	4	5%	2,56	3,49	4	5%	2,56	3,49
		2,5%	2,88	3,87		2,5%	2,88	3,87
		1%	3,29	4,37		1%	3,29	4,37
Actual Sample Size	65		Finite Sample: n=45		65		Finite Sample: n=45	
		10%	2,335	3,25		10%	2,34	3,25
		5%	2,75	3,76		5%	2,75	3,76
		1%	3,73	4,94		1%	3,76	4,94

As shown in the F-bound test, the F values calculated for Models 5, 6, and 7 exceed the upper critical value at all significance levels [$F > I(1)$], indicating that the "no cointegration" hypothesis is rejected. In Model 8, the calculated F value is greater than the critical values at all significance levels, except for the 1% significance level. Additionally, all F values are cointegrated, as indicated by the upper critical values calculated by Narayan (2005: 1981) for small samples. The long-term results of the models (5, 6, 7, and 8) are provided below in Table 13.

Table: 13
Long-Term Results

Model 5					Model 6				
Dependent Variable: NPL	Coefficient	St. Error	t	P	Dependent Variable: NPL	Coefficient	St. Error	t	P
LOGTCONCRD	-3,47	0,77	-4,50	0	LOGPRVCRD	-2,18	0,32	-6,73	0
IR	-0,06	0,04	-1,72	0,09	IR	-0,03	0,02	-1,34	0,19
CPI	0,14	0,07	2,17	0,03	CPI	0,02	0,02	0,89	0,38
REALEX	-0,11	0,02	-4,75	0	REALEX	-0,06	0,01	-6,60	0
Model 7					Model 8				
Dependent Variable: NPL	Coefficient	St. Error	t	P	Dependent Variable: NPL	Coefficient	St. Error	t	P
LOGPUNCRD	-1,33	0,45	-2,96	0,00	LOGFORCRD	-1,11	0,56	-1,96	0,05
IR	0,06	0,04	1,66	0,10	IR	0,10	0,05	1,95	0,06
CPI	-0,06	0,02	-2,59	0,01	CPI	-0,06	0,03	-2,11	0,04
REALEX	-0,0605	0,02	-3,16	0,00	REALEX	-0,04	0,02	-1,58	0,12

The ratio of non-performing loans, which encompasses all credit risk across individual and commercial loans, shows a statistically significant negative relationship with sector total consumer loans and with consumer loans across all bank groups. In other words, an increase in consumer loans does not increase credit risk. Allocating credit to more customers, rather than extending large loans to a few, reduces banks' credit risk (BDDK, 2016a; 2016b). This is because diversification minimises the concentration of risk. Diversification is an essential strategy for reducing the risks associated with both commercial and individual loans. As is well known, traditional portfolio theory advocates "diversification", often summarised as "not putting all eggs in one basket", and holds that diversification should be maximised to enhance performance (Gönenç & Kılıçhan, 2004: 53-56).

When examining the relationship between macroeconomic indicators and credit risk, it is observed that, except for Model 6, an increase in CPI is associated with higher risk. Inflationary pressure is expected to cause repayment difficulties for borrowers. The relationship between interest rates and credit risk is statistically significant and positive across all models, except Model 6, consistent with expectations. High interest rates lead to repayment difficulties, increasing credit risk, which is consistent with some studies in the literature (Nkusu, 2011; Castro, 2012: 25; Louzis et al., 2012: 14). Similarly, an increase in the real exchange rate leads to repayment difficulties for firms, thereby increasing credit risk (Castro, 2012: 25). In all models except Model 8, the relationship between the real exchange rate and credit risk is positive and statistically significant. This could have meant that an increase in the real exchange rate would boost exports and, in turn, improve the payment capacity of exporting firms. However, it is important to remember that many other factors

affect exports, and that Türkiye's production structure is dependent on imports (Küçükkiremitçi, 2024: 273-315).

Below, the F, t, and p statistics, as well as the error correction coefficient (negative CointEq(-1) coefficient), based on the short-term regression estimation results of Models 5, 6, 7, and 8, are summarised in Table 14. As shown, the error-correction coefficient is both negative, as expected, and statistically significant. Deviations from equilibrium in the short term will correct themselves within 1.5 years, converging to the long-term equilibrium.

Table: 14
Short-Term Estimation Results for Models 5, 6, 7, and 8

	F	CointEq(-1)	P	Short-Term Deviations
Model 5	8,39	-0,15	0,00	6,36 period ~ 1,5 year
Model 6	7,01	-0,28	0,00	3,52 period ~ 1 year
Model 7	4,98	-0,17	0,00	5,9 period ~ 1,5 year
Model 8	4,11	-0,14	0,00	7,04 period ~ 1,5 year

5.3. Granger Causality Analysis Findings

The variables in the ARDL models described above were also subjected to Granger causality tests using two lags. Because the test is based on shorter time lags, it is more sensitive to short-term relationships. A summary of the results of these tests is presented below (Table 15).

Table: 15
Granger Causality Test Results

	F	p
DLOGTCONCRD → DLOGGDP	5,59	0,00
DIR → DLOGTCONCRD	6,90	0,00
DLOGTCONCRD → DIR	9,59	0,00
CPI → DLOGTCONCRD	6,67	0,00
DLOGTCONCRD → DCPI	2,40	0,09
DREALEX → DLOGTCONCRD	2,73	0,07
DLOGM3 → DLOGTCONCRD	6,39	0,00
DLOGTCONCRD → DLOGM3	3,61	0,03
DLOGOZELKRD → DLOGGSYIH	5,08	0,01
DLOGPRVCRD → DIR	3,82	0,03
DLOGM3 → DLOGPRVCRD	2,94	0,06
DLOGPRVCRD → DLOGM3	7,08	0,00
DLOGPUBCRD → DLOGGDP	4,32	0,02
DIR → DLOGPUBCRD	3,48	0,04
DCPI → DLOGPUBCRD	4,76	0,01
DLOGM3 → DLOGPUBCRD	6,87	0,00
DLOGM3 → DLOGFORCRD	2,50	0,09

According to the findings, a unidirectional causality relationship from total sector consumer loans and consumer loans of private and public bank groups to GDP is observed. This short-term result is consistent with Tiryaki's (2014) finding of a "positive causality between individual loans and GDP growth.

The relationship between interest rates, the most significant determinant of credit costs, and sector consumer loans is bidirectional. In other words, low interest rates stimulate

loan use, whereas high interest rates limit it. Reverse causality, in which consumer loans influence interest rates, may indicate that higher loan demand can raise market interest rates. If consumer borrowing increases substantially, banks may need to raise interest rates to manage their loan portfolios or to offset increased risk. It means that the sensitivity of the credit market to fluctuations in consumer borrowing patterns. It is thought that interest rates on consumer loans may be related to credit constraints and resource costs arising from macroeconomic conditions. Indeed, a relationship between private bank group consumer loans and interest rates was observed. This could suggest that private banks are more likely to set interest rates based on market conditions, including changes in consumer demand for credit. It can be concluded that private banks are more reactive to changes in loan demand. Additionally, a unidirectional relationship from interest rates to consumer loans of the public bank group was detected. This means that interest rates affect the cost of credit and, consequently, credit demand. This suggests that public banks may be more sensitive to changes in market interest rates, possibly due to government public finance policy (policy-driven interest rates) and/or the cost of capital they face. In İbicioğlu and Karan's (2009) study, a causal relationship from interest rates to consumer loans in the Turkish banking sector between 2004 and 2009 was also found.

The relationship between sector consumer loans and CPI is bidirectional, while there is a unidirectional causality from CPI to public bank group consumer loans. The relationship between sector consumer loans and inflation is consistent with the short-term findings of Coricelli et al. (2006) and Sakarya (2020). It can also be said to align with the observation of Ögünç and Sakarya (2015: 7-8) that "consumer loans are more inflationary, and their effect on inflation can spread over 1.5 years", i.e., a short-term effect. Additionally, Altan and Gökçürk (2007: 32) cite studies showing that inflation has a short-term impact on consumption (Sidrauski, 1967; Faria & Corneiro, 2001). Özmen and Sarıkaya (2014) also demonstrate that inflation is sensitive to credit in Türkiye.

A bidirectional causal relationship was found between sector and private bank group consumer loans and the broadest money supply, M3. The bidirectional causality between sectoral and private bank group consumer loans and M3 can be understood through both monetarist and Keynesian lenses as an interaction between the money supply and the demand for credit. Meanwhile, the unidirectional causality from M3 to public and foreign bank groups' loans highlights the role of monetary policy and central bank actions in influencing the credit market, especially for banks that are more responsive to central bank interventions.

The real exchange rate exhibits unidirectional causality only with total sector consumer loans. The unidirectional causality from the real exchange rate to total sector consumer loans suggests that exchange rate changes can influence consumer behaviour and, in turn, consumer loans. Changes in the exchange rate can increase demand for loans as consumers adjust to shifting prices and economic conditions. However, consumer loans do not appear to have a significant effect on the exchange rate, likely because the domestic

credit market's influence on broader macroeconomic factors is relatively limited compared with other forces that drive exchange rate fluctuations.

6. Conclusion

In this study, the macroeconomic effects of consumer loans, their relationship with economic growth, and their role in credit risk are analysed using data from 2007-2023 on sectors, deposit domestic private, public, and foreign bank groups, total consumer loans⁴ including credit card expenditures, non-performing loan ratio, GDP, weighted consumer loan interest rate, CPI, real exchange rate, and money supply. The analysis is conducted through the ARDL (Autoregressive Distributed Lag) method, cointegration analysis, and Granger causality test.

According to the ARDL analysis results, except for the foreign bank group, the relationship between consumer loans and GDP is statistically insignificant for the sector, private banks, and public bank groups, meaning that consumer loans do not support growth. On the other hand, the relationship between non-performing loans (representing credit risk) and total consumer loans, as well as the consumer loans of separate bank groups, is statistically significant and negative, indicating that an increase in consumer loans does not raise credit risk. Providing loans to more customers, rather than large loans to a few, reduces concentration risk and thus credit risk. In summary, while consumer loans do not contribute substantially to long-term growth, their role in reducing credit risk through diversification is substantial. The findings point to the need for a broader focus on improving the efficiency of credit allocation and encouraging investment in productive sectors to foster sustainable economic growth. Moreover, banks can expand consumer credit without necessarily jeopardising their financial stability, provided they diversify risk across a broader spectrum of consumers and employ more robust risk assessment and management strategies.

According to the Granger causality results, a unidirectional causal relationship from consumer loans to GDP is found for both the private and public bank groups. That is, in the short term, consumer loans increase GDP, as consumption is an essential component of GDP. Furthermore, the bidirectional relationship between sector consumer loans and CPI indicates that consumer loans are inflationary. The relationship between interest rates and consumer loans in the sector is bidirectional. Low interest rates stimulate loan use, whereas high interest rates limit it. Conversely, higher demand for loans can lead to higher market interest rates as banks adjust their portfolios and risk management. This highlights the sensitivity of the credit market to changes in consumer borrowing. Additionally, while a relationship from private bank group consumer loans to interest rates suggests that private banks set rates based on market conditions and loan demand, a unidirectional relationship

⁴ Models have also been established for the sector and deposit bank groups' individual consumer loans and individual credit card expenditures, and long-term results in the same direction have been identified. It has been observed that only the Granger causality results differ.

from interest rates to public bank group consumer loans indicates that government policy-driven interest rates influence credit cost and, thus, credit demand.

These results provide new evidence regarding the relationship between consumer loans and the macroeconomy. Therefore, it is hoped that the study will inform credit policies that influence macroeconomic conditions, determine credit standards and credit composition, allocate loans to more efficient areas (selective credit policies), and establish conditions for access to credit. It is also suggested to conduct studies on individual types of consumer loans, such as needs, vehicle, housing, and credit card options, for the same purpose.

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The Impact of Establishing a Biomass Energy-Based Reverse Logistics (Recycling and Distribution) Facility in the TRB2 Region on Sustainable Local Development¹

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TRB2 Bölgesi İllerinde Biyokütleyle Dayalı Tersine Lojistik (Geri Dönüşüm ve Dağıtım) Tesisi Kurulmasının Sürdürülebilir Yerel Kalkınmaya Etkisi²

Abstract

Reverse logistics facilities using local renewable energy sources can promote sustainable regional development in the TRB2 Region (Van, Muş, Bitlis, Hakkâri), which has high biomass potential. This study examined the economic, social, and environmental impacts of a recycling and distribution facility through SWOT analysis. Field research and regression analyses identified opportunities as the most critical factor. Muş was recognised as the most suitable location for the facility. Establishing such a facility could support sustainable development by utilising regional resources, reducing income disparities among provinces, creating added value for the local economy, and enhancing overall regional equity.

Keywords : Reverse Logistics, Sustainable Local Development, Multiple Regression Analysis, TRB2 Region.

JEL Classification Codes : Q42, R11, C30, L91.

Öz

Yerel yenilenebilir enerji kaynaklarına dayalı tersine lojistik tesisleri, TRB2 Bölgesi'nde (Van, Muş, Bitlis, Hakkâri) sürdürülebilir yerel kalkınmaya katkı sunabilir. Bölgede özellikle biyokütle (bitki ve hayvan atıkları) potansiyeli yüksek olup, çalışmada geri dönüşüm ve dağıtım tesisinin ekonomik, sosyal ve çevresel etkileri ile güçlü ve zayıf yönleri, fırsatlar ve tehditler (GZFT) analizi yapılmıştır. Anket tabanlı saha çalışması ve regresyon analizleri sonucunda, en etkili değişkenin fırsatlar olduğu ve tersine lojistik tesisi için en uygun ilin Muş olduğu tespit edilmiştir. Böyle bir tesis, bölgeler arası gelir farklılıklarını azaltacak şekilde katma değer sağlayabilir.

Anahtar Sözcükler : Biyokütle, Tersine Lojistik, Sürdürülebilir Yerel Kalkınma, Çoklu Regresyon Analizi, TRB2 Bölgesi.

¹ This study is derived from the doctoral dissertation entitled "Proper Renewable Energy Sources for Sustainable Local Development: A Field Research on the TRB2 Region", completed by İbrahim Halil Polat in 2023 under the supervision of Prof.Dr. Sevda Yapraklı at Atatürk University Social Sciences Institute.

² Bu çalışma, Atatürk Üniversitesi Sosyal Bilimler Enstitüsü'nde Prof.Dr. Sevda Yapraklı'nın danışmanlığında İbrahim Halil Polat tarafından 2023 yılında tamamlanan "Sürdürülebilir Yerel Kalkınma İçin Tersine Lojistiğe Uygun Yenilenebilir Enerji Kaynakları: TRB2 Bölgesi Üzerine Bir Alan Araştırması" başlıklı doktora tezinden üretilmiştir.

1. Introduction

Local Renewable Energy Sources (LRES) and reverse logistics facilities based on these resources are vital for Sustainable Local Development (SLD) in a world confronting threats such as environmental degradation, climate change, and resource depletion or scarcity.

LRES are resources that occur naturally due to various natural phenomena and ecological cycles on Earth. They are inexhaustible and reusable. Policies that support mobilising local potential and turning LRES into economic value emphasise the importance of natural capital and enable the efficient use of limited natural resources. This shift away from the fossil-fuel-based development model in the global economy offers opportunities to access new markets and achieve sustainable prosperity, according to the International Energy Agency (2011). Due to the adverse effects of fossil fuel-based energy production and consumption, such as coal and oil, on the environment and natural resources at local, regional, and global levels, as well as the environmental awareness emerging in the 1990s, LRES began to be recognised as clean, inexhaustible, cost-effective, and environmentally friendly energy sources (Li et al., 2020: 991-992).

One of the primary LRES, widely available in nearly every country and potentially causing environmental issues, is biomass. Biomass comprises organic materials produced by living organisms such as plants and animals. Used as a raw material for energy production, biomass includes animal and plant waste, agricultural and industrial residues, urban-rural waste, and solid organic waste from households and municipalities (Khan, 2009: 39; Polat, 2023: 83). The main component of biomass is carbohydrate compounds, which can be converted into commercial-grade solid, liquid, and gaseous forms of biomass energy through various physical, chemical, and biological processes. Biomass energy can be utilised as liquid fuels like butanol, biodiesel, methanol, and ethanol; as gases such as methane and hydrogen; as solid fuels like wood and dung for combustion; and for electricity generation in turbine boilers and microbial fuel cells (Polat, 2023: 83). Biomass resources are inexhaustible, universally available, help manage waste through biofuels, promote regional and local development, and can be adjusted according to demand (Jenkins, 1998: 41-42). Activating the investment and production potential of local biomass resources increases both the quantity and quality of production in regional economies, thereby strengthening national competitiveness and facilitating structural transformations (Polat, 2023: 69).

One of the core activities that allows biomass resources to benefit local economies is reverse logistics. Reverse logistics involves processes such as collecting, disassembling, recycling, and reintroducing waste or unusable products generated from production and consumption back into the market to prevent environmental harm (Polat, 2023: 2). Covering stages like collection/recovery, separation, screening, classification, recycling/recovery, disposal, transportation, and redistribution, reverse logistics activities can support the growth of firms and countries aiming for both environmental and economic benefits, while also helping to reduce local-national income disparities (Polat, 2023: 60; Fettahlioğlu & Birin,

2016: 91). Since reverse logistics activities demand technological investments in areas such as sustainable production, recycling, energy efficiency, new materials development, and environmental services rather than pollution control they contribute to environmental protection while creating new jobs and employment opportunities (Demirer, 2001: 212-213; Pearce et al., 1989: 1).

Reverse logistics activities, which involve converting biomass resources and waste that cause environmental pollution at the local level into economic value, represent a significant focus for implementing sustainable development principles locally, that is, for SLD (Jacobs & Stott, 1992: 263). By effectively and efficiently utilising local natural resources, such as biomass through reverse logistics, SLD contributes to increased economic and social welfare, fostering a cleaner and more liveable world for future generations. The global discourse on environmental issues, drought, reckless resource consumption, waste, and interregional or intercountry disparities in development, especially during the 1980s, brought sustainable development to the forefront. From the late 1990s onwards, the concepts of sustainable development and localisation have been integrated, recognising the reciprocal interactions between global and local actors, making SLD a primary objective (Kadirbeyoğlu et al., 2014: 290). Various regional and local development approaches and theories, such as export centres, cumulative causation, new industrial hubs, endogenous regional growth, and new economic geography, have influenced one another and addressed each other's shortcomings, thereby advancing SLD, which emphasises the role of local and regional authorities, resources, and dynamics (Polat, 2023: 42-43).

The SLD approach aims to reduce local development disparities by addressing global economic, social, and environmental issues at the local level, integrating local development with sustainability (Garcia et al., 2019: 1; Liu et al., 2024: 107339-107340). Instead of focusing on regions, it highlights local geographical areas that can operate and sustain themselves based on their existing internal resources, accumulation, and potential (Coffey & Polese, 1984: 1). SLD promotes a development perspective that fosters local growth while tackling economic, social, and environmental concerns, making efficient use of resources and involving all local actors in the process (Kocaoğlu, 2015: 107). The economic dimension of SLD includes activities aimed at increasing economic welfare; the social dimension encompasses justice, equity, education, health, participation, and partnership; and the environmental dimension involves protecting ecological systems, waste management, pollution control, recycling, and natural resources such as biomass and waste (Newby, 1999: 67; Christy, 2008: 17). Through SLD, living conditions within a local community such as a province, metropolitan area, or subnational region improve, while local production, competitiveness, employment opportunities, and economic benefits grow, and environmental degradation decreases (Gwen et al., 2006: 1-3).

This study, emphasising the critical role of SLD, aims to identify the strengths, weaknesses, opportunities, and threats (SWOT) of establishing a biomass-based recycling and distribution facility suitable for reverse logistics among LRES in the TRB2 Region. It also seeks to determine which province within the TRB2 Region is most ideal for

establishing the reverse logistics facility. To achieve this, a conceptual and theoretical framework was initially discussed, followed by a literature review on the subject. Finally, the research methodology was outlined, the analysis results and their interpretations were presented, and the conclusion section offered policy recommendations.

2. Literature Review

Despite its vital role in addressing local development disparities and Sustainable Local Development (SLD), no applied research has examined the relationship among Local Renewable Energy Sources (LRES), reverse logistics, and SLD. In scholarly works, reverse logistics is regarded as a strategic, value-recovery function that complements forward supply-chain activities. Through returns, repair, reuse, remanufacturing, and recycling, it manages demand uncertainty, warranty costs, and environmental responsibilities, thereby enhancing overall cost efficiency, service performance, and sustainability. The supply chain, by contrast, is an end-to-end system coordinating material, information, and cash flows across planning, procurement, manufacturing, inventory management, distribution, and customer service. A closed-loop perspective clarifies how forward and reverse flows are integrated, how information systems boost transparency, and how standard metrics (such as cycle time, recovery rate, and carbon intensity) are utilised. Studies on this subject, which have increased since the late 2000s, generally focus on the relationship between reverse logistics and/or Renewable Energy Sources (RES), or between RES and reverse logistics using a single indicator of SLD. The literature review shows that most research focuses on the impact of energy sources on economic growth and development at the national or international level, whereas local-level studies remain limited. The key studies reviewed can be summarised as follows, based on their findings.

In panel data analyses conducted by prominent researchers such as Sadorsky (2009), Menyah and Wolde-Rufael (2010), Menegaki (2011), Marques and Fuinhas (2012), Salim and Rafiq (2012), Leitao (2014), Çınar and Yılmaz (2015), Bayrak and Çıldır (2017), Dees and Auktor (2018), Bello et al. (2018), Obsatar et al. (2019), Naseem and Ji (2020), Mehmood (2021), Azam et al. (2021), Chang et al. (2022), Dagar et al. (2022), Hieu and Mai (2023), Polat et al. (2023), Raihan et al. (2024), and Abdi et al. (2025), it was established that there is a relationship between RES and economic growth. However, the direction and strength of this relationship vary with factors such as countries' levels of development, dependence on non-renewable energy sources, production technologies, the type, potential, and level of RES use, investment costs, environmental impacts, public support, sampling, and the analytical methods employed.

Similarly, key studies conducted locally on RES investments, production facilities, and their impacts such as those by Ivanova (2005), Bergman et al. (2006), Chandrasekar and Kandpal (2007), Swofford and Slattery (2010), Zhu et al. (2011), Liu et al. (2013), Liu (2016), Shoaib and Ariaratnam (2016), Hess and Gentry (2019), Surya et al. (2021), and Almulhim (2022) revealed that RES investments and facilities have economic and environmental effects, but the direction and magnitude of these effects differ between urban

and local areas. A limited number of studies investigating the relationship between RES and reverse logistics, including Damiano (2013), Kinobe et al. (2015), Dupal et al. (2016), Çınar and Yıldırım (2017), Agrawal and Singh (2019), Guarnieri et al. (2020), and Kostha et al. (2022), found similar results. According to these studies, the environmental and economic impacts of RES in general, and biomass resources specifically, vary depending on factors such as the location of use (e.g., households, workplaces, industries), forms of use (e.g., combustion, recycling, storage), cost-benefit levels, public attitudes towards natural resource use, and the completion of infrastructural, managerial, socio-cultural, and economic improvements, as well as the extent of public support.

For Türkiye, a limited number of local-level studies by Önaç et al. (2017), Deniz et al. (2019), Tunacan et al. (2020), and Taşkın et al. (2020) found that reverse logistics facilities based on RES and/or biomass resources are insufficient, high installation costs hinder investment growth, public collaboration regarding waste management is low, and the effects of these facilities on growth and development are either adverse or negligible.

A summary of the studies applied to the subject is presented in Table 1.

Table: 1
Key Studies on the Subject

	Researcher(s)/Year(s)	Periods/Samples	Methods	Findings
Single and Multi-Country Studies	Sadorsky-2009	1980-2005/G7 Countries	FMOLS/DOLS	RES positively affects Economic Growth.
	Menyah/Wolde-Rufael-2010	1960-2017/USA	Time Series Analysis	RES affects Economic Growth and carbon emissions.
	Menegaki-2011	1997-2007/27 EU Countries	Panel Causality	There is no causal relationship between RES and economic growth. RES reduces carbon emissions.
	Marques/Fuihas-2012	1990-2007/24 EU Countries	Panel OLS	The adverse effects of RES use on economic growth exceed its positive impact.
	Salim/Rafiq-2012	1980-2006/6 GÜ	ARDL	RES affects economic growth in the short term and carbon emissions in the long term.
	Leitao-2014	1970-2010/Portugal	Causality, Cointegration.	RES consumption positively affects Economic Growth.
	Çınar/Yılmaz-2015	1990-2013/ 8 Developing and Emerging Countries	Panel ARDL	RES consumption positively affects Economic Growth.
	Bayrac/Çildir-2017	2006-2015/ EU Countries	Panel Regression	RES consumption increases Economic Growth.
	Dees/Auktor-2018	1996-2012/ MENA Countries	Panel OLS	RES positively affects economic growth in member countries, except in Türkiye.
	Bello et al.-2018	1971-2016/ Malaysia	Causality, Cointegration.	RES positively affects Economic Growth and carbon emissions.
	Obsatar et al.-2019	1980-2017/ Indonesia	ARDL	Biomass energy supports sustainable growth and environmental protection.
	Naseem/Ji-2020	2000-2017/ SAARC Countries	Panel Causality	RES consumption negatively affects carbon emissions and Economic Growth.
	Azam et al.-2021	1990-2017/25 Developing Countries	Panel ARDL	There is a reciprocal relationship between RES production and consumption and Economic Growth.
	Mehmood-2021	1990-2017/G11 Countries	ARDL	RES usage reduces carbon emissions.
	Chang et al.-2022	1990-2019/10 Developing Countries	Cointegration	RES usage positively impacts the environment.
	Dagar vd-2022	1990-2019/38 OECD Countries	Panel GMM	RES usage reduces environmental degradation.
	Hieu/ Mai -2023	1990-2020/80 Developing Countries	Panel MMQR	RES consumption positively affects Economic Growth.
	Polat et al.-2023	1980-2020/12 OECD	CS-ARDL	RES usage reduces carbon emissions.
	Raihan et al.-2024	1965-2022/India	ARDL	RES usage reduces carbon emissions.
	Abdi et al -2025	1994-2021/ sub-Saharan Africa (SSA)	(FGLS), and Driscoll-Kraay	RES usage reduces carbon emissions and ecological footprint.

Studies on the Impacts of RES Investments and Facilities	Ivanova-2005	Australia, Queensland	Survey-Correlation	Biomass investment is suitable for clean energy and affordable electricity.
	Bergmann et al. (2006)	Scotland	Survey-ANOVA	RES investments yield economic and environmental benefits.
	Chandrasekar/Kandpal-2007	India	Survey-Correlation	Biomass energy production facilities have positive socio-cultural impacts.
	Swofford/Slattery-2010	USA, Texas	Survey-Average	Wind energy helps in combating climate change.
	Zhu et al. (2011)	China	Survey-ANOVA	Biomass is most widely used locally, and public support is required to facilitate investment.
	Liu et al. (2013)	Çin	Logit Probit	RES investments have economic, social, and environmental impacts.
	Lui-2016	1990-2010 / 31 Cities in China	Panel Regression	RES usage positively affects local per capita income but negatively impacts economic growth.
	Shoaib/Ariaratnam-2016	Afganistan	Survey-Average	RES investments have economic and social impacts.
	Hess/Gentry-2019	3 Cities in the USA	Survey-Regression	Transitioning to a RES production system is essential for local development.
	Surya et al.-2021	Indonesia	Input-Output Analysis	RES production facilities positively impact SLD.
Studies on RES-Reverse Logistics	Almulhim-2022	Saudi Arabia	Survey-ANOVA	High investment costs hinder RES investments.
	Damiano-2013	Italy	Survey-Logit	Recycling household waste has both positive and negative impacts.
	Kinobe et al.-2015	Kampala, Africa	Interviews-Case Analysis	Reverse logistics facilities reduce the negative economic and environmental impacts of solid waste.
	Dupal et al. (2016)	Slovakia	Survey-Regression	Recycling industrial waste positively affects sustainable development.
	Çınar/Yıldırım-2017	General	Optimization Model	Recycling and recovery of wind turbine waste have positive environmental and economic impacts.
	Agrawal/Singh 2019	India	Survey-Structural Equation Modelling	The disposal of electronic waste has economic and environmental impacts.
	Guarnieri et al. (2020)	Brazil	Survey-Frequency Forecast	Waste recycling affects the economy and the environment.
	Kostha et al. (2022)	India	Survey-Partial Least Squares	Applying reverse logistics to e-waste has positive social, environmental, and economic impacts.
Studies on Türkiye and Local Areas	Önaç et al. (2017)	Alaçati	Survey-Frequency-Average	Wind power plants do not harm the environment.
	Deniz et al. (2019)	1965-2017 / Türkiye	Cointegration, Causality	Biomass energy will reduce energy dependency.
	Tunacan et al.-2020	Karabük, Türkiye	Survey-ANOVA, Frequency	Solid waste recycling has positive economic and environmental impacts.
	Taşkın et al. (2020)	Mucur, Türkiye	Survey-Frequency	Wind power plants have limited economic impacts.

Overall, the studies in the table indicate a relationship between Renewable Energy Sources (RES) and development, as measured by economic growth. However, the direction and magnitude of this relationship vary. While no study has been identified that simultaneously examines RES (biomass), reverse logistics, and SLD, existing research on the subject addresses different indicators of these areas, suggesting a complementary relationship among them. No such study has been found in the national literature. This study is expected to contribute to the literature by distinguishing itself through the identification of the impacts of a biomass-based reverse logistics facility's SWOT analysis on SLD's economic, social, and environmental indicators, and by serving as a guide for future local-level research.

3. Field Research on the TRB2 Region

This study used primary data collected from field research on agricultural and livestock enterprises to assess the impacts of establishing a biomass-based recycling and distribution facility in the TRB2 Region. Specifically, the study aimed to conduct a SWOT analysis of the facility with respect to the economic, social, and environmental indicators of

SLD. Additionally, the research sought to determine which province within the TRB2 Region would be most suitable for establishing a reverse logistics facility.

3.1. Population and Sample

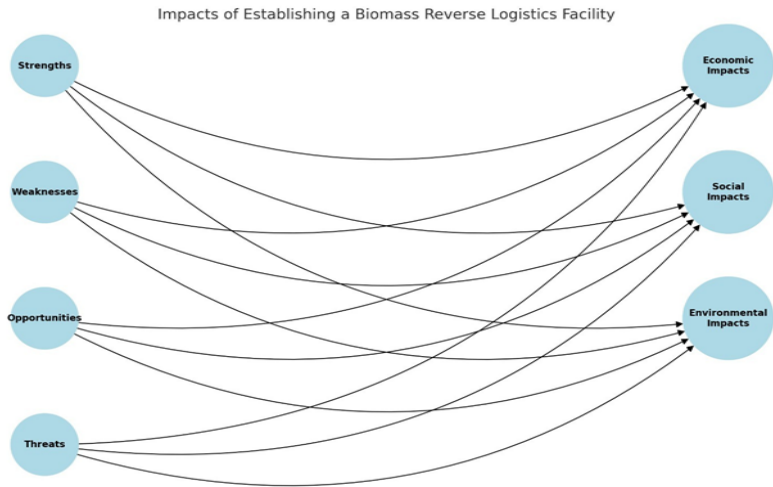
The TRB2 Region, one of Türkiye's underdeveloped sub-regions, has significant potential in biomass resources derived from plant and animal waste. Biomass, identified as the renewable energy source most suitable for reverse logistics in the TRB2 Region (Polat, 2023: 309), is the focus of this study. Therefore, the research covers agricultural and livestock enterprises in provinces, districts, and villages with abundant biomass resources within the region. The study population comprises enterprises registered with the provincial agriculture and forestry directorates (TUIK, 2022). In the TRB2 Region, there are 89,498 domestic and foreign agricultural and livestock enterprises, distributed as follows: 39,396 in Van, 23,266 in Muş, 17,660 in Bitlis, and 9,176 in Hakkâri. Consequently, the study's population size is 89,498 enterprises.

A simple random sampling method was used, ensuring that each individual in the population had an equal chance of selection. The sample size was calculated using the formula $n = \pi(1-\pi) / (e / z)^2$ (Polat, 2023: 242). With a 95% confidence level and a 5% margin of error, the minimum sample sizes were 380 for Van, 378 for Muş, 376 for Bitlis, and 369 for Hakkâri, totalling 1,503 enterprises. To account for potential response errors and incomplete evaluations, 1,600 survey forms were prepared. Before administering the survey to the sample, a pilot study was conducted with 30 enterprises to verify the clarity of the questionnaire. Due to constraints such as time, financial limitations, and participant reluctance, surveys were completed by 1,549 enterprise owners. The surveys were conducted by 12 surveyors selected from students of Hakkâri and Van Yüzüncüyıl University. These surveyors received training on the questions, the types of renewable energy sources considered, reverse logistics, sustainable local development (SLD), and interview techniques before being sent to the relevant areas. Data were collected through structured face-to-face interviews with enterprise owners.

3.2. Research Methodology

To assess the effects of the SWOT analysis for establishing a biomass-based recycling and distribution reverse-logistics facility on the indicators of Sustainable Local Development (SLD) in the TRB2 Region, the following fundamental model was formulated, drawing on studies by Mehta et al. (2022) and Kamran et al. (2020).

Figure: 1
The Model of the Study



Based on the basic model, regression analyses were conducted to examine the effects of SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis on SLD's economic, social, and environmental indicators for a biomass recycling and distribution facility. The equation used in the estimations is as follows.

$$Y_i = a_0 + a_1X_{i1} + a_2X_{i2} + \dots + a_kX_{ik} + e_i \tag{1}$$

where the “XXX_i” variables represent the independent variables, Y_i denotes the dependent variable, “aaa” represents the coefficients, and “eee” signifies the error term. Based on Equation (1), the estimation equations provided below have been constructed within the framework of this study.

$$SLD_{EI} = a_{01} + a_{11}SS + a_{21}WS + a_{31}O + a_{41}T + e_{i1} \tag{2}$$

$$SLD_{SI} = a_{02} + a_{12}SS + a_{22}WS + a_{32}O + a_{42}T + e_{i2} \tag{3}$$

$$SLD_{EI1} = a_{03} + a_{13}SS + a_{23}WS + a_{33}O + a_{43}T + e_{i3} \tag{4}$$

Equations (2), (3), and (4) define SLD_{EI}, SLD_{SI}, and SLD_{EI1} as the economic, social, and environmental indicators of SLD, respectively; SS represents the strengths side of the proposed biomass recycling and distribution facility, WS its weaknesses, O the opportunities it offers, and T the threats it may face. These equations were tested through multiple regression analysis, with separate estimates conducted for the TRB2 Region and its provinces, namely Van, Muş, Bitlis, and Hakkâri. The research utilised primary data collected from field studies on agricultural and livestock enterprises, following ethical

approval granted by the Scientific Research and Publication Ethics Committee of Hakkâri University (decision number 2022/101, dated 25 November 2022). For the variables in Equations (2), (3), and (4), participant perceptions were considered, with mean perception scores derived from survey responses used in the analysis.

To collect data, a questionnaire comprising 128 items, divided into four sections, was developed based on a review of the relevant literature. The survey employed closed-ended questions and a 5-point Likert scale [Strongly Agree (5), Agree (4), Neutral (3), Disagree (2), Strongly Disagree (1)]. The first section of the questionnaire included items on the demographic characteristics of business owners, such as gender, age, education level, marital status, and monthly income. The second section addressed the characteristics of the businesses, biomass potential, methods for waste utilisation, information about reverse logistics, expected costs, and workforce requirements for establishing an appropriate recycling and distribution facility for reverse logistics, among other topics. Due to space constraints, the findings from the first and second sections are not included here. The third section comprised 40 questions assessing the strengths, weaknesses, opportunities, and threats (SWOT) associated with the proposed biomass recycling and distribution facility. The fourth section comprised 30 questions concerning the economic, social, and environmental indicators of SLD. The data were analysed using SPSS.

3.3. Analysis Results

Before estimating Equations (2), (3), and (4), analyses of the survey questions were conducted to identify the dependent and independent variables. These analyses included reliability and validity tests to determine whether the questions administered to participants were appropriate for identifying the variables to be used in the equations. For this purpose, the reliability of the measurement results was assessed using the internal consistency method and evaluated against the Cronbach's Alpha reliability criterion (Polat, 2023: 243).

To evaluate the accuracy of the variables used in the equations, the survey data were subjected to exploratory factor analysis. Before conducting the factor analysis, the Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity were performed. A KMO test value above 0.50, which reflects the proportion of common variance among variables, suggests that the data are appropriate for factor analysis. Likewise, a significant Bartlett's test of sphericity ($p < 0.05$) confirms that the data are suitable for factor analysis (Şencan & Fidan, 2020: 642). As part of the exploratory factor analysis, the factor loadings and the total variance explained by the factors for each survey question were analysed. Factor loadings above 0.50 for each item and a total explained variance exceeding 50% indicate that the survey data are valid and appropriate for use as dependent or independent variables in the equations (Şencan & Fidan, 2020: 668, 646).

The results of the reliability and validity analyses conducted on the survey data to identify the variables for the equations to be estimated are presented in Tables 2 and 3.

Table: 2
Results of Reliability and Validity Analysis for Dependent Variables

Economic Sub-Indicators	Factor Loadings
1) Facilitates the increase in infrastructure investments	0.720
2) Supports small and medium-sized energy production companies	0.696
3) Contributes to the increase in investments targeting local resources	0.687
4) Promotes entrepreneurship activities and increases employment opportunities	0.658
5) Enables local firms to gain cost advantages	0.651
6) Contributes to enhancing competitiveness in biogas production	0.632
7) Provides opportunities for biogas sales at local, regional, national, and international levels	0.612
8) Supports the development of bioenergy activities locally	0.611
9) Facilitates the increase in local logistics activities	0.562
10) Contributes to local economic growth	0.503
Cronbach Alpha = 0.834; Kaiser-Meyer-Olkin (KMO) = 0.848 Bartlett's Test of Sphericity = 4393.891; Sig. = 0.000; Total Variance Explained = 52.1%	
<i>Note: All questionnaire items in the relevant section have factor loadings above 0.50.</i>	
Social Sub-Indicators	Factor Loadings
2) Contributes to the strengthening of human development and social solidarity	0.802
3) Reduces social pressures on farmers stemming from waste and environmental issues	0.795
4) Enhances intra-family relationships and stakeholder organisations	0.774
5) Facilitates the strengthening of social dialogue and participation	0.768
7) Helps reduce migration outside the province/region	0.761
8) Increases the number of skilled labourers in agricultural and livestock production	0.722
9) Contributes to the improvement of healthy and high-quality living	0.649
10) Leads to better opportunities for education	0.524
Cronbach Alpha = 0.873; Kaiser-Meyer-Olkin (KMO) = 0.875 Bartlett's Test of Sphericity = 5215.957; Sig. = 0.000; Total Variance Explained = 53.2%	
<i>Note: Only standardised loadings ≥ 0.50 are reported; sub-threshold loadings and Items 1 and 6, which were removed from the questionnaire, are not displayed.</i>	
Environmental Sub-Indicators	Factor Loadings
1) Facilitates the acquisition of clean energy that contributes to the environment	0.693
2) Contributes to the development of environmental enterprises	0.682
3) Supports leaving a clean environment for future generations	0.632
4) Ensures the economic utilisation of waste that is harmful to the environment and human health	0.632
5) Helps mitigate climate change	0.629
6) Assists in achieving energy and water savings	0.625
7) Contributes to the improvement of air, soil, and water quality	0.598
8) Supports the conservation of natural resources	0.578
9) Plays a role in reducing environmental pollution	0.574
10) Helps reduce the use of fossil fuels	0.596
Cronbach Alpha = 0.811; Kaiser-Meyer-Olkin (KMO) = 0.849 Bartlett's Test of Sphericity = 3726.988; Sig. = 0.000; Total Variance Explained = 50.2%	
<i>Note: All questionnaire items in the relevant section have factor loadings above 0.50.</i>	

As shown in the table, the Cronbach's Alpha coefficients for the items within the scales are 0.83, 0.85, and 0.81 for the economic, social, and environmental sub-indicators, respectively. Since these values exceed the threshold of 0.70, it can be concluded that the scales related to the dependent variables in the estimation equations are reliable. Additionally, the results of the KMO and Bartlett's sphericity tests indicate that the data are suitable for factor analysis.

The results of the exploratory factor analysis for the economic and environmental indicator scales of SLD indicate that the factor loadings for each item exceed 0.50. However, the social indicator scale analysis revealed that two items (Items 1 and 6) had factor loadings below 0.50. These items were removed, and the factor analysis was repeated with the remaining items. Based on the analysis results in the table, decisions were made regarding which items to retain in the survey form. As shown in the table, the total explained variance for the economic, social, and environmental indicators is 52.1%, 53.2%, and 50.2%,

respectively. The factor loadings and total explained variance values confirm that the survey data are valid and appropriate for use as dependent variables in the equations.

Table: 3
Results of Reliability and Validity Analysis for Independent Variables

Strengths of the Facility	Factor Loadings
1) Utilisation of applicable and straightforward technology	0.683
2) Profitability enhancement through biomass energy facility and recycling practices	0.679
3) Government purchase guarantee for electricity produced from renewable energy sources	0.623
6) High potential of the region for bioenergy production	0.606
7) Minimisation of environmental pollution by the biomass energy facility	0.605
8) Being an investment-incentivised region	0.600
9) Obligation of waste disposal, ensuring system sustainability	0.587
10) Possessing vast pasture and forage crop potential	0.553
Cronbach Alpha = 0.767; Kaiser-Meyer-Olkin (KMO) = 0.740	
Bartlett's Test of Sphericity = 2993.893; Sig. = 0.000; Total Variance Explained = 54.6%	
<i>Note: Only standardised loadings ≥ 0.50 are reported; sub-threshold loadings and Items 4 and 5, which were removed from the questionnaire, are not displayed.</i>	
Weaknesses of the Facility	Factor Loadings
1) Difficulties encountered during the transportation of animal waste	0.742
2) Lack of knowledge during the production and collection of waste	0.735
3) Absence of free market conditions and its impact on price competition	0.714
4) High water demand	0.695
5) Logistical problems due to the mountainous terrain of the region	0.687
6) Disruptions in production caused by migration from the region	0.642
8) Shortage of skilled technical personnel	0.634
9) Homogeneity issues in biomass quality	0.603
10) System problems caused by variable calorific values of animal waste used as fuel	0.504
Cronbach Alpha = 0.841; Kaiser-Meyer-Olkin (KMO) = 0.862	
Bartlett's Test of Sphericity = 4292.858; Sig. = 0.000; Total Variance Explained = 55.8%	
<i>Note: Only standardised loadings ≥ 0.50 are reported; sub-threshold loadings and Item 7, which was removed from the questionnaire, are not displayed.</i>	
Opportunities Provided by the Facility	Factor Loadings
3) Increase in local energy resources	0.684
4) Support for electricity production in rural areas	0.677
5) Reusability of waste generated after energy production	0.668
6) Development of the livestock and agriculture sectors	0.657
7) Increased opportunities and incentives for establishing facilities in different regions	0.655
8) Strengthened collaboration with the public or stakeholders due to support for renewable energy	0.630
9) Creation of new businesses based on electricity and heat production	0.576
10) Opportunity to utilise the unused biomass potential	0.521
Cronbach Alpha = 0.781; Kaiser-Meyer-Olkin (KMO) = 0.795	
Bartlett's Test of Sphericity = 2855.356; Sig. = 0.000; Total Variance Explained = 53.7%	
<i>Note: Only standardised loadings ≥ 0.50 are reported; sub-threshold loadings and Items 1 and 2, which were removed from the questionnaire, are not displayed.</i>	
Threats Faced by the Facility	Factor Loadings
1) Risk of increased installation costs due to exchange rate fluctuations	0.719
2) Activities aimed at preventing the facility from continuing production	0.695
3) Insufficient demand for the energy produced	0.675
5) Use of outdated production technologies	0.674
6) Increased production costs due to price instability in the country	0.663
7) Emergence of infectious diseases during waste logistics	0.627
8) Inability to meet the facility's waste demand due to animal deaths caused by infectious diseases	0.607
9) Environmental degradation caused by agricultural and livestock production activities	0.579
10) Risk of energy production reaching a halt due to an increase in the proportion of inefficient waste	0.555
Cronbach Alpha = 0.824; Kaiser-Meyer-Olkin (KMO) = 0.802	
Bartlett's Test of Sphericity 4379.246; Sig. = 0.000; Total Variance Explained = 55.7%	
<i>Note: Only standardised loadings ≥ 0.50 are reported; sub-threshold loadings and Items 4 and 5, which were removed from the questionnaire, are not displayed.</i>	

As shown in Table 3, the Cronbach's Alpha coefficients for the items within the scales for strengths, weaknesses, opportunities, and threats are 0.77, 0.84, 0.78, and 0.82, respectively. Since these values exceed the 0.70 threshold, it can be concluded that the scales related to the independent variables in the estimation equations are reliable. Furthermore,

the results of the KMO and Bartlett's sphericity tests indicate that the data are appropriate for performing factor analysis.

The exploratory factor analysis results for the strengths variable indicated that two items (Items 4 and 5) had factor loadings below 0.50. These items were removed, and the factor analysis was repeated using the remaining items, which confirmed that all factor loadings exceeded 0.50. Similarly, for the weaknesses variable, one item (Item 7) was excluded because its factor loading was below 0.50; for the opportunities variable, two items (Items 1 and 2) were removed. For the threats variable, one item (Item 4) was excluded, and the factor analysis was repeated. Based on the results presented in the table, decisions were made regarding which items should remain in the survey form. As shown in the table, the total explained variance for the strengths, weaknesses, opportunities, and threats variables is 54.6%, 55.8%, 53.7%, and 55.7%, respectively. The factor loadings and total explained variance values confirm that the survey data are valid and suitable for use as independent variables in the equations.

3.3.1. Findings Related to Regression Analyses

Equations (2), (3), and (4) were estimated for the TRB2 Region and its provinces; the estimation results are presented below.

3.3.1.1. Estimation Results Related to Equation (2)

Equation (2) was estimated separately for the TRB2 Region and each of its provinces, with the results shown in Tables 4, 5, 6, 7, and 8.

Table: 4
Findings for the TRB2 Region

	Unstandardized Coefficients		Standardized Coefficients	t stat.	p	Multicollinearity Statistics	
	B	Beta	Beta			Tolerance	VIF
Constant	0.852	0.094		9.103	0.000		
Strengths side	0.240	0.023	0.260	10.491	0.000	0.583	1.716
Weaknesses side	0.007	0.022	0.010	0.339	0.734	0.435	2.299
Opportunities	0.421	0.024	0.398	17.305	0.000	0.677	1.476
Threats	0.154	0.022	0.191	6.963	0.000	0.473	2.114
R	R²	R²	F stat. (p)	Standard Error	DW		
0.703	0.494	0.492	345.174 (0.000)	0.357	1.870		

Note: Only findings with $p < 0.05$ (95% confidence) are interpreted.

Table 4 indicates that Equation (2) is significant at the 1% level ($F(p) = 0.000$), with an explanatory power of 49.2%. The Durbin-Watson (DW) statistic ($(1 < 1.87 < 2.5)$) suggests no autocorrelation, and the Variance Inflation Factor (VIF) values (< 3) confirm the absence of multicollinearity issues.

Based on the table's estimates, the strengths, opportunities, and threats associated with establishing a biomass recycling and distribution facility in the TRB2 Region have a positive and significant effect on SLD's economic indicator. Specifically, a one-unit increase

in the strengths, opportunities, and threats variables leads to increases of 0.24, 0.42, and 0.15 units, respectively, in the economic indicator. Among these, opportunities are the most influential independent variable impacting SLD's economic indicator in the TRB2 Region. For the Weaknesses dimension ($p = 0.734$), which exceeds the 0.05 threshold, the result is not statistically significant.

Table: 5
Findings for Van Province

	Unstandardized Coefficients		Standardized Coefficients	t stat.	p	Multicollinearity Stat.	
	B	Beta	Beta			Tolerance	VIF
Constant	0.888	0.168		5.302	0.000		
Strengths side	0.363	0.042	0.426	8.634	0.000	0.505	1.981
Weaknesses side	-0.013	0.042	-0.017	-0.300	0.764	0.372	2.686
Opportunities	0.308	0.050	0.277	6.199	0.000	0.617	1.621
Threats	0.135	0.044	0.180	3.032	0.003	0.351	2.852
R	R²	R²	F stat. (p)	Std. error	DW		
0.746	0.556	0.552	112.92 (0.000)	0.345	1.942		

Note: Only findings with $p < 0.05$ (95% confidence) are interpreted.

In Table 5, it is observed that the estimated Equation (2) for Van Province is significant at the 1% level (F-statistic (p) = 0.000) and has an explanatory power of 55.2%. The Durbin-Watson (DW) value ($1 < 1.94 < 2.5$) indicates no autocorrelation, and the Variance Inflation Factor (VIF) values (< 3) confirm the absence of multicollinearity issues. According to the regression results, the strengths, opportunities, and threats of establishing a biomass recycling and distribution facility in Van Province have positive and statistically significant effects on the economic indicator of SLD. A one-unit increase in the variables strengths, opportunities, and threats yields positive effects of 0.36, 0.31, and 0.14 on the economic indicator, respectively. Among these, the variable with the most significant impact on the economic indicator in Van Province is strength. For the Weaknesses dimension ($p = 0.764$), which exceeds the 0.05 threshold, the result is not statistically significant.

Table: 6
Findings for Hakkari Province

	Unstandardized Coefficients		Standardized Coefficients	t stat.	p	Multicollinearity Stat.	
	B	Beta	Beta			Tolerance	VIF
Constant	1.525	0.233		6.534	0.000		
Strengths side	0.054	0.041	0.076	1.329	0.185	0.655	1.527
Weaknesses side	-0.036	0.038	-0.070	-0.963	0.336	0.405	2.467
Opportunities	0.547	0.061	0.510	8.999	0.000	0.669	1.495
Threats	0.087	0.038	0.160	2.285	0.023	0.437	2.286
R	R²	R²	F stat. (p)	Std. Error	DW		
0.583	0.430	0.422	39.559 (0.000)	0.330	1.825		

Note: Only findings with $p < 0.05$ (95% confidence) are interpreted.

In Table 6, it is observed that the estimated Equation (2) for Hakkari Province is significant at the 1% significance level (F-statistic (p) = 0.000) and has an explanatory power of 42.2%. The Durbin-Watson (DW) value ($1 < 1.83 < 2.5$) indicates no autocorrelation, and the Variance Inflation Factor (VIF) values (< 3) confirm the absence of multicollinearity issues. According to the estimation results, the opportunities created and the threats faced

by establishing a biomass recycling and distribution facility in Hakkari Province have positive and statistically significant effects on the economic indicator SLD. A one-unit increase in the variables opportunities and threats results in positive impacts on the economic indicator of 0.55 and 0.09 units, respectively. Among these, the variable with the most significant impact on the economic indicator in Hakkari Province is opportunities. The variables for Strengths ($p = 0.185$) and Weaknesses ($p = 0.336$) are not statistically significant.

Table: 7
Findings for Muş Province

	Unstandardized Coefficients		Standardized Coefficients	t stat.	p	Multicollinearity Stat.	
	B	Beta	Beta			Tolerance	VIF
Constant	1.525	0.211		7.239	0.000		
Strengths side	0.188	0.047	0.219	3.993	0.000	0.551	1.814
Weaknesses side	-0.079	0.047	-0.089	-1.674	0.195	0.590	1.694
Opportunities	0.509	0.044	0.517	11.498	0.000	0.823	1.215
Threats	0.049	0.042	0.060	1.171	0.242	0.643	1.555
R	R ²	$\bar{R}^2$	F stat. (p)	Std. error		DW	
0.624	0.389	0.382	58.538 (0.000)	0.285		2.134	

Note: Only findings with $p < 0.05$ (95% confidence) are interpreted.

In Table 7, it is observed that the estimated Equation (2) for Muş Province is significant at the 1% significance level (F-statistic ($p = 0.000$)) and has an explanatory power of 38.2%. The Durbin-Watson (DW) value ($1 < 2.13 < 2.5$) indicates no autocorrelation, and the Variance Inflation Factor (VIF) values (< 3) confirm the absence of multicollinearity issues. According to the estimation results, establishing a biomass recycling and distribution facility in Muş Province has positive and statistically significant effects on the economic indicator SLD. A one-unit increase in the variables' strengths and opportunities yields positive effects of 0.18 and 0.51 on the economic indicator, respectively. Among these, the variable with the most significant impact on the economic indicator in Muş Province is opportunities. For the Weaknesses dimension ($p = 0.195$), which exceeds the 0.05 threshold, the result is not statistically significant.

Table: 8
Findings for Bitlis Province

	Unstandardized Coefficients		Standardized Coefficients	t stat.	p	Multicollinearity Stat.	
	B	Beta	Beta			Tolerance	VIF
Constant	0.418	0.199		2.103	0.036		
Strengths side	0.213	0.057	0.187	3.698	0.000	0.524	1.910
Weaknesses side	0.112	0.055	0.103	2.012	0.045	0.510	1.960
Opportunities	0.294	0.050	0.282	5.920	0.000	0.589	1.699
Threats	0.320	0.052	0.295	6.166	0.000	0.583	1.714
R	R ²	$\bar{R}^2$	F stat. (p)	Std. error		DW	
0.714	0.509	0.504	95.151 (0.000)	0.392		1.862	

Note: Only findings with $p < 0.05$ (95% confidence) are interpreted.

In Table 8, it is observed that the estimated Equation (2) for Bitlis Province is significant at the 1% significance level (F-statistic ($p = 0.000$)) and has an explanatory power of 50.4%. The Durbin-Watson (DW) value ($1 < 1.86 < 2.5$) indicates no autocorrelation, and

the Variance Inflation Factor (VIF) values (< 3) confirm the absence of multicollinearity issues. According to the estimation results, the SWOT (Strengths, Weaknesses, Opportunities, and Threats) of establishing a biomass recycling and distribution facility in Bitlis Province has positive and statistically significant effects on the economic indicator of SLD. A one-unit increase in the SWOT variables yields positive effects of 0.21, 0.11, 0.29, and 0.32 on the economic indicators, respectively. Among these, the variable with the most significant impact on the economic indicator in Bitlis Province is threats.

Overall, the regression results indicate that establishing a biomass recycling and distribution facility in the TRB2 Region and its provinces would significantly affect SLD's economic indicators, primarily through the opportunities it creates. The findings regarding SLD's economic indicator agree with those of prominent researchers such as Bergmann et al. (2006), Zhu et al. (2011), Liu et al. (2013), Kinobe et al. (2015), Shoaib and Ariaratnam (2016), Çınar and Yıldırım (2017), Hess and Gentry (2019), Agrawal and Singh (2019), Guarnieri et al. (2020), Tunacan et al. (2020), Surya et al. (2021), Azam et al. (2021), and Kostha et al. (2022). These studies underline the positive economic impacts of RES, production facilities, and reverse logistics systems.

3.3.1.2. Estimation Results Regarding Equation (3)

Equation (3) was estimated separately for the TRB2 Region and its provinces, and the findings are shown in Tables 9, 10, 11, 12, and 13.

Table: 9
Findings Related to the TRB2 Region

	Unstandardized Coefficients		Standardized Coefficients	t stat.	p	Multicollinearity Stat.	
	B	Beta	Beta			Tolerance	VIF
Constant	-0.105	0.134		-0.781	0.435		
Strengths side	0.249	0.032	0.197	7.791	0.000	0.607	1.648
Weaknesses side	0.248	0.031	0.241	8.110	0.000	0.440	2.273
Opportunities	0.391	0.034	0.270	11.438	0.000	0.696	1.438
Threats	0.155	0.031	0.143	4.998	0.000	0.475	2.106
R	R²	$\bar{R}^2$	F stat. (p)	Std. Error	DW		
0.677	0.458	0.456	294.315 (0.000)	0.495	1.547		

Note: Only findings with $p < 0.05$ (95% confidence) are interpreted.

Table 9 shows that the estimated Equation (3) for the TRB2 Region is significant at the 1% level ($F\text{-stat. (p)} = 0.000$), with an explanatory power of 45.6%. The DW value ($1 < 1.55 < 2.5$) indicates no autocorrelation, and the VIF values (< 3) suggest no multicollinearity. According to the estimation results, the SWOT analysis of a biomass recycling and distribution facility to be established in the TRB2 Region has a positive and statistically significant effect on the social indicator SLD. A one-unit increase in the strengths, weaknesses, opportunities, and threats variables positively influences the social indicator by 0.25, 0.25, 0.32, and 0.16 units, respectively. Among these, opportunities are identified as the most influential variable affecting the SLD social indicator in the TRB2 Region.

Table: 10
Findings Related to the Van Province

	Unstandardized Coefficients		Standardized Coefficients	t stat.	p	Multicollinearity Stat.	
	B	Beta	Beta			Tolerance	VIF
Constant	-0.135	0.268		-0.506	0.613		
Strengths side	0.193	0.065	0.152	2.954	0.003	0.509	1.966
Weaknesses side	0.382	0.066	0.354	5.815	0.000	0.362	2.765
Opportunities	0.117	0.078	0.068	1.495	0.136	0.641	1.561
Threats	0.302	0.070	0.268	4.321	0.000	0.349	2.869
R	R²	$\bar{R}^2$	F stat. (p)	Std. Error	DW		
0.739	0.546	0.541	102.016 (0.000)	0.522	2.064		

Note: Only findings with $p < 0.05$ (95% confidence) are interpreted.

Table 10 shows that the estimated Equation (3) for Van Province is significant at the 1% level (F-stat. (p) = 0.000) with an explanatory power of 54.1%. The DW value ($1 < 2.064 < 2.5$) indicates no autocorrelation, and the VIF values (< 3) suggest no multicollinearity. The estimation results indicate that the strengths, weaknesses, and threats associated with establishing a biomass recycling and distribution facility in Van Province have a positive and significant effect on the social indicator of SLD. A one-unit increase in the strengths, weaknesses, and threats variables raises the social indicator by 0.19, 0.38, and 0.30 units, respectively. Among these, the weakness variable has the most considerable impact on the social indicator of SLD in Van Province. For the Opportunities dimension ($p = 0.136$), which exceeds the 0.05 threshold, the result is not statistically significant.

Table: 11
Findings Related to the Hakkari Province

	Unstandardized Coefficients		Standardized Coefficients	t stat.	p	Multicollinearity Stat.	
	B	Beta	Beta			Tolerance	VIF
Constant	3.035	0.333		9.123	0.000		
Strengths side	0.018	0.048	0.023	0.369	0.712	0.801	1.248
Weaknesses side	0.072	0.042	0.145	1.742	0.183	0.434	2.306
Opportunities	0.213	0.077	0.168	2.762	0.006	0.816	1.225
Threats	0.022	0.043	0.042	0.517	0.606	0.448	2.232
R	R²	$\bar{R}^2$	F stat. (p)	Std. Error	DW		
0.883	0.680	0.668	60.620 (0.000)	0.372	1.934		

Note: Only findings with $p < 0.05$ (95% confidence) are interpreted.

Table 11 shows that the estimated Equation (3) for Hakkari Province is significant at the 1% level (F-stat. (p) = 0.000), with an explanatory power of 66.2%. The DW statistic ($1 < 1.93 < 2.5$) indicates no autocorrelation, while the VIF values (< 3) suggest no multicollinearity. According to the estimation results, establishing a biomass recycling and distribution facility in Hakkari Province has a positive and statistically significant effect on the social indicator SLD. A one-unit increase in the opportunities variable positively influences the social indicator by 0.21 units. In Hakkari Province, opportunities are the only variable affecting the social indicator of SLD. Regarding the weaknesses, ($p = 0.183$), which exceeds the 0.05 threshold, the result is not statistically significant.

Table: 12
Findings Related to the Muş Province

	Unstandardized Coefficients		Standardized Coefficients	t stat.	p	Multicollinearity Stat.	
	B	Beta	Beta			Tolerance	VIF
Constant	1.365	0.203		6.729	0.000		
Strengths side	0.126	0.047	0.141	2.676	0.008	0.544	1.839
Weaknesses side	-0.022	0.047	-0.024	-0.463	0.644	0.586	1.706
Opportunities	0.591	0.043	0.599	13.830	0.000	0.806	1.240
Threats	0.013	0.041	0.015	0.319	0.750	0.643	1.556
R	R²	$\bar{R}^2$	F stat. (p)	Std. Error	DW		
0.665	0.442	0.436	73.127 (0.000)	0.283	1.961		

Note: Only findings with $p < 0.05$ (95% confidence) are interpreted.

Table 12 shows that the estimated Equation (3) for Muş Province is significant at the 1% significance level (F-stat. (p) = 0.000), with an explanatory power of 43.6%. The DW statistic ($1 < 1.96 < 2.5$) indicates no autocorrelation, while the VIF values (< 3) suggest no multicollinearity. According to the estimation results, establishing a biomass recycling and distribution centre in Muş Province has positive and statistically significant effects on the social indicator SLD. A one-unit increase in the opportunities and threats variables positively impacts the social indicator by 0.13 and 0.59 units, respectively. Among these, opportunities have the most significant impact on the social indicator of SLD in Muş Province. For the Weaknesses and threats sides respectively ($p = 0.644$) and ($p = 0.750$), which exceed the 0.05 threshold, the results are not statistically significant.

Table: 13
Findings Related to the Bitlis Province

	Unstandardized Coefficients		Standardized Coefficients	t stat.	p	Multicollinearity Stat.	
	B	Beta	Beta			Tolerance	VIF
Constant	0.416	0.219		1.899	0.058		
Strengths side	0.220	0.063	0.182	3.476	0.001	0.527	1.899
Weaknesses side	0.160	0.061	0.141	2.635	0.009	0.508	1.969
Opportunities	0.393	0.055	0.357	7.172	0.000	0.586	1.707
Threats	0.167	0.057	0.145	2.909	0.004	0.581	1.721
R	R²	$\bar{R}^2$	F stat. (p)	Std. Error	DW		
0.683	0.467	0.461	80.640 (0.000)	0.432	2.069		

Note: Only findings with $p < 0.05$ (95% confidence) are interpreted.

Table 13 shows that the estimated Equation (3) for Bitlis Province is significant at the 1% level (F-stat. (p) = 0.000), with an explanatory power of 46.1%. The DW value ($1 < 2.07 < 2.5$) indicates no autocorrelation, and the VIF values (< 3) suggest no multicollinearity. According to the results, the SWOT analysis of a planned biomass recycling and distribution facility in Bitlis Province has positive and statistically significant effects on the social indicator SLD. A one-unit increase in the strengths, weaknesses, opportunities, and threats variables yields positive effects of 0.22, 0.16, 0.39, and 0.17 on the social indicator, respectively. Among these, opportunities are the most influential variable affecting SLD's social indicator in Bitlis Province.

Overall, the regression results indicate that the opportunities provided by a biomass recycling and distribution facility to be established in the TRB2 Region and its provinces

are the most influential factor on the social indicator SLD. These findings related to the social indicator of SLD are consistent with the fundamental studies conducted by Chandrasekar and Kandpal (2007), Liu et al. (2013), Shoaib and Ariaratnam (2016), Dupal et al. (2016), Surya et al. (2021), and Kotha et al. (2022).

3.3.1.3. Estimation Results Regarding Equation (4)

Equation (4) has been estimated separately for the TRB2 Region and its provinces, with the results shown in Tables 14, 15, 16, 17, and 18.

Table: 14
Findings Related to the TRB2 Region

	Unstandardized Coefficients		Standardized Coefficients	t stat.	p	Multicollinearity Stat.	
	B	Beta	Beta			Tolerance	VIF
Constant	1.309	0.099		13.211	0.000		
Strengths side	0.180	0.024	0.204	7.609	0.000	0.600	1.666
Weaknesses side	0.012	0.023	0.016	0.513	0.608	0.447	2.235
Opportunities	0.395	0.025	0.388	15.587	0.000	0.695	1.439
Threats	0.127	0.023	0.165	5.498	0.000	0.476	2.100
R	R ²	R ²	F stat. (p)	Std. Error	DW		
0.632	0.400	0.398	232.042 (0.000)	0.368	1.887		

Note: Only findings with $p < 0.05$ (95% confidence) are interpreted.

Table 14 indicates that the estimated Equation (4) for the TRB2 Region is significant at the 1% level (F-stat. (p) = 0.000) with an explanatory power of 39.8%. The DW value ($1 < 1.89 < 2.5$) indicates no autocorrelation, while the VIF values (< 3) indicate no multicollinearity. According to the estimation results, the strengths, opportunities, and threats associated with establishing a biomass recycling and distribution facility in the TRB2 Region have positive and statistically significant effects on the environmental indicator SLD. A one-unit increase in the strengths, opportunities, and threats variables, respectively, raises the environmental indicator by 0.18, 0.40, and 0.13 units. Among these, opportunities are the most influential factor on the environmental indicator of SLD in the TRB2 Region. For the 'Weaknesses' variable (p = 0.608), which exceeds the 0.05 threshold, the result is not statistically significant.

Table: 15
Findings Related to the Van Province

	Unstandardized Coefficients		Standardized Coefficients	t stat.	p	Multicollinearity Stat.	
	B	Beta	Beta			Tolerance	VIF
Constant	1.681	0.194		8.677	0.000		
Strengths side	0.240	0.048	0.300	4.969	0.000	0.497	2.012
Weaknesses side	0.049	0.049	0.070	0.997	0.320	0.371	2.692
Opportunities	0.224	0.058	0.210	3.888	0.000	0.617	1.620
Threats	0.103	0.051	0.143	2.001	0.046	0.354	2.824
R	R ²	R ²	F stat. (p)	Std. Error	DW		
0.612	0.374	0.367	51.723 (0.000)	0.392	1.791		

Note: Only findings with $p < 0.05$ (95% confidence) are interpreted.

Table 15 shows that the estimated Equation (4) for Van Province is significant at the 1% level (F-stat. (p) = 0.000), with an explanatory power of 36.7%. The DW value ($1 < 1.79$

< 2.5) indicates no autocorrelation, and the VIF values (< 3) suggest no multicollinearity. According to the estimation results, the strengths, opportunities, and threats associated with establishing a biomass recycling and distribution facility in Van Province have positive and statistically significant effects on the environmental indicator SLD. A one-unit increase in these variables positively impacts the environmental indicator by 0.24, 0.22, and 0.10 units, respectively. Among them, strengths are the most influential variable affecting the environmental indicator of SLD in Van Province. The Weaknesses side ($p = 0.320$) does not exceed the 0.05 threshold and is not statistically significant.

Table: 16
Findings Related to the Hakkari Province

	Unstandardized Coefficients		Standardized Coefficients	t stat.	p	Multicollinearity Stat.	
	B	Beta	Beta			Tolerance	VIF
Constant	3.642	0.302		12.045	0.000		
Strengths side	0.020	0.041	0.031	0.490	0.624	0.787	1.270
Weaknesses side	0.029	0.037	0.069	0.789	0.431	0.426	2.346
Opportunities	0.097	0.071	0.087	1.377	0.169	0.813	1.230
Threats	0.045	0.040	0.096	1.140	0.255	0.452	2.211
R	R ²	R ²	F stat. (p)	Std. Error	DW		
0.606	0.442	0.429	32.790 (0.000)	0.332	1.545		

Note: Only findings with $p < 0.05$ (95% confidence) are interpreted.

Table 16 shows that the estimated Equation (4) for Hakkari Province is significant at the 1% level (F-stat. (p) = 0.000), with an explanatory power of 42.9%. The DW value ($1 < 1.55 < 2.5$) indicates no autocorrelation, and the VIF values (< 3) suggest no multicollinearity. According to the estimation results, the SWOT analysis of a biomass recycling and distribution facility to be established in Hakkari Province has no statistically significant effect on the environmental indicator SLD. That is, in this model, none of the predictors have $p < 0.05$ (Strengths: $p=0.624$; Weaknesses: $p=0.431$; Opportunities: $p=0.169$; Threats: $p=0.255$). Thus, at the 95% significance level, their effects are not statistically significant.

Table: 17
Findings Related to the Muş Province

	Unstandardized Coefficients		Standardized Coefficients	t stat.	p	Multicollinearity Stat.	
	B	Beta	Beta			Tolerance	VIF
Constant	0.703	0.214		3.280	0.001		
Strengths side	0.241	0.050	0.240	4.863	0.000	0.544	1.837
Weaknesses side	-0.132	0.050	-0.127	-2.664	0.008	0.587	1.703
Opportunities	0.690	0.045	0.620	15.253	0.000	0.804	1.243
Threats	0.038	0.044	0.040	0.880	0.379	0.642	1.557
R	R ²	R ²	F stat. (p)	Std. Error	DW		
0.714	0.510	0.505	96.054 (0.000)	0.300	2.182		

Note: Only findings with $p < 0.05$ (95% confidence) are interpreted.

Table 17 shows that the estimated Equation (4) for Muş Province is significant at the 1% level (F-stat. (p) = 0.000), with an explanatory power of 50.5%. The DW value ($1 < 2.18 < 2.5$) indicates no autocorrelation, and the VIF values (< 3) suggest no multicollinearity. According to the results, the strengths and opportunities of establishing a biomass recycling

and distribution facility in Muş Province have a positive and significant effect on the environmental indicator SLD. In contrast, weaknesses have a negative and statistically significant impact. A one-unit increase in the strengths, weaknesses, and opportunities variables affects the environmental indicator by 0.24, (-0.13), and 0.69 units, respectively. Among these, opportunities are the most influential variable on the environmental indicator of SLD in Muş Province. For the threat side ($p = 0.379$), which exceeds the 0.05 significance level, the result is not statistically significant.

Table: 18
Findings Related to the Bitlis Province

	Unstandardized Coefficients		Standardized Coefficients	t stat.	p	Multicollinearity Stat.	
	B	Beta	Beta			Tolerans	VIF
Constant	0.827	0.190		4.353	0.000		
Strengths side	0.203	0.055	0.191	3.696	0.000	0.527	1.897
Weaknesses side	0.064	0.053	0.064	1.208	0.228	0.508	1.969
Opportunities	0.325	0.047	0.336	6.843	0.000	0.585	1.711
Threats	0.251	0.050	0.249	5.046	0.000	0.580	1.723
R	R ²	R ²	F stat. (p)	Std. Error		DW	
0.696	0.484	0.478	85.770 (0.000)	0.375		1.755	

Note: Only findings with $p < 0.05$ (95% confidence) are interpreted.

Table 18 shows that the estimated Equation (4) for Bitlis Province is significant at the 1% level (F-stat. (p) = 0.000), with an explanatory power of 47.8%. The DW value ($1 < 1.76 < 2.5$) suggests no autocorrelation, and the VIF values (< 3) indicate no multicollinearity. According to the estimation results, the strengths, opportunities, and threats associated with establishing a biomass recycling and distribution facility in Bitlis Province have positive and statistically significant effects on the environmental indicator SLD. A one-unit increase in the strengths, opportunities, and threats variables, respectively, raises the environmental indicator by 0.20, 0.33, and 0.25 units. Among these, opportunities are the most impactful factor on the environmental indicator of SLD in Bitlis Province. For the Weaknesses side ($p = 0.228$), which exceeds the 0.05 threshold, the result is not statistically significant.

Overall, the regression results indicate that the opportunities offered by a planned biomass recycling and distribution facility in the TRB2 Region and its provinces significantly influence the environmental indicator of sustainable development. The results about the environmental indicator of sustainable development are in line with the findings of key studies by Ivanova (2005), Bergmann et al. (2006), Swofford and Slattery (2010), Liu et al. (2013), Kinobe et al. (2015), Dupal et al. (2016), Çınar and Yıldırım (2017), Agrawal and Singh (2019), Guarnieria et al. (2020), Tunacan et al. (2020), Surya et al. (2021), and Kostha et al. (2022), which emphasise the positive environmental impacts of renewable energy investments, production, and reverse logistics facilities.

3.3.1.4. Selection of the Province for Establishing the Biomass Recycling and Distribution Facility

Based on the results of the multiple regression analysis, an attempt was made to identify which province in the TRB2 Region would be most suitable for establishing a reverse logistics facility from the perspective of SLD. To achieve this, only statistically significant coefficient values were considered, and the combined scores for strengths and opportunities (SS + O) were compared with those for weaknesses and threats (WS + T). It was assumed that establishing a reverse logistics facility in the province with the highest coefficient value, based on the comparison (SS + O > WS + T), would provide the most significant benefit to SLD in the TRB2 Region.

Table 19 presents the results of a comparison of the effects of the SWOT factors of a proposed biomass recycling and distribution facility on SLD's economic, social, and environmental indicators across provinces.

Table: 19
Selection of the Province for Establishing the Reverse Logistics Facility

Economic	Van	Hakkâri	Muş	Bitlis
Strengths side	0.363	-	0.188	0.213
Weaknesses side	-	-	-0.079	0.112
Opportunities	0.308	0.547	0.509	0.294
Threats	0.135	0.087	-	0.320
Comparison	SS + O > T	O > T	SS + O > WS	SS + O > WS + T
	0.671 > 0.135	0.547 > 0.087	0.697 > (-0.079)*	0.507 > 0.432
Social	Van	Hakkâri	Muş	Bitlis
Strengths side	0.193	-	0.126	0.220
Weaknesses side	0.382	0.072	-	0.160
Opportunities	-	0.213	0.591	0.393
Threats	0.302	-	-	0.167
Comparison	SS < WS + T	O > WS	SS + O	SS + O > WS + T
	0.193 < 0.684	0.213 > 0.072	0.717*	0.613 > 0.327
Environmental	Van	Hakkâri	Muş	Bitlis
Strengths side	0.240	-	0.241	0.203
Weaknesses side	-	-	-0.132	-
Opportunities	0.224	-	0.690	0.325
Threats	0.103	-	-	0.251
Comparison	SS + O > + T	-	SS + O > WS	SS + O > T
	0.464 > 0.103	-	0.931 > (-0.132)*	0.528 > 0.251

* Indicates the province where the reverse logistics facility will be established.

According to the table, with respect to the net effects of the SWOT factors on SLD's economic indicator, Muş has the highest performance, followed by Van, Hakkâri, and Bitlis. For the social indicator, Muş again leads, with Bitlis and Hakkâri trailing behind. In Van Province, however, the net effect is such that SS < WS + TSS < WS + T. Finally, with respect to SLD's environmental indicator, Muş once again ranks highest, followed by Bitlis and Van. Hakkâri is not statistically significant for the ecological indicator. As a result, the strengths and opportunities of a biomass recycling and distribution facility in Muş Province exert a greater net impact on SLD's economic, social, and environmental indicators [(SS+O)–(WS+T)] than those in other provinces.

Based on the comparative results of the regression coefficient analysis, it can be concluded that establishing a biomass recycling and distribution facility in Muş Province could contribute to the SLD of other provinces and the TRB2 Region as a whole. By generating added value, this initiative could help reduce income disparities between provinces and regions. To achieve this, it is essential to prioritise investments in the mobilisation of biomass resources and to emphasise collaboration among local stakeholders.

4. Conclusion

This study examined the impacts of SWOT factors associated with a planned biomass recycling and distribution facility in the TRB2 Region on economic, social, and environmental indicators of sustainable development. It also identified the most suitable province for establishing such a facility. To achieve this, a field survey employing a questionnaire targeting agricultural and livestock enterprises was conducted, and the primary data were analysed using multiple regression.

To identify the dependent and independent variables for the regression equations, preliminary tests such as Cronbach's Alpha, the Kaiser-Meyer-Olkin (KMO) measure, Bartlett's test of sphericity, and exploratory factor analyses were conducted. These tests verified the reliability and validity of the survey questions. Subsequently, the average perception scores from participants' responses were used as the data for both the dependent and independent variables.

The regression estimation results showed that the SWOT factors of a biomass recycling and distribution facility, at both regional and provincial levels within the TRB2 Region, significantly influence the economic, social, and environmental indicators of sustainable development. Among these, the most influential variable is the "opportunities" factor.

Based on the results of the multiple regression analysis, an effort was made to identify which province in the TRB2 Region would be most suitable for establishing a reverse logistics centre from a sustainable development standpoint. For this purpose, the statistically significant coefficient values were considered, and using the formula $SS+O>WS+TSY + O > WS + TSS+O>WS+T$, the province with the highest coefficient value was recognised as Muş.

Based on the analysis results, it can be concluded that establishing a biomass recycling and distribution facility in Muş Province has the potential to contribute to the SLD of both other provinces and the TRB2 Region as a whole. By generating added value, such an initiative could help reduce income disparities between provinces and regions. This would transform Muş into a reverse logistics hub, leveraging forward, reverse, and lateral linkages to advance SLD and help close regional development gaps. Additionally, establishing a facility in the province would increase local value added and employment; integrating SMEs into repair/remanufacturing and pre-processing would create new value chains and diversify

incomes. Socially, strengthening cooperative-based supply relations with farm and livestock enterprises, alongside investments in skills, jobs, and capability building (such as occupational health and safety, quality/traceability, and training), would promote inclusive development and reinforce stakeholder collaboration and local governance capacity. Environmentally, source separation and pre-processing would reduce open burning and uncontrolled dumping, improve recovery rates, and, through shorter logistics loops and greater backhaul, lower carbon intensity and transport-related emissions; standardisation and traceability would limit leakage and pollution risks, and institutionalise circularity. Furthermore, by valorising agricultural and livestock residues as renewable energy feedstocks (biomass), the facility would reduce greenhouse gas emissions through fossil-fuel substitution and limit methane (CH₄) and black carbon emissions. Together, these channels suggest that a biomass recycling and distribution facility in Muş could simultaneously enhance SLD indicators.

To ensure the success of a reverse logistics facility in Muş Province and to attain SLD in the TRB2 Region, several measures are vital. These include incentivising biomass energy production and consumption suitable for reverse logistics through mechanisms such as tax reductions, targeted credits, project support, price purchase guarantees, and licence exemptions. Additionally, supporting the cultivation of energy crops, formalising the biomass sector, establishing forward and backward supply chains, prioritising public-private investments to mobilise biomass resources, fostering an environment that encourages collaboration among local stakeholders, conducting educational activities on the subject, and developing effective and practical policies tailored to the province and region are of utmost importance.

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The Impact of Fiscal Rules on Long-Term Borrowing Costs in EU Countries¹

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AB Ülkelerinde Mali Kuralların Kamu Borçlanma Maliyeti Üzerindeki Etkileri²

Abstract

Fiscal credibility denotes the public's trust in the government's fiscal plans; it is defined as the government's ability to meet its debt obligations and to comply with planned tax and expenditure policies. The primary purpose of this study is to analyse the relationship between fiscal rule practices and long-term interest rates by examining the determinants of public borrowing costs. Empirical results from selected European Union (EU) countries for 2001-2018 show that improvements in the fiscal rule index are associated with lower long-term interest rates, and that the effect of public debt levels on borrowing costs is nonlinear. The results of the analysis show that the adoption of fiscal rule practices will contribute to establishing fiscal credibility, which represents confidence in the government's fiscal policies and their ability to fulfil their financial obligations, and to enable countries to finance their deficits at a lower cost.

Keywords : Fiscal Rules, Government Borrowing Cost, Public Debt.

JEL Classification Codes : H63, H61, G12.

Öz

Mali kredibilite, kamuoyunun hükümetin mali planlarına olan güvenini temsil eder; hükümetin borç yükümlülüklerini yerine getirebilme yeteneği ve planlanan vergi ve harcama politikalarına uyumu olarak tanımlanır. Bu çalışmanın temel amacı kamu borçlanma maliyetlerinin belirleyicilerini inceleyerek mali kural uygulamaları ile uzun vadeli faiz oranları arasındaki ilişkiyi analiz etmektir. 2001-2018 yılları arasında seçilmiş Avrupa Birliği (AB) ülkeleri verileri kullanılarak elde edilen ampirik sonuçlar, mali kural endeksindeki iyileşmenin uzun vadeli faiz oranlarının düşmesine yol açtığını ve kamu borç düzeylerinin borçlanma maliyetleri üzerindeki etkisinin doğrusal olmadığını göstermektedir. Analiz sonuçları, mali kural uygulamalarının benimsenmesinin, hükümetin mali politikalarına ve mali açıdan yükümlülüklerini yerine getirebileceklerine olan güveni temsil eden “mali

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² Bu makale, Doç. Dr. İrem Yendi-Çetin danışmanlığında hazırlanan “Mali Kuralların Kamu Borçlanma Maliyetine Etkisi: Avrupa Birliği Ülkeleri Üzerine Bir İnceleme” başlıklı yüksek lisans tezinden türetilmiştir. Bu çalışmada ifade edilen görüşler yazar(lar)a aittir ve Türkiye Cumhuriyeti Merkez Bankası'nın resmi görüşlerini yansıtmaz.

kredibilite"nin tesis edilmesine ve ülkelerin açıkları finanse etmesini daha düşük maliyetle gerçekleştirilmesine katkı sağlayacağını göstermektedir.

Anahtar Sözcükler : Mali Kurallar, Devlet Borçlanma Maliyeti, Kamu Borçları.

1. Introduction

The suspension and reactivation of fiscal rules, particularly in European Union (EU) countries, have become a vital issue following the COVID-19 pandemic, particularly with respect to fiscal discipline and its effects on a stable recovery. Strict fiscal rules governing public debt and budget deficits were temporarily relaxed during the pandemic to provide economies with the flexibility needed to address the crisis.

Nevertheless, numerous studies in the literature highlight the importance of reactivating these rules in 2024 to ensure the sustainability of public finances and long-term economic growth and stability. Fiscal rules are vital for regulating government spending and debt policies, maintaining fiscal discipline, and developing a resilient economic structure capable of withstanding future economic disruptions (Gbohoui & Medas, 2024).

New European fiscal rules took effect in April 2024. The new framework replaces rigid numerical fiscal targets with a more flexible, country-specific approach that accounts for the expected evolution of each nation's debt levels over time. This method aims to provide a more precise assessment of each country's fiscal health and debt path by accounting for potential changes in economic growth and interest rates. The European Union's revival of fiscal rules following the COVID-19 pandemic is vital to ensuring the sustainability of public budgets across member states. The updated regulations focus on managing public expenditure based on country-specific debt sustainability assessments, aiming to bring debt-to-income ratios down to sustainable levels (Darvas et al., 2024).

The discussions above show that the effect of fiscal rules on maintaining fiscal credibility will often be evaluated after 2024. Using available data, this study aims to explore how fiscal constraints and public debt influence the long-term cost of public borrowing, a key indicator of fiscal credibility, in EU member states during the pre-COVID-19 period. Public borrowing costs significantly affect fiscal credibility, economic stability, and sustainability, particularly in regions such as the EU. Understanding the factors that influence long-term borrowing costs is essential for effective public finance management, economic growth, macroeconomic stability, and investment climate. This study contributes to the literature by assessing how fiscal rules and government debt levels affect long-term borrowing costs in EU countries from 2001 to 2018. Results from the Fully Modified OLS (FMOLS) method indicate that the relationship between public debt levels and borrowing costs is nonlinear, and that improvements in the fiscal rule index are associated with lower long-term interest rates. Unlike previous research, which typically examines fiscal rules or public debt separately, this study evaluates both the nonlinear effects of public debt levels and the influence of fiscal rule strength simultaneously, using a panel FMOLS approach

across 16 EU nations from 2001 to 2018. By focusing on a pre-COVID period and including a diverse range of EU countries, it provides unique insights into how fiscal frameworks operated under relatively stable macroeconomic conditions. Additionally, it identifies a debt-to-GDP ratio threshold (around 62%) beyond which borrowing costs increase, supporting and extending findings from Ardagna et al. (2007).

In this framework, section 2 examines the factors influencing the government's long-term borrowing costs. Section 3 outlines the methodology and econometric model. Section 4 describes the data. Section 5 reports the empirical findings. Section 6 summarises the paper's conclusions.

2. Literature Review

Long-term interest rates used to assess the cost of public-sector borrowing reflect the yields on investment instruments issued by the public sector and guaranteed by the state. Central banks focus on yields of these instruments, including traditional pricing data, which is an essential source of information in monetary policy, to evaluate the inflation and output outlook. For private and corporate entities, government bonds often serve as the benchmark for pricing fixed-income securities (Lo Conte, 2009). On the other hand, the level of long-term interest rates is an essential variable in savings and investment decisions, and understanding the determinants of yield differences across government bonds is crucial for ensuring the sustainability of public finance.

Views on the determinants of long-term interest rates have varied among economic doctrines. The traditional view asserts that rising public debt, fiscal deficits, and increased public spending crowd out private investment and raise long-term interest rates. In this perspective, it has been argued that higher public debt ratios and budget deficits lead to increased government bond yields because investors doubt a country's debt sustainability (Akram & Das, 2017). Conversely, the Keynesian view holds that central bank policy interest rates and other monetary policy instruments are the primary determinants of government bond yields (Keynes, 1936). Countries with low fiscal discipline are more susceptible to domestic fragility and fluctuations in market perceptions of country risk. In this context, interest rates shaped by market expectations and serving as signals within the economy are likely to be influenced by the design and implementation of fiscal rules (Szarowská, 2013: 796).

When evaluating the determinants of long-term government bond yields, the initial focus is on the economy's fiscal condition. The primary variables for assessing the fiscal situation are budget deficits and public debt levels. The theoretical reasons why the primary deficit raises long-term interest rates can be explained as follows:

In standard macroeconomic models, the primary deficit initially boosts aggregate demand. It raises both nominal and real interest rates in the IS-LM model, even though the nominal money supply is treated as exogenous. The monetary authority raises interest rates

to compensate for changes in the output gap (Taylor rule). While the immediate effect of fiscal expansion is on short-term interest rates, long-term rates will also be impacted because deficits are permanent and price adjustments happen gradually (Ardagna et al., 2007).

Within the scope of the Neoclassical view, which assumes that individuals make consumption-saving decisions by considering their life cycles, budget deficits resulting from rising public expenditures will have a crowding-out effect. Accordingly, budget deficits increase lifetime consumption by transferring taxes to future generations. Assuming full resource utilisation, the amount of savings decreases as consumption increases, and interest rates rise to restore balance in the capital markets. In this case, private capital accumulation is diminished by the crowding-out effect.

The standard explanation of how budget deficits affect interest rates, as described by Barro, begins with the assumption that replacing the budget deficit with current taxation increases overall consumer demand. In other words, desired private saving rises by less than the tax cut, which results in a decrease in desired national saving. For a closed economy, the anticipated real interest rate must increase to restore equilibrium between desired national savings and investment demand. A higher real interest rate discourages investment by raising the cost of capital. Consequently, public debt imposes an intergenerational burden by reducing the capital stock (Barro, 1989).

In an open economy, a small country's budget deficits will have minimal effects on the real interest rate in international capital markets. Therefore, in standard analysis, increasing the country's budget deficit primarily results in increased foreign borrowing rather than a higher real interest rate. In other words, budget deficits lead to current account deficits. Real interest rates rise only if expected real interest rates are sufficiently high to influence international markets, or if increasing national debt causes foreign lenders to demand higher expected returns on the country's obligations. In any case, the impact of a country's budget deficits on crowding out domestic investment in the short term and the capital stock in the long term is weaker. However, the current account deficit leads to a lower stock of national wealth in the long run and, consequently, to higher foreign demand (Barro, 1989).

In debt-crisis models that explain how budget deficits and debt ratios affect interest rates, it is stated that default risk depends on the debtor's income flows; in this case, default risk is also influenced by the primary budget balance (Ardagna et al., 2007). A higher debt-to-GDP ratio or interest rate can raise government bond yields through the default-risk premium. The public debt-to-GDP ratio is regarded as a measure of a government's capacity to service its debt. LitGruber and Kamin (2012) explain the increases in long-term yields on public debt as arising from portfolio balance effects, inflation expectations, and default risk. Investors require higher interest rates to accept a larger portion of their portfolios in debt. Conversely, an increase in public debt may raise inflation expectations due to fears of debt monetisation. At the same time, a higher public debt-to-GDP ratio could elevate the government's default risk, necessitating a corresponding rise in bond yields. This high ratio also increases a country's vulnerability to an international liquidity crisis. In such instances,

capital outflows could lead to a sharp increase in borrowing costs. Many studies in the literature have stated that budget deficits and public debt levels are linked to the long-term borrowing costs faced by the public (e.g., Dai & Philippon, 2004; Gale & Orszag, 2004; Codogno et al., 2008; Attinasi et al., 2009; Poghosyan, 2012). Accordingly, increases in budget deficits and public debt levels result in higher public borrowing costs. However, studies in the literature suggest that an increase in public debt does not always lead to higher public borrowing costs, and that the level of public debt is a key determinant of this relationship. In this context, the study by Ardagna et al. (2007) for OECD countries states that a one-percentage-point rise in the primary deficit raises long-term interest rates by roughly 10 basis points; that the effect of debt on interest rates is non-linear; and that increases in debt impact interest rates mainly in countries with above-average debt levels. Their analysis shows that higher public debt has a statistically significant positive effect on long-term interest rates, predominantly in "high debt" countries. The study's specifications indicate that a rise in the public debt-to-GDP ratio will negatively affect long-term interest rates if the ratio is below 62.5% and 65.4%, respectively, in two different models. When the debt ratio exceeds these thresholds, the effect turns positive. These findings imply that the relationship between long-term interest rates and public debt may be nonlinear and contingent on the level of public debt. When debt levels are low, increasing debt may correlate with declining interest rates. However, once a threshold is crossed, further increases in debt are typically associated with higher interest rates. More broadly, a negative coefficient on the public debt stock could be explained by the liquidity effect. In countries with very low public debt, government bonds may be less liquid and involve higher transaction costs, which can push interest rates upward. Another perspective, by Caporale and Williams (2002), suggests that a negative coefficient of public debt-to-GDP ratios on long-term interest rates results from the portfolio effect. When governments issue high-quality bonds, the market demands more of them than lower-quality debt, raising bond prices and consequently lowering yields. Conversely, if investors view government bonds as risky or of poor quality, the opposite occurs. Therefore, it should be recognised that the relationship between long-term interest rates and public debt stock may not be linear and might depend on the debt level (Ardagna et al., 2007).

Another factor cited in the literature that influences public borrowing costs is fiscal rules. Borrowing costs are indicated by the difference between a country's borrowing rate and the "risk-free" interest rate. These rates, known as risk premiums, are generally favourable because of the risks countries face. If adopting fiscal rules enhances policy credibility, other conditions remaining equal, government bond yields are expected to fall (Thornton & Vasilakis, 2018). In this context, in their study where Afonso and Jalles (2017) evaluated the impact of fiscal rules on government bond spreads in the short and medium term for 34 developed countries and 21 emerging market economies between 1980 and 2016, they stated that the dynamic effect of fiscal rules on the public's long-term borrowing costs is negative and statistically significant, reducing government borrowing costs by approximately 1.2-1.8 percentage points. Similarly, Thornton and Vasilakis (2018; 2020) concluded in their studies that fiscal rules lower the cost of public borrowing across different

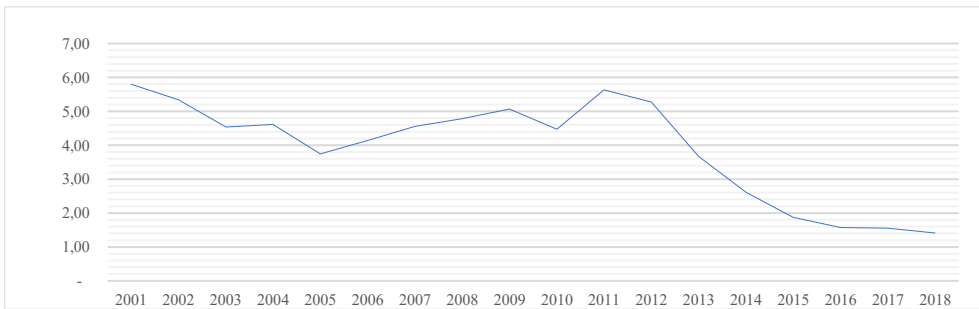
country groups. In the study by Bretscher et al. (2019), the components of fiscal policy that determine the risk premium were examined. Accordingly, because of the positive relationship between shocks to public spending levels and inflation, unexpected increases in public spending raise long-term interest rates. Meanwhile, shocks from government spending uncertainty generate a positive term premium and elevate long-term interest rates. Likewise, End (2023) highlights the importance of consistent government communication (budget and fiscal plans) for stabilising expectations and bolstering credibility. Credibility functions as a trust reserve influenced by fiscal policy, historical performance, and institutions (such as fiscal rules and councils). The literature demonstrates that establishing fiscal credibility through regulations, procedures, and institutions that direct fiscal policy is a vital tool for countries to access fiscal markets more effectively and reduce debt costs.

3. Data

In this study, data from 16 EU member states between 2001 and 2018 were used to analyse the effects of fiscal rules and public debt on the cost of public borrowing. The 10-year bond interest rate, which reflects long-term interest rates as an indicator of the cost of public borrowing, was included as the dependent variable in the model. The public debt level and the fiscal rule index were used as independent variables, whereas per capita income and the money supply were used as control variables. The 10-year government bond nominal yield, the dependent variable, was denoted as "GBY." The "DR" variable represents the ratio of public debt to GDP. The "FRI" variable indicates the fiscal rule index, and "M3" signifies the money supply. The "GDPPER" variable, taken as the logarithm, indicates the per capita income level. All variables in the estimation are used in their level form except for per capita income (GDPPER), which is transformed into natural logarithms ($\ln GDPPER$) to account for scale differences and nonlinear effects. Accordingly, the interpretation of its coefficient is a percentage change in long-term interest rates resulting from a 1% change in per capita income, whereas the other coefficients reflect level-to-level effects. The GBY and M3 variables were obtained from the OECD database, while the DR, GDPPER, and FRI variables were sourced from the AMECO, World Bank, and European Commission databases, respectively. To measure the strength of fiscal rules in European Union countries, the fiscal rule index (FRI) is computed based on criteria for compliance with budget balance, debt, expenditure, and revenue rules. The fiscal rule index for each member state is calculated by summing the weighted fiscal rule strength index for all fiscal rules in force in that member state, separately for each level of government (general government, central government, local government, and social security institutions). The fiscal rule strength index (FRSI), available in the European Commission's economic database and covering all numerical fiscal rules at all levels of government, is calculated considering five criteria. These criteria are: (1) the legal basis of the rule, (2) flexibility for target revisions, (3) mechanisms for monitoring compliance and implementation, (4) the existence of predefined implementation mechanisms, and (5) media visibility of the rule (European Commission, 2022).

Following the 2008 financial crisis, governments increased spending, cut taxes, and launched economic stimulus packages. As a result, deficits and debt levels rose rapidly, prompting investors to doubt some countries' ability to repay their debts and to demand higher credit-risk premiums (Comenda, 2020). Due to the ECB's loose monetary policy adopted since mid-2012, margins around the risk-free interest rate have declined, and long-term interest rates have fallen, supported by bailout packages and negative policy interest rates (Reuter, 2020). By the end of 2018, the borrowing costs of Eurozone countries averaged 140 basis points, a rate that has steadily declined since the 2011 debt crisis (Figure 1).

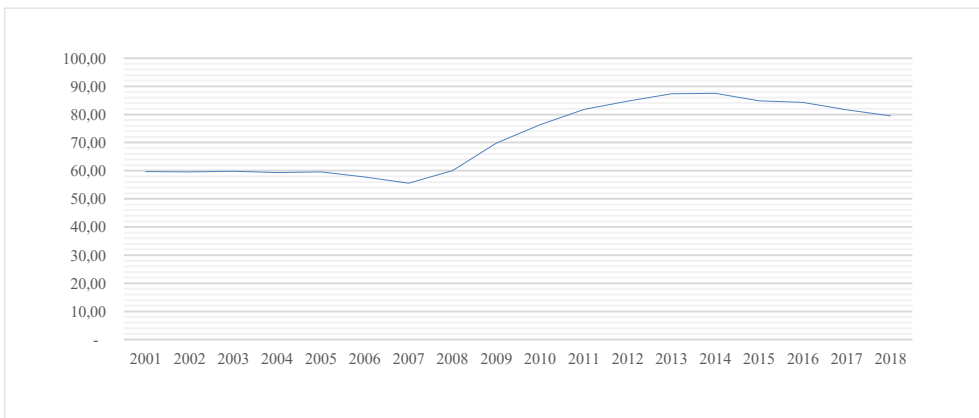
Figure: 1
Long-Term Interest Rates in Sample Countries



Source: OECD, 2023.

The average trajectory of the public debt level, one of the main determinants of long-term interest rates, in the sample countries for the years 2001-2018 is shown below.

Figure: 2
Public Debt / GDP Ratio in Sample Countries

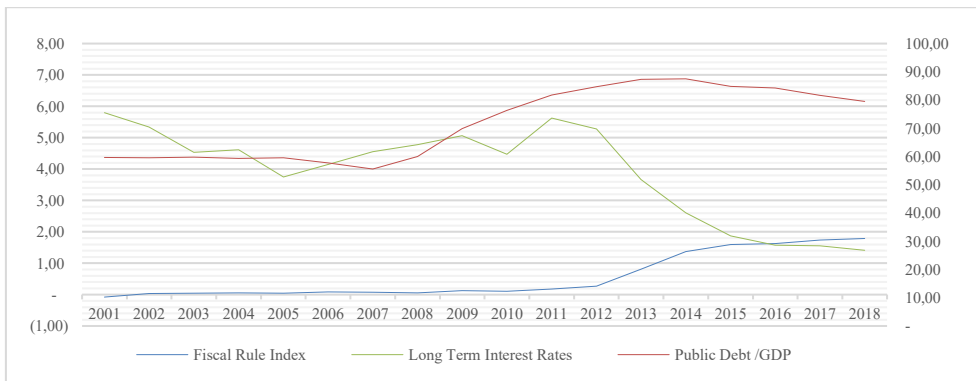


Source: European Commission, 2022.

Despite the Maastricht debt criterion of 60%, public debt-to-GDP ratios remain high across the sample countries, with the average public debt-to-GDP ratio reaching 80% by the end of 2018. Public debt has increased notably since the 2008 crisis, exceeding 60%. The fact that debt levels exceed the specified criteria indicates that, despite the fiscal rules in place within the European Union, fiscal policy tends to adjust in line with economic conditions, and debt levels across member states have not declined sharply (Reuter, 2020).

Figure 3 illustrates the concurrent trends in public debt, the fiscal rule index, and long-term interest rates across the sample countries. The ratios on the right axis represent the public-debt-to-GDP ratio, whereas the fiscal rule index and long-term interest rates are plotted on the left axis. As shown in the figure, as the fiscal rule index strengthened, long-term interest rates decreased. Public debt and long-term interest rates did not move in unison; however, long-term interest rates declined sharply during the period when public debt was decreasing.

Figure: 3
Simultaneous Course of Public Debt, Fiscal Rule Index and Long-Term Interest Rates



Source: Created using data from OECD, AMECO and European Commission.

In this study, three different models were developed to examine how fiscal rules and public debt levels influence the cost of public borrowing. In Model (1), in addition to the DR variable, the DR^2 term was included to assess whether public debt has a linear effect. In Model (2), the fiscal rule index (FRI) was included to determine the impact of fiscal rule compliance on long-term interest rates. In Model (3), consistent with the existing literature, M3 and GDPPER were added as control variables. The New Keynesian model explains how an increase in the money supply affects interest rates through the IS-LM model. Central bank activities, such as open market operations and bond purchases, reduce the total bond supply in the market, raise bond prices, and consequently lower yields (Meyer et al., 2020). Existing research often highlights that increasing the money supply tends to lower interest rates. For example, Wright (2011) noted that the Federal Reserve's large-scale asset purchases,

intended to stimulate the economy, led to lower yields on Treasury and corporate bonds. Afonso et al. (2020) indicated that increasing liquidity is associated with falling returns, noting that liquidity injections through long-term refinancing operations (LTROs) implemented by the European Central Bank reduced government bond yields in eurozone countries. Between 2008 and 2013, liquidity was expanded via collateral increases across the Eurozone, which contributed to reduced long-term interest rates. Poghosyan (2012) observed that increased consumption, driven by higher per capita income, is positively associated with long-term real bond yields. Likewise, Koroleva and Kopeykin (2022) demonstrated that changes in per capita GDP tend to correspond with movements in government bond yields.

$$GBY_{it} = \beta_{1it} DR_{it} + \beta_{2it} DR^2_{it} + \varepsilon_{it} \quad (1)$$

$$GBY_{it} = \beta_{1it} DR_{it} + \beta_{2it} DR^2_{it} + \beta_{3it} FRI_{it} + \varepsilon_{it} \quad (2)$$

$$GBY_{it} = \beta_{1it} DR_{it} + \beta_{2it} DR^2_{it} + \beta_{3it} FRI_{it} + \beta_{4it} \ln PerCap_{it} + \beta_{5it} M3_{it} + \varepsilon_{it} \quad (3)$$

4. Method and Empirical Results

This study analysed the long-term impact of fiscal rules and public debt on public borrowing costs using the FMOLS estimator.

When the series of variables are not stationary, the linear combinations of these series may be stationary, indicating a long-term relationship. Kao and Chen (1995) demonstrated that the EKK could be biased in panel cointegrated models. Phillips and Moon (1999) and Pedroni (1996, 2000, 2004) recommended using the FMOLS estimator to address endogeneity and autocorrelation in panel cointegration models. (Baltagi & Kao, 2000: 29).

Generally, the cointegrated system can be represented as follows (Pedroni, 2000):

$$y_{i,t} = \alpha_i + \gamma_t + \beta_{ji} x_{i,t} + e_{i,t} \quad (4)$$

$$x_{i,t} = x_{i,t-1} + \varepsilon_{i,t} \quad (5)$$

In equations (4) and (5), when $i=1, \dots, N$ and $t=1, \dots, T$, N denotes the cross-sectional dimension and T denotes the time dimension. α_i and γ_t denote the panel-specific fixed effects and common time fixed effects, respectively. If $y_{i,t}$ and $x_{i,t}$ have a unit root but are cointegrated, then $e_{i,t}$ is stationary by definition. In this context, Pedroni (2000) showed that the cross-sectional estimator of β_i ($i=1, \dots, N$) and the t-statistic can be computed using the FMOLS estimator for the i th panel. In this context; $\beta_j = N^{-1} \sum_{i=1}^N \beta_{ji}$ and the associated t-statistic is $t_{\beta_{ii}} = N^{-1} \sum_{i=1}^N \beta_{ii}$.

Firstly, Levin, Lin, and Chu (2002) (LLC), Im, Pesaran, and Shin (2003) (IPS), and Maddala and Wu (1999) used the ADF Fisher χ^2 (ADF) and PP Fisher χ^2 (PP) unit root tests to examine whether the variables were stationary.

Table: 1
Panel Unit Root Tests

Variables	Levin, Lin and Chu	Im, Pesaran and Shin	ADF - Fisher	PP - Fisher
GBY	-103.850	107.490	258.121	185.326
DR	2.99740 ***	-0.88640	352.370	208.965
DR ²	-3.03233***	-124.756	389.948	196.765
FRI	-2.99740***	0.88640	352.370	208.965
M3	0.85683	414.377	647.234	546.398
GDPPER	-124.971	105.284	211.047	154.098
ΔGBY	-13.0221***	-9.97603***	147.218***	157.691***
ΔDR	-5.08887***	-3.60251***	62.0874***	60.3089***
ΔDR ²	-4.53890***	-3.44166***	60.4858***	60.2037***
ΔFRI	-14.1009***	-11.1081***	162.914***	177.958***
ΔM3	-5.30591***	-4.59315***	76.6859***	54.2657***
ΔGDPPER	-6.91264***	-5.07472***	81.8766***	97.4616***

Note: *** indicates statistical significance at the 1% level.

According to IPS, ADF, and PP unit root tests, the series are not stationary at the 1% significance level and contain a unit root. Conversely, based on the LLC tests of the GBY variable, it appears not to be stationary at the 1% significance level. When the first difference of the series is taken, the series becomes stationary. In the study, after examining whether the variables were stationary, the existence of long-term relationships among the variables at the same degree of stationarity was investigated using Pedroni's cointegration tests. According to Group ADF statistics developed by Pedroni (2004), the null hypothesis of no cointegration between the variables was rejected.

Table: 2
Panel Cointegration Test Results

Group ADF	2.738460***

Note: *** indicates statistical significance at the 1% level.

Finally, the long-term relationship between variables found to be cointegrated of the same degree was estimated using the FMOLS estimator.

Table: 3
FMOLS Estimation Results

	Model 1	Model 2	Model 3
DR	-0.112244***	-0.047415**	-0.049936***
DR ²	0.000565***	0.000496***	0.000402***
FRI		-1.843070***	-1.014280***
M3			-0.026110**
lnGDPPER			0.719302***

Note: ***, ** indicate statistical significance at 1% and 5% levels, respectively.

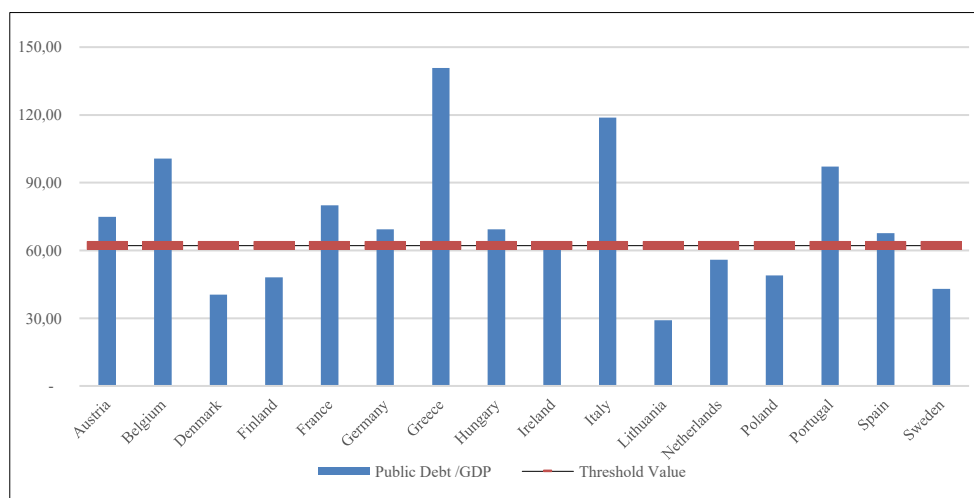
When evaluating the results from Model (1), the coefficient of the DR variable is negative and statistically significant. The positive coefficient on the DR² variable indicates that the DR variable has a positive linear effect on long-term interest rates. In other words, the ratio of public debt to GDP decreases long-term interest rates up to a certain point, after which it increases. In the first model without the fiscal rule index, a 1% increase in the public-debt-to-GDP ratio initially decreases long-term interest rates by 0.11%, but this effect

is nonlinear. Once the public debt-to-GDP ratio reaches a certain threshold, a 1% increase in the public debt-to-GDP ratio raises long-term interest rates by 0.05%.

In Model (2), where the fiscal rule index is included, the coefficient of the index is negative as anticipated. A one-unit increase in the fiscal rule index will decrease long-term interest rates by 1.8%. This finding indicates that fiscal rules lower borrowing costs in EU countries. In Model (2), the DR and DR² variables retain their signs and statistical significance.

When control variables are added to Model (3), the results are similar to those in Models (1) and (2). According to Model (3), a 1% increase in the public debt-to-GDP ratio initially decreases long-term interest rates by 0.049 percentage points, but beyond a certain threshold, it raises them by 0.0004 percentage points. This finding supports Ardagna et al.'s (2007) conclusion that the effect of debt on interest rates is nonlinear and that higher debt affects interest rates only for countries with above-average debt.

Figure: 4
Public Debt/GDP Ratios in Sample Countries



Source: Created with empirical analysis results.

The results from the third model indicate that when the public debt-to-GDP ratio exceeds 62%, long-term interest rates tend to rise. The 62% debt-to-GDP threshold was derived from the estimated coefficients of the DR and DR² variables in Model 3. Specifically, the turning point of the nonlinear relationship was calculated using the formula $-\beta_1/(2\beta_2)$, which yields approximately 62%. This value aligns with thresholds identified by Ardagna et al. (2007), at which the nonlinear effects of debt on interest rates become evident. Therefore, the threshold is supported by both empirical data and theory. Figure 4 presents

the average public debt-to-GDP ratios for the sample countries from 2001 to 2018, based on the 62% threshold derived from the analysis.

When comparing Debt/GDP values for 2001-2018 with the threshold identified in the study, it is evident that countries other than Denmark, Finland, Ireland, Lithuania, the Netherlands, Poland, and Sweden have public debt ratios exceeding 62%. This highlights the importance of implementing fiscal rules that limit public debt once a certain threshold is reached.

According to the results obtained within the scope of Model (3), there is a strong and negative relationship between the fiscal rule index and long-term interest rates. A one-unit increase in the fiscal rule index will reduce long-term interest rates by 1.01 points. This result indicates that as compliance with fiscal rules increases in EU countries, the margin in borrowing costs decreases. The fiscal rule index will strengthen as the criteria for compliance with the budget balance, debt, expenditure, and revenue rules are approached. In this context, a reliable fiscal policy designed with a planned budget, public expenditure policies that are limited or directed toward productive areas, a public debt level limited to a particular threshold value and monitored by additional audit mechanisms, and revenue rules that aim to restrict discretionary policies by defining where public revenues are used will reduce risk borrowing costs by increasing compliance with fiscal rules. Simultaneously, the following interpretation can be made by considering the five criteria used in the calculation of the fiscal rule strength index (FRSI): as the definition of the legal basis of the rules constituting the fiscal rule index approaches the constitutional level, the degree of flexibility for revising the targets decreases; the independence of the mechanisms monitoring the compliance and implementation of the rule increases; the existence of predefined implementation mechanisms is present; and the media closely monitor the implementation and outcomes of fiscal rules. Consequently, the fiscal rule index will increase, and borrowing costs will decrease.

The analysis results indicate that increases in the money supply negatively affect long-term interest rates, consistent with the New Keynesian model. Furthermore, as per capita income rises, consumption patterns and ultimately money demand will grow, leading to a tendency for long-term interest rates to rise. When GDP per capita is incorporated into the model, a 1% increase in GDP per capita raises the long-term borrowing cost by 0.007%.

5. Conclusion

This study examined the effect of fiscal rules and public debt levels on long-term borrowing costs, a key indicator of fiscal credibility, using data from 16 EU countries from 2001 to 2018 and employing the FMOLS estimator. The empirical results show that improvements in the fiscal rule index notably reduce long-term borrowing costs, whereas the effect of public debt levels is nonlinear: costs initially decline but become harmful beyond a certain point (approximately 62% of GDP).

These results largely align with earlier studies (e.g., Afonso and Jalles, 2017; Thornton and Vasilakis, 2018), which emphasise the cost-reducing impacts of fiscal rules. However, this study contributes to the literature by identifying a threshold effect in the debt-interest rate relationship and by showing how the credibility of fiscal frameworks shapes market perceptions even during relatively stable periods. Unlike many studies that examine fiscal rules or debt independently, this research assesses both variables simultaneously, providing a more comprehensive understanding of how they interact to influence borrowing costs.

The 62% debt-to-GDP threshold was derived from the nonlinear specification in Model 3, based on the turning-point formula $-\beta_1/(2\beta_2)$, using the estimated coefficients for the public debt and squared debt terms. This empirical finding also broadly aligns with the threshold levels reported by Ardagna et al. (2007) for OECD countries. The result suggests that while moderate public debt levels may not adversely impact borrowing costs, exceeding a certain threshold significantly raises perceived fiscal risk and results in higher interest rates demanded by investors.

From a policy perspective, the findings indicate that EU countries should not only reinstate but also strengthen fiscal rules that were suspended during the COVID-19 crisis. Effective fiscal rules must be legally binding, transparent, and adaptable to each country's specific fiscal situation. Importantly, they need to be supported by independent monitoring bodies and enforcement mechanisms. Public communication and media visibility of these rules further bolster fiscal credibility by increasing transparency and accountability.

Although this study focuses on the pre-COVID period (2001-2018) to examine the structural effects of fiscal rules under stable macroeconomic conditions, its findings offer valuable insights for the post-pandemic fiscal environment. The suspension of fiscal rules across EU countries during the COVID-19 crisis highlighted the need for more resilient and adaptable fiscal frameworks. As the EU introduces a reformed set of fiscal rules from 2024, understanding how rules functioned before the crisis offers an essential reference point. Based on our results, post-COVID fiscal governance should focus not only on flexibility during shocks but also on maintaining a credible long-term commitment to debt sustainability. This involves designing rules with clear thresholds, automatic correction mechanisms, and vigorous institutional enforcement to restore market confidence and manage borrowing costs in the coming years.

In conclusion, fiscal credibility, grounded in strict and enforceable rules, plays a crucial role in reducing borrowing costs and securing long-term fiscal stability. The findings of this study offer policymakers essential guidance: adopting credible, well-designed fiscal rules is not merely a bureaucratic requirement but a strategic economic instrument to bolster market confidence, sustain debt levels, and support macroeconomic stability.

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Why Do Turkish Women Become Discouraged: Evidence from HLFS

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Türkiye'de Ümidi Kırık Kadın İşgücü: HİA'dan Bulgular

Abstract

This study investigates the factors contributing to women's discouragement in the Turkish labour market using cross-sectional data from the Household Labour Force Survey (HLFS) for 2004-2023. The results show that lower educational attainment, marriage, living in an underdeveloped region, and household factors like having preschool-aged children or elderly/disabled dependents all increase the likelihood of discouragement. The reduction in the probability of discouragement for the 25-34 age group is -0.721 for women with low education, compared with -0.180 for highly educated women in 2023, emphasising the protective effect of higher education against discouragement. Policies that address structural, cultural, and economic barriers are necessary.

Keywords : Discouraged Women, Female Labour Force Participation, Unemployment, Türkiye.

JEL Classification Codes : J01, J16, J21, J64.

Öz

Çalışma, Hanehalkı İşgücü Anketi'nin (HİA) 2004-2023 yılları arasındaki kesitsel verilerini kullanarak, Türk işgücü piyasasında kadınların işgücüne katılımını engelleyen faktörleri incelemektedir. Düşük eğitim seviyesi, evlilik, kalkınmamış bir bölgede yaşama, hanede çocuk, yaşlı, veya engelli gibi bakıma muhtaç bireylerin bulunması kadınların gücümüş işgücüne dahil olma olasılığını artırmaktadır. 2023 yılı için, 25-34 yaş grubunda, gücümüş işgücüne dahil olma olasılığının 15-24 yaş grubuna göre düşük eğitimli kadınlar için %72.1, yüksek eğitimli kadınlar içinse %18 daha düşük olduğu bulgulanmıştır. Bu durum yüksek eğitimin gücümüş işgücüne dahil olma olasılığını engelleyici bir etki sağladığını ortaya koymaktadır. Yapısal, kültürel ve ekonomik engelleri ele alan politikalara ihtiyaç vardır.

Anahtar Sözcükler : Gücümüş Kadın İşgücü, Kadın İşgücüne Katılım, İşsizlik, Türkiye.

1. Introduction

Discouraged workers are individuals who, under ideal conditions, would be willing and eager to work; however, they are not actively seeking employment at present due to a lack of suitable job opportunities or a history of unsuccessful attempts to secure desirable work. According to the International Labour Organisation (ILO, 2015), unemployed individuals are those who are without work and are either actively seeking employment or waiting to be recalled after being laid off. Because discouraged workers do not actively search for work, they are not classified as unemployed and are therefore excluded from the labour force. As a result, discouraged workers are excluded from the calculation of a country's unemployment rate.

The initial idea of the 'discouraged worker effect' suggests a group of secondary workers whose labour market participation varies with economic cycles. These individuals seek work when opportunities are plentiful, but cease searching during prolonged recessions. As a result, during economic downturns, when the expected return to work falls below the reservation wage, discouraged workers tend to cease active job hunting, anticipating poor labour market conditions.

Discouraged workers are generally excluded from the labour force participation rate, as they are not classified as active job seekers. However, they may still be considered part of the broader category of underemployed or unemployed individuals, despite not being officially recognised as unemployed. Consequently, they can be regarded as part of the hidden unemployment population. While the unemployment rate is the most widely used indicator, it offers only a limited view of the jobless population, as it includes only those who are not employed, readily available for work, and actively seeking employment. Individuals who are not actively seeking employment are categorised as inactive. This subset of inactivity comprises passive job seekers, or individuals marginally attached to the labour force, including discouraged workers.

The empirical literature that distinguishes between the inactive and unemployed first notes that the transition probabilities to employment differ between these two groups and, second, examines the extent to which passive job seekers resemble the unemployed. While the results are mixed, the general finding is that marginally attached workers fall somewhere between the unemployed and the inactive. In other words, their chances of transitioning to employment are higher than those of other inactive individuals but lower than those of the unemployed. Therefore, the issue of discouraged workers is significant. One reason is that during periods of economic expansion, discouraged workers constitute a hidden source of labour, as they are more likely to re-enter the workforce when the likelihood of obtaining a suitable job increases. Conversely, during economic recessions, potential workers withdraw from the labour market, thereby reducing the observed unemployment.

Traditionally, the discouraged worker effect has been associated with economic recessions within the business cycle, particularly affecting women or secondary earners in

households. (Ehrenberg & Smith, 1988; Benati, 2001). Women living in regions with high unemployment rates are less likely to enter the labour market or actively seek employment compared to those in areas with lower unemployment rates. (Bičáková, 2016; Dagsvik et al., 2013; Martín-Román et al., 2020; Martín-Román et al., 2023). Analysing the response of female labour supply to both idiosyncratic and aggregate shocks thus has important implications for gender equality in the labour market. The female labour force participation rate, as an indicator of improved rights and better economic conditions for women, can play a key role in achieving these broader development goals. (Klasen, 2002; Mourao, 2013).

Although the concept of the discouraged worker has long existed, the literature primarily examines how individuals move from unemployment and discouragement into employment, primarily in developed countries. Economic theory indicates that changes in the unemployment rate can affect the labour force participation rate in two main ways. During economic slowdowns, when unemployment rises, the decline in labour force participation is linked to the discouraged worker effect (DWE). On the other hand, the rise in labour force participation is connected to the added worker effect (AWE). Additionally, most research examines factors that influence labour force participation rates, particularly the existence and comparison of the AWE and DWE (e.g., Edwards & Roberts, 1994; Borjas, 1996; Ehrenberg & Smith, 2000; Cerruti, 2000; Lim, 2000; Maridueña-Larrea & Martín-Román, 2024a). Surprisingly, there is a scarcity of microdata-based studies that examine who becomes discouraged and why, particularly in developing countries.

Limiting the 'discouraged worker effect' solely to economic cycles is inadequate, as research has not found consistent evidence of a significant pro- or counter-cyclical pattern in labour force participation. Beyond economic cycles, numerous factors influence the job search process, including personal and household characteristics, lack of job opportunities in their field, search costs, expected wage offers, discriminatory practices in the labour market (e.g., skills mismatch, age, or gender discrimination), social norms, the chance of receiving alternative job offers, unemployment benefits, safety concerns in both public spaces and workplaces, or a high local level of underemployment.

Discouragement varies among different demographic groups, including age, race, gender, and marital status. Gender disparities in discouragement are evident in the self-selection process into the labour force. Studies show that women's labour force participation is considerably lower than men's, with women being less likely to seek employment actively. Although female labour force participation has risen markedly in recent decades, many households remain traditional, with women still shouldering the majority of household and childcare responsibilities. The presence of older women to assist with domestic duties, family income, and the process of urbanisation are also key factors affecting a woman's decision to enter the labour market. Additional limitations include lower pay for comparable work and the predominance of men in organisational hierarchies, exemplified by the "glass ceiling". The radical perspective argues that men, as a social group, dominate women, describing this system of dominance and subordination as "patriarchy". These constraints often lead women to prefer part-time employment, as it enables them to balance domestic

duties with paid work. Women are also more constrained by spatial factors than men. Research indicates that men and women differ in their tolerance for commuting, resulting in different job-search areas: men are generally willing to endure longer commuting times than women. (Madden, 1981; Gordon et al., 1989; Johnston-Anumonwo, 1992; Martín-Román et al., 2020; Maridueña-Larrea & Martín-Román, 2024b). Women with children, in particular, are especially averse to long commutes. Compared with men, women are more likely to face significant daily spatial and temporal constraints due to domestic responsibilities.

Although discouraged workers are likely to be present in any economy, their prevalence tends to be higher in developing countries with slack labour markets. In such economies, where employment agencies play a limited role and informal employment is widespread, job search intensity is often more subjective. Many job seekers rely on traditional, non-institutional methods, such as word of mouth and social networks consisting of family and friends. For discouraged workers in particular, it isn't easy to assess the intensity and methods of their job search, making it challenging to determine how actively they are seeking employment. As a result, compared to labour markets in more developed economies, the distinction between an unemployed individual and a discouraged worker becomes less clear.

In 2023, Türkiye's female labour force participation (LFP) rate was 40.7%, while the average LFP rate for OECD countries was 66.6%. Between 2000 and 2012, LFP rates for urban women remained relatively stable, whereas rates for rural women declined. This decline in rural women's LFP may be linked to an ageing population, as younger individuals migrated to cities while older people remained in rural areas. However, because the mass migration from rural to urban areas in Türkiye did not reduce LFP rates among men with similar education and experience, the traditional role of women as primary caregivers may be a key factor in explaining the lower labour force participation among women. Nonetheless, data shows a consistent rise in women's labour force participation from 33.6% in 2014 to 40.9% in 2023. The female labour force participation rate is generally low across all regions due to cultural norms, religious tensions, and high fertility rates. While Southeastern Anatolia has the lowest female LFP rate—due to cultural differences and social status of women—the Black Sea region has the highest, despite both areas predominantly engaging in agriculture (Karaoglan & Okten, 2015).

Most industries in Türkiye are concentrated in the western part of the country. The eastern region, on the other hand, lacks a well-developed transportation infrastructure and faces security challenges, particularly due to terrorism in recent years. As a result, the western region provides more job opportunities. Due to regional, cultural, and geographical differences, notable disparities exist across the country. Additionally, the overall education level of the Turkish workforce remains relatively low. (Özden, 2017) Approximately 27 million women aged 15-64 in Türkiye have completed an average of 8 years of formal education, a significant factor affecting labour force participation. This educational deficit also contributes to a considerable number of individuals becoming discouraged.

Discouragement appears to be a significant issue in Türkiye. Over the past decade, alongside persistently high unemployment rates, the number of discouraged workers has remained elevated, indicating a structural problem in the labour market. The prevalence of discouraged workers in Türkiye is among the highest within OECD countries. Additionally, the ratio of women to men among discouraged workers is particularly high compared to other OECD nations, where discouragement is often linked to gender-related factors. However, in Türkiye, discouragement has remained consistently high over the last ten years, signalling a structural feature of the labour market beyond cyclical and gender factors. According to the Household Labour Force Surveys (HLFS) from the Turkish Statistical Institute (TURKSTAT), the proportion of discouraged women in 2023 is 60% of the working-age population. Another notable aspect of discouragement in Türkiye is the significant regional disparities. These disparities become even more pronounced when examining transitions from unemployment to discouragement. It is especially striking that regions with low rates of transition from unemployment to employment tend to experience higher rates of transition from unemployment to discouragement. (Akarçay-Gürbüz et al., 2014).

A concerning aspect of Türkiye's female labour market is the persistently low and stagnant labour force participation rate among women. Despite increased educational enrolment of women, research on this issue has identified a range of complex and interconnected factors, including rising household incomes, domestic constraints, sociocultural norms, and limited job opportunities, as potential explanations for this ongoing trend. (e.g., Karaoglan, 2009; Ilkcaracan, 2012; Akarçay-Gürbüz et al., 2014; Karaoglan & Okten, 2015). Although unemployment has become a more prominent issue, discouragement remains marginalised in policymakers' agendas. Research in Turkish literature, similar to studies conducted in developed countries, mainly focuses on the relative importance of the AWE and DWE, for example, responses to cyclical employment fluctuations. However, factors that discourage women from joining the labour force have not been extensively examined in this literature. This study aims to address this gap by investigating how individual and household characteristics specifically contribute to women's discouragement in Türkiye.

This study aims to empirically examine the factors that contribute to women's discouragement in the Turkish labour market, focusing on both individual and household characteristics. This issue has become increasingly important amid the country's persistently high unemployment rate. To the best of our knowledge, this is the first study to explore the impact of individual-specific factors, such as education level, age, and marital status, as well as household-specific factors, including the number of employed household members, preschool-age children, elderly individuals, and disabled persons, on the likelihood of Turkish women becoming discouraged from participating in the labour force. This phenomenon has not been previously studied in Türkiye. The most similar study to ours is Akarçay-Gürbüz et al. (2014), which investigates how individual, household, and local labour market indicators influence worker discouragement, using cross-sectional microdata from the Household Labour Force Survey (HLFS). However, their primary focus is on how

these factors affect the transition to discouragement. Unlike their study, which covers only six years, our analysis is based on a 20-year sample. Additionally, our regressions are exclusively estimated for females, whereas their study uses a pooled sample to examine the determinants of discouragement.

This study makes several contributions to the current understanding of female labour in Türkiye. Firstly, it examines the characteristics of discouraged women in the Turkish labour market. Secondly, it provides empirical evidence on the influence of socioeconomic and household-specific factors on the likelihood that women experience discouragement in their labour force participation. Türkiye provides an insightful context for this analysis, given that traditional values often cast women primarily as providers of domestic labour, relegating them to secondary roles in income generation. In the absence of reliable survey data on discouraged women in Türkiye, our findings provide valuable insights. These insights are expected to have important policy implications for the country, which faces significant challenges related to high unemployment and low labour force participation.

HLFS is Türkiye's most comprehensive source of individual-level labour market data, providing valuable insights into employment trends. Importantly, it is the only dataset that includes information on discouraged workers. Using detailed microdata for cross-sectional analysis allows for a thorough understanding of individual responses to changes in labour market conditions. To investigate how personal and household characteristics influence discouragement in the labour market, a simple linear probit model is employed, with discouragement as the dependent variable. The explanatory variables include age group, educational attainment, marital status, the number of elderly individuals, disabled persons, preschool-aged children, and employed household members. The analysis utilises twenty years of cross-sectional data (2004-2023) for women aged 15 to 64. To enhance the study, probit regression is first performed on the pooled sample, and then separately for the three education categories: low, medium, and high.

The study's findings reveal that women with lower levels of education, particularly those in younger and older age groups, are more prone to discouragement. While education provides some protection against discouragement, highly educated women still face obstacles, including mismatches in skills and limited job opportunities in specialised fields. Factors such as marital status, caregiving responsibilities, the number of employed individuals in the household, and region also influence the likelihood of discouragement. Temporal trends indicate gradual improvements in discouragement rates across educational and age groups, reflecting socioeconomic progress and policy efforts. The persistent gaps highlight the need for comprehensive strategies that address the complex nature of discouragement. Expanding educational access, especially for disadvantaged women, is critical to closing the skills gap and increasing workforce participation. At the same time, providing targeted support for working mothers—such as affordable childcare and flexible work arrangements—can alleviate caregiving responsibilities and encourage greater labour market participation. Reducing regional disparities through infrastructure development and job creation in underdeveloped areas can also help lower discouragement, particularly in

rural regions. Additionally, efforts to address skill mismatches and promote gender equality in the workplace are essential.

The rest of the paper is organised as follows. Section 2 reviews the literature. Section 3 describes the data, Section 4 outlines the methodology, and Section 5 presents the empirical results of the analysis. Finally, Section 6 discusses the implications and offers some final remarks.

2. Literature Review

The cyclical patterns of labour force participation have been extensively examined in academic literature. However, empirical results from subsequent studies concerning the prevalence and even the existence of these effects have been inconsistent. Flaim (1973) notes cyclical variations within the unemployed population, supporting the positive link between worker discouragement and unemployment. Borjas (1996) contends that strong empirical evidence backs the dominance of the discouraged worker effect. Blundell et al. (1998) introduce a model that incorporates discouraged workers alongside unemployment, highlighting how business cycle fluctuations influence expected market wages, which in turn affect both unemployment and discouragement rates. Ehrenberg and Smith (2000) observe that the added worker effect has waned recently as more women are either regularly employed or actively participate in the labour force. Additionally, the availability of unemployment insurance benefits has incentivised individuals to remain outside the labour force. Darby et al. (2001) investigate the response of labour force participation to economic cycles in France, Japan, Sweden, and the United States, revealing that the discouraged worker effect is widespread but primarily affects women, especially older women. Benati (2001) provides evidence of the discouraged worker effect in both the overall population and various age-sex subgroups in the United States. Van Ham et al. (2001) studied the process of discouragement in the Netherlands using labour force survey data, emphasising the role of challenging labour market conditions, gender disparities, and individual qualifications in fostering discouragement among workers. Wasmer (2009) analyses the causal links between labour force participation and unemployment across European nations and the U.S. O'Brien (2011) notes that workers who were previously marginally attached are those whose participation is highly sensitive to cyclical fluctuations, making them particularly prone to becoming discouraged workers. DeLoach and Kurt (2013) attribute this to high unemployment during economic downturns, which reduces the chance of securing employment and therefore increases the number of discouraged workers. Tansel and Ozdemir (2018) provide evidence of the added-worker effect among men and the discouraged-worker effect among women in Canada, and further explore potential explanations for this apparent contradiction. Ramos-Veloza et al. (2021) suggest that verifying a long-term relationship between unemployment and labour force participation could enable the investigation of whether fluctuations in unemployment rates trigger an added or discouraged worker effect in Latin American economies. Martín-Román (2022) states that the added worker hypothesis holds when the relationship between the labour force participation rate and the unemployment rate is positive. In contrast, the discouraged worker

hypothesis is supported by a negative relationship. Zemlianukhina and Zemlianukhina (2023) examine the causes and effects of discouragement in Russia, analysing its impact on individuals and society at large.

Studies using data from the United States (Parsons, 1991; Keith & McWilliams, 1999) and the United Kingdom (van Ophem, 1991) provide evidence that women are less likely than men to engage in an active job search. Women are more constrained in terms of geographical mobility than men (Hanson & Pratt, 1988), suggesting that gender disparities in job search behaviour may, in part, be attributed to differences in the discouraged worker effect between the sexes. Research indicates that men and women exhibit differing levels of tolerance for commuting; men are generally willing to endure longer commuting times than women (Johnston-Anumonwo, 1992). Furthermore, women with children are particularly averse to long commutes (Rouwendal, 1999). Compared with men, women are more likely to face significant daily time and space constraints due to domestic responsibilities (Hanson & Pratt, 1991). Bradbury and Katz (2005) investigate the decline in female labour force participation since 2000, identifying a particularly pronounced decrease among highly educated women with young children. Their study also reveals that a husband's earnings play a significant role in determining whether women participate in the labour force. Fallick and Pingle (2006) compare labour force participation rates (LFPRs) for females and males across age groups in the United States, revealing that participation tends to decline after age 50. The concept of the complementary leisure effect (or shared leisure effect, in which individuals may enjoy leisure more in the company of their spouse) discussed in the literature may be relevant in this context (Michaud & Vermeulen, 2011; Pérez et al., 2020). The decomposition by Hotchkiss (2009) shows that low labour force participation rates among women, along with the decline in the proportion of working-age men, contribute to these trends. Dagsvik et al. (2013) develop an empirical model to estimate the labour force participation decisions of married and cohabiting women in Norway from 1988 to 2008, indicating that the discouraged worker effect is substantial. Mondal et al. (2023) demonstrate that, in India, as the number of employed individuals in a household increases, women in that household are more likely to enter the labour force. Deeksha and Sourabh (2021) reveal that the wage gap discourages women from entering the labour market, while the prevalence of underemployment, characterised by overqualification for their occupations, prevents them from seeking better job opportunities by reducing their efforts to search for jobs while employed in urban India.

In Türkiye, earlier research on this topic includes works by Tansel (2002) and Başlevent and Onaran (2003). Using Population Census data from 1980, 1985, and 1990, Tansel (2002) examines how the unemployment rate and gross domestic product (GDP) per capita affect women's overall labour force participation rates. Başlevent and Onaran (2003) utilise data from the HLFS for 1988 and 1994 to analyse the labour market outcomes of married couples, aiming to identify whether the added worker effect or the discouraged worker effect is more dominant in urban Turkish families. Selim (2006) investigates the factors affecting women's labour force participation in both rural and urban areas, using the 1999 HLFS data. She finds that education level and the number of children are the most

significant variables influencing married women's labour market participation. Taşçı and Darıcı (2009) examine gender-based determinants of labour force participation using probit and logit models and find that women are generally less likely than men to participate in the labour force. Karaoglan (2009) examines how socioeconomic factors affect the likelihood that individuals without regular employment become discouraged, identifying key determinants, including gender, age, marital status, education, prior work experience, and residence in urban or rural areas. The research also assesses the dominance of the AWE in Türkiye, concluding that it substantially exceeds that of the DWE. Dayıoğlu and Kırdar (2010) find that, although higher levels of education positively affect both genders, this effect is powerful among women. They further highlight that, while an increase in household children tends to encourage men to join the labour force, it discourages women from entering or remaining in employment. Using panel data from the Survey on Income and Living Conditions (SILC), Tansel and Kan (2012) found that among individuals who were unemployed in 2006, the likelihood of transitioning into inactivity was 23.8%. Arguably, a considerable part of these transitions into inactivity was due to discouraged workers. Akarçay-Gürbüz et al. (2014) aim to explore factors influencing the transition to discouragement by analysing pooled cross-sectional data from 2006 to 2011, considering individual and household characteristics alongside local labour market conditions. Their results show that both low educational attainment and adverse market conditions are significantly associated with higher discouragement rates. Karaoglan and Okten (2015) provide evidence of a statistically significant added-worker effect in Türkiye during 2005–2010, indicating that a husband's involuntary job loss increases the probability that his wife moves from inactivity to activity by approximately four percentage points. Özden (2017) investigates trends and underlying factors of discouraged workers from 1988 to 2014, revealing that discouragement rises markedly once a certain per capita income threshold is exceeded. Additionally, an increase in unemployment correlates with greater discouragement, particularly during economic crisis years, such as 2001, affecting individuals with higher levels of secondary and tertiary education. Yılmaz (2005) notes that many discouraged workers possess insufficient qualifications for employment; in 2000, approximately 4.5% of discouraged workers in Türkiye were either primary school graduates or illiterate. Kaya-Bahçe and Memiş (2014) examine the impact of the 2008-2009 economic crisis on unemployment, reporting that women were more likely than men to be marginally attached throughout the period, with the number of marginally attached women rising at a faster rate during the crisis. Finally, Yenilmez and Kılıç (2018) find that the AWE is particularly marked among highly educated or vocationally trained women using data from January 2014 to July 2017. Conversely, for highly skilled men, no significant long-term relationship is observed between labour force participation and the unemployment rate.

3. Data

Using microdata from the Household Labour Force Survey for 2004-2023, we apply weights to represent the entire national labour force accurately. Our analysis is centred on women aged 15-64. A discouraged worker is defined as someone who stops job searching after several unsuccessful attempts. However, the HLFS data does not include information

on the duration of inactivity or the number of failed search attempts. Therefore, for our analysis, we classify women in this age group who are not participating in the labour force as discouraged. Specifically, women with a labour force status recorded as “3” (not searching for a job) are considered discouraged workers. The survey also lacks direct measures of household size, the number of employed individuals, preschool-age children, or household members with disabilities or chronic illnesses. To address this, we created these variables from other available household-level data. For household size, we count the individuals in the same household each year. To determine the number of children, we count individuals below school age within each household. Similarly, for the number of disabled or ill persons, we use responses to the question ‘reason for not searching for a job’, counting those who cite illness or disability. For the number of employed individuals, we tally household members with a labour market status coded as “1” (employed). Additionally, we developed grouping variables for education levels and age brackets.

For education, women are classified as follows: those who are illiterate, literate without a diploma, or hold primary or secondary school diplomas are categorised as “low educated”; those with high school or vocational high school diplomas are considered “medium educated”; and those with two-year college, university, or advanced degrees are regarded as “high educated”¹.

Table 1 presents the proportion of discouraged women across education categories, age groups, and marital statuses for 2004, 2013, and 2023. Table 2 details the reasons women give for not seeking employment across age groups, while Table 3 presents similar information by education level. The data highlight changing trends among women discouraged from seeking work over the past two decades. The analysis, grouped by education, age, and marital status, identifies persistent barriers to women's workforce participation, although some improvement is evident over time. The South East Anatolia region consistently has the highest proportion of discouraged women across all years, whereas the East Black Sea region has the lowest. The gap between regions has narrowed over the study period. It is worth noting that a negative correlation exists between regional development levels and discouragement ratios. Additionally, Istanbul, West Anatolia, East Anatolia, and the Marmara region experienced the most significant reductions during this period.

Educational attainment significantly influences discouragement trends. Women with limited education consistently exhibit the highest discouragement rates, though the rate

¹ For the year 2023, the “low educated” group includes individuals with no diploma, primary, and secondary school graduates, while the “medium educated” group consists of high school and vocational high school graduates. The “high educated” group includes those with two-year college degrees, university graduates, and holders of master’s or PhD degrees. A figure (Figure A2) showing the distributions for each group for this year is provided in the appendix. Distribution figures for the other years in the analysis are available upon request. As can be observed, only the “high educated” group exhibits a heterogeneous distribution. However, this is unlikely to cause any econometric issues, as the proportion of individuals with a master’s or PhD in this group is relatively small.

declined from 79.04% in 2004 to 71.92% in 2023, indicating some progress. Women with medium levels of education show a larger decline, from 69.49% to 59.51%, reflecting greater opportunities or changes in employment conditions. However, women with higher education exhibit fluctuating patterns, with a discouragement rate of 29.63% in 2023, slightly higher than in 2013. This inconsistency among highly educated women suggests that barriers, such as skill mismatches or limited job opportunities in specialised fields, may still exist.

Age is a key factor in discouraging employment. Younger women aged 15-24 experienced a decline in disengagement rates, falling from 75.01% in 2004 to 68.73% in 2023, potentially due to improved access to education and early-career opportunities. The 25-34 age group shows the most significant improvement, with discouragement declining from 70.66% to 49.16%, possibly reflecting the benefits of family-support policies or increased awareness of career options. On the other hand, older age groups, especially those aged 55-64, remain highly discouraged, with only slight improvements. This indicates persistent challenges, including age discrimination and limited job flexibility, faced by older workers.

Marital status also influences the varying levels of discouragement among women. Widowed women consistently report the highest rates, with only a slight decrease from 82.76% in 2004 to 79.42% in 2023, possibly due to limited support networks. Divorced women show the most notable progress, with rates falling from 58.01% to 45.16%, whereas married women show moderate improvement. These trends highlight the compounded challenges faced by single and widowed women, who may lack the resources or societal support to re-enter the workforce.

The reasons behind women's reluctance to seek employment in 2023 reveal deep-rooted barriers. At the aggregate level, childcare is the most frequently cited reason for not seeking employment, accounting for 26.24%. Childcare is a universal barrier that affects women across all educational levels. It is followed by beliefs in skill mismatch (18.8%), unsuccessful long-term searches (10.35%), and the belief that there are no jobs in the neighbourhood (8.77%). Skill mismatches are most pronounced among highly educated women (21.19%), indicating possible overqualification or structural issues in the job market. Meanwhile, health-related barriers and housework are more common among less educated women, highlighting socio-economic disparities that influence workforce participation.

Younger women, especially those aged 15-24, cite education as the primary reason, accounting for 35.21%. Childcare becomes a significant challenge for women aged 25-44, with nearly half (47.77%) of those aged 25-34 affected. As women grow older, skill mismatches increase, highlighting a gap between their expertise and available employment opportunities. Health-related issues, such as illness or disability, affect older women more, particularly those aged 45-64, while housework remains a persistent barrier, especially for women with less education and those who are older.

Overall, the data highlight ongoing challenges for women, particularly those with lower levels of education, older age groups, and caregiving responsibilities. While progress is visible, targeted interventions—such as retraining initiatives, flexible work arrangements, and increased caregiving support—are essential to reducing these barriers and boosting female workforce participation.

Table: 1
Ratio of Discouraged Women across Categories, 2004, 2013 and 2023

Categories	Ratio of Discouraged Women		
	2004	2013	2023
Education Level			
Low Educated	79.04	73.50	71.92
Medium	69.49	65.02	59.51
High Educated	28.75	27.14	29.63
Age Group			
15to24	75.01	73.46	68.73
25to34	70.66	59.13	49.16
35to44	72.36	58.50	50.39
45to54	78.89	69.41	60.08
55to64	83.33	81.63	79.10
Marital Status			
Single	66.67	63	54.86
Married	77.79	68.49	62.29
Divorced	58.01	46.60	45.16
Widowed	82.76	81.84	79.42
Region			
Istanbul	79.1	67.51	57.01
West Marmara	65.11	62.60	53.27
Aegean	68.45	57.74	55.02
East Marmara	75.33	64.59	56.22
West Anatolia	78.34	69.88	60.46
Mediterranean	77.62	67.45	62.53
Mid. Anatolia	82.19	68.77	65.05
West Black Sea	64.61	60.55	54.60
East Black Sea	42.75	58.72	50.98
North East Anatolia	64.61	62.75	62.14
Mid. East Anatolia	84.34	68.90	68.46
South East Anatolia	88.08	85.12	75.66
Total	74.8	66.94	60.14

Source: Authors' own work. The ratios are reported for three years: the starting year, 2004; the middle year, 2013; and the final year, 2023. The results for other years are available on request.

Table: 2
Reasons Why Women in Different Age Groups Did Not Seek Jobs in 2023

Reasons For Not Seeking a Job	Age Group					Total
	15 to 24	25 to 34	35 to 44	45 to 54	55 to 64	
In Education	35.21	2.86	0.58	0.10	0	7.86
Seasonal Employee	0.29	0.30	0.51	0.78	0.31	0.44
Searched For So long	13.18	10.15	9.13	10.43	8.12	10.35
Believes Skill Mismatched	14.95	13.85	17.04	26.01	32.13	18.8
Believes No Job in Region	11.15	6.93	8.36	9.07	9.58	8.77
Child Care	8.20	47.77	38.56	8.14	3.29	26.24
Elder Care	0.74	1.02	1.86	3.97	3.86	1.99
Child & Elder Care	0.11	0.79	0.91	0.57	1.25	0.69
Temporarily Ill or Wounded	0.78	1.44	3.04	6.15	5.45	2.96
Ill or Disabled	0.81	1.17	3.72	9.35	12.95	4.34
House Work	4.10	5.65	8.6	14.22	11.64	8.24
Other Family Reasons	3.14	2.96	2.81	3.52	2.64	3.03
Other Personal Reasons	7.16	4.98	4.56	7.43	8.77	6.09
Any Other Reason	0.18	0.13	0.33	0.26	0	0.20
Total	100	100	100	100	100	100

Source: Authors' own work. Results for other years are available on request.

Table: 3
Reasons Why Women Do Not Seek Employment By Education Level, 2023

Reasons For Not Seeking a Job	Education Level			
	Low Educated	Medium	Highly Educated	Total
In Education	4.47	14.54	7.25	7.86
Seasonal Employee	0.65	0.23	0.19	0.44
Searched For So long	8.63	10.72	14.51	10.35
Believes Skill Mismatched	18.53	17.69	21.19	18.8
Believes No Job in Region	10.26	7.23	6.94	8.77
Child Care	25.92	26.43	26.83	26.24
Elder Care	2.29	1.71	1.56	1.99
Child & Elder Care	0.61	0.92	0.55	0.69
Temporarily Ill or Wounded	3.73	2.51	1.51	2.96
Ill or Disabled	6.44	2.60	1.16	4.34
House Work	10.62	6.16	4.80	8.24
Other Family Reasons	3.29	2.69	2.82	3.03
Other Personal Reasons	4.41	6.31	10.39	6.09
Any Other Reason	0.13	0.27	0.30	0.20
Total	100	100	100	100

Source: Authors' own work. Results for the other years are available on request.

4. Methodology

As educational attainment increases, the demand for domestic equality is expected to grow. Educated individuals are more likely to adopt an egalitarian approach when dividing household tasks. Additionally, educated women are more inclined to seek professional services in areas such as childcare, elder care, and patient care. This, in turn, affects labour force participation decisions and the likelihood of discouragement. Following several other studies in the literature, we employ a probit model to estimate the impact of various factors on the probability of being discouraged (e.g., Mincer, 1974; Blau & Kahn, 2000; Frey & Stutzer, 2002; Rabe-Hesketh & Skrondal, 2008; Akarçay-Gürbüz, 2014). We apply a probit model to both the pooled sample and to three educational groups to examine intergroup differences in the significance and influence of factors affecting the likelihood that women aged 15-64 are outside the labour force. The explanatory variables include an age group dummy, with the 15-24 category as the reference group; a marital status dummy, with the single category as the reference; educational level dummies; a region dummy, stratified into 12 ‘NUTS 1’ classifications with South East Anatolia as the base category; and household characteristics. The household variables include household size (HHSIZE), the number of employed individuals (NumEmp), the number of preschool-aged children (NumKids), the number of individuals with disabilities (NumDis), and the number of elderly persons aged 60 and older who are not working (NumElder). Therefore, the probit model we estimate is:

$$P(Discouraged)_i = \alpha_0 + \alpha_1 HHSIZE_i + \alpha_2 NumEmp_i + \alpha_3 NumKids_i + \alpha_4 NumDis_i + \alpha_5 NumElder_i + D_1 Education_i + D_2 MaritalStatus_i + D_3 AgeGroup_i + D_4 Region_i + \varepsilon_i \quad (1)$$

Household size has two opposing effects on the likelihood of discouragement. On one hand, a larger household size often indicates lower socioeconomic status and educational attainment, increasing discouragement due to limited human capital. On the other hand, in households with limited income, larger family sizes may compel women to enter the labour force, thereby reducing the likelihood of discouragement.

The presence of preschool-aged children, disabled individuals, or elderly dependents requiring care is expected to be positively related to the likelihood of discouragement, especially in financially constrained families. In traditional family units, caregiving duties are mainly assigned to women, which often leads to their withdrawal from the labour market and increases the likelihood of discouragement. Conversely, middle-class families with higher educational levels and sufficient financial resources tend to utilise external childcare or eldercare services, reducing these effects. As a result, the direction and strength of these relationships are likely to vary across different analyses, particularly when divided by educational attainment. Additionally, regardless of education level, the impact of these factors may differ across age groups. For example, for younger women, having children or elderly dependents may have little to no effect on the likelihood of discouragement.

Educational attainment is a vital factor in reducing the likelihood of discouragement. Generally, higher educational attainment is associated with a reduced likelihood of feeling discouraged. The categories used for education in the questionnaire have evolved over the years. Consequently, we assign different baseline categories to groups with low and high levels of education in the regressions. In the low-education group, the baseline was illiterate individuals in 2004; from 2013 onwards, it was defined as individuals who are literate but do not hold a diploma. For the medium-educated group, the baseline has always been high school diploma holders across all years. Lastly, for the highly educated group, "university and higher education" served as the baseline until 2023. However, in 2023, the baseline was changed to a "2-year college diploma".

We first conduct the regression for the pooled group and then perform it separately for the three different education categories: "low educated", "medium educated", and "high educated". "Low educated" includes those who are illiterate, literate without a diploma, or hold primary or secondary school diplomas; "medium educated" comprises individuals with high school or vocational high school diplomas; and "high educated" refers to those with university or higher degrees for 2004. For 2013, "low educated" remains the same; "medium educated" includes individuals with high school or vocational diplomas; and "high educated" consists of individuals with a college, university, or master's/PhD degree. For 2023, "low educated" are those who are literate without a diploma or hold primary or secondary education; "medium educated" includes those with high school or vocational diplomas; and "high educated" refers to individuals with 2-year college diplomas, university degrees, or master's/PhD qualifications. The purpose of this subgrouping is to examine whether the impact of explanatory variables varies across women with different levels of human capital, as human capital is the most apparent determinant of discouragement.

Marital status also plays a significant role. Across all education groups, being single is used as the reference category. Marriage is expected to positively correlate with discouragement, as it often reduces women's participation in the labour force. In contrast, divorce is anticipated to have a negative correlation; after a divorce, women may be compelled to re-enter the labour market, decreasing the likelihood of discouragement. Widowhood, however, is expected to increase discouragement for two reasons. First,

widows are typically older, and the probability of re-entering the labour market declines with age. Second, widows may receive pensions, which lessen the need for active job searching.

Age group effects are expected to differ significantly. The coefficients for age groups are likely to fluctuate due to the interaction of underlying factors such as education, work experience, marital status, and childcare responsibilities linked to different life stages.

Finally, because of the inverse relationship between development level and discouragement ratio, we expect a negative correlation in the more developed regions of the western part of the country.

Although the R^2 values are relatively high for a probit model, unobserved factors may influence the likelihood of discouragement among women, potentially introducing endogeneity. These unobserved factors could include ethnicity, race, total previous work experience, number of rejected job applications, and physical or mental health conditions. However, because these variables are not available in the HLFS data, this represents a limitation of the study's methodological approach.

5. Results

Regression for the Pooled Sample

Table 4 presents the probit regression results for the pooled sample from 2004, 2013, and 2023. These results provide a detailed analysis of the factors that affect the likelihood of discouragement among women. The coefficients indicate the marginal effects of the explanatory variables, computed while holding all other covariates constant at their means. Consequently, the interpretation of these coefficients should consider this context. For example, the coefficients for different age groups indicate their effects on the probability of discouragement relative to a reference category, holding all other factors constant. In this analysis, the reference age group is 15-24, and the baseline for marital status is being single.

Age Group Effects

The most notable discovery is the U-shaped connection between discouragement probability and age groups. Specifically, the youngest (reference category) and oldest age groups have higher probabilities of discouragement than other age groups. This trend becomes even more evident over the years analysed.

Marital Status Effects

Regarding marital status, results show that only divorced women have a lower likelihood of feeling discouraged compared to their single counterparts. This effect is most evident in 2013 but diminishes in later years. Nonetheless, this finding suggests that women are more likely to re-enter the labour force following divorce, consistent with theoretical expectations.

Household Characteristics Effects

Among household characteristics, a larger household size increases the likelihood of discouragement among women. Conversely, the number of income earners, children, the elderly, and disabled individuals in the household generally decreases the risk of discouragement. The only exception is the coefficient for the number of disabled individuals in 2023, which is positive. As shown in Table 5, this trend is particularly evident among individuals with lower levels of education. The regression analysis subtly suggests that women from economically disadvantaged backgrounds do not leave the labour market mainly due to caregiving responsibilities for children, elderly family members, or individuals with disabilities within the household. Instead, the financial burden of caregiving drives women from lower socioeconomic backgrounds to remain in the workforce. Additionally, these families are likely dependent on extended kin networks for support. For example, grandmothers presumably play a vital role in raising their grandchildren within such households. Ultimately, if the effect observed in the low-education group is sufficiently large, the overall impact in the pooled sample closely resembles the pattern observed in this demographic segment. Moreover, although the coefficients for the number of children and disabled individuals are small, they remain statistically significant. Finally, it is essential to note that, apart from the presence of disabled individuals, there is a notable convergence in the effects of household characteristics on the likelihood of discouragement.

Education Effects

For educational attainment, the lowest education level is used as the reference category for each year, consistent with the survey design. The results show that higher levels of education, including high school, are associated with lower probabilities of discouragement. Conversely, lower educational qualifications, such as primary and secondary school diplomas, increase the likelihood of discouragement. The most potent effects are observed for university degrees and higher academic levels. Lastly, it is crucial to emphasise that the impact of education level on discouragement becomes more pronounced over time throughout the analysed period.

Regional Comparisons

Southeastern Anatolia, which serves as the reference category, is the least developed region, characterised by limited labour market access for women, a high reliance on agriculture for employment, and a lack of diverse job opportunities. As a result, the coefficients for all other regions are negative throughout the entire analysed period. Moreover, regional disparities appear to diminish over time, indicating convergence in discouragement probabilities across areas.

Table: 4
Probit Results, Pooled Sample

Prob (Discouraged)	Pooled		
Variables	2004	2013	2023
Age Group			
15-24	Base	Base	Base
25-34	-.557***	-.627***	-.633***
35-44	-.601***	-.731***	-.825***
45-54	-.073***	-.212***	-.416***
55-64	.099***	.159***	.034***
Marital Status			
Single	Base	Base	Base
Married	.693***	.43***	.367***
Divorced	-.275***	-.47***	-.335***
Widowed	.418***	.295***	.218***
HH Character			
HH Size	.267***	.278***	.245***
NumEmp	-.984***	-1.018***	-.876***
NumKids	-.09***	-.011***	-.008***
NumElder	-.187***	-.158***	-.1***
NumDis	-.091***	-.075***	.135***
Education Level			
Illiterate	Base	----	----
Lit.NoDiploma	.109***	Base	Base
PrimarySch	.132***	-.024***	-.08***
SecondarySch	.395***	.214***	.024***
HighSch	-.083***	-.162***	-.3***
Voc.HighSch	-.461***	-.35***	-.471***
2YearsColl	----	----	-.794***
University	----	----	-.977***
Uni&Higher	-1.157***	-1.05***	----
MasterOrPhD	----	----	-1.371***
Region			
SouthEast An.	Base	Base	Base
Istanbul	-.099***	-.067***	.073***
West Marmara	-.421***	-.229***	-.131***
Aegean	-.43***	-.389***	-.108***
East Marmara	-.244***	-.157***	-.09***
West Anatolia	-.191***	-.015***	.054***
Mediterranean	-.265***	-.269***	-.066***
Mid. Anatolia	-.165***	-.17***	.044***
WestBlack Sea	-.457***	-.308***	-.182***
EastBlack Sea	-.81***	-.406***	-.238***
NorthEast An.	-.462***	-.297***	-.103***
Mid.EastAn.	-.188***	-.204***	-.127***
Observations	157,485	169,426	202,042
Pseudo R ²	0.401	0.272	0.339

Source: Authors' own work. The regression results are reported for the pooled data. *** $p < .01$, ** $p < .05$, * $p < .1$.

Table 5 presents the probit regression results for three educational groups (low, medium, and high) in 2004, 2013, and 2023.

Table: 5
Probit Results for Different Educational Categories: 2004, 2013, and 2023

Prob (Discouraged) Variables	2004			2013			2023		
	LowEd.	MediumEd	HighlyEd.	LowEd.	MediumEd	HighlyEd	LowEd.	MediumEd	HighlyEd.
Age Group									
15-24	Base	Base	Base	Base	Base	Base	Base	Base	Base
25-34	-.543***	-.642***	-.211***	-.673***	-.688***	-.437***	-.721***	-.668***	-.18***
35-44	-.559***	-.691***	-.421***	-.779***	-.73***	-.719***	-.9***	-.859***	-.488***
45-54	-.071***	.008*	.456***	-.275***	-.057***	-.19***	-.525***	-.367***	-.176***
55-64	.069***	.923***	1.439***	0.003	.832***	.926***	-.202***	.424***	.866***
Marital Status									
Single	Base	Base	Base	Base	Base	Base	Base	Base	Base
Married	.471***	.899***	1.245***	.156***	.582***	.961***	-.02***	.488***	.699***
Divorced	-.492***	-.301***	.311***	-.716***	-.516***	.04***	-.656***	-.371***	-.094***
Widowed	.232***	.258***	.682***	.078***	.278***	.615***	-.086***	.107***	.416***
HH Character									
HH Size	.27***	.247***	.32***	.271***	.288***	.338***	.221***	.245***	.362***
NumEmp	-1.002***	-.858***	-1.296***	-1.007***	-1.011***	-1.258***	-.829***	-.851***	-1.201***
NumKids	-.116***	.07***	.057***	-.049***	.132***	.049***	-.079***	.051***	.067***
NumElder	-.173***	-.24***	-.154***	-.112***	-.3***	-.21***	-.046***	-.164***	-.193***
NumDis	-.089***	-.271***	-.101***	-.088***	-.136***	-.033***	.222***	.099***	-.065***
Education Level									
Illiterate	Base								
Lit.NoDiploma	.066***			Base			Base		
PrimarySch	.095***			-.029***			-.117***		
SecondarySch	.258***			.032***			-.178***		
HighSch		Base			Base			Base	
Voc.HighSch		-.442***			-.215***			-.178***	
2YearsColl									Base
University									-.191***
Uni&Higher			Base			Base			
MasterOrPhD									-.591***
Region									
SouthEast An.	Base	Base	Base	Base	Base	Base	Base	Base	Base
Istanbul	.024***	-.467***	.147***	0.003	-.129***	.107***	.164***	-.085***	.11***
West Marmara	-.449***	-.391***	.116***	-.277***	-.093***	.23***	-.161***	-.215***	.06***
Aegean	-.409***	-.535***	-.051***	-.434***	-.255***	-.022***	-.099***	-.235***	.018***
East Marmara	-.212***	-.387***	.055***	-.164***	-.128***	.154***	-.064***	-.196***	-.016***
West Anatolia	-.038***	-.533***	-.154***	.029***	.05***	.126***	.175***	-.06***	.006*
Mediterranean	-.239***	-.387***	-.098***	-.303***	-.172***	.056***	-.025***	-.173***	-.044***
Mid. Anatolia	-.137***	-.198***	0.017	-.215***	.047***	.15***	.035***	.079***	.111***
WestBlack Sea	-.452***	-.411***	-.118***	-.388***	.024***	.17***	-.205***	-.249***	.048***
EastBlack Sea	-.869***	-.577***	-.121***	-.594***	.164***	.54***	-.325***	-.186***	.013***
NorthEast An.	-.5***	-.2***	.163***	-.403***	.178***	.37***	-.202***	.102***	.196***
Mid.EastAn.	-.128***	-.532***	-.176***	-.291***	.098***	.417***	-.223***	-.043***	.221***
Cons	1.388***	1.124***	-.721***	1.635***	.861***	-.451***	1.694***	.854***	-.24***
Observations	127142	22544	7799	124642	26757	18027	120619	42221	39202
Pseudo R ²	0.401	0.272	0.393	0.361	0.302	0.352	0.287	0.264	0.348

Source: Authors' own work. The regression results are reported for three years: the start year of the analysis (2004), the middle year (2013), and the final year (2023). The results for the other years are available upon request. *** $p < .01$, ** $p < .05$, * $p < .1$.

Age Group Effects

The coefficients for age groups (25-34 and 35-44) consistently display negative values across all educational levels and years. For example, in 2004, the discouragement probability for low-educated women in the 25-34 age group decreased by 0.543 relative to the 15-24 age group. This effect becomes more pronounced in later years, with coefficients of -0.673 in 2013 and -0.721 in 2023 for the same group. Similar trends are observed in the 35-44 age group, with the probability of discouragement declining further over time.

Results suggest that the youngest women (15-24) and the oldest women (55-64) are the most likely to be discouraged across all educational groups. It is also noteworthy that the

coefficient becomes positive only for the oldest women (55-64) across all education groups and all years, except for the low-educated group in 2023. Therefore, the relationship between age groups and discouragement is U-shaped. This pattern may reflect greater career confidence or greater opportunities for middle-aged women, who may have gained more experience and stability in balancing work and personal life.

Marital Status Effects

Being married increases the likelihood of discouragement across all years and groups, except for the low-educated group in 2023, where the effect is minimal. This suggests that, as expected, marriage leads women to exit the labour force. Interestingly, the effect is more pronounced for the highly educated group. Furthermore, the sign for divorce is generally negative, except for the highly educated group in 2004 and 2013. This indicates that, typically, divorced women reenter the labour market. Finally, there is convergence in the impact of marital status on discouragement across education levels during the analysed period.

Household Characteristics Effects

The regression results also emphasise the significant impact of household characteristics on the likelihood of discouragement. Variables such as household size, the number of employed household members, the number of preschool-aged children, and the presence of disabled or elderly family members are expected to influence discouragement probabilities across all educational groups. Larger household sizes are associated with higher probabilities of discouragement in all years and across all education groups, likely due to increased domestic responsibilities or resource constraints.

The presence of preschool-aged children is expected to reduce the likelihood that women in the low-education group feel discouraged, whereas we observe a positive trend among women with medium and high education levels. One plausible explanation is that educated women may prefer to care for their children themselves. Although educated women may be able to earn high wages, the opportunity costs of working may be too high. For some women, the financial burden of employment—considering childcare costs, commuting expenses, and the stress of balancing work and family life—may not justify the benefits. This may lead them to withdraw from the workforce and assume the primary caregiving role, especially if they perceive their income as insufficient to cover the costs and demands of working while raising children. (Harkness & Waldfogel, 2003; Goldin, 2006).

Households with more employed members tend to have lower probabilities of discouragement in all years and across all education levels, as additional financial support can reduce the need for women to remain out of the labour force. These findings emphasise the critical link between household dynamics and labour force participation, underscoring the need for supportive policies to address family-related barriers, such as affordable childcare, eldercare services, and flexible working arrangements.

Education Effects and Educational Group Comparisons

Although we classify the sample by education level, we also include education as an explanatory dummy variable to analyse its impact within each group. As coefficients represent marginal effects, in 2004, within the low-educated group, holding a primary school diploma—*ceteris paribus*—increased the likelihood of being discouraged by 25.8% compared to illiterate individuals in the same group. For individuals with a medium level of education, holding a vocational high school diploma reduced the probability of discouragement by 44.2% in 2004. However, this effect diminished over the years, with the gap narrowing to just 17.8% by 2023. This trend suggests a declining influence of vocational education on women's labour force participation.

A key finding is the variation in discouragement probabilities across educational groups. For women with low education, the likelihood of discouragement is consistently higher than for those with medium or high education across all years. For example, in 2023, the reduction in discouragement probability for the 25-34 age group is 0.721 for women with low education, compared with 0.668 for women with medium education and -0.18 for women with high education. This emphasises the protective role of higher education against discouragement.

Over time, the gap in discouragement probabilities among educational groups seems to widen. In 2004, the difference in discouragement reduction between low- and highly educated women aged 25-34 was approximately 0.332 (-0.543 vs. -0.211), but this increased to 0.541 in 2023 (-0.721 vs. -0.18). This divergence highlights the growing significance of education in reducing discouragement, possibly due to an increasing premium on skills and qualifications in the labour market.

Regional Comparisons

Southeast Anatolia, the least developed region with high population density, an agriculture-based economy, and the largest average household size, is selected as the reference category for the regional dummy variable. As development levels increase, job market opportunities and access to education are expected to improve, reducing the likelihood of discouragement. This effect is evident across both low- and middle-educated groups in all years. It is particularly pronounced in these groups throughout the period. However, the coefficient for the highly educated group is usually positive, likely due to issues such as overqualification and skill mismatch. Therefore, we expect negative coefficients for all regions. The results confirm this expectation, as most regional coefficients are both negative and statistically significant.

Temporal Trends

The results show a general decrease in the probability of discouragement among women across all educational levels and age groups over the 20 years. This may be due to advances in education and urbanisation, as urbanisation—alongside migration from rural to

urban areas—can encourage women to seek employment in cities. Specifically, in recent years, the added worker effect might have become stronger. In many households, both men and women now need to work to meet basic living costs. This trend could be especially noticeable in the final year of the study. Among women with low education, discouragement for the 35-44 age group drops from -0.559 in 2004 to -0.90 in 2023. This steady downward trend indicates broader socioeconomic shifts, such as improved employment prospects, stronger social support networks, or targeted policies designed to reduce barriers to workforce participation.

Interestingly, the improvements are most noticeable among women with low and medium levels of education, suggesting that initiatives to combat labour force discouragement may have been particularly successful for these groups. Women with higher levels of education, although already experiencing lower probabilities of discouragement, show more modest improvements over time. For example, in the 25-34 age group, the reduction in discouragement among highly educated women improves from -0.211 in 2004 to -0.180 in 2023, a relatively small change compared with the shifts observed in other educational groups.

Sensitivity and Robustness Analysis

A thorough approach to sensitivity analysis involves comparing regression results across different model specifications or sample groups. Based on this, we compare the Probit regression results for the pooled sample (Table 4) with those for the grouped subsample (Table 5).

A comparison of the pooled sample and the grouped regression results shows that most coefficients for the explanatory variables in the “low educated” group closely match those in the pooled sample. For some other explanatory variables, the average coefficient across the “low educated” and “medium educated” groups more closely aligns with that of the pooled sample. For example, the coefficients for age groups and household characteristics in the pooled regression resemble those observed in the “low educated” subgroup more, whereas the coefficients for marital status in the pooled sample are closer to the averages for the “low educated” and “medium educated” subgroups. These findings are pretty intuitive, as most discouraged women belong to either the “low educated” or “medium educated” groups. In other words, because observations from these two subgroups dominate the pooled sample, the pooled regression results naturally tend to resemble those of the “low educated” and/or “medium educated” subgroups.

Using alternative models is a standard method for conducting robustness analysis. Therefore, we estimate a Logit model for the same subgroups to check if the coefficient patterns match those from the Probit model. As shown in Table A1 in the appendix, the signs of the Logit model coefficients are consistent with those of the Probit model. Additionally, a standard robustness criterion requires that the ratio of Logit to Probit model coefficients

should be approximately 1.65 (Wooldridge, 2009). Our results confirm that this ratio is maintained, further supporting the robustness of our findings.

Policy Implications

The findings have several implications for policymakers aiming to reduce labour force discouragement among women. First, targeted efforts to address discouragement in younger women (15-24) could yield significant benefits, particularly for low- and medium-educated groups. Strategies might include mentorship programmes, career counselling, or skills-building initiatives tailored to this demographic.

Second, the protective effect of higher education against discouragement emphasises the need to improve access to educational opportunities for women, especially those from disadvantaged backgrounds. Scholarships, subsidies, or flexible learning pathways could help bridge the academic gap and lessen long-term disparities in labour force participation.

Finally, the ongoing disparities across educational groups highlight the importance of developing inclusive labour market policies that address the specific challenges faced by women with low and medium levels of education. For instance, expanding childcare services, encouraging flexible working arrangements, or incentivising employers to hire from underrepresented groups could help reduce discouragement and promote greater workforce inclusivity.

In summary, the probit model results highlight significant differences between groups and improvements over time in the likelihood of discouragement among women across educational levels. While older women and those with higher levels of education experience lower probabilities of discouragement, younger and less educated women remain more vulnerable. These findings emphasise the need for targeted interventions to address these disparities and promote equitable labour force participation for all women.

6. Conclusion

The study highlights the crucial issue of discouragement in the labour market among women in Türkiye and its broader implications for gender equality, economic growth, and social development. Discouragement, as a labour market phenomenon, reflects the structural challenges faced by women, including educational disparities, traditional gender roles, caring responsibilities, and limited employment opportunities. These barriers are worsened by regional disparities and socio-cultural norms, which disproportionately affect women in rural areas or those with lower educational attainment.

The analysis shows that discouraged workers constitute a hidden part of the labour force, with substantial potential to contribute to economic development if their difficulties are addressed. Key findings indicate that women with lower levels of education, particularly those in younger and older age groups, are more susceptible to discouragement. Marital status and household dynamics, such as caregiving responsibilities and the number of

employed household members, further affect labour force participation. While education acts as a protective factor against discouragement, highly educated women also encounter issues like skill mismatches and limited job opportunities in specialised fields. Trends over time show slow improvements in discouragement rates across educational and age groups, signalling socio-economic progress and policy efforts. However, these improvements are uneven, with women with low and medium levels of education benefiting more than their highly educated counterparts. Ongoing gaps highlight the need for comprehensive strategies that address the complex factors underlying discouragement.

To address these challenges, policymakers need to adopt a multi-faceted approach. Broadening access to education, particularly for disadvantaged women, is vital to closing the skills gap and increasing workforce participation. At the same time, targeted support for working mothers, such as affordable childcare and flexible working arrangements, can reduce the caregiving burden and encourage greater labour-market participation. Tackling regional disparities through investment in infrastructure and job creation in underdeveloped areas can also help lessen discouragement, particularly in rural regions. Furthermore, initiatives to resolve skill mismatches and advance gender equality in the workplace are essential. These include career guidance, mentorship schemes, and incentives for employers to foster inclusive work environments. Efforts to challenge traditional gender norms and promote shared caregiving duties within households can further support women's participation in the labour force.

In conclusion, reducing discouragement among women in the labour market requires a comprehensive and sustained effort to address structural, cultural, and economic barriers. By fostering an inclusive labour market and enabling women to realise their full potential, Türkiye can make significant progress in gender equality and socioeconomic development.

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Appendix

Figure: A1
Ratio of Discouraged Women, 2004, 2013, 2023

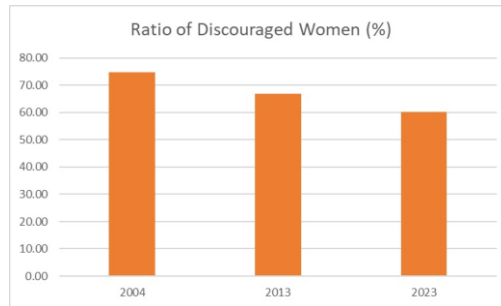


Figure: A2
Distribution of Subgroups within Education Categories, 2023

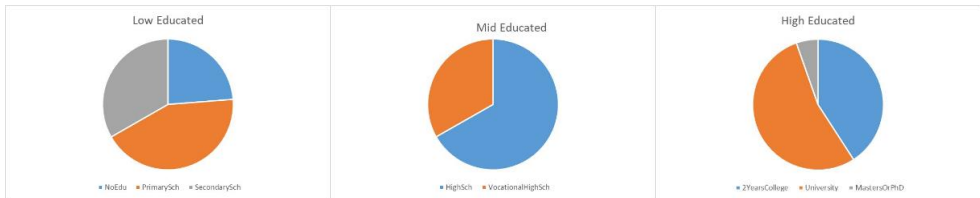


Table: A1
Logit Results Across Educational Categories: 2004, 2013 and 2023

Logit Discouraged Variables	2004			2013			2023		
	LowEd.	MediumEd	HighlyEd.	LowEd.	MediumEd	HighlyEd.	LowEd.	MediumEd	HighlyEd.
Age Group									
15-24	Base	Base	Base	Base	Base	Base	Base	Base	Base
25-34	-1.084***	-1.153***	-.334***	-1.346***	-1.262***	-.783***	-1.356***	-1.196***	-.342***
35-44	-1.06***	-1.249***	-.654***	-1.496***	-1.351***	-1.226***	-1.651***	-1.503***	-.841***
45-54	-.107***	.02***	.774***	-.529***	-.145***	-.371***	-.947***	-.64***	-.317***
55-64	.122***	1.767***	2.475***	-.054***	1.496***	1.507***	-.389***	.718***	1.433***
Marital Status									
Single	Base	Base	Base	Base	Base	Base	Base	Base	Base
Married	.793***	1.56***	2.46***	.214***	1.041***	1.936***	-.066***	.818***	1.404***
Divorced	-.931***	-.522***	.603***	-1.344***	-.883***	.138***	-1.173***	-.639***	-.125***
Widowed	.326***	.397***	1.274***	.035***	.465***	1.136***	-.205***	.131***	.773***
HH Characteristics									
HH Size	.553***	.464***	.525***	.543***	.549***	.574***	.437***	.457***	.62***
NumEmp	-1.922***	-1.567***	-2.462***	-1.906***	-1.856***	-2.385***	-1.513***	-1.532***	-2.274***
NumKids	-.252***	.097***	.128***	-.128***	.186***	.102***	-.179***	.084***	.123***
NumElder	-.368***	-.445***	-.284***	-.272***	-.558***	-.379***	-.124***	-.321***	-.359***
NumDis	-.159***	-.477***	-.138***	-.148***	-.252***	-.08***	.483***	.218***	-.066***
Education Level									
Illiterate	Base								
Lit.NoDiploma	.127***			Base			Base		
PrimarySch	.172***			-.058***			-.205***		
SecondarySch	.455***			.041***			-.324***		
HighSch		Base			Base			Base	
Voc.HighSch		-.447***			-.378***			-.302***	
2YearsColl									Base
University									-.326***
Uni&Higher			Base						
MasterOrPhD									-1.019***
Region									
SouthEast An.	Base	Base	Base	Base	Base	Base	Base	Base	Base
Istanbul	.048***	-.812***	.253***	-.009**	-.217***	.142***	.283***	-.143***	.115***
West Marmara	-.805***	-.674***	.156***	-.504***	-.167***	.324***	-.275***	-.352***	-.011
Aegean	-.739***	-.905***	-.177***	-.768***	-.42***	-.126***	-.174***	-.385***	-.073***
East Marmara	-.402***	-.671***	.071***	-.322***	-.227***	.194***	-.121***	-.318***	-.117***
West Anatolia	-.08***	-.905***	-.301***	.022***	.075***	.172***	.298***	-.104***	-.088***
Mediterranean	-.46***	-.671***	-.195***	-.573***	-.314***	.031***	-.055***	-.286***	-.195***
Mid. Anatolia	-.3***	-.329***	.054***	-.429***	.048***	.185***	.039***	.115***	.062***
WestBlack Sea	-.844***	-.709***	-.247***	-.723***	.027***	.168***	-.369***	-.42***	-.081***
EastBlackSea	-1.537***	-1.014***	-.241***	-1.09***	.289***	.83***	-.581***	-.314***	-.123***
NorthEast An.	-.976***	-.341***	.303***	-.788***	.344***	.555***	-.415***	.194***	.25***
Mid.EastAn.	-.23***	-.928***	-.368***	-.598***	.204***	.589***	-.412***	-.009	.34***
Cons	2.477***	1.918***	-1.104***	3.013***	1.505***	-.582***	2.955***	1.47***	-.16***
Observations	127142	22544	7799	124642	26757	18027	120619	42221	39202
Pseudo R ²	.409	.278	.405	.371	.311	.362	.293	.27	.359

Source: Authors' own work. The regression results are reported for three years: the start year of the analysis (2004), the middle year (2013), and the final year (2023). The results for the other years are available upon request. *** $p < .01$, ** $p < .05$, * $p < .1$.

Exploring Trust Dynamics in the Labour Market: A Behavioural Economics Perspective

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Emek Piyasasındaki Güven Dinamiklerinin Araştırılması: Davranışsal İktisat Yaklaşımı

Abstract

This study explores the dynamics of trust in the labour market from a behavioural economics perspective, utilising data from the World Values Survey. We examine how employment status, job-related concerns, and perceptions of corruption influence trust. Our findings indicate that full-time employment and high income levels lower trust, whereas perceptions of corruption intensify this effect. The study recognises limitations, including incomplete representation of informal jobs and variation in income-reporting practices. It highlights the complex interaction of factors that shape trust within the labour market. The uniqueness of this research lies in conceptualising trust as a multifaceted construct, including cognitive expectations, mental shortcuts, and emotional dispositions. The study contributes to the understanding of trust in the labour market and its links with factors such as employment levels, job concerns, and perceptions of corruption. It enriches the literature by emphasising the complex interplay between cognitive and emotional factors in shaping trust in labour markets. Future research should investigate non-standard working patterns, including informal, flexible, and atypical employment, as well as the influence of cultural structures within cultural codes.

Keywords : Behavioural Economics, Trust, Labour Market, WVS.

JEL Classification Codes : D90, D91, J01, J20.

Öz

Bu çalışma, emek piyasasında güven dinamiklerini davranışsal iktisat perspektifinden analiz etmektedir. İstihdam düzeyi, işle ilgili kaygılar, adalet algısı ve yolsuzluk gibi faktörlerin güven ile etkileşimini incelemektedir. Dünya Değerler Anketi (World Values Survey) verilerini kullanan çalışma, yerleşik araştırma yöntemlerinden ilham alan bir metodoloji izlemektedir. Karşılaştırmalı doğrusal regresyon analizi için LOGIT/PROBIT ve OLS yöntemleri uygulanmıştır. Bulgular, istihdam durumunun güven üzerinde etkili olduğunu göstermektedir. Güveni olumsuz etkileyen faktörler arasında yolsuzluk algısı ve işle ilgili kaygılar öne çıkmaktadır. Çalışma, kayıt dışı istihdamın eksik temsili ve gelir beyanı uygulamalarındaki farklılıklar gibi bazı sınırlılıkları kabul etmekte ve emek piyasasında güveni şekillendiren faktörlerin karmaşık etkileşimine vurgu yapmaktadır. Bu araştırmanın özgünlüğü, güvenin bilişsel beklentiler, zihinsel kestirmeler ve duygusal eğilimleri kapsayan çok yönlü bir kavram olarak ele alınmasında yatmaktadır. Çalışma, emek piyasasında güvenin anlaşılmasına ve istihdam düzeyi, işle ilgili kaygılar ve yolsuzluk algısı gibi faktörlerle olan etkileşimine katkı sağlamaktadır. Gelecek araştırmalar, standart dışı çalışma modellerini, kayıt dışı, esnek ve atipik istihdam türlerini ve kültürel yapıların emek piyasasına etkisini kültürel kodlar çerçevesinde incelemelidir.

Anahtar Sözcükler : Davranışsal İktisat, Güven, Emek Piyasası, WVS.

1. Introduction

Trust is a fundamental element of social, institutional, and economic relations; yet it remains a complex and multidimensional concept. The phenomenon has been studied across various academic disciplines, including psychology, economics, sociology, and organisational behaviour (Rousseau et al., 1998; Hardin, 2002; Cook et al., 2005). Despite differences in emphasis on whether to focus on emotional, behavioural, or institutional aspects, there is a broad consensus on the vital role of trust in shaping social interactions and cooperative outcomes (Lewicki et al., 1998; Misztal, 1996).

In neoclassical economics, trust is viewed as a risky and irrational domain for the self-interested individual. Behavioural economics links trust to cognitive expectations and mental shortcuts, recognising it as a component of individuals' mental frameworks in communication and decision-making. In this study, trust is regarded as a cognitive expectation, a mental shortcut, and an emotional disposition, reflecting the perspective of behavioural economics. Trust is associated with behavioural and cognitive biases, including social preferences, fairness, and confirmation bias. While social preferences can rationalise trust, confirmation bias creates a foundation for a tendency that turns trust into hypothetical trust.

The concept of trust has been examined across various aspects, including emotion and behaviour, in numerous studies. However, a standard view emphasises its significance in social relations, organisational life, and interpersonal interactions. In the emotional dimension, trust relates to both feeling and cognition. Simultaneously, trust is understood as an emotion involving belief or expectation.

Mayer et al. (1995) define trust as the willingness of one party to be vulnerable to the actions of another, based on the expectation that the other will perform a particular action, regardless of the ability to monitor or control the other party. This definition is especially relevant in labour markets, where asymmetries in power, information, and dependency are common. Rousseau et al. (1998) further emphasise that trust is not a behaviour but a psychological state that varies depending on the level of interdependence and perceived risk between actors.

The concepts of economic confidence and trust are distinct. Economic confidence serves as an index reflecting production, spending, and saving tendencies, based on the expectations and behaviours of producers and consumers, who rely on their assessments of current economic indicators and the overall economic environment. Consequently, it should be distinguished from expectations shaped by emotional, cognitive, and mental shortcut effects.

Labour market dynamics are shaped by limited information, rationality, and emotional factors, which influence trust between employers and workers. Therefore, relationships that lack complete rationality and unlimited information and computational power rely on various cognitive and emotional shortcuts. Supply and demand in labour relations are constrained. Both parties establish a trusting relationship under specific conditions. There are different levels of trust depending on the degree of reciprocity and the level of risk involved. Many factors, such as unionisation, productivity, effort, etc., are linked to trust in different ways.

In psychology, with respect to its impact on decision-making, trust can serve as a mental shortcut (Evans & Kruger, 2009). In evolutionary development, hypothetical trust arises, whether consciously or unconsciously, at various levels in individuals' professional lives (Delton et al., 2011). In the workplace, employer-employee contracts are not merely formal documents. Employer-employee relationships extend beyond material contracts to include psychological contracts—unwritten, abstract agreements shaped by mutual expectations, beliefs, and perceptions of reciprocity (Conway & Briner, 2005). Similar to the concept of trust within reciprocity and risk frameworks, a psychological contract exists between the employer and the employee. Unlike legal contracts, psychological contracts are intangible, governed by expectations, beliefs, and perceptions of the relationship. Individuals who develop numerous conscious and unconscious behaviours within their cognitive boundaries form mutual agreements¹. Psychological contracts, which influence employee-employer expectations, may mediate how perceptions of job insecurity or corruption diminish trust (Nguyen & Van Dijk, 2012), especially in non-standard employment settings (Guest, 2004; Kalleberg, 2009).

In psychology, trust is viewed within the framework of cognitive expectations and is regarded as a disposition (Evan & Krueger, 2009). It can be seen as a mental shortcut related to cognitive expectations and an evolutionary shortcut concerning disposition. Individuals with limited informational and cognitive capacities utilise trust as a mental shortcut in processes such as evaluation and decision-making. Experimental social psychologist Kramer (2009) argues that humans are inherently predisposed to trust, based on evolutionary history, and that this predisposition serves as a defence mechanism. He describes this tendency as presumptive trust and characterises it as a bias favouring trust. Presumptive trust is not deemed irrational behaviour. However, it is associated with confirmation bias, as documented in the psychology and behavioural economics literature. Such biases shape our judgments and evaluations, and our expectations exert a similar influence. Typically, we seek supporting evidence for a hypothesis about a subject.

Bounded rationality, one of the most significant contributions of behavioural economics, highlights the limits of an individual's computational ability and the

¹ Rousseau (2012) discusses free will in the context of social and psychological contracts and treats free will as a cognitive and emotional issue in the psychological contract. Reasoning, knowledge, trust, and power are necessary for free will and are elements of psychological contracts.

informational and cognitive constraints that hinder the evaluation of all possible options, as well as the goal of optimisation, a key aim of economic theory. Braynov and Sandholm (2002) argue that trust is essential for an individual to consider all possibilities. Consequently, a person with limited rationality relies on heuristics in decision-making. In this context, trust acts as a mental shortcut. As social psychologists have noted, Kramer (2009), Braynov, and Sandholm (2002) have noted, the trusting individual suspends disbelief and ignores negative factors, a pattern that resembles the confirmation bias inherent in trust.

There is a difference between predictive trust and emotional trust. While false predictions lead to disappointment, the adverse effects of emotional trust extend beyond it (Faulkner, 2011). Jones (2019) links trust based on optimistic expectations to emotional trust. Emotional feedback influences feelings of trust and distrust. For example, emotions such as fear and contempt engender distrust, whereas feelings such as respect and empathy elicit feedback that fosters trust.

Thagard (2008) views emotion and cognition as interconnected, characterising emotional and cognitive states such as happiness and sadness as neural activity plans. He highlights the emotional aspect of the neurophysiological state that unites cognition and knowledge. According to Thagard, emotion can be understood in two structures: cognitive and somatic. While the cognitive theory pertains more to evaluation, the somatic approach concerns physical states. Thagard regards these theories as complementary.

This study employs a behavioural economics framework to examine the factors that influence trust in the labour market. In this way, trust is conceptualised as a cognitive expectation, a mental shortcut, and an emotional disposition. The selection of variables is based on two primary considerations. First, numerous studies have identified employment status, job-related concerns, perceptions of fairness, and perceptions of corruption as key determinants of trust (Rothstein & Stolle, 2008; Alesina & La Ferrara, 2002; Sapienza et al., 2013). Second, behavioural economics highlights how trust-related decisions are affected by bounded rationality, cognitive biases, and perception-based attitudes (Kahneman & Tversky, 1979; Thaler, 1999; Camerer et al., 2003).

While previous studies have examined trust in the labour market, there is limited research on how trust interacts with job-related worries, perceptions of corruption, and employment status within a behavioural economics framework. Employment is viewed as a factor directly connected to economic security, while job-related worries reflect perceived uncertainty about current or future employment. Perceptions of justice are central to institutional trust, and perceptions of corruption serve as indicators of the trustworthiness of broader social and political systems (Putnam, 2000; Bjørnskov, 2007).

All variables are derived from the World Values Survey database, with both theoretical relevance and empirical validity considered in their selection. This study addresses this gap by analysing these interactions using data from the World Values Survey.

It aims to contribute to the literature by examining the relationships among trust, job-related concerns, perceptions of corruption, and employment status from a behavioural economics perspective. Utilising data from the World Values Survey, it seeks to offer a nuanced understanding of trust dynamics within the labour market, which has been underexplored in prior research.

The paper is organised as follows: Section 2 reviews the literature on trust in the labour market; Section 3 describes the methodology; Section 4 presents the results and discusses the findings; and Section 5 concludes with policy implications and suggestions for future research.

2. Literature Review

Behavioural economics offers a theoretical basis for understanding trust as a heuristic that offsets individuals' cognitive and informational constraints (Kahneman & Tversky, 1979; Camerer et al., 2003). While mainstream economic models often minimise the importance of trust in labour relations, behavioural approaches highlight psychological contracts and social preferences that influence employment outcomes (Thaler, 1999; Conway & Briner, 2005). However, existing research tends to focus on job satisfaction, motivation, or incentive structures, often overlooking how trust itself is affected by broader labour market dynamics.

Beyond the limited number of studies on the labour market from a behavioural economics perspective, research on the concept of trust within the labour market is even scarcer. Behavioural issues in the labour market have often focused primarily on job satisfaction, incentives, and related factors, but only to a limited extent.

Rothstein and Uslaner (2005) emphasise the potential of equality of wealth and opportunity, particularly in education and the labour market, to foster social solidarity and thereby boost social trust. Optimism about the future is realised when such equality is attained. Wealth inequality, disparities in opportunity, and discrimination² in areas like education and employment undermine trust and diminish optimism for the future.

Van Deer Meer & Wielers (1996) examined the link between education and employment at the firm and sector levels, finding positive effects on employment relations. Data were sourced from the Netherlands Bureau of Statistics. A categorisation of high- and low-security sectors was developed using sectoral data. Because measuring productivity, professional services, and high control costs is challenging, trust among workers, employers, and consumers is essential. In high-trust institutions, employers place greater value on educational background. The study reports positive effects of education, employment

² *Fair treatment in employment is one of the factors influencing trust in the labour market. This idea, which can be linked to fairness, provides a basis for discussion in the behavioural dimension. Studies on discrimination in employment (Fox & Stallworth, 2005; Shoss et al., 2013) have shown that workers subjected to discrimination develop feelings of anger and depression towards the organisation, leading to a decline in trust.*

relations, and trust. Van Oorschot & Arts (2005) investigated the relationship between well-being and social capital (trust, networks, norms) at both the individual and national levels, concluding that being economically active—whether in full-time or part-time employment—may positively influence trust.

Although the current study concentrates on micro-level labour market variables, macro-level social structures offer essential context. Generalised trust is positively linked to national well-being, social capital, and institutional strength (Delhey & Newton, 2005; Hooghe et al., 2009; Bjørnskov, 2012). For example, egalitarian welfare states tend to cultivate higher levels of trust, which in turn support cooperative labour market institutions. Delhey & Newton (2005), Hooghe et al. (2009), Dearmon and Grier (2009), and Bjørnskov (2012) find that a country's welfare status is positively related to generalised trust. In studies on income inequality, the impact of income inequality on trust remains debated. According to Wilkinson and Pickett (2009) and Rothstein and Uslaner (2005), income inequality diminishes social trust. However, Steijn & Lancee (2011) found that income inequality, measured by national wealth, does not significantly affect trust. Aghion, Algan, Cahuc, and Shleifer (2010) examined the relationship between labour market regulations and distrust, concluding that trust is negatively associated with labour market regulations. Their findings indicate that country-level distrust and regulation, measured by the number of steps required to open a business, are positively correlated. Countries with high levels of trust, such as Nordic and Anglo-Saxon nations, tend to have less regulation than those with lower trust levels, such as Mediterranean, Latin American, and African countries. A notable positive correlation exists between employment contracts and job insecurity.

Dimeglio et al. (2013) examine how societal teamwork relates to job-related factors, using data from the World Values Survey to compare European countries. The research categorises countries into groups based on the extent of interfirm cooperation and its effects on the job market. It finds distinct patterns of collaboration across different groups of countries. Notably, Nordic countries score well overall, whereas new EU member states score lower, particularly in interpersonal trust. In examining the relationship between cooperation and the job market, the study notes that Nordic countries generally have good teamwork. At the same time, new EU member states face challenges, particularly in Eastern Europe, regarding interpersonal trust.

Costigan, Insinga, Berman, Kranas, and Kureshov (2013) examined employees' trust in coworkers and leaders, distinguishing between cognitive-based and affect-based trust. They found a strong negative relationship between affect-based trust in the leader and turnover intention, while the link between affect-based trust in coworkers and turnover intention is comparatively weaker. Mewes (2014) explored the impact of gender equality in employment participation on trust. The study indicated that gender equality positively influences social trust, but there is insufficient evidence to suggest that it affects trust toward foreigners.

Broader research on trust has demonstrated its essential role in shaping societal outcomes, including well-being, civic engagement, and institutional effectiveness. For example, studies have shown a positive relationship between social trust and institutional trust, and between these and life satisfaction, emphasising trust's influence across various domains of life (Akyürek & Ural-Uslan). These findings reflect the complex nature of trust as a cognitive, emotional, and behavioural construct, which also influences how individuals perceive and engage with economic and employment structures. While these insights extend beyond the labour market, they provide a valuable foundation for understanding how trust functions within it, especially when labour market experiences intersect with institutional performance, fairness, and perceptions of social cohesion.

Beyond employment status and workplace relations, structural features such as gender equality influence trust outcomes. Mewes (2014) finds that gender equality in employment participation boosts social trust, although effects on trust in out-groups are less clear. Dutta and Sobel (2021) highlight how cultural dimensions like individualism and collectivism mediate the relationship between gender attitudes and trust, emphasising that social trust can either reinforce or challenge patriarchal structures. Social trust fosters collaboration and collective action among individuals, with its origins in exchange patterns of the pre-industrial era. Its influence extends to economic growth, skill acquisition, governance, and human development. Variations in trust levels across cultures are evident in the opportunities afforded to women. Additionally, the interplay between individualism and collectivism shapes trust and gender equality (Dutta & Sobel, 2021). Dutta and Sobel's exploration examines the complex relationship between social trust and attitudes toward gender equality. The research relies on World Values Survey data, utilising a substantial dataset. The study highlights the nuanced association between social trust and gender attitudes. Elevated social trust can either diminish or solidify patriarchal perspectives depending on the interplay of individualism and collectivism. The study emphasises the role of collectivistic beliefs as a barrier to progress in women's equality and economic rights.

However, trust is influenced not only by employment but also by its quality and stability. Wang, Mather, and Seifert (2018) demonstrate that both objective and subjective job insecurity increase job-related anxiety and decrease organisational commitment. O'Higgins and Stimolo (2019), using experimental methods, find that unemployment or precarious employment significantly reduces trust and trustworthiness in interpersonal contexts. Wroe (2014) similarly shows that job insecurity erodes political trust, framing this as a violation of the "psychological-democratic contract" between citizen and state. Wroe (2014) examined the relationship between job insecurity and political trust, which has grown increasingly important in developed countries, within the context of the psychological-democratic contract mechanism. The study concluded that job insecurity diminishes political trust and negatively impacts satisfaction with democratic practices. Workers have an expectation of job security in their relationship with the state and the employer. While this psychological contract sustains political trust towards the state, increased job insecurity tends to weaken it. Kim (2015) analysed the relationship between trust and employment participation and found a positive correlation. According to the study's findings, an

individual's attitude of trust significantly influences the likelihood of participating in employment.

Wang, Mather & Seifert (2018), in their study examining the relationship between job insecurity, job-related anxiety and commitment, and collective trust in management, found the following results: (i) objective job insecurity (such as salary cuts, overtime, training, and loss of working hours) leads to high job-related anxiety, and (ii) decreases organisational commitment. This correlation also applies to subjective job insecurity, which is the perception of possible job loss. O'Higgins and Stimolo (2019) employed an experimental method to examine the relationship between trustworthiness, trustworthy behaviours, and employment status. The study demonstrated that individuals' employment status influences trustworthiness and trustworthy behaviours through an experiment involving a trust game. The results indicated that unemployment status damages trust and trustworthiness. An additional key finding is that precariousness has as much negative impact on trust and trustworthiness as unemployment. The study not only explores how job insecurity affects job-related anxiety and organisational commitment, but also investigates collective trust in management. It suggests that when employees face objective job insecurity (actual threats to their employment), it heightens their anxiety and reduces their commitment to the organisation. The degree of trust employees have in management significantly influences their responses to job insecurity.

Moreover, the study extends this investigation to include subjective job insecurity, emphasising perceptions of potential job loss. The link between subjective job insecurity, work-related anxiety, and reduced organisational commitment highlights the importance of trust. Even in the absence of concrete evidence of job loss, subjective feelings of insecurity can affect employees' well-being and commitment. This suggests that trust in management is a vital factor in mitigating the adverse effects of perceived job insecurity, thereby promoting a more resilient and committed workforce.

Son (2020) examined the concept of trust at the trade union level in relation to the political representation of labour. He explored workers' attitudes towards trade unions and how interpersonal trust influences trust in these organisations. The study, conducted in South Korea, found that under a liberal government, individuals' trust in labour unions is significantly affected by interpersonal trust. Conversely, when a conservative government is in power, unions are seen as the voice of the working class. However, under liberal governance, those with low trust view unions as representatives who prioritise their private interests. Brandl (2020) investigated mutual trust in employment relations and its impact on firm performance. According to the findings in European Union member states, mutual trust has a positive effect on both firm performance and employment relations.

Hauser (2015) states that social capital influences firm productivity and economic growth rates. Individual trust is closely linked to the presence of social capital in the workplace. The dynamics of management practices and firm size shape workplace social capital. Additionally, workplace social capital positively affects employee satisfaction with

wages. Employee attitudes towards trust significantly influence workplace social capital, with individuals high in trust demonstrating better integration into networks and a greater willingness to follow management directives. Management initiatives promoting health and work-life balance contribute positively to workplace social capital. However, reliance on financial incentives may decrease intrinsic motivation and the quality of social networks. It is advantageous for firms to recruit individuals predisposed to trust, as this enhances social capital. Social trust indirectly impacts wage satisfaction through the mediation of firm-level social capital. The study highlights the substantial effect of social networks on employee productivity, while emphasising that the decline of social capital adversely affects national competitiveness. Therefore, recruitment strategies should prioritise social attitudes, especially since larger firms tend to have lower-quality workforce norms.

Further emphasising the importance of organisational structures in labour dynamics, Mygind and Poulsen (2021) explore how employee ownership influences workplace equity and stability. Their findings that employee ownership can reduce wage disparities and promote fairness align with the role of trust-building practices in fostering workplace justice. While Hauser's work demonstrates how trust-based recruitment enhances social capital and integration, Mygind and Poulsen offer a structural perspective, suggesting that ownership models can be crucial in creating equitable workplaces. This insight underscores how workplace structures and policies not only shape employee trust but also influence broader perceptions of fairness and trustworthiness within labour markets.

FitzRoy and Nolan (2022) argue that in the context of declining labour power and high employer market concentration, employee participation can counterbalance employer dominance by fostering a work environment conducive to trust and fairness. This finding highlights how policies that promote equitable practices and inclusiveness can build trust and cohesion within labour markets. This alignment between individual trust dynamics and organisational practices offers critical insights for labour policies aimed at achieving fair, transparent, and participatory workplaces across socioeconomic contexts.

The impact of inequality on trust remains debated. While Rothstein and Uslaner (2005) and Wilkinson and Pickett (2009) argue that income inequality reduces trust, Steijn and Lancee (2011) find no significant effect of income inequality on national wealth. Aghion et al. (2010) demonstrate that high levels of regulation, particularly in the labour market, are associated with lower institutional trust.

All of these studies build on a framework where both individual attitudes and structural policies are crucial in shaping trust and fairness in employment and the labour market more broadly. This paper contributes to this discussion by using empirical data to highlight the effects of perceived corruption and employment on trust, emphasising the importance of policies that foster fair and transparent work environments to promote trust and social cohesion in diverse labour markets.

3. Data & Methodology

This study is based on the behavioural economics framework, which views trust as a complex construct involving cognitive expectations, heuristics, and emotional tendencies. We use this framework to examine how trust is affected by employment status, work-related worries, and perceptions of corruption.

The study's approach aligns with current behavioural economics methodology. The field of behavioural economics emphasises the integration of psychological insights into economic modelling. As Chuah, Hoffmann, and Neelim (2024) explain, behavioural economics challenges traditional assumptions of entirely rational agents by incorporating cognitive biases, heuristics, and bounded rationality into empirical analyses. The researchers' proposed framework highlights the importance of selecting variables and models that not only capture observable economic behaviours but also the underlying mental processes influencing decision-making. This methodological perspective supports the use of logistic and probit regression models for analysing trust as a behavioural construct shaped by both measurable factors and psychological dispositions. The present study aims to base its empirical strategy on this evolving methodological approach, with the goal of better capturing the complexity of trust dynamics in the labour market.

The selection of variables in this study is based on two primary considerations. Firstly, these variables are recognised as key determinants of trust in the existing literature, as shown by Rothstein and Stolle (2008), Alesina and La Ferrara (2002), and Sapienza et al. (2013). Secondly, the choice of variables is guided by behavioural economics, which emphasises the significant impact of cognitive biases and perception-based attitudes on individual decision-making processes. This view is supported by foundational studies such as Kahneman and Tversky (1979), Thaler (1999), and Camerer et al. (2003).

Although employment directly influences individuals' economic security, concerns about jobs reflect perceptions of uncertainty regarding their current or future employment. Perceived justice is regarded as a fundamental element of institutional trust, and perceived corruption is a significant factor that can undermine social trust and capital (Putnam, 2000; Bjørnskov, 2007). All variables are derived from survey questions in the World Values Survey database, with both theoretical coherence and empirical validity considered in selecting relevant items.

The analysis draws on country data from the World Values Survey (WVS) for the period 2017-2020. Details of studies using this dataset (Aghion et al., 2010; Dimeglio et al., 2013; Kim, 2015; Son, 2020; Dutta & Sobel, 2021) are provided in the literature section.

WVS collects data on people's attitudes, beliefs, value judgments, stereotypes, trust, gender, religion, family, society, and the environment through regular surveys conducted in many countries. As an international research initiative, it provides a dataset that can be used to examine people's attitudes and behaviours, as well as to analyse changes over time to

some degree. The dataset is utilised in research within political science, psychology, economics, and numerous related fields. In this study, using data from the WVS dataset, the interaction among factors such as employment level, anxiety about losing or not finding a job, perceived justice, and corruption with trust is analysed.

The analysis draws on data from Wave 7 (2017-2022) of the World Values Survey, which includes nationally representative samples from 66 countries. For this study, we selected a subset of countries with complete data on key variables—such as generalised trust, employment status, education, perceived corruption, and subjective well-being. The countries in the final sample are: Türkiye, the United States, Germany, South Korea, Mexico, Lebanon, Jordan, Morocco, Egypt, and Tunisia. Fieldwork in each country took place between 2017 and 2020, depending on the national survey schedule. Detailed information on fieldwork periods and sample characteristics is available in the official WVS documentation (World Values Survey Association, 2022). Wave 7 covers the years 2017-2020 and is the most recent and comprehensive dataset available at the time of analysis. This wave was chosen because it contains current and relevant variables aligned with the study's focus on trust and behavioural responses within labour market dynamics. Notably, the most recent resource available to the research community has two main features: first, it includes data from 64 countries worldwide; second, it encompasses responses from over 80,000 participants. Data collection occurred across countries in different years, which introduces variability; for example, data for Türkiye are from 2018, whereas in the United States, the data were collected in 2017. Based on the data and existing literature, the model was established with a defined dependent variable and categorised independent variables.

This study employs logit and probit models because the dependent variable is binary. These models are suitable for analysing categorical outcomes and for estimating the likelihood of trusting others as a function of various explanatory variables. They are appropriate for examining categorical results and enable us to calculate the probability of trust given different independent variables. Table 1 provides an overview of all variables used in the analysis, including their definitions and categories. The dependent variable is coded as binary: individuals who report trusting are assigned 1, and those who do not are assigned 0. Gender is treated as a binary variable; females are coded as 1, with males serving as the reference group coded as 0. Education is categorised into three levels: lower, middle, and higher. Employment status is divided into eight distinct groups. To streamline the analysis, income levels are recoded from ten original categories into three grouped categories. Happiness and job-related concerns—such as worries about losing a job or difficulty in securing employment—are measured on a four-point ordinal scale. Perceptions of corruption are measured using a 10-point scale, allowing respondents to indicate the prevalence of corruption in their country. These variables encompass a wide range of factors, including demographic characteristics, emotional well-being, labour market experiences, and perceptions of institutional and social conditions.

Table 2 provides a summary of the descriptive statistics. Participants demonstrated a moderate level of general trust, with a mean trust score of 0.784 (SD = 0.411) and a score

range of 0 to 1, based on 69,940 observations. Regarding gender, the mean female score was 0.526 (SD = 0.499), indicating a relatively balanced distribution. The average age of respondents was 42.677 years (SD = 16.297), with a range from 16 to 103 years. Education levels varied, with a mean of 1.962 (SD = 0.804) on a scale from 1 to 3, according to the ISCED classification, based on 70,273 observations. The mean score for labour union membership was 0.208 (SD = 0.529), suggesting a relatively low prevalence of union affiliation among respondents. Perception of corruption was measured on a 10-point scale, with a mean of 8.663 (SD = 2.245), reflecting a nuanced perspective on corruption within the country.

Table: 2
Summary of Descriptive Statistics of Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Trust	69940	.784	.411	0	1
Female	70867	.526	.499	0	1
Age	70549	42.677	16.297	16	103
Age2	70549	2086.932	1530.925	256	10609
Education level	70273	1.962	.804	1	3
Employment status	70021	3.156	2.053	1	8
Income scale	69145	1.819	.569	1	3
Marital status	70528	2.723	2.126	1	6
Worries	68328	2.123	1.096	1	4
Feeling of happiness	70437	1.85	.713	1	4
Labour union member	69929	.208	.529	0	2
perception corruption	69750	8.663	2.245	3	10

Model

$$trust_i = \beta_0 + \beta_1 female_i + \beta_2 age_i + \beta_3 age2_i + \beta_4 marital\_status_i + \beta_5 educ\_level_i + \beta_6 employment\_status_i + \beta_7 income\_scale_i + \beta_8 worries_i + \beta_9 happiness_i + \beta_{10} perception\_corruption_i + \beta_{11} labor\_union_i + \beta_{12} country\_year_i + u_i$$

Since the dependent variable is categorical, the LOGIT and PROBIT models were used in the analysis. The OLS method was also included as a linear regression model for comparison. The age variable was squared and included in the model to assess its effect better. Because we assume that the impact of age on the dependent variable is nonlinear, we include the squared age term. In logit and probit models, the coefficients represent the change in the log-odds (logit) or the z-score (probit) of the dependent variable for a one-unit increase in the independent variable. Positive coefficients indicate an increased likelihood of trust, while negative coefficients suggest a decreased likelihood.

4. Results

The subjective, multidimensional, and context-dependent nature of trust presents unique challenges in both understanding and measuring it. Conventional economic indicators are typically directly observable and quantifiable. In contrast, trust encompasses emotional, cognitive, and behavioural dimensions that are less easily captured through quantitative metrics. Therefore, the interpretation of the results in this study is limited to the data and model outputs, and it avoids overly broad or definitive claims. Given the binary structure of the dependent variable (trust), the analysis employs logistic and probit

regression. These techniques are well-suited to estimating the likelihood of binary outcomes and enable the study to assess the relationship between trust and various explanatory variables. For comparative robustness, Ordinary Least Squares (OLS) regression results are also included, despite its limitations in modelling dichotomous outcomes.

To improve the clarity and consistency of the analysis, dummy variables are created for categorical variables. These are interpreted with respect to a reference category. For example, in the gender variable, female respondents are coded 1, whereas males (the reference group) are coded 0. The estimation results indicate that the gender variable is statistically significant and positively related to trust. Specifically, according to the logistic regression model, women are approximately 0.071 units more likely than men to report trusting others. Although this result aligns with some findings in the literature, the effect size remains modest, and caution should be exercised when making generalisations. The modest effect size warrants caution in drawing broad conclusions. The conflicting results across studies highlight the complex nature of the gender-trust relationship, prompting further investigation into contextual and cultural factors.

Since data on countries are obtained from different years, this variable is included in the model as a country-year interaction. Country data are included as a categorical variable in the model. The significance test was performed using a dummy variable, and the result was significant. Coefficients for country-year fixed effects are omitted for brevity but can be provided upon request.

Table: 3
Regression Model Results

	(OLS)	(LOGIT)	(PROBIT)
	trust	trust	trust
female	.011*** (.003)	.071*** (.024)	.042*** (.014)
age	.001* (.001)	.008* (.005)	.005* (.003)
age2	0*** (0)	0*** (0)	0*** (0)
1bn.educ_level			
2.educ_level	0 (.004)	-.022 (.031)	-.005 (.017)
3.educ_level	-.048*** (.004)	-.328*** (.032)	-.178*** (.018)
1bn.employment_~s	-.028*** (.007)	-.18*** (.047)	-.108*** (.027)
2.employment_st~s	-.037*** (.008)	-.254*** (.057)	-.152*** (.033)
3.employment_st~s	-.027*** (.007)	-.172*** (.053)	-.104*** (.03)
4.employment_st~s			
5.employment_st~s	-.026*** (.008)	-.146*** (.055)	-.09*** (.031)
6.employment_st~s	-.033*** (.01)	-.231*** (.071)	-.136*** (.04)
7.employment_st~s	-.027*** (.008)	-.163*** (.064)	-.103*** (.036)
8.employment_st~s	-.003 (.016)	-.024 (.122)	-.025 (.069)

1bn.income_scale			
2.income_scale	-.02*** (.003)	-.146*** (.028)	-.077*** (.016)
3.income_scale	-.047*** (.006)	-.332*** (.044)	-.185*** (.025)
1bn.marital_sta~r			
4.marital_statu~r	.016*** (.004)	.112*** (.032)	.062*** (.018)
6.marital_statu~r	.01** (.005)	.048 (.034)	.025 (.019)
1bn.worries			
2.worries	-.025*** (.004)	-.216*** (.029)	-.12*** (.016)
3.worries	-.052*** (.005)	-.38*** (.032)	-.216*** (.018)
4.worries	-.039*** (.005)	-.301*** (.036)	-.169*** (.021)
1bn.happiness			
2.happiness	.03*** (.004)	.223*** (.025)	.127*** (.014)
3.happiness	.076*** (.005)	.627*** (.043)	.351*** (.024)
4.happiness	.078*** (.009)	.745*** (.107)	.385*** (.055)
0bn.laborunion ~r			
1.laborunion_me~r	-.026*** (.005)	-.184*** (.036)	-.106*** (.021)
2.laborunion_me~r	-.038*** (.007)	-.271*** (.045)	-.156*** (.026)
1bn.perception_~n	-.052*** (.011)	-.5*** (.087)	-.278*** (.047)
2.perception_co~n	-.143*** (.014)	-.942*** (.075)	-.528*** (.044)
3.perception_co~n	-.135*** (.01)	-.855*** (.056)	-.485*** (.033)
4.perception_co~n	-.111*** (.009)	-.758*** (.054)	-.424*** (.031)
5.perception_co~n	-.072*** (.006)	-.558*** (.041)	-.307*** (.024)
6.perception_co~n	-.086*** (.007)	-.629*** (.042)	-.35*** (.024)
7.perception_co~n	-.071*** (.006)	-.544*** (.038)	-.295*** (.022)
8.perception_co~n	-.045*** (.005)	-.397*** (.037)	-.21*** (.021)
9.perception_co~n	-.027*** (.005)	-.274*** (.043)	-.143*** (.024)
10.perception c~n			
cons	.851*** (.022)	1.918*** (.142)	1.12*** (.082)
Observations	62982	62982	62982
<i>Robust standard errors are in parentheses.</i>			
*** p<.01, ** p<.05, * p<.1			
scalars:			
e(r2_p) = .1741166884083774			
e(chi2) = 9597.443351483928			
e(ll_0) = -32740.87470242132			
e(ll) = -27040.1420236421			

The age variable and its square were included in the model. This is to analyse the effect more accurately, rather than assuming a linear impact across all ages. If both variables are positive, the effect strengthens with age. We included a quadratic term for age (age²) to test for potential nonlinear effects (Table 4). A likelihood-ratio test confirmed a nonlinear relationship between age and trust ($\chi^2 = 7.11, p = 0.007$), justifying the inclusion of a quadratic term for age. The quadratic relationship between age and trust was statistically

significant, with trust peaking at 32 years ($\text{turning point} = -\beta_{age}/2\beta_{age^2} = 32$). This suggests that trust evolves nonlinearly across the lifespan, rising in early adulthood and declining in later life. According to the model, the age breakpoint is 32. The non-linear relationship between age and trust, characterised by a breaking point at 32, offers a nuanced perspective. The positive effect of age on trust up to this point, followed by a diminishing effect, prompts considerations of life-stage influences on trust dynamics. The inverted U-shaped relationship between age and trust, peaking at 32 years, aligns with life-cycle theories of social capital. Younger individuals may exhibit lower trust due to limited labour market experience, while midlife workers develop trust through stable employment and social integration. The subsequent decline in trust after age 32 may reflect the erosion of social networks and job security in later adulthood (Delhey & Newton, 2005; Hauser, 2015). These findings suggest that interventions to enhance trust in labour markets should consider age-specific strategies. For instance, younger workers may benefit from mentorship programs to build confidence, while older workers may require support to mitigate job insecurity and maintain social connections.

The marginal effects (Table 5) and odds ratios (Table 6) together highlight the complex interaction of individual and contextual factors in shaping trust. Higher education and full-time employment, often thought to foster trust, are associated with lower trust, possibly due to cognitive biases, unmet expectations, or competitive environments. Conversely, happiness and female gender boost trust, reflecting the impact of positive emotions and socialisation processes. The strong adverse effect of corruption perceptions emphasises the importance of institutional trust in building interpersonal trust. These findings have significant policy implications, suggesting that efforts to reduce corruption and improve workplace well-being could strengthen trust in labour markets.

Being female is linked to a 7% higher likelihood of trusting others (OR=1.074, $p<0.01$). However, the small effect size emphasises the need for further investigation of gender differences in trust across specific cultural and institutional contexts.

Education level consists of three categories: low, middle, and high. The base value is low educational attainment. A high level of education has a negative value and is statistically significant. Therefore, a higher education level negatively affects trust, with a coefficient of -.328 relative to a lower education level. The adverse effect of higher education on trust compared to lower levels of education introduces a counterintuitive dimension. Further research is needed to clarify how education affects trust, while accounting for potential mediating factors such as socioeconomic status and cultural predispositions. The marginal effect for higher education ($dy/dx=-0.047$, $p<0.01$) indicates that individuals with higher education are, on average, 4.7 percentage points less likely to trust others compared to those with lower education. This counterintuitive finding may reflect cognitive biases associated with higher education, such as heightened scepticism or greater awareness of systemic inequalities, which could erode trust in generalised others. Alternatively, higher education may expose individuals to competitive environments that foster distrust, aligning with theories of social comparison and relative deprivation (Wilkinson & Pickett, 2009).

Employment status includes eight categories: full-time, part-time, self-employed, retired, homemaker, student, unemployed, and others. The reference category is retired status. All categories are statistically significant except for "others." Full-time employment (-.18), part-time employment (-.254), and unemployment (-.163) are statistically significant and negative. Contrary to expectations, full-time employment has a negative value. These findings are inconsistent with Kim (2015), which shows that employment participation positively influences trust and that a person's level of trust significantly affects their likelihood of engaging in employment. However, the negative impact of unemployment on trust aligns with O'Higgins & Stimolo (2019), who used an experimental approach to assess how employment status affects trust and trustworthiness. This finding contradicts earlier research and warrants further investigation into the contextual factors behind this counterintuitive relationship. Full-time employment correlates with a 2.3 percentage point decrease in the probability of trust ($dy/dx = -0.023$, $p < 0.01$). This contradicts the standard expectation that stable employment promotes trust. It may instead reflect psychological strain and job-related stress among full-time workers, which could reduce their willingness to trust others. This idea is supported by psychological contract theory (Conway & Briner, 2005), which suggests that unmet expectations in employment relationships can diminish trust over time.

The income level variable has three categories: low, medium, and high. The low-income level was set as the reference category. The high-income level is statistically significant and has a negative coefficient (-.332). Consequently, an adverse effect between high-income levels and trust is possible. The negative correlation between high income levels and trust may reflect the 'trust paradox' observed in affluent societies, in which greater income inequality diminishes social cohesion and trust (Wilkinson & Pickett, 2009). This indicates that economic prosperity alone does not ensure higher levels of trust in the labour market. The negative impact of high income on trust underscores the complex interplay between socioeconomic status and interpersonal trust. Further research is required to understand the complex mechanisms by which income influences trust dynamics.

The marital status variable was recoded into three categories: married, single, and other (separated, widowed, and divorced). When the married category is used as the reference, the 'other' category is statistically significant and positive, whereas the single category is not statistically significant. When the 'other' category serves as the reference, being married appears as a statistically significant negative factor. The link between marital status and trust varies, requiring careful interpretation. It is important to investigate potential moderating variables that influence the counterintuitive finding that being married can have an adverse effect in specific contexts.

The variable of worry about losing one's job and being unable to find one was statistically significant and negative across all categories. This result is statistically significant and aligns with theoretical expectations. Concerns about job loss and unemployment undermine trust. This finding supports the study (Wroe, 2014), which shows that job insecurity diminishes political trust. It also aligns with the survey (O'Higgins &

Stimolo, 2019), highlighting the importance of trust in management in shaping employees' responses to job insecurity. The results indicate that when employees face real threats to job security, anxiety increases and organisational commitment decreases. This applies not only to tangible threats but also to employees' perceptions of potential job loss. A high level of trust in management can help buffer the adverse effects of job insecurity and foster a more resilient and dedicated workforce. However, these findings require further research before concluding that individuals concerned about losing or failing to secure employment are less likely to trust others.

The happiness variable is statistically significant and shows a consistently positive relationship across all categories, consistent with expected outcomes. While traditional discourse often uses terms such as job satisfaction and overall satisfaction with employment, the experiential aspect of happiness constitutes a distinct dimension, distinct from mere satisfaction and professional contentment. Nevertheless, at a superficial level, a positive association exists between the subtle feeling of happiness and trust. In terms of happiness, it aligns with Van Oorschot & Arts (2005), who indicate that individuals working full-time or part-time can experience positive effects on their well-being through increased confidence, highlighting the potential of employment in fostering happiness and social connectedness.

The labour union membership variable includes three categories: active members, inactive members, and non-members. The reference category is non-membership. The estimated values for active or inactive union membership are statistically significant and positive. Consequently, there is a negative correlation between union membership and trust. Studies indicate a positive correlation between union membership and trust. It is argued that union membership can foster solidarity and create an environment of trust and cooperation among members. However, it should be recognised that other factors influence differences in trust between unionised and non-unionised individuals, though they are beyond the scope of this study.

Perception of corruption comprises 10 categories. In this categorical structure, ranging from 1 to 10, 10 indicates 'too much corruption.' The 10th category, which signifies excessive corruption, serves as the reference point. According to the results, all categories of corruption perception are statistically significant and negatively related. The perception of corruption, which can be linked to perceptions of fairness, negatively correlates with trust, consistent with theoretical expectations and common sense. An increase in corruption perception adversely affects fairness and trust. Fairness and trust are crucial in the labour market, goods and services, and financial sectors. The findings support and extend prior research, such as Nguyen & van Dijk (2012), emphasising how systemic corruption hampers labour market efficiency by undermining trust in institutional frameworks. While their research focuses on structural economic outcomes, our behavioural economics approach examines trust as a multifaceted construct shaped by cognitive expectations (e.g., perceptions of justice) and emotional responses (e.g., job-related anxieties). By integrating World Values Survey data and regression analyses, we confirm their findings on the adverse effect of corruption on trust, while also broadening the scope to include individual factors

such as employment status and subjective well-being. This links macro-level institutional critiques (Nguyen & van Dijk, 2012) with micro-level behavioural mechanisms, thereby providing a more comprehensive understanding of the role of trust in labour market dynamics.

The labour market analysis shows that trust is notably affected by employment status, with full-time and part-time workers reporting lower levels of trust than retirees. This suggests that job insecurity and workplace stress can erode trust among employees. Moreover, perceptions of corruption have a substantial adverse effect on trust, emphasising the importance of fair and transparent labour market policies.

The findings presented here encourage further investigation and call for interdisciplinary approaches to fully understand the intricate dynamics of trust in modern societies. Future research should address the study's limitations, such as the cross-sectional design and potential confounding factors, to develop a more comprehensive understanding of trust dynamics.

5. Discussion

The results of this study highlight the inherently complex and multidimensional nature of trust, particularly in the labour market context. The findings show that trust is influenced by a combination of individual demographic traits, socioeconomic factors, and institutional perceptions, emphasising the interaction between personal experiences and systemic conditions. The observed gender difference, in which women display slightly higher trust levels, is consistent with prior literature, although the effect size remains modest. This indicates that more profound cultural, social, and institutional influences shape gender-related trust dynamics. Future research should investigate how intersecting identities, social roles, and normative expectations affect trust differently across genders and contexts.

The nonlinear relationship between age and trust provides valuable theoretical and practical insights. Trust appears to develop and peak in early adulthood, possibly reflecting increased social integration and stability during mid-career. The subsequent decline in trust among older individuals may indicate shrinking social networks, perceived vulnerabilities, or disillusionment with institutional structures.

The negative correlation between higher education and trust challenges traditional views of education's generally positive social impact. This surprising finding may reflect heightened awareness fostered by higher education, in which greater exposure to systemic inequalities or competitive pressures leads to scepticism. This phenomenon also raises important questions about the role of education in developing social capital. It highlights the need for further research to clarify the mechanisms, whether cognitive, cultural, or structural, that influence this relationship.

Employment status, particularly full-time and part-time work, was negatively associated with trust relative to retirees. This indicates that the pressures and uncertainties

tied to active employment—such as job insecurity, workplace stress, and unmet expectations—can undermine trust. These findings support psychological contract theory, which suggests that violations or unfulfilled obligations in employment relationships weaken trust over time. Therefore, labour policies that improve job security, enhance working conditions, and foster positive employer-employee relationships are essential for maintaining trust within the workforce.

The strong and consistent negative impact of perceived corruption on trust emphasises the importance of institutional integrity in fostering social cohesion. Corruption not only erodes confidence in formal institutions but also undermines interpersonal trust, thereby weakening the social fabric necessary for effective economic and social interactions. This underscores the urgent need for transparency reforms and effective anti-corruption measures as essential steps to rebuild trust within labour markets and society as a whole.

From a policy perspective, these findings support multi-level strategies that tackle both individual experiences and structural issues. Initiatives that improve workplace well-being, combat corruption, and encourage inclusive participation can build trust, thereby enhancing labour market efficiency and social stability. Tailored programmes that address age-specific needs and gender dynamics may further reinforce the role of trust in fostering fair and productive employment environments.

It is important to recognise certain limitations that may influence the interpretation of the findings. The cross-sectional design prevents causal inferences, and reliance on self-reported survey data may introduce biases. Furthermore, the aggregation of data from diverse countries in the World Values Survey dataset warrants caution when generalising results, as cultural and institutional differences likely shape trust dynamics. Informal employment presents another challenge that constrains labour market analysis and limits the ability to obtain accurate estimates. Data on employment levels in the datasets and models need further development and refinement. The WVS dataset does not include the Not in Education, Employment, or Training (NEET) group within the employment level categories. Consequently, NEET is incorporated into existing categories but not recognised as a separate group, limiting specific analysis of this segment. Income-level data in the WVS dataset are provided in two formats: 10 categories and three categories. A notable point about income levels is that countries have varying practices concerning wages and salaries. For instance, whilst Türkiye has minimum wages and salaries, some countries use hourly wages. The dataset is not ideal for analysing these specific differences.

For future research, exploring additional aspects is advised to enhance and refine the current understanding in the field. Topics such as non-standard working patterns, flexible working conditions, and atypical employment should be addressed in further studies. Many factors, including expectations, uncertainties, and flexible or rigid working hours, influence labour market dynamics. Developments such as non-standard working models, flexible working conditions arising due to changing circumstances, and atypical employment present both limitations and opportunities for further research in labour economics. Topics like

expectations, uncertainty, and uncertainty avoidance remain prominent in recent discussions. There is a need for more literature on the labour market. The uncertain conditions caused by the COVID-19 pandemic have impacted labour market relations in various ways. Future research could focus on reducing labour market uncertainties and mitigating their adverse effects, thereby informing policy recommendations based on these findings. The cultural framework, which inherently influences the economic structure, is also pertinent to the labour market. Each country's cultural makeup shapes its economic and social systems. Cultural codes- such as concepts of masculine and feminine cultures, business practices, and daily life customs- are relevant in understanding labour market phenomena. Future studies could investigate labour market dynamics within the context of masculine and feminine cultures.

6. Conclusion

The empirical findings from the investigation can be summarised as follows. Using the World Values Survey dataset, this study examines trust, perceptions of corruption, worry about losing a job or being unable to find a new one, feelings of happiness, and demographic variables (gender, education level, employment status, and income level), and assesses their impact on trust. Perceptions of corruption and concerns about job loss influence trust. Perception of corruption relates to the concept of fairness. In this context, perceptions of corruption are a key factor in the relationship between fairness and trust. Being a member of a labour union and employment status- whether full-time, part-time, or unemployed- are similarly associated with decreased trust. Interestingly, the potential positive link between full-time employment, union membership, and trust was contrary to expectations. The findings regarding part-time employment and unemployment align with expectations. The negative impact of full-time jobs on trust is unexpected and contradicts prior research indicating a positive correlation between employment participation and trust. This discrepancy may be explained by psychological contract theory, which suggests that full-time employees might experience higher levels of job-related stress, thereby reducing trust.

Job search behaviours, unionisation, job mobility, wage determination, efforts to increase labour productivity through incentives, and similar decision-making processes can be addressed from a behavioural perspective. This approach enables the development of policy recommendations on change and transformation in these areas. The outcomes and concepts of behavioural economics, as applied to goods and financial markets, consumer behaviour, and many other fields, are also key reference points for labour studies. Behavioural economics has strong potential for understanding how the labour market functions and how individual behaviour is shaped within this context. In this sense, behavioural labour economics can potentially improve labour market issues, policy design, and the development of active or passive intervention programmes, thereby enhancing economic welfare.

In summary, the present study contributes to the body of knowledge by examining the complex factors that influence trust in the labour market. Moreover, it highlights the vital

role that fairness, security, and well-being play in maintaining social cohesion. Continued interdisciplinary research is necessary to elucidate the intricate trust dynamics underpinning economic and social life and to guide policies that foster more resilient and inclusive societies. Investigating the psychological and behavioural pathways through which education, employment conditions, and perceptions of institutions affect trust could shed light on mechanisms amenable to intervention. Combining behavioural economics frameworks with sociological and institutional analyses offers potential to improve both theoretical understanding and practical outcomes.

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APPENDIX

Table: 1
Variable Definitions and Descriptions

Trust: Most people can be trusted	<i>Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people? 1.- Most people can be trusted 2.- Need to be very careful</i>
Respondent's sex	<i>1.- Male 2.- Female</i>
Age	<i>Numeric variable – number of years</i>
Highest educational level	<i>Education level (recoded): Lower: ISCED 0, ISCED 1, ISCED 2 - Middle: ISCED 3, ISCED 4 - Higher: ISCED 5, ISCED 6, ISCED 7, ISCED 8</i>
Employment status	<i>Are you employed now or not? If yes: About how many hours a week? 1.- Full-time (30 hours a week or more) 2.- Part-time (less than 30 hours a week) 3.- Self-employed 4.- Retired/pensioned 5.- Housewife not otherwise employed 6.- Student 7.- Unemployed 8.- Other</i>
Income level (recoded)	<i>Income level recoded: 1.- Low 2.- Medium 3.- High</i>
Marital status	<i>Are you currently 1.- Married 2.- Living together as married 3.- Divorced 4.- Separated 5.- Widowed 6.- Single</i>
Worries: Losing my job or not finding a job	<i>To what degree are you worried about the following situations? Losing my job or not finding a job 1.- Very much 2.- A great deal 3.- Not much 4.- Not at all</i>
Feeling of happiness	<i>Taking all things together, would you say you are: 1.- Very happy 2.- Quite happy 3.- Not very happy 4.- Not at all happy</i>
Active/Inactive membership: Labour union	<i>Now I am going to read out a list of voluntary organisations; for each one, could you tell me whether you are a member, an active member, an inactive member or not a member of that type of organisation? Labor Union</i>
Perceptions of corruption in the country	<i>Now I'd like you to tell me your views on corruption – when people pay a bribe, give a gift, or do a favour to others to get the things they need done or the services they need. How would you place your views on corruption in your country on a 10-point scale, where “1” means “there is no corruption in this country” and “10” means “there is abundant corruption in this country”? If your views are somewhat mixed, select the appropriate number between the two.</i>

Table: 4
Test for Nonlinearity

Likelihood-ratio test LR $\chi^2(1) = 7.11$

(Assumption: linear nested in quadratic) Prob > $\chi^2 = 0.0077$

Table: 5
Marginal Effects

	dy/dx	Std.Err.	z	P>z	[95%Conf.	Interval]
female	0.010	0.003	3.000	0.003	0.003	0.016
age	0.001	0.001	1.890	0.059	-0.000	0.002
age2	-0.000	0.000	-2.710	0.007	-0.000	-0.000
educ level						
Middle	-0.003	0.004	-0.690	0.489	-0.011	0.005
Higher	-0.047	0.005	-9.970	0.000	-0.056	-0.037
employment status						
Full-time (30 hours a week or more)	-0.023	0.006	-3.950	0.000	-0.035	-0.012
Part-time (less than 30 hours a week)	-0.034	0.008	-4.490	0.000	-0.049	-0.019
Self employed	-0.022	0.007	-3.280	0.001	-0.036	-0.009
Homemaker not otherwise employed	-0.019	0.007	-2.680	0.007	-0.033	-0.005
Student	-0.031	0.010	-3.200	0.001	-0.050	-0.012
Unemployed	-0.021	0.008	-2.560	0.011	-0.037	-0.005
Other	-0.003	0.015	-0.200	0.844	-0.032	0.026
income scale						
Medium	-0.019	0.004	-5.330	0.000	-0.026	-0.012
High	-0.047	0.006	-7.260	0.000	-0.059	-0.034
marital status r						
4	0.015	0.004	3.510	0.000	0.007	0.024
6	0.007	0.005	1.410	0.159	-0.003	0.016
worries						
A great deal	-0.028	0.004	-7.300	0.000	-0.036	-0.021
Not much	-0.053	0.005	-11.560	0.000	-0.062	-0.044
Not at all	-0.041	0.005	-8.070	0.000	-0.050	-0.031
happiness						
Quite happy	0.033	0.004	8.630	0.000	0.025	0.040
Not very happy	0.080	0.005	16.230	0.000	0.071	0.090
Not at all happy	0.092	0.010	9.350	0.000	0.073	0.111
laborunion_member						
Inactive member	-0.026	0.005	-4.840	0.000	-0.037	-0.016
Active member	-0.040	0.007	-5.630	0.000	-0.054	-0.026
perception corruption						
1 There is no corruption in my country	-0.065	0.012	-5.270	0.000	-0.090	-0.041
2	-0.143	0.015	-9.780	0.000	-0.172	-0.114
3	-0.126	0.010	-12.500	0.000	-0.146	-0.106
4	-0.108	0.009	-11.930	0.000	-0.126	-0.090
5	-0.074	0.006	-12.370	0.000	-0.086	-0.063
6	-0.086	0.006	-13.700	0.000	-0.099	-0.074
7	-0.072	0.005	-13.210	0.000	-0.083	-0.062
8	-0.050	0.005	-10.260	0.000	-0.060	-0.041
9	-0.033	0.005	-6.080	0.000	-0.044	-0.022

Note: dy/dx for factor levels is the discrete change from the base level.

Table: 6
Odds Ratio

trust	Odds Ratio	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
female	1.074	.025	3.00	.003	1.025	1.125	***
age	1.009	.005	1.89	.059	1	1.017	*
age2	1	0	-2.71	.007	1	1	***
Highest educationa~o	1	-	-	-	-	-	-
Middle	.979	.03	-0.69	.49	.921	1.04	-
Higher	.721	.024	-9.93	0	.676	.769	***
Full-time (30 hour~o	.836	.039	-3.81	0	.762	.917	***
Part-time (less th~	.776	.044	-4.46	0	.694	.867	***
Self employed	.842	.045	-3.23	.001	.758	.935	***
Employment status ~d	1	-	-	-	-	-	-
Homemaker not othe~d	.864	.048	-2.66	.008	.775	.962	***
Student	.794	.056	-3.27	.001	.691	.912	***
Unemployed	.85	.054	-2.57	.01	.751	.962	**
Other	.977	.117	-0.20	.843	.772	1.236	-
Income level (Reco~o	1	-	-	-	-	-	-
Medium	.864	.024	-5.22	0	.818	.913	***
High	.718	.031	-7.61	0	.659	.782	***
RECODE of marital ~a	1	-	-	-	-	-	-
4	1.119	.036	3.44	.001	1.049	1.192	***
6	1.049	.036	1.40	.162	.981	1.122	-
Worries: Losing my~i	1	-	-	-	-	-	-
A great deal	.805	.024	-7.36	0	.76	.853	***
Not much	.684	.022	-11.93	0	.643	.728	***
Not at all	.74	.027	-8.37	0	.69	.794	***
Feeling of happine~y	1	-	-	-	-	-	-
Quite happy	1.25	.032	8.79	0	1.189	1.313	***
Not very happy	1.873	.08	14.75	0	1.723	2.035	***
Not at all happy	2.106	.215	7.28	0	1.723	2.573	***
Active/Inactive me~o	1	-	-	-	-	-	-
Inactive member	.832	.03	-5.07	0	.774	.893	***
Active member	.763	.034	-6.05	0	.699	.833	***
1 There is no corr~c	.607	.05	-6.08	0	.516	.713	***
2	.39	.03	-12.22	0	.335	.453	***
3	.425	.024	-15.01	0	.38	.476	***
4	.469	.025	-14.01	0	.422	.521	***
5	.573	.024	-13.51	0	.528	.621	***
6	.533	.022	-15.14	0	.491	.578	***
7	.58	.022	-14.19	0	.538	.626	***
8	.672	.025	-10.76	0	.625	.723	***
9	.76	.033	-6.39	0	.699	.827	***
Perceptions of cor~e	1	-	-	-	-	-	-
Constant	6.81	.972	13.44	0	5.148	9.009	***
Mean dependent var	0.786		SD dependent var		0.410		
Pseudo r-squared	0.175		Number of obs		62982		
Chi-square	11450.057		Prob > chi2		0.000		
Akaike crit. (AIC)	54195.692		Bayesian crit. (BIC)		54937.842		

*** $p < .01$, ** $p < .05$, * $p < .1$

Navigating Uncertainty: The Impact of Real Exchange Rate Changes on Türkiye's Tourism (2013-2023)

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Belirsizlikte Yol Almak: Gerçek Döviz Kuru Değişikliklerinin Türkiye Turizmine Etkisi (2013-2023)

Abstract

This study investigates the causal relationship between tourism revenues and the real effective exchange rate within the context of economic and social crises. Monthly data from 2013-2023 were analysed using structural break tests and Granger causality analysis. The findings show that the July 15 coup attempt, the Pastor Brunson crisis, and the COVID-19 pandemic influenced the relationship in various ways. No immediate short-term causality was identified; tourism revenues were more affected by security concerns, seasonal patterns, and global crises. The exchange rate advantage diminished during crises and vanished during the pandemic. The study emphasises the need for greater political stability and effective crisis management in tourism policy, and offers key recommendations.

Keywords : COVID-19, Crises, Granger Causality Analysis, Real Exchange Rate, Tourism Revenue.

JEL Classification Codes : E43, O520, Z32.

Öz

Bu çalışma, Türkiye’de turizm gelirleri ile reel efektif döviz kuru arasındaki nedensel ilişkiyi, ekonomik ve sosyal krizler bağlamında analiz etmektedir. 2013-2023 dönemi aylık verileri kullanılarak yapısal kırılma testleri ve Granger nedensellik analizi uygulanmıştır. Bulgular, 15 Temmuz darbe girişimi, Pastor Brunson krizi ve COVID-19 pandemisinin ilişkiyi farklı biçimlerde etkilediğini göstermektedir. Kısa vadede doğrudan nedensellik bulunmazken, turizm gelirleri daha çok güvenlik endişeleri, mevsimsellik ve küresel krizlerden etkilenmektedir. Kriz dönemlerinde döviz kuru avantajının etkisi azalmakta, pandemi sürecinde ise tamamen ortadan kalkmaktadır. Çalışma, turizm politikalarında siyasi istikrar ve kriz yönetiminin önemini vurgulamakta ve politika geliştirmeye ve gelecek çalışmalara yönelik öneriler sunmaktadır.

Anahtar Sözcükler : COVID-19, Krizler, Granger Nedensellik Analizi, Reel Döviz Kuru, Turizm Gelirleri.

1. Introduction

Tourism plays a vital role in strengthening the economies of both emerging and developed nations (Streimikiene et al., 2021: 260), as well as contributing to the foreign exchange reserves of all countries and generating direct or indirect employment opportunities within society (Thommandru et al., 2021: 1). For developing countries, tourism offers a crucial opportunity to reduce poverty, stimulate economic growth, and better integrate into the global economy (Croes & Vanegas, 2008: 94). It can also be noted that the tourism sector, which actively supports foreign exchange needs, helps improve the balance of payments deficit (Perez-Rodríguez et al., 2015: 268). Therefore, the sector, closely monitored by policymakers, is believed to influence both individual- and national-level variables (Gülcü, 2024: 847).

The process of structural change in Türkiye's tourism sector and its development began in 1980 (Bulut, 2000: 72). Following the decisions made on 24 January 1980 regarding active foreign tourism in Türkiye, the import-substitution policy was replaced by an export-oriented policy. The Tourism Incentive Law of 1982 was a key milestone, offering significant investments and financial support to the sector (Yamak et al., 2006: 206). During this period, tourism revenues made up just 0.6% of GDP in 1980 (Albayrak, 2017: 135; Kanca, 2015: 4), rising notably to 5.4% by 2023.

As shown in Table 1, tourism revenues generally increased between 2013 and 2019, peaking at USD 38.9 billion in 2019. During this period, tourism revenues accounted for 5.1% of GDP. However, the COVID-19 pandemic in 2020 led to a sharp decline, with revenues falling to USD 14.8 billion and the share of GDP decreasing to 2%. This notable contraction in the tourism sector was primarily due to travel restrictions and health concerns, which reduced international tourist arrivals.

Table: 1
Distribution of Tourism Revenues, Average Annual Expenditures, and Tourism's Contribution to GDP

Year	Tourism Revenues (\$, billion)	Average Expenditure (\$)	Tourism Revenue Share in GDP (%)
2013	33.07	843	4.0
2014	35.14	848	4.3
2015	32.49	781	3.7
2016	22.84	728	2.6
2017	27.04	700	3.1
2018	30.55	669	3.8
2019	38.93	751	5.1
2020	14.82	936	2.0
2021	30.17	1028	3.7
2022	46.28	901	5.1
2023	55.87	979	5.4

Source: Created by the authors using data from TÜRSAB, 2024; Ministry of Culture and Tourism, 2024; TUIK, 2024.

In 2021, tourism revenues partially recovered, reaching USD 30.2 billion, although their share in GDP remained below pre-pandemic levels at 3.7%. The recovery continued in 2022 and 2023, with revenues increasing to USD 46.3 billion and USD 55.9 billion, respectively. Correspondingly, the share of GDP grew to 5.1% in 2022 and 5.4% in 2023.

The rise in 2023 reflects the ongoing recovery of the tourism sector and positive developments that support its growth.

When analysing international tourism flows, it becomes clear that the movement of people directly influences fluctuations in foreign exchange rates. These fluctuations affect the demand for foreign currency in countries that send tourists and impact the supply in nations that receive them (Bulut, 2000: 78). The real exchange rate (RER), which compares the price levels of goods and services between domestic and foreign markets, functions as a key indicator for assessing a country's global trade competitiveness (Edwards, 1988).

In this context, the RER plays a vital role in boosting Türkiye's appeal to international visitors and promoting local expenditure. Moreover, global economic factors such as security, international connectivity, and exchange rates substantially affect both the number of tourist arrivals and tourism income. Exchange rate fluctuations, in particular, significantly affect tourism earnings (Aktaş et al., 2014: 493-494).

The RER is usually calculated by adjusting nominal exchange rates for inflation differences between countries. It essentially shows the relative price of domestic goods compared to foreign ones (Kızıltan & Çiğerlioğlu, 2008: 424). An increase in the RER indicates that domestic goods and services become more expensive relative to foreign goods and services, potentially reducing a country's tourism competitiveness. Conversely, a decrease means that foreign products are becoming more expensive, making domestic tourism more attractive (Gülcü, 2024: 847-848).

Given that tourism contributes to economic growth through foreign exchange earnings and employment creation, exchange rates are a vital factor in boosting tourism revenues (Öner, 2022: 100). The link between exchange rates and tourism revenues is therefore crucial for designing effective sectoral strategies and incentives. Fluctuations in exchange rates directly influence international tourist demand and modify domestic tourists' spending behaviour. As a result, incorporating exchange rate dynamics into tourism policy formulation is essential for enhancing policy effectiveness.

The tourism sector is inherently susceptible to external shocks and is among the most immediately affected industries during crises (UNWTO, 2020). Factors such as pandemics, geopolitical tensions, and economic uncertainties deeply impact the sector through both demand contraction and financial instability. In the face of such shocks, the timely and targeted implementation of fiscal and monetary policies directly influences the pace of recovery and the long-term sustainability of the tourism industry (Hevia & Neumeyer, 2020; Gössling et al., 2021). For instance, during crisis periods, fiscal policies such as stimulus packages, tax deferrals, and direct subsidies help tourism businesses remain operational, while monetary policies, including interest rate adjustments and liquidity support, aim to stimulate demand (Şengel et al., 2023).

However, the literature provides limited empirical evidence on the effectiveness of these policies within the tourism sector, particularly regarding macroeconomic variables such as exchange rates (see Sastre, 2017; Sarker, 2020; Şengel et al., 2023). This study aims to address this gap by analysing the effect of crisis periods on tourism revenues and the real exchange rate, offering policymakers practical, data-driven advice. The results obtained through empirical methods such as the Granger causality test offer insights into which types of macroeconomic policies are more effective in stabilising tourism revenues during crises, thereby making a strategic contribution to Türkiye and to other economies with similar structural vulnerabilities.

A significant body of literature has examined the relationship between real exchange rates and tourism revenues (see Pekmezci & Bozkurt, 2016; Aktaş et al., 2014; Akar & Özcan, 2021). However, to date, no research has incorporated recent events and data, such as the COVID-19 pandemic, the Pastor Brunson crisis, and the attempted coup, that could considerably affect a country's current economic conditions as variables in the analysis.

Following the Pastor Brunson crisis, significant exchange-rate shocks were observed, accompanied by rapid increases in both exchange rates and inflation (Nazlıoğlu, 2024; Solmaz, 2002). These economic fluctuations heightened volatility in the Borsa İstanbul (BIST) and prompted foreign investors to withdraw from equity markets amid heightened risk perceptions during the crisis (Somuncu, 2021). Although the World Health Organisation declared COVID-19 a pandemic in March 2020 (McCartney, 2020), the virus caused unprecedented socioeconomic impacts globally, owing to its mutation-driven rapid transmission and lethality, which far surpassed those of previous MERS and SARS outbreaks. The tourism sector, characterised by its dynamic nature and reliance on physical interaction, was among the most severely affected industries (Gralinski & Menachery, 2020; Backer et al., 2020). Consequently, the pandemic's impacts remain highly relevant to scientific investigation.

This study aims to make an original contribution by examining the relationship between exchange rates and tourism revenues, which is most often analysed in the literature using conventional period data, in the context of three major recent shocks in Türkiye: the COVID-19 pandemic, the Pastor Brunson crisis, and the July 15 coup attempt. Existing studies primarily focus on long-term relationships and often exclude such sudden political, economic, and global shocks from their analyses. However, these events can have direct and significant effects on both exchange rate volatility and tourism demand. In fact, a study by Kartal (2019) highlights that the series of events starting with the Gezi Park protests and continuing through the July 15 coup attempt and the Pastor Brunson crisis substantially influenced the cointegration and causality relationship between foreign trade and exchange rates.

To empirically examine these relationships, this study uses a monthly dataset from January 2013 to December 2023, comprising tourism revenue data from the Turkish

Statistical Institute (TUIK) and exchange rate data from the Central Bank of the Republic of Türkiye (TCMB). All analyses were performed using EViews 10.0.

Given the significant structural breaks during this period, including the 2016 coup attempt, the 2018 Pastor Brunson crisis, and the COVID-19 pandemic, the study employs advanced econometric techniques that account for these shifts. Stationarity tests that incorporate structural breaks (e.g., the Lee-Strazicich unit root test) are applied to assess the data's robustness. Additionally, sub-period causality analyses are conducted using the Granger Causality Test, differentiating between pre-crisis and crisis regimes to capture changing dynamics.

Moreover, dummy variables representing each crisis are included in the model to explicitly assess their effects on tourism revenues and exchange rate volatility. This methodological approach enhances the study's capacity to provide practical insights and policy advice relevant to emerging economies facing similar shocks.

Considering the shocks and their implications on both macroeconomic stability and sector-specific dynamics, this study hypothesises that real exchange rate volatility significantly influences tourism revenues during crises. By empirically incorporating dummy variables for events such as COVID-19, the Pastor Brunson crisis, and the 2016 coup attempt, this paper offers an evidence-based approach to understanding the effectiveness of fiscal and monetary interventions in stabilising the tourism industry. The findings are particularly relevant for policymakers seeking to strengthen the resilience of the tourism sector in emerging economies like Türkiye. Furthermore, the study evaluates whether export-oriented policy frameworks, as adopted after 1980, remain viable during crisis periods, or whether more targeted, shock-specific tools are necessary.

2. Literature Review

The literature review shows that numerous studies have examined the relationship between tourism and exchange rates, conducted at both national and international levels (see Table 2). The main difference among these studies lies in the variety of models and datasets used in the analyses. Additionally, many existing studies do not account for recent developments and overlook the impact of socio-economic crises, including the COVID-19 pandemic, the July 15 coup attempt, and the Pastor Brunson crisis. Table 2 summarises research investigating the link between real exchange rates and tourism revenues.

Table: 2
Studies on Real Exchange Rate and Tourism Revenues

Name of the Study	Researcher and Date of the Study	Study Period	Analyses Used in the Study	Findings
<i>“Real Exchange Relationship with Tourism Income in Türkiye”</i>	Gülcü, Y. (2024)	2005-2020	Unit root test and causality	The analysis indicates that, in 2013 and 2020, the real exchange rate causally affects tourism revenue, whereas in 2017 and 2018, the causality runs from tourism revenue to the real exchange rate.

"The effect of real effective USD/TRY exchange rate on tourism income: An empirical analysis of Türkiye"	Öner (2022)	2003Q1-2019Q4	Granger causality test	No Granger causality was found between the real effective USD/TRY exchange rate and tourism revenue.
"Relationship between real exchange rate and tourism receipts: A VAR analysis with structural break"	Akar ve Özcan (2021)	2012-2019	VAR Analysis	During the period under analysis, tourism revenues and exchange rate variables did not significantly influence one another.
"Tourism Income Exchange Rate Relationship: In Türkiye (2008-2019)"	Arslan ve Çetiner (2020)	2008-2019	Vector autoregression method	The variables demonstrate a significant relationship and exhibit low mutual explanatory power.
"The Effect of Real Exchange Rate on Tourism Revenues in Türkiye: An Empirical Application for the Period 2010-2017"	Albayrak (2017)	2010-2017	Dickey-Fuller (ADF) and Phillips-Perron (PP) methods	It has been determined that the real exchange rate impacts Türkiye's tourism revenues. According to the Granger Causality Analysis, a unidirectional causal relationship exists, flowing from the exchange rate to tourism revenues.
"Relationship Between Tourism Revenue and Exchange Rate"	Kaya (2017)	2003-2016	Least Squares (LSS) method	The exchange rate significantly influences Türkiye's tourism income.
"Real Exchange Rate and Tourism Income Relationship in Türkiye: Empirical Application for The Period Of 2003-2016"	Öncel vd. (2016)	2003-2015	FMOLS DOLS methods for Toda-Yamamoto Causality analysis and coefficient estimation	Although the two variables are cointegrated, causality runs solely from tourism revenues to real exchange rates.
"The Türkiye Macroeconomic Determinants of Tourism Revenues: Panel Data Analysis"	Özcan, C. C. (2015)	1995-2011	Panel Data Analysis	Every variable in the model influences tourism income; however, per capita GDP and the real exchange rate emerge as particularly significant determinants.
"A note on modelling tourism revenues in Croatia"	Payne ve Mervar (2002)	1993-1999	Regression analysis	Both the EU GDP and the real exchange rate play significant roles in shaping Croatian tourism revenues.

Kara et al. (2012) examined the relationship between tourism revenues and several macroeconomic variables from 1992 to 2011 using three models. Using methods such as the Engle-Granger cointegration approach, VAR analysis, and Granger causality tests, they found a one-way causal effect from economic growth to tourism revenues, a mutual relationship between tourism revenues and the current account balance, and a unidirectional causal link from exchange rates to tourism revenues.

Erkan et al. (2013) analysed monthly data from 2005 to 2012 using a VAR model and Granger causality tests. Their results indicated a reciprocal causal relationship between tourism revenues and the number of tourists in Türkiye, and that fluctuations in the real exchange rate do not significantly affect tourism revenues.

Şen & Şit (2015) examined the effect of the real exchange rate on tourism revenues using monthly data between 2000 and 2012. For this purpose, researchers employed unit root tests, frequency distribution, and Toda-Yamamoto causality tests. They concluded that both real exchange rates and Türkiye's tourism revenues have reciprocal effects.

Sevim & Oğan (2020) investigated the causality relationship between the exchange rate applied from 2012 to 2018 and the tourism sector, using data on exchange rates, tourism revenues, tourist numbers, and tourists' average expenditures. In the study in which Granger Causality analysis was conducted, the results showed no causal link among the real exchange rate, tourism revenues, and the number of visitors.

Ünkaracalar & Arslantürk (2021) examined the economic factors influencing tourism revenues in Türkiye. They indicated cointegration among the variables used in their research

for the periods 2010-Q1 and 2020-Q4. They showed that economic growth, the CPI-based real effective exchange rate, and inflation positively affected tourism revenues.

Demir (2021) examined the relationship between tourism revenues, real economic growth, and the real exchange rate for the period from 2003Q1 to 2020Q1. This study employed advanced econometric techniques, including the Zivot-Andrews structural break unit root test, Johansen cointegration analysis, FMOLS, and DOLS for coefficient estimation, as well as the Toda-Yamamoto causality test. The results showed that the real exchange rate has a significantly greater impact on real national income compared to tourism revenues.

Timur & Mert (2021) examined the asymmetric relationship between the real exchange rate and tourism revenues in Türkiye using data from 2003Q1 to 2020Q1. Their analysis showed that, over the long term, the relationship between exchange rates and tourism revenues is asymmetric, whereas in the short term it appears symmetric.

Therefore, several studies have examined the relationships among tourism revenue, exchange rates, and other macroeconomic variables in Türkiye. Various studies have examined the relationships between tourism revenues and exchange rates using diverse methods (e.g., Engle-Granger, VAR, Granger causality, Johansen cointegration). This diversity reflects the subject's complexity and multidimensional nature. Most studies have found mutual causality relationships between tourism revenues and other macroeconomic variables. However, some studies indicate that the effect of exchange rates on tourism revenues is limited or absent. Additionally, these studies cover different periods. As a result, the literature offers a wide range of findings on the relationships between tourism revenues and exchange rates in Türkiye, but contradictory results and methodological differences also emerge. This situation indicates that further research on the subject is necessary.

Granger Causality Analysis has significantly contributed to understanding the dynamic relationship between tourism and macroeconomic variables, especially during periods of crisis. By assuming that past values contain valuable information for predicting the future development of other variables, this approach uncovers both the direction and the strength of causality. Studies such as Radulescu (2020) and Aslan (2014) comprehensively demonstrate the impact of tourism on economic growth through Granger causality tests. Additionally, research by Lean & Tang (2010) and Tang & Tan (2013) indicates that tourism's effect on economic growth may vary over time and across economic regimes. Pairwise Granger Causality Tests were conducted for each sub-period. This method enables the examination of causal relationships between two variables, separately, across different time frames and during periods of crisis.

Incorporating fiscal and monetary policy interventions, as well as significant structural breaks such as the COVID-19 pandemic, the 2016 coup attempt, and the Pastor Brunson crisis, into the analysis is crucial for enhancing both the realism of the results and the practical applicability of policy recommendations. The use of dummy variables to

capture these shocks within Granger causality frameworks provides a more nuanced understanding of how sudden and unprecedented events alter the tourism-exchange rate nexus.

For Türkiye and similar emerging economies, this enhanced Granger Causality method functions not only as a data-driven predictive tool but also as a crucial instrument for managing future uncertainties in tourism. It supports the development of adaptive and crisis-responsive policy measures to stabilise and enhance the tourism sector's resilience amid macroeconomic volatility.

3. Methodology

This study examines the causal relationship between Türkiye's tourism revenues and the exchange rate, with particular emphasis on the dynamic effects of economic and social crises on this link. For this purpose, a dataset consisting of 132 monthly observations from January 2013 to December 2023 was used. The tourism revenue data were obtained from the Turkish Statistical Institute (TUIK), while the U.S. dollar exchange rate data were sourced from the Central Bank of the Republic of Türkiye (TCMB). All empirical analyses were conducted using EViews 10.0.

3.1. Analytical Framework and Methodological Approach

The period covered by this study (2013-2023) encompasses a timeframe marked by significant political, social, and health-related structural breaks that have notably affected the Turkish economy. In the presence of such structural breaks, traditional econometric methods may yield misleading results. Therefore, to improve the robustness and reliability of the study's findings, more modern and dynamic econometric techniques have been employed.

Within this framework, the analytical process involves four key steps:

- **Stationarity Analysis with Structural Breaks:** The series' stationarity properties were evaluated using unit root tests that consider potential structural breaks.
- **Sub-Period Causality Analysis:** The causal relationship between the variables was examined by dividing the sample into sub-periods that represent different economic regimes (pre-crisis periods and crisis periods).
- **Model Validity Tests:** The statistical validity of the VAR models used in the causality analysis was evaluated through stability and autocorrelation diagnostics.
- **Crisis-Oriented Graphical Analysis and Interpretation:** To visualise the statistical findings and highlight the unique dynamics of each structural break, the main crisis episodes (Post-Coup Attempt, Pastor Brunson Crisis, and COVID-19 Pandemic) were analysed and interpreted individually using graphical representations.

3.1.1. Stationarity Analysis with Structural Breaks

In time-series analysis, testing the stationarity of variables before examining causal relationships is a critical prerequisite. To account for potential abrupt shifts in the level or trend of the series (structural breaks) that crises during the study period may have induced, the Lee and Strazicich (2003) LM unit root test, allowing for two endogenous structural breaks, was employed. This test offers a theoretical advantage in that it permits breaks under both the null hypothesis (H_0 : unit root) and the alternative hypothesis (H_1 : stationarity).

The primary hypotheses of the test are as follows:

- **H_0 (Null Hypothesis):** The series contains a unit root when structural breaks are present (i.e., it is non-stationary).
- **H_1 (Alternative Hypothesis):** The series remains stationary despite structural breaks.

The LM statistic from the test is compared with the relevant critical values to assess the series' stationarity. The test results are shown below.

For the logarithmic tourism revenue series (LOG_REVENUES), the test statistic was -5.939. This value is more negative than the 5% critical value of -5.438. Accordingly, the null hypothesis of a unit root in the presence of structural breaks is rejected at the 5% significance level. This finding indicates that the tourism revenue series is stationary ($I(0)$) after accounting for structural breaks. The test identified December 2019 (2019M12) as the most probable date of the structural break. The fact that this date coincides with the onset of the COVID-19 pandemic, an event that profoundly affected the global tourism industry, further emphasises the economic importance of the result.

For the logarithmic real effective exchange rate series (LOG_REEL_EFFEKTIVE), the test statistic was -5.527. This value is more negative than the 5% critical value of -5.370. Therefore, the null hypothesis (H_0) stating that the series contains a unit root is rejected at the 5% significance level. This result confirms that the real effective exchange rate series is also stationary ($I(0)$) in the presence of structural breaks. The test identified October 2014 (2014M10) as the structural break date for this series.

Table: 3
Results of the Lee-Strazicich LM Unit Root Test

Variables	Test Statistic	5% Critical Value	Break Date	Conclusion
LOG_REVENUES	-5.939	-5.438	2019M12	Stationary ($I(0)$)
LOG_REEL_EFFEKTIVE	-5.527	-5.370	2014M10	Stationary ($I(0)$)

The stationarity test results indicate that both the tourism revenue series and the real effective exchange rate series are stationary ($I(0)$) when structural breaks are accounted for. This has two main implications. First, it indicates that differencing the series is unnecessary when examining causal relationships between these variables, thereby enabling reliable

analysis using their level values (Sünbül, 2025: 154). Second, the identified break dates (late 2014 and late 2019) align with key periods in the Turkish economy, underscoring the validity of an approach that explicitly accounts for structural breaks.

3.1.2. Sub-Period Causality Analysis

Assuming that the causal relationship between tourism revenues and the real effective exchange rate may not remain stable over time and that its structure or direction could vary, especially during crisis periods, this study does not apply the standard Granger causality test to the entire sample period. Instead, to examine the temporal stability of the relationship and to identify the potential influence of structural breaks, a sub-period division strategy reflecting different economic regimes was adopted (Söyler, 2021: 70).

Consequently, the entire dataset was divided into pre-crisis and crisis periods, and separate Pairwise Granger Causality Tests were performed for each sub-period. This method enables direct comparison of whether the causal relationship is statistically significant across different economic conditions (Danyal & Gümüş, 2022).

Before starting the analysis, two key methodological choices were made to ensure model robustness (Karaca, 2003: 249): selecting the appropriate lag length and setting the analysis periods.

3.1.2.1. Determination of Optimal Lag Length

In causality tests based on the Vector Autoregressive (VAR) model, selecting the appropriate lag length is crucial for the reliability of the results. To this end, the VAR Lag Length Selection Criteria test was applied to the variables LOG_REVENUES and LOG_REEL_EFFECTIVE over the entire study period (2013M01-2023M12). According to the test outcomes, both the Schwarz Criterion (SC) and the Hannan-Quinn Criterion (HQ) suggested an optimal lag length of 3.

In econometric modelling, it is a common principle to prefer "parsimonious yet adequate" models that retain explanatory power with fewer parameters, thereby reducing the risk of overparameterisation (Ucal, 2006: 47). Based on this principle and support from multiple criteria, a lag length of 3 was regarded as the optimal value for the analyses.

3.1.2.2. Determination of Analysis Periods (Pre-Crisis and Crisis Period Separation)

The central hypothesis of the study posits that the causal relationship undergoes a structural change during periods of crisis. To examine this hypothesis, rather than analysing the entire sample as a single unit, a strategy was employed that divides it into meaningful sub-periods representing different economic regimes. This method enables testing the stability of the relationship over time and clearly identifying the effects of potential structural

breaks (Yurdakul, 2000). In selecting these periods, the results of the Lee-Strazicich unit root test, conducted in the previous section, were also used.

- **Pre-Crisis / Relatively Stable Period (2013M01-2017M12):** This phase reflects a time when the Turkish economy was comparatively more stable, and significant structural breaks such as the Pastor Brunson crisis and the COVID-19 pandemic had not yet taken place. It was designated as a baseline to observe the "normal" course of the relationship between the variables.
- **Crisis and Structural Break Period (2018M01-2021M12):** The start of this period includes 2018, which was identified as a significant breakpoint for the real effective exchange rate series in the unit root test. This period also encompasses the onset and peak of the COVID-19 pandemic in December 2019, which was found to cause a significant structural break in the tourism revenue series in tests. Therefore, this period was selected to measure the effects of structural breaks on the model directly.

To test the study's main hypothesis, the Pairwise Granger Causality Test was conducted on the defined sub-periods with a lag length of 3. The results concerning the causality from the real effective exchange rate (LOG_REEL_EFFECTIVE) to tourism revenues (LOG_REVENUES), which is the central focus of the analysis, are presented as follows:

• Pre-Crisis Period (2013M01-2017M12) Analysis

The test conducted during this period yielded a p-value that was not statistically significant, supporting the null hypothesis that "the real effective exchange rate is not a Granger cause of tourism revenues." The low F-statistic of 0.3886 indicates that, during this period, the real effective exchange rate lacked sufficient statistical power to predict tourism revenues.

• Crisis Period (2018M01-2021M12) Analysis

During this period marked by significant economic and social disruptions, the test yielded a p-value of 0.934 for the same null hypothesis. This p-value is considerably higher than the 5% significance level. This result confirms that, contrary to expectations, no significant causal effect of the real effective exchange rate on tourism revenues was observed, even during the crisis period. To provide a more straightforward overview of the analysis results, the findings are summarised in Table 4.

Table: 4
Sub-Period Causality Test Results

Null Hypothesis (H ₀)	Period	Number of Observations	F	P	Result (5%)
REEL_EFFECTIVE → REVENUES No causality exists	2013-2017	57	3.886	0.872	H ₀ Fail to reject
REEL_EFFECTIVE → REVENUES No causality exists	2018-2021	48	1.410	0.934	H ₀ Fail to reject

3.1.3. Model Validity Tests

To assess whether the VAR models used in the causality analysis are statistically sound and reliable, stability and autocorrelation tests were conducted on the models estimated for each sub-period.

- **Stability Tests**

The dynamic stability of the VAR models for both sub-periods (2013-2017 and 2018-2021) was assessed by examining the roots of the characteristic polynomial. For both models, all calculated roots lie within the unit circle, with moduli less than 1. The EViews output confirmed this with the statement: "No root lies outside the unit circle. VAR satisfies the stability condition." These findings suggest that both models are stable and that the effects of structural breaks fade over time, thus confirming the reliability of the results.

- **Autocorrelation Tests**

The presence of autocorrelation (serial correlation) in the model residuals was examined using the LM test applied to the VAR residuals. The test results vary between the periods:

- **Pre-Crisis Period (2013-2017):** Conversely, the model for this period exhibited statistically significant autocorrelation at the 7th and 12th lags (with p-values of 0.019 and 0.000, respectively). This indicates that some serial correlation persists in the model's residuals.
- **Crisis Period (2018-2021):** For the model established during this period, no statistically significant autocorrelation was detected in the residuals up to the 12th lag. All p-values exceeding 0.05 indicate that the residuals of this model conform to a "white noise" process, confirming the model is specified correctly.

According to the diagnostic test results, the models for both periods satisfy the stability condition. The model representing the crisis period (2018-2021) is statistically robust and free of autocorrelation. The detection of autocorrelation in the pre-crisis period (2013-2017) model suggests that the causality test results for this period (which were insignificant at the 5% level) should be interpreted with caution. However, the absence of causality in both periods supports the study's overall conclusion.

The causality analysis consistently shows that, both during relatively stable economic periods and during crisis periods with significant structural breaks, the real effective exchange rate does not have a short-term, direct Granger-causality effect on Türkiye's tourism revenues. This finding suggests that the relationship between these two variables is more complex than a simple causal link and indicates that non-exchange-rate factors may exert a greater influence on tourism revenues.

3.1.4. Crisis-Focused Graphical Analysis and Interpretation

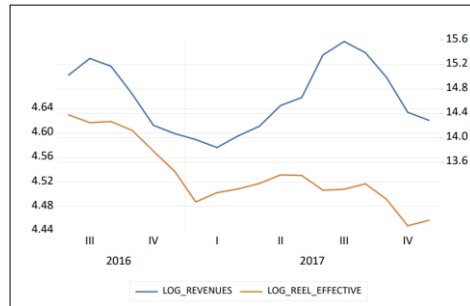
To support the statistical analysis with visual evidence and to reveal the unique dynamics of each structural break, the main crisis periods were examined and graphically interpreted.

3.1.4.1. Post-Coup Attempt Period (2016-2017)

Figure 1 covers the period from the third quarter of 2016 to the fourth quarter of 2017. This interval aligns with the political and economic uncertainty immediately following the coup attempt in Türkiye on July 15, 2016. The graph displays the logarithmic values of two key economic indicators.

- **Tourism Revenues (LOG_REVENUES):** Shown by the solid line on the graph. The values of this series are shown on the right vertical axis, which ranges from 13.6 to 15.6.
- **Real Effective Exchange Rate (LOG_REEL_EFFECTIVE):** Shown by the dashed line. The values for this series are displayed on the left vertical axis, ranging from 4.44 to 4.64.

Figure: 1
Tourism Revenue and Exchange Rate Graph for the Post-Coup Attempt Period (2016-2017)



The sharp decline in tourism revenues after the third quarter of 2016 can be attributed to both security concerns and image issues caused by the coup attempt, as well as to seasonal sector dynamics. By 2017, especially in the second and third quarters, there was clear evidence of a strong recovery in tourism revenues. During the same period, the real effective exchange rate showed a general downward trend, indicating a real depreciation of the Turkish Lira and making Türkiye a relatively cheaper destination for foreign tourists. The graph suggests a possible inverse relationship between these two variables. Specifically, during the recovery phase in 2017, the drop in the real effective exchange rate coupled with rising tourism revenues implies that, following the initial shock of the coup attempt, the currency's real depreciation may have helped drive the sector's rebound.

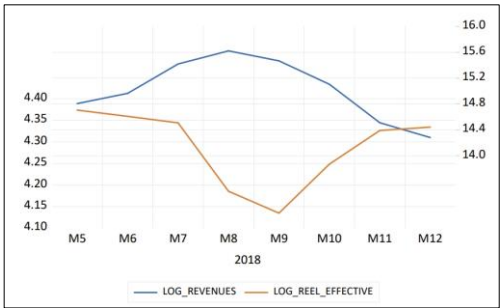
3.1.4.2. Pastor Brunson Crisis Period (2018)

According to Figure 2, the period from May 2018 to December 2018 is covered, focusing on the "Pastor Brunson Crisis," during which the Turkish economy experienced a sharp exchange rate shock. The graph compares the logarithmic series of tourism revenues and the real effective exchange rate during this critical period.

- **Tourism Revenues (LOG_REVENUES):** Shown by the solid line, tourism revenues exhibit a clear seasonal pattern as expected. Revenues increase with the start of summer, peak in August (M8), and then decline seasonally towards the end of the year.
- **Real Effective Exchange Rate (LOG_REEL_EFFECTIVE):** Shown by the dashed line, the real effective exchange rate displays a dramatic movement during this period. The sharp decline, which began in July (M7), reaches its lowest point in September (M9). This visually demonstrates how rapidly and severely the Turkish Lira depreciated in real terms, making Türkiye considerably cheaper for foreign visitors.

The most notable observation from this graph is the apparent independence of the two series' movements. While the real effective exchange rate experienced one of its steepest declines in history, tourism revenues continued to follow their seasonal cycle. The extreme depreciation of the real exchange rate during this period did not produce an immediate or visible positive effect on tourism revenues.

Figure: 2
Tourism Revenue and Exchange Rate Chart during the Pastor Brunson Crisis (2018)

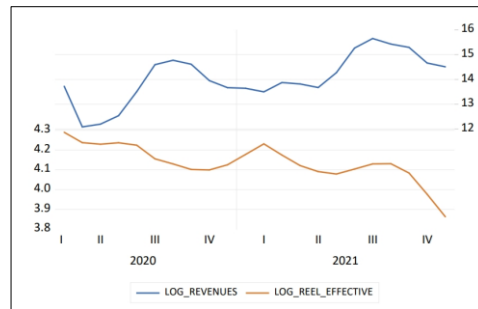


3.1.4.3. COVID-19 Pandemic Period (2020-2021)

Figure 3 centres on 2020 and 2021, when the COVID-19 pandemic, which profoundly affected the world and Türkiye, was at its peak. The graph displays the trajectories of the logarithmic tourism revenues and the logarithmic real effective exchange rate series during this period of global upheaval.

- **Tourism Revenues (LOG_REVENUES):** As shown by the solid line, tourism revenues strongly reflect the pandemic's impact. The sharp, sudden decline starting in the first quarter of 2020 indicates that the sector nearly ground to a halt due to international travel bans and quarantines. Although some recovery and seasonal variation occurred in the second half of 2020 and throughout 2021, levels remained well below pre-pandemic levels.
- **The Real Effective Exchange Rate (LOG_REEL_EFFECTIVE),** shown by the dashed line, continued its overall downward trend during this period. This suggests that the Turkish lira continued to depreciate in real terms, making Türkiye increasingly affordable for foreign visitors.

Figure: 3
Tourism Revenue and Exchange Rate Graph during the COVID-19 Pandemic (2020-2021)



The most notable finding in this graph is the complete decoupling observed between the two series. While Türkiye was becoming increasingly cheaper in real terms, tourism revenues experienced one of the largest collapses in its history. This visual evidence supports the results of the causality analysis conducted in the study. The findings suggest that, in the face of a widespread, global shock such as the pandemic, the exchange rate's attractiveness becomes entirely ineffective. In other words, regardless of how inexpensive a destination is, if people are unable or unwilling to travel, the exchange rate cannot produce a positive impact on revenues.

4. Conclusion & Discussion

Revenues from foreign tourist visits can be compared to export earnings from goods (Bahar & Kozak, 2005). Such income not only drives economic growth but also plays a vital role in increasing employment levels. Furthermore, tourism income is essential in reducing deficits for countries facing external payment imbalances (Öncel et al., 2016).

When reviewing the literature, the most notable feature distinguishing these studies is the diversity of models and datasets used in experimental analyses. However, a significant portion of the existing literature does not address current social and economic events,

particularly neglecting the economic and social impacts of critical turning points such as the COVID-19 pandemic, the coup attempts on 15 July 2016, and the Pastor Brunson crisis. This indicates that these studies do not sufficiently examine the damaging effects of crisis periods on economic structures or the potential repercussions of such extraordinary events on the relationship between tourism revenues and the exchange rate.

This study investigates the causal link between Türkiye's tourism revenues and the real effective exchange rate, emphasising the dynamic effects of economic and social crises on this relationship. Using monthly data from 2013 to 2023 and applying advanced econometric techniques, the analysis shows that crisis periods, including the 2016 coup attempt, the 2018 Pastor Brunson crisis, and the 2020 COVID-19 pandemic, have impacted the connection between the tourism sector and the exchange rate in various ways.

In the Granger causality analysis, no direct causal relationship was identified between exchange rates and tourism revenues. This aligns with many studies in the literature (Öner, 2022; Akar & Özcan, 2021; Sevim & Oğan, 2020). Dummy variables were included in the analysis to control for the effects of key events such as the COVID-19 pandemic, the July 15 coup attempt, and the Pastor Brunson crisis and to assess whether these turning points affected the relationship between exchange rates and tourism revenues. Notably, a significant relationship was observed only during the pandemic period, while no clear causal link was found in other periods. These findings suggest that the interaction between exchange rates and tourism revenues becomes more complex during crisis periods, with external factors possibly masking the relationship. The key findings are as follows:

- Both the tourism revenues and real effective exchange rate series were found to be stationary when considering structural breaks, enabling meaningful causality analyses using their level values.
- The causality analysis did not identify a significant causal link from the real effective exchange rate to tourism revenues either across the entire period or during times of crisis. This suggests that exchange rate changes do not directly and exclusively influence tourism revenues in the short term.
- Graphical analyses suggest that the depreciation of the real exchange rate following the coup attempt may have contributed to the recovery of tourism revenues, whereas no direct impact of the exchange rate shock on tourism revenues was observed during the Pastor Brunson crisis.
- During the COVID-19 pandemic, despite a significant depreciation of the exchange rate, tourism revenues experienced an unprecedented decline, leading to a complete decoupling of the relationship between the two variables. This finding suggests that global and extraordinary shocks, such as pandemics, outweigh the benefits of exchange rate depreciation.

Consequently, the analyses indicate that the real effective exchange rate in Türkiye does not have a short-term or direct Granger causality effect on tourism revenues. Non-exchange-rate factors, including security concerns, seasonal patterns, and global crises,

primarily drive fluctuations in tourism income. Notably, after the 2016 coup attempt, tourism revenues declined sharply and subsequently recovered in 2017, during which the exchange rate and tourism revenues moved in opposite directions. During the pandemic, the exchange rate's influence on tourism revenues disappeared.

The study by Işık et al. (2019) revealed that economic and policy-related uncertainties have a decisive impact on tourism demand. This study particularly highlights that policy uncertainties significantly affect tourists' travel plans and stresses that the level of uncertainty may vary across different tourist markets. These findings align with the present study's results, which showed that political and global crisis-related uncertainties have a greater influence on tourism revenues than economic variables such as the real effective exchange rate. While it is generally accepted that tourism has a strong relationship with economic growth (Wijesekara et al., 2022), it can be argued that in countries like Türkiye, where political and economic uncertainties are high, tourism revenues are more affected by policy- and crisis-related uncertainties than by economic indicators such as the exchange rate. In this context, tourism policies should focus not only on economic indicators but also on uncertainties stemming from political and global crises.

The finding that the real effective exchange rate does not have a short-term, direct causal effect on Türkiye's tourism revenues, and that political and global crisis-induced uncertainties have a greater impact on tourism demand, serves as a crucial warning for economic policymakers. Given Türkiye's financial structure, characterised by high and volatile inflation, double-digit real interest rates, and challenges for public debt sustainability (Akyüz & Boratav, 2003), traditional exchange rate policies alone are insufficient to revive the tourism sector during periods of crisis.

In this context, policymakers should focus not only on exchange rate and macroeconomic stability but also on managing uncertainties from political and global crises to bolster the tourism sector's resilience against shocks. As highlighted by Işık et al. (2019), the significant impact of political and economic uncertainties on tourism demand emphasises the need for institutional and political stability measures to reduce uncertainty during crises and support tourism revenues.

Furthermore, Türkiye's challenges with high real interest rates and public debt sustainability cannot be addressed solely through fiscal discipline policies, which may exacerbate adverse effects on economic growth and tourism revenues (Voyvoda & Yeldan, 2002). Therefore, measures that reduce financial market volatility and economic uncertainty, such as temporary capital controls and debt-restructuring mechanisms, should be employed alongside efforts to ensure debt sustainability (Sumer & Ozorhon, 2021; Cornelli & Felli, 1995; Krugman, 1999).

In conclusion, for Türkiye's tourism sector to become more resilient to crises, policies must be adopted that address not only economic indicators but also political stability, reduction of crisis-induced uncertainties, and more holistic and sustainable

approaches to debt management. Such policies will support both tourism demand and sustainable economic growth. Given the findings and the complex dynamics impacting the tourism sector, particularly during periods of economic and political instability, the following policy recommendations are proposed to enhance resilience and promote sustainable growth.

- Establish Multi-Dimensional Crisis Support Mechanisms:

The tourism sector is exposed to significant external shocks during crises, regardless of macroeconomic factors such as the exchange rate. Hence, policy responses should not depend solely on exchange rate policies; instead, direct sector-specific measures such as financial support, business grants, and tax deferrals should be enhanced to mitigate the impact on tourism.

- Exchange Rate Policies Are Merely One Tool for Tourism:

The stimulative effect of a depreciation in the real exchange rate on tourism is limited and context-dependent. Fluctuations in the exchange rate alone are not enough to increase tourist demand. Additional policies, such as marketing campaigns, infrastructure development, and measures to enhance perceptions of safety, are crucial to effectively supporting the tourism industry.

- Crisis Management Plans for Pandemics and Extraordinary Events:

Travel restrictions and health concerns during the COVID-19 pandemic have nullified exchange rate benefits. Long-term strategies, such as early warning systems, digitalisation, and improved hygiene standards, should be implemented to enhance the sector's resilience to global shocks.

- Maintain Overall Economic Stability:

Maintaining economic stability is essential for tourism growth. Stabilising exchange rates, securing macroeconomic balance, and reducing political uncertainties are key to sustaining confidence in the sector.

- Utilise Adaptable Policy Tools During Crises:

Literature and empirical evidence demonstrate that the course and effects of crises differ. Policymakers should implement adaptable, crisis-specific measures instead of uniform approaches.

- Balance Between Export-Led, Fiscal, and Monetary Policies:

During crises, the choice among export-led growth strategies, fiscal stimulus, and monetary easing depends on the nature of the shock and the economy's structural

characteristics. In Türkiye's case, given persistent high inflation and concerns about public debt sustainability, a carefully coordinated approach that combines targeted fiscal support for tourism, cautious monetary policy to control inflation, and export-promotion measures is recommended to ensure economic recovery without exacerbating vulnerabilities.

Although tourism is widely associated with economic growth, especially in countries such as Türkiye, where political and economic uncertainties are high, tourism revenues are more affected by political and crisis-induced uncertainties than by economic indicators such as exchange rates. Therefore, tourism policies should extend beyond traditional economic variables and focus on mitigating uncertainties arising from political instability and global crises. Adopting comprehensive, adaptable, and context-specific policies will strengthen Türkiye's tourism resilience and promote sustainable economic growth.

The main limitations of this study include its focus on only certain economic and political variables and the narrow timeframe of the dataset. Additionally, other social, cultural, and environmental factors influencing tourism demand were not addressed in this research. Future studies should utilise larger datasets, include regional and cross-country comparisons, and examine in detail how extraordinary circumstances, such as the post-pandemic period, affect tourism. Furthermore, comparing different types of economic uncertainties and their impacts on tourism could offer more comprehensive insights for policymakers.

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Will Technological Developments Disrupt Income Distribution in the Near Future?

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Teknolojik Gelişmeler, Yakın Gelecekte Gelir Dağılımını Bozacak Mı?

Abstract

This study analyses the relationship between human factors, technological advancements, global shifts, labour structure, and income inequality across 21 selected upper-middle-income and high-income countries from 2008 to 2021. The study utilises variables such as high-tech exports, the human capital index, the misery index, the share of R&D expenditures in GDP, skilled and unskilled labour, patent counts, and the Global Innovation Index. The results from the one- and two-step GMM methods indicate that skilled and unskilled labour and the human capital index have significant positive effects on income distribution. In contrast, the misery index, high-tech exports, and patent counts are found to exacerbate income inequality. However, the global innovation index does not exhibit a significant effect in either analysis.

Keywords : Technological Development, Income Distribution, Gini, Skilled Workforce, Misery Index.

JEL Classification Codes : B22, E24, C40.

Öz

Bu çalışma, 2008-2021 döneminde seçilmiş 21 üst-orta gelirli ve yüksek gelirli ülkede insan faktörleri, teknolojik gelişmeler, küresel dönüşümler, emek yapısı ve gelir eşitsizliği arasındaki ilişkiyi incelemektedir. Tek ve iki aşamalı Sistem GMM yöntemleriyle elde edilen bulgular, nitelikli ve nitelsiz işgücünün yanı sıra beşerî sermaye endeksinin gelir dağılımı üzerinde anlamlı ve pozitif bir etkiye sahip olduğunu göstermektedir. Buna karşılık, sefalet endeksi, yüksek teknoloji ihracatı ve patent sayılarının gelir eşitsizliğini artırıcı yönde etkilediği tespit edilmiştir. Öte yandan, Küresel İnovasyon Endeksi'nin her iki analizde de gelir eşitsizliği üzerinde istatistiksel olarak anlamlı bir etkisi bulunmamaktadır.

Anahtar Sözcükler : Teknolojik Gelişme, Gelir Dağılımı, Gini Katsayısı, Vasıflı İşgücü, Sefalet Endeksi.

1. Introduction

Technological change has historically been a fundamental force shaping labour markets, often generating structural unemployment and widening income inequality by disrupting established production relations and altering the balance between labour and capital. From the early stages of industrialisation, labour-saving technologies increased productivity while simultaneously intensifying social stratification and economic insecurity among workers, contributing to collective resistance and class-based conflict (Thompson, 1966). A prominent early manifestation of these dynamics was the Swing Riots of 1830-1831 in England, during which agricultural labourers protested declining real wages, rising local tax burdens, and the rapid diffusion of mechanised threshing machines. These uprisings represented one of the earliest large-scale responses to technological displacement and deteriorating labour conditions, highlighting the distributive tensions embedded in early capitalist development (Hobsbawm & Rudé, 1969). More broadly, classical accounts of industrialisation document how mechanisation repeatedly generated labour resistance and uneven social outcomes, demonstrating that tensions between technological progress, employment security, and income distribution constitute a persistent structural feature of capitalist economies rather than a phenomenon unique to the contemporary era (Mantoux, 1928/2013).

Throughout history, as the effects of mechanisation deepened, social movements emerged in various areas. In 18th-century England, following the Industrial Revolution, workers who lost their jobs formed an anti-technological-advancement movement, organising multiple protests. This anti-technology group came to be known as "Luddites," and over time, this name became synonymous with opponents of technology. In Leeds, England, in 1791, workers voiced their grievances by publishing a letter in a local newspaper, complaining about the use of machines in their workplaces, deteriorating living conditions, and rising unemployment (Harrison, 1984: 71-72).

The Second Industrial Revolution emerged at the end of the 19th century and the beginning of the 20th century, and with the discovery of electricity, it transitioned to mass production through assembly lines. The commencement of mass production at Henry Ford's automobile factory is widely regarded as the onset of the Second Industrial Revolution. This event profoundly altered the course of the 20th century. In 1914, despite workers earning an average daily wage of 2-3 dollars, Henry Ford offered them a daily salary of 5 dollars to boost productivity, leading to long queues forming outside the factory from those eager to work at this wage level. Simultaneously, Henry Ford effectively utilised the emerging event to apply the efficient wage theory (Schwab, 2016: 16; Mankiw, 2010: 193).

The Industrial Revolution, often referred to as the Third Industrial Revolution, is characterised as an era of rapid advances in information technology that began after World War II and gained momentum from the 1970s onwards. The Third Industrial Revolution commenced with the production of transistors in 1947. It gained significant momentum in 1968, when machines were first programmed, marking the onset of this era; machine

programming played a substantial role in its development. Key factors influencing the Third Industrial Revolution include computers, the internet, and digital products. In the 1960s, mainframe computers emerged, followed by personal computers in the 1970s and 1980s. Subsequently, with the widespread adoption of the internet in the 1990s, the Third Industrial Revolution became known as the digital revolution or computer revolution. In summary, the Third Industrial Revolution denotes the use of information technologies enabled by digitisation in production (Schwab, 2016: 16; Baines et al., 2009).

Although the term "thinking machines" was first used by British computer scientist and cryptologist Alan Turing in the 1950s, the first person to articulate the concept of "artificial intelligence" (AI) was the computer and cognitive scientist John McCarthy. Artificial intelligence (AI) can be viewed as a tool that assists humans in thinking holistically, analysing data, and improving decision-making by leveraging acquired knowledge. AI is a field that seeks to explain how robots and machines learn and respond in ways that resemble human behaviour. It is primarily designed to create intelligent machines that operate in ways that closely resemble human behaviour in tasks such as learning, speech recognition, problem solving, and planning. Therefore, artificial intelligence encompasses techniques based on machine learning, including the creation of models that combine data, algorithms, and numerous iterations to make predictions about unknowns using existing data, such as neural networks (West & Allen, 2018).

American artificial intelligence and robotics scientist and futurist Martin Ford, in his 2016 book "Rise of the Robots: Technology and the Threat of a Jobless Future," argued that artificial intelligence, robotics, and machine learning have significant and unsettling effects on income inequality, unemployment, and the job cycle. The first question that comes to mind is, "Does artificial intelligence and machine learning create a jobless future for humans?" According to Martin Ford, economists view the idea that machines will displace human workers in the near future and lead to long-term unemployment with skepticism, even disdain. The statement by American economist Milton Friedman further supports this skepticism: "When we look at history, we see that this concern has been baseless so far. Especially in 21st-century America, advancing technology has always propelled society forward" (Ford, 2015: 10).

However, the International Federation of Robotics (IFR) reported that global sales of industrial robots increased by nearly 60% from 2000 to 2012. In 2012, robot sales reached \$28 billion worldwide. By a wide margin, China, the fastest-growing market in the robot industry, saw a 25% increase in robot usage between 2005 and 2012. In 2021, global robot production increased by 10% worldwide to reach 3 million units, and robot sales reached an international level of \$50 billion (Ford, 2015: 21; IFR, 2021: 1).

The defining feature of this century, alongside the Fourth Industrial Revolution, is the belief that machines will replace workers. The assumption that "machines are tools that enhance worker productivity" regarding technological advancements warrants scrutiny. This is because machines are now becoming workers themselves. Another question that arises

from the ongoing influence of technologies on our future is their impact on labour demand. While the increased efficiency brought about by new technologies is expected to raise overall income, the concern is how this increase in revenue will be distributed across skill levels of labour, particularly between low- and high-skilled labour (Özcan, 2019).

This study's main theme is to analyse whether technological developments lead to unemployment and how they affect income distribution. In this context, the study is divided into six sections. The first two sections examine the impact of industrialisation on the labour force, emerging technological theories, and the historical relationship among the labour force, wages, and income distribution. The third section categorises the literature into two parts. First, it discusses theories about technological developments. Second, it addresses the econometric model employed in this study and in related studies. The fourth and fifth sections cover econometric methodology and the results of applications. Finally, the analysis's findings and policy recommendations are presented.

2. Theoretical Framework

Simon Kuznets' 1955 book on inequality and distribution has provided clarity on the subject with a method and sources as transparent as possible. In his 1955 article titled "Economic Growth and Income Inequality," Simon Kuznets introduced what is now known as the Kuznets Inverted U Hypothesis, exploring the relationship between economic growth and income inequality. Kuznets posited that during the early stages of economic growth, income inequality would increase, but would later improve in subsequent years, forming an inverted U-shaped curve (Piketty, 2015: 19; Kuznets, 1955: 4). Later, technological advancements and low-cost borrowing also explained this relationship. In Western societies, economic and social development led to more equitable income distribution as large segments of the population demanded political changes. Initially, development increased income inequality, which, in turn, triggered social changes and the formation of democratic institutions that led to a more equitable income distribution. Kuznets' hypothesis applies to Western societies (Acemoglu & Robinson, 2002: 184).

Nobel laureate American economist Joseph Stiglitz articulated the idea that inequality hampers economic development in a 2013 New York Times article. He stated, "Inequalities stifle economic recovery, and historically, economic growth has been driven by consumer spending. But now the middle class, which used to support this, is weak." Robert Solow, who was awarded the Nobel Prize in Economics in 1987 for his work on the significance of technological advancements in long-term economic growth, also supports J. Stiglitz's viewpoint. Solow asserted that "as income inequality increases, the gap in income distribution widens." He emphasised the importance of consumer demand, stating that "consumer demand is the fundamental factor that fuels innovation and the economy, but in this case, the middle- class workers and middle-class incomes that sustain the continuity of demand are disappearing" (Ford, 2015: 203-204).

Over the past sixty years, our values, norms, and language have undergone significant changes. Yet, one enduring concern remains: the fear of machines. In 1956, Nobel laureate Herbert Simon predicted, "Machines will be capable, within twenty years, of performing any task that a human can do." This foresight suggested that emerging technologies would eventually render many jobs obsolete, extending beyond traditional blue-collar positions in manufacturing. Today, we are surrounded by computers in various settings—homes, offices, banks, and even while ordering food at drive-in restaurants. Despite this, we seldom reflect on the potential job losses linked to these technological advancements. Whereas Professor Simon's fears centred on computers, our current anxiety is more profound: artificial intelligence (AI). AI encompasses the ability of machines to analyse vast amounts of data to make predictions and act in complex, unstructured environments (Ernst et al., 2019).

The literature contains numerous studies examining the impact of technological advancements, such as artificial intelligence, machine learning, and robotics, on income distribution. One of these is the (SBTC) theory, proposed by Katz and Murphy (1992) in the U.S. The theory emphasises how increasing demand for highly skilled labour has contributed to rising wage inequality, favouring university-educated workers. This trend has been observed not only in the U.S. but also in countries such as Japan and South Korea, albeit to varying degrees (Wood, 1998; Acemoglu, 2002). Purnastuti et al. (2013) suggest that differences in the intensity of SBTC's impact on wage disparities may stem from variations in the entry rates of skilled labour into the workforce. Additionally, factors such as inequality levels, minimum wages, industry wages, and other economic investments also influence wage dynamics alongside SBTC (Card & Lemieux, 2001; Autor et al., 2008). The SBTC approach functions as an invisible regulator in the labour market, increasing the skill premium as technological knowledge expands (Acemoglu & Autor, 2011; Grossman & Helpman, 2018). However, because this approach is difficult to measure directly, indirect indicators such as R&D investments are necessary for analysis. Several researchers have demonstrated that increased R&D expenditures correlate with a widening wage gap in favour of workers with higher academic qualifications (Machin & Van Reenen, 1998; Michaelsen, 2011; Violante, 2008; Nogueira & Madaleno, 2023b).

The effects of technological advancements and mechanisation on income distribution, labour markets, employment, wages, and macroeconomic variables remain a subject of ongoing debate. Some argue that automation, exemplified by computer numerical control machinery, industrial robots, and artificial intelligence, may herald widespread job loss. Conversely, others suggest that current automation, akin to previous technological waves, will ultimately boost labour demand, thereby increasing employment and wages. Automation pertains to the development and adoption of new technologies that enable the substitution of capital for labour across various tasks. This process adversely affects the composition of production tasks for labour through a displacement effect, whereby capital assumes roles previously performed by labour. Historically, early innovations during the Industrial Revolution, which automated tasks previously carried out by artisans, and the mechanisation of agriculture, led to significant worker displacement. Today, we observe a similar trend: as industrial robots and other automated machinery displace production jobs,

specialised software and artificial intelligence increasingly replace tasks performed by white-collar workers (Acemoglu & Restrepo, 2019).

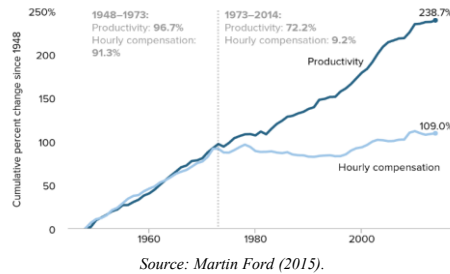
Technological advancements have increased demand for skilled labour, resulting in a sustained rise in skilled workers' wages. As Acemoglu (2002) noted, this phenomenon can be attributed to the faster growth in demand for skilled labour compared to its supply. The development of technologies used in the labour market and the improvement in workers' educational levels have enhanced productivity, leading to a persistent increase in demand for highly skilled labour (Violante, 2008; Acemoglu & Autor, 2011; Murphy & Topel, 2016). Meanwhile, increasing robotisation displaces medium-skilled workers in favour of higher-skilled workers, leading to unemployment and exacerbating labour-market polarisation. As a result, the labour market becomes increasingly polarised, with highly skilled workers at one end and low-skilled workers at the other, causing job opportunities for medium-skilled workers to gradually decline (Nogueira & Madaleno, 2023).

In addition to the destructive effects that long-term unemployment and labour shortages can have on societies and individuals, there will also be an economic cost. Increasing wages will lead to a collapse in the economic cycle that feeds between production and rising consumer spending. Inequality is not only growing in income levels but also in consumption nowadays. Currently, the top 5% of households are responsible for nearly 40% of total expenditures. The fundamental mechanism that places purchasing power in consumers' hands is employment and earnings. If this mechanism continues to erode, there may be insufficient consumers to sustain the growth of mass-market economies (Ford, 2015: 17).

3. The Evolution of Wages, Income, and Inequality from Historical to Modern Times

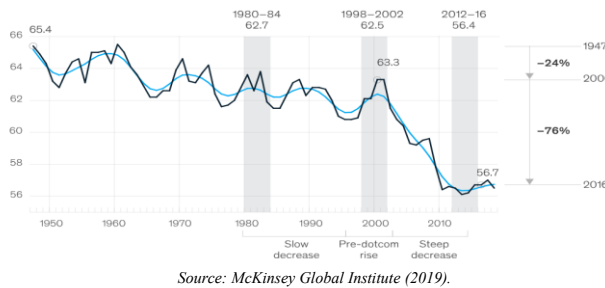
Despite the United States' sustained economic growth over the past decade, low-skilled workers have experienced stagnant average real wages since the 1970s. During the same period, wages for high-skilled workers with bachelor's or master's degrees have increased. Various signs indicate that we may be approaching the end of a favourable economic era. The relationship between increasing productivity and rising wages began to break down in the 1970s. As of 2013, despite a 107% increase in manufacturing workers' productivity, they earned 13% less in real terms than in 1973. The rise in wage inequality has been one of the most significant drivers of overall income inequality since the 1980s (De Santis, 2002: 725-746; Acemoglu & Autor, 2012: 426-463).

Figure: 1
Relationship between Blue-Collar Workers' Productivity and Real Hourly Wages (%) from 1948 to 2011



According to Figure 1, from 1948 to 1973, wage growth closely tracked productivity gains until the OPEC (Organisation of the Petroleum Exporting Countries) oil crisis. Rising prosperity was shared among all individuals contributing to the economy. However, since the mid-1970s, a clear divergence between productivity and wages has become evident. During this period, the returns from economic innovations were almost entirely directed to business owners and entrepreneurs, with workers not benefiting from these gains. Compared with 2000, productivity increased by nearly as much during 2009, comparable to the post-World War II golden era between 1947 and 1973.

Figure: 2
Share of Labour in U.S. National Income from 1947 to 2014 (%)

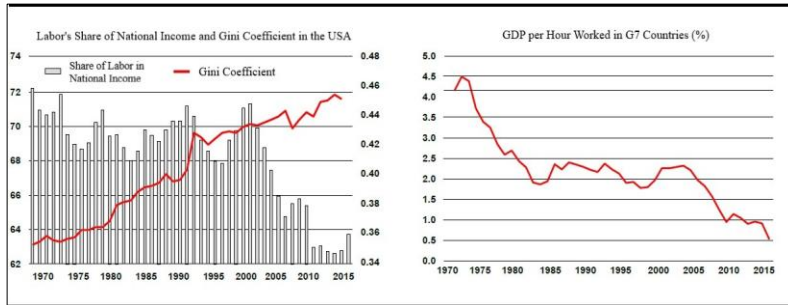


According to Figure 2, the share of labour in U.S. national income remained within a relatively narrow range as predicted by Bowley's Law in the post-war period, but from the mid-1970s onward, Bowley's Law lost validity. It can be observed that the share of labour in GDP sharply declined from this period onwards. This graph becomes even more striking when considering not only blue-collar workers but all labour-supplying employees. If we include the incomes of Wall Street executives, CEOs, movie stars, and athletes (whose incomes increase more than those of other blue-collar workers), or if we imagine that high-

income employees are excluded from this graph, it is evident that the share of labour in national income would drop even more significantly.

As the years progressed, the share of labour in national income declined, while income inequality continued to increase. This situation is depicted in the graphs in Figure 3.

Figure: 3
Share of Labour in National Income and Gini Coefficient from 1970 to 2015 (%)



Source: Bureau of the Census, BEA, OECD, UniCredit Research. <<https://www.unicreditresearch.eu/>>.

According to Figure 3, since the 1970s, the share of labour in total income has steadily declined in the United States, whereas the Gini coefficient, which reflects income inequality, has risen persistently. Similarly, in G7 countries, the wage share of GDP (measured as GDP per hour worked) declined sharply between 1970 and 2015, indicating a reduction in labour's contribution to national income. This trend can be attributed to industrialisation, technological progress, and mechanisation, all of which have contributed to the widening of wage disparities. Moreover, increasing wage inequality may exacerbate unemployment. This notion was explored in the fair wage theory proposed by George Akerlof and Janet Yellen (1990), which suggests that automation enhances the productivity and earnings of high-skilled workers while leaving low-skilled workers' wages relatively stagnant (Akerlof & Yellen, 1990: 255-283).

The concept of labour-replacing technological progress gained prominence with Erik Brynjolfsson and Andrew McAfee's 2011 book "Race Against the Machine," which addressed another agent, the robot. Brynjolfsson and McAfee argued that technological advancements, commonly understood as automation, make some people more innovative, productive, and wealthier, while causing problems such as unemployment and wealth inequality for others (Brynjolfsson & McAfee, 2011).

As technological advancements continue to exacerbate income and consumption inequality worldwide, they will undermine the critical foundation of a prosperous life: broad-based market demand. Consumer markets not only sustain current economic activities but also stimulate innovation (Ford, 2015: 259). Because automating high-skilled labour is more challenging than automating low-skilled labour, high-skilled workers can mitigate the

adverse effects of technological change and turn the situation in their favour by enhancing their skills. However, some individuals may be motivated to pursue higher education if they anticipate gains in their abilities as a result of automation. Nevertheless, not everyone in a heterogeneous society is inclined or able to pursue higher education. Due to skill limitations, some individuals may fail to attain higher education degrees and lag behind others. In this way, research and development (R&D)-driven growth can lead to rising income and wealth inequality from one generation to the next, and to increased involuntary unemployment among low-skilled individuals. In situations where both technology and education are intrinsic, improving the disposable income of low-skilled individuals can be more challenging than improving that of high-skilled workers. To reduce unemployment and address the situation faced by low-skilled labour, policy recommendations such as eliminating income taxes on labour and implementing a robot tax have been suggested (Prettner & Strulik, 2020: 250).

Income redistribution policies aimed at addressing inequality, such as progressive income taxation or taxes on capital inputs, are often justified by concerns over declining labour incomes. However, when educational choices and technological progress are endogenously determined within a general equilibrium framework, such policies may generate unintended medium-term consequences. In particular, higher taxes on income or capital reduce incentives to invest in education, innovation, and productive activities, thereby reducing economic growth and aggregate welfare. As the expected returns to education decline, more individuals choose to remain low-skilled, increasing the supply of low-skilled labour and exerting downward pressure on real wages. Under these conditions, redistribution can raise the disposable income of low-skilled workers only in economies where educational attainment remains largely stagnant (Gasteiger & Prettner, 2020).

Progressive taxation and redistribution policies play a crucial role in combating growing inequality. The situation in which technological advancements are biased against unskilled labour, combined with the "winner-takes-all" principle and increasing monopoly power, has exacerbated income and wealth inequality worldwide. This has underscored the importance of progressive taxation. However, numerous countries have implemented tax cuts. For instance, in the United States, the highest-income groups pay a smaller share of their earnings in taxes than the broader population (Saez & Zucman, 2019).

The most dangerous scenario concerning technological advancement, machine learning, and robotics is the possibility that the world could simultaneously face multiple challenges. When the effects of technological unemployment and climate change exacerbate one another, the benefits of technological innovation can be realised if used appropriately. This requires identifying the impacts on employment and income distribution accurately and taking measures to address potential problems. Humanity's most challenging struggle today is finding our way through complex and seemingly insurmountable issues to leave a future of widespread prosperity and security for the next generations (Ford, 2015: 316).

4. Literature Review

The effects of technological advancements on income distribution are widely discussed in the literature. While technological progress has improved living standards and increased overall prosperity, concerns have grown regarding its implications for income distribution and the future of the labour force. In particular, the continuous evolution of technology raises important questions about how its effects differ across skilled and unskilled labour markets. The literature on the impact of technological advancements on income inequality and labour segmentation includes numerous key studies. For example, Blackburn and Bloom (1987) examined the early effects of technological change on income inequality in the U.S., highlighting how technology tends to favour skilled over unskilled workers. Berman, Bound, and Griliches (1994) showed that technological progress increased the demand for skilled labour in manufacturing, thus contributing to wage inequality.

Bresnahan and Trajtenberg (1995) analysed the role of general-purpose technologies, such as computers, in boosting productivity while also disrupting labour markets and income distribution. Similarly, Autor, Katz, and Krueger (1998) demonstrated that computerisation raised wage inequality by increasing productivity predominantly for high-skilled workers.

Card and DiNardo (2002) questioned the skill-biased technological change (SBTC) hypothesis, noting that wage inequality patterns do not always align with technological shifts. In contrast, Autor, Katz, and Kearney (2006) provided evidence that SBTC has led to labour market polarisation in the U.S., increasing demand for both high- and low-skilled jobs at the expense of middle-skilled positions. Goldin and Katz (2008) explored the historical relationship between technological progress and educational attainment in shaping U.S. income distribution. Van Reenen (2011) offered updated insights into how both technology and trade contributed to wage inequality in the 21st century.

Brynjolfsson and McAfee (2020) argued that digital technologies are transforming economies, with automation displacing middle-skill jobs and amplifying income disparities. Similarly, Piketty (2014) discussed how long-term capital accumulation and technological change fuel inequality. Fitzgerald et al. (2014) analysed how digital transformation and industry restructuring influence income distribution. Murphy and Topel (2016) examined labour market shifts, emphasising how technology favours skilled workers and exacerbates income gaps.

Brynjolfsson and McAfee (2017) further investigated how artificial intelligence (AI) raises demand for high-skilled labour while threatening low-skilled employment, potentially deepening inequality. Acemoglu and Restrepo (2017) provide empirical evidence that robot adoption in the U.S. labour market substitutes for low-skilled labour, thereby increasing income inequality.

Korinek and Stiglitz (2017) explored the implications of AI and labour-replacing technologies on factor prices and policy interventions. Graetz and Michaels (2018)

examined how robot adoption affects income distribution, arguing that while productivity rises, low-skilled jobs are threatened. Stiglitz (2018) discussed the macroeconomic and policy implications of labour-substituting technologies. Ernst et al. (2019) showed that automation exacerbates inequality, particularly in countries with weak labour protections, and emphasised the role of social safety nets.

Bessen (2019) analysed how AI impacts job demand and the resulting income inequality. He emphasised that while demand may rise in some sectors, others may vanish entirely, widening the inequality gap. Levy and Murnane (2013) examined how robotics and automation disproportionately affect low-skilled workers.

Furman and Seamans (2019) explored how AI and machine learning reshape economic structures, increasing demand for high-skilled labour while displacing low-skilled workers. Kreiterling (2023) and Autor (2022) reviewed how economic perspectives on technology and inequality have evolved over four decades. Autor et al. (2020) discussed how SBTC has reduced the labour share of total income and contributed to the rise of "superstar" firms, thereby widening firm-level income inequality. Acemoglu and Restrepo (2020) provided further evidence that robots depress demand for low-skilled workers, thereby contributing to broader income gaps.

Brynjolfsson and McAfee (2020) analysed how SBTC has shaped labour markets and wage structures amid rapid technological change. Ferreira (2020) presented a case study showing how U.S. low-skilled workers have been disproportionately affected by technological progress. International perspectives also enrich the discussion.

Goldin and Katz (2020) explored how historical shifts in educational attainment interact with technological change to drive income inequality. Mindell, the author, and Reynolds (2023) discussed the future of labour under AI, emphasising shifts in skill-based labour and inequality.

Country-specific studies provide further insights. Wang et al. (2023) examined the long-term relationship between financial development, innovation, and urban-rural income inequality in China. Autor (2022) offered a comprehensive reflection on how paradigms in economic thought have evolved in the analysis of technology and inequality. Nogueira and Madaleno (2023a) focused on gender wage inequality driven by SBTC across OECD countries.

Acemoglu and Restrepo (2023) argued that automation has been a significant force behind wage dispersion since the 1980s, particularly harming workers in routine jobs. Lastly, Van Dijck, Poell, and De Waal (2023) investigated how platform-based business models (e.g., Uber, Airbnb) reshape labour markets, fostering new forms of precarious employment and inequality.

Few econometric model studies in the literature directly examine the relationship between the SBTC theory and income distribution. In general, issues related to income

inequality and the labour force have been discussed in the context of technological developments. Prominent findings from these studies indicate that, while technological progress in developed countries does not directly affect income distribution, technological progress in developing countries does have a disruptive effect on income distribution. Other studies have found that technology does not affect income distribution. Some studies conducted using econometric modelling are as follows:

Perugini and Pompei (2009) examined the relationship between technological developments and income inequality across eight sectors in 14 European countries between 1995 and 2001. Their analysis, which used Feasible Generalised Least Squares (FGLS) and the Murphy-Topel correction method, revealed that income inequality follows an inverted U-shaped pattern alongside technological development.

Ciriaci et al. (2016) studied innovative and non-innovative companies in Spain from 2002 to 2009. Using simple regression analysis, they found that innovative companies contributed to employment and economic growth. In contrast, Frey and Osborne (2017) categorised 702 computer-assisted occupations in the U.S. as either skilled or unskilled, then examined the data using logistic regression. Their analysis revealed that approximately 47% of these occupations were at risk of being eliminated.

Kharlamova et al. (2018) examined how technological developments and labour productivity affected income inequality in EU countries from 2007 to 2017. The researchers defined two periods for their study: 2007-2010 and 2010-2017. They then performed clustering and regression analyses. Their results showed that the higher the level of development, the more positive the relationship between technological developments and income distribution. In countries with high income inequality, however, technological developments have both positive and negative effects. Santos et al. (2017) examined the relationship between technological development and income distribution in 41 countries from 1960 to 2003 using a panel data analysis. Their analysis revealed that technological developments increased inequality.

Antonelli and Scellato (2019) employed the two-stage least squares method to examine the relationship between technology choice, firm size, and wage structure among 6,205 Italian firms from 1996 to 2005. The analysis revealed that large companies prefer high-technology and skilled workers, whereas medium and small companies tend to opt for labour-intensive technologies. This situation disrupts income distribution by creating wage disparities across companies.

Carvalho and Guilmi (2020) used data obtained from a simulation-based, stock-flow-consistent agent model. This model employed agents such as households, firms, governments, and banks. The study examined the relationship between income inequality and indebtedness in the context of technology-induced unemployment.

Using the least-squares method, Lewandowski et al. (2022) conducted a regression analysis of survey data from 47 OECD countries on skill-based routine jobs. Their study revealed that the nature of a given job varies across countries depending on the level of technological advancement.

Li (2023) conducted a panel data analysis to determine whether digital transformation increased the labour share in China between 2010 and 2020. The study found that, while digital transformation did not completely replace labour, it increased productivity in some areas. Specifically, digital transformation in China did not lead to increased unemployment but rather contributed positively to income distribution.

Xiao et al. (2024) analysed the relationship between technological development and income inequality in 51 developed and developing countries from 1995 to 2020. They first applied the augmented and average group (CCEMG) estimator to their panel data analysis, then used the augmented average group (AMG) estimator to corroborate their results. Their study revealed that technological development increases income inequality in developed countries.

5. Methodology

The Generalised Method of Moments (GMM) was first introduced by Hansen (1982) as a flexible estimation technique that does not require strong distributional assumptions, making it particularly useful for econometric models with endogeneity issues. Soon after its introduction, Anderson and Hsiao (1982) applied this method to panel data, demonstrating its potential for addressing dynamic panel data models in which traditional estimation techniques, such as Ordinary Least Squares (OLS) or Fixed Effects estimators, can yield biased results.

Building on these initial developments, Arellano and Bond (1991) refined the method by introducing a first-difference GMM estimator, which effectively controls for unobserved heterogeneity and endogeneity in dynamic panel models. This approach became widely used in empirical economics, especially in growth and productivity studies. Further refinements were made by Arellano and Bover (1995) and Blundell and Bond (1998), who developed a system GMM estimator that enhances efficiency by incorporating both level and differenced equations in the estimation process. This advancement significantly improved the reliability of GMM estimators, particularly in small-sample settings and when explanatory variables are persistent.

Over time, these methodological advancements led to the creation of what is now recognised as the dynamic GMM model, a commonly used tool in panel data econometrics. Arellano (2016) later provided a detailed discussion on the development of GMM techniques, highlighting their significance in modern empirical research. Today, dynamic GMM estimators are widely employed in areas such as finance, labour economics, and

macroeconomic modelling, where addressing endogeneity, autocorrelation, and omitted variable bias is essential for producing reliable results.

Dynamic panel data analysis shows that the causal relationships between economic conditions and facts are dynamic and evolve (Topolewski, 2021: 5). Furthermore, as noted by Tatoğlu (2020), dynamic models fall into the category of autoregressive lag models, where past values of the dependent variable act as predictors. Additionally, prior values of the independent variable(s) can also be included in the model as explanatory factors. In the relevant study, the panel model is set up as an autoregressive lagged model, with the structure of the model shown in Equations 1-4.

$$y_{it} = \alpha y_{i,t-1} + x'_{it}\beta + u_{it} \quad (1)$$

$$u_{it} = \mu_i + v_{it} \quad (2)$$

$$E[\mu_i] = E[v_{it}] = E[\mu_i v_{it}] = 0 \quad (3)$$

$$\mu_i \sim IID(0, \sigma_\mu^2) \text{ and } v_{it} \sim IID(0, \sigma_v^2) \quad (4)$$

The subscript i in Equations 1-4 represents units, while the subscript t represents time. x'_{it} , in Equation 1, represents the $K \times 1$ -dimensional independent variable vector. The expression $y_{i,t-1}$ in the same equation symbolises the one-period lagged value of the dependent variable included in the model. It is predicted that the error term v_{it} in the model follows a one-way error component model. Since the variables y_{it} and $y_{i,t-1}$ in Equation 1 are functions of the unit effect, the lagged value of the dependent variable $y_{i,t-1}$ is correlated with the error term u_{it} . In this context, the OLS estimator in Equation 1 cannot yield unbiased and consistent estimates (Baltagi, 2021: 187).

To address the endogeneity that arises when lagged dependent variables are used as independent variables, instrumental variable estimators are employed. In this context, various transformations are applied to control for endogeneity in the GMM model. One such method is the Difference GMM (Differenced GMM), which is obtained by subtracting the previous period's values from the current period's values (Roodman, 2009). If the error terms of the difference model have constant variance and no autocorrelation, the Anderson and Hsiao estimator can be used (Baltagi, 2021: 135-136). However, because the error terms in the first-difference model are typically negatively autocorrelated, it is more appropriate to use the GMM estimator proposed by Arellano and Bond (1991). In the GMM approach, the first-difference model is first transformed using the instrumental-variables matrix, and generalised least squares are then used to estimate the transformed model. Due to these transformations, the first difference model is referred to as the “two-stage instrumental variable estimator” (Tatoğlu, 2020).

The dynamic model is presented in the following equation (5):

$$y_{it} = \delta y_{i,t-1} + u_{it} \quad i = 1, \dots, N; \quad t = 1, \dots, T \quad (5)$$

Since the error term u_{it} is defined as $u_{it} = \mu_i + v_{it}$ in Equation 2, the unit effect must be eliminated, and the first difference must be taken in order to obtain δ as a consistent estimator. This transformation is shown in Equation 6.

$$y_{it} - y_{i,t-1} = \delta(y_{i,t-1} - y_{i,t-2}) + (v_{it} - v_{i,t-1}) \quad (6)$$

$(v_{it} - v_{i,t-1})$ in Equation 6 represents the MA(1) unit root process. For $t=3$, Equation 5 is expressed as follows:

$$y_{i3} - y_{i,2} = \delta(y_{i,2} - y_{i,1}) + (v_{i3} - v_{i,2})$$

Unless v_{it} in Equation 5 shows serial correlation, the instrumental variable $y_{i,1}$ in Equation 6 is highly correlated with $(y_{i,2} - y_{i,1})$ and uncorrelated with $(v_{i3} - v_{i,2})$. When t is evaluated for $t=4$ in Equation 5, in addition to $y_{i,1}$, the variable $y_{i,2}$ is also used as a valid instrumental variable. Arellano and Bond (1991) stated that although the instrumental variables method yields consistent estimates, omitting some instruments reduces efficiency. Therefore, techniques that utilise all instrumental variables are recommended. When the error terms have constant variance, one-stage GMM estimators are recommended; when they have variable variance, two-stage GMM estimators are recommended (Baltagi, 2021: 189).

To address the challenges caused by first-differencing in small T or unbalanced panel data, Arellano and Bover (1995) and Blundell and Bond (1998) introduced the System GMM approach. Because the first-difference transformation entails data and information loss (Roodman, 2009), the forward orthogonal deviation transformation has been proposed as an alternative. In this method, the mean of all available future observations is subtracted from the current-period values, thereby preventing data loss (Tatoğlu, 2020: 138). This forms the basis of the System GMM approach to efficient instrumental-variable estimation. The System GMM estimator yields more efficient results than the first-difference GMM estimator. Furthermore, it enables analysis of models that account for autocorrelation, heteroscedasticity, and endogeneity. This approach requires a minimum of $T=3$ time periods and $N>T$ observations, ensuring efficient estimates under these conditions (Thorpe & Leita, 2012: 126).

The system GMM method served as the empirical approach in the research for analysing dynamic panel data. This method demonstrates robustness against issues such as autocorrelation, heteroskedasticity, and endogeneity, delivering consistent results. Among the estimators for dynamic analysis, the two-stage System GMM is the most widely used. This estimator alleviates problems arising from collinearity among independent variables, increases degrees of freedom, incorporates more observations into the analysis, and ensures greater homogeneity across observations (Drukker, 2008). In light of these attributes, it surpasses the Difference GMM.

6. Data and Econometric Model

This study examines the impact of the share of research and development activities in GDP, the globalisation index, high-technology exports, the human capital index, and the Misery Index on income distribution in 21 upper-middle- and high-income countries from 2008 to 2021. To address the study's dynamic structure and potential endogeneity, reliable and valid results were obtained by employing one-step and two-step system Generalised Method of Moments (GMM) estimators. The equation model utilised in the analysis is as follows: Equation 6:

$$Gini_{it} = \beta_0 + \beta_1 Gini_{i,t-1} + \beta_2 \ln R\&D_{i,t} + \beta_3 \ln GII_{i,t} + \beta_4 \ln HTE_{i,t} + \beta_5 HCI_{i,t} + \beta_6 \ln MI_{i,t} + \beta_7 \ln USKL_{i,t} + \beta_8 \ln SKL_{i,t} + \beta_9 \ln PAT_{i,t} + u_{i,t} \quad (7)$$

$$i = 1 \dots N, t = 1 \dots T$$

Table 1 presents the variables and their descriptions used in the one-step and two-step Generalised Method of Moments estimates.

Table: 1
Description of Variables Used in the Model

Code of Series	Variable Type	Name of Series	Source of the Series	Description of the Series
Gini	Dependent variable	Gini coefficient	World Bank	%
			Standardised World Income Inequality Database (SWIID)	
LR&D	Independent variable	R&D Expenditures on GDP	World Bank	%
LGII	Independent variable	Global Innovation Index	Mendeley Data	%
LHT	Independent variable	High Technology Exports	World Bank	%
HCI	Control variable	Human Capital Index	United Nations Development Program (UNDP)	%
USKL	Control variable	Unskilled Labor*	World Bank	%
LSKL	Control variable	Skilled Workforce**	World Bank	%
LPAT	Control variable	Number of Patents Resident	World Bank	Number
LMI	Control variable	Misery Index	World Bank	%

* The unskilled labour force consists of people between the ages of 15 and 64 with primary education.

** The skilled labour force comprises persons aged 15-64 with higher education.

This study examines how technological developments affect the labour force and the extent to which they influence income distribution, using the GMM method based on SBTC theory. In this context, skilled and unskilled labour, factors influencing technological progress, and socio-economic factors affecting income distribution are analysed. To robustly evaluate income distribution with the Gini coefficient as the dependent variable, our model incorporates four contemporary control variables grounded in recent empirical literature. The Human Capital Index (HCI), which reflects population-level education and health, enhances productivity and reduces inequality; regions with lower HCI consistently exhibit higher Gini coefficients (World Bank, 2024). Unskilled labour and skilled workforce shares are included to capture labour-market polarisation driven by technological change: automation and digitalisation disproportionately benefit skilled workers and displace unskilled workers, thereby widening wage gaps (Perera-Tallo et al., 2024; Gilfoyle, 2023). As a proxy for innovation capacity, the number of resident patents quantifies domestic technological output. Empirical evidence suggests that although innovation can boost high-skilled employment, it tends to favour capital and skilled labour, thereby widening income

disparities (Abbas et al., 2024). Lastly, the Misery Index, which combines inflation and unemployment, measures macroeconomic distress. Recent studies confirm that higher levels of this index are associated with increased inequality, as economic hardship disproportionately affects low-income households (Osuma & Nzimande, 2025). Together, these variables enable a comprehensive assessment of how human capital development, labour market composition, innovation, and macroeconomic pressures mediate the impact of technological change on income distribution.

Table 2 presents the minimum, mean, maximum, kurtosis, and skewness values for both the dependent and independent variables.

Table: 2
Descriptive Statistics for Upper-Middle and High-Income Countries

Variable	Obs.	Mean	SD	Min	Max	Skew	Kurt.
Gini	291	0.3733402	0.0989457	25	69	1.170723	4.038992
LR&D	291	0.3674059	0.8013432	-2.525729	1.316408	-1.246189	4.576965
LGI	291	4.287936	0.2479744	3.234749	4.562263	-.8996689	3.06693
LHT	291	2.974051	1.574333	0.0861777	6.848334	.3738461	2.356235
HCI	291	0.8584192	0.0887898	0.654	0.961	-.7320914	2.139515
LMI	291	2.176431	0.8844166	-3.912023	4.166665	-2.056991	13.6182
LPAT	290	8.664732	2.054298	5.955837	14.17084	1.09365	3.124377
USKL	291	103.4864	5.653309	82.21154	123.7547	1.100025	4.924272
LSKL	291	4.127978	0.4293876	2.808318	4.784845	-1.233669	4.053628

Mean: Average, SD: Standard deviation, Min: Minimum, Max: Maximum, Skew: Skewness, Kurt: Kurtosis.

In Table 2, the number of observations used in the analysis is 291. Based on this data, USKL exhibited the highest standard deviation, while Gini had the lowest. The skewness coefficient showed that LR&D, LGI, HCI, and LMI are left-skewed, whereas Gini, LHT, LPAT, and USKL are right-skewed. The positive kurtosis coefficients for all variables suggest that the distributions are concentrated at the centre and exhibit sharp peaks rather than being normally distributed.

7. Analysis Results

The analysis focuses on middle- to high-income countries and presents the findings from the Generalised Method of Moments (GMM) estimator, using both single- and two-stage systems, in Table 3.

Table: 3
One-Stage System GMM and Two-Stage System GMM Analysis Results

One-Stage System GMM			Two-Stage System GMM		
Variables	Coefficient	P>z	Coefficient	P>z	
Gini L1.	0.7175824	0.000	0.7866366	0.000	
LR&D	-0.0897766	0.014	-0.0762944	0.001	
LGI	-0.0657204	0.127	-0.0189779	0.657	
LHT	-0.0415433	0.010	-0.028814	0.040	
HCI	1.67775	0.005	1.23239	0.001	
LMI	0.0260696	0.034	0.0113593	0.471	
LPAT	0.0412402	0.016	0.0297915	0.025	
USKL	-0.0042935	0.014	-0.0040301	0.021	
LSKL	-0.2089431	0.032	-0.1542552	0.007	
Number of observations: 262					
Number of Groups: 21					
Number of Vehicle Variables: 19					
Wald (χ^2) = 48867.54 Prob> chi2 = 0.0000			Wald (χ^2) = 24917.11 Prob> chi2 = 0.0000		
AR (1) z = -3.17 Pr> z = 0.002 AR (2) z = 1.16 Pr> z = 0.244			AR (1) z = -3.21 Pr> z = 0.001 AR (2) z = 1.60 Pr> z = 0.110		
Sargan test chi2(10) = 7.35 Prob> chi2 = 0.692			Chi2(10) = 7.35 Prob> chi2 = 0.692		
Hansen Test			Chi2(10)=10.96Prob>chi2=0.278		

The results presented in Table 3 show the effects of the lagged income inequality coefficient on various economic and social indicators. According to the findings from the one- and two-step system GMM analyses, a Wald test statistic p-value < 0.05 indicates that the model is statistically significant. First, the AR(1) autocorrelation test shows the presence of first-order autocorrelation, while the AR(2) test results indicate no second-order autocorrelation. This suggests that only first-order autocorrelation should be considered in the model. The Sargan test results, which assess the instruments' validity, indicate that the p-value exceeds 0.005, supporting their validity. According to the one-step system GMM estimation, the lagged value of the Gini coefficient (L1) significantly affects the current-period Gini coefficient. Accordingly, holding other variables constant, a one-unit increase in the lagged Gini coefficient is associated with a 0.71-point increase in income inequality in the current period. The analysis findings show that the share of R&D expenditures in GDP (LR&D), high-tech exports (LHT), human capital index (HCI), the number of patents held by residents (LPAT), skilled labour (LSKL), and unskilled labour (USKL) have a statistically significant impact on the income inequality coefficient. However, the global innovation index (LGI) doesn't have a statistically significant effect, as its p-value exceeds 0.05. According to the model's coefficient interpretation, holding other variables constant, a 1% increase in the share of R&D expenditures in GDP reduces the Gini coefficient by approximately 0.009 points. A 1% increase in high-tech exports reduces the Gini coefficient by 0.0041 points. A one-point increase in the human capital index increases the Gini coefficient by 1.67 points. A 1% increase in the misery index increases the Gini coefficient by 0.0026 points. A 1% increase in the number of patents raises the Gini coefficient by 0.004 points. A 1% increase in skilled labour decreases the Gini coefficient by 0.002 points. Although unskilled labour is statistically significant, it does not significantly impact the Gini coefficient.

According to the two-step system GMM estimation, the lagged value of the Gini coefficient (L1) has a significant effect on the Gini coefficient. Thus, a one-unit increase in the lagged Gini coefficient increases the current period's Gini coefficient by 0.78 points. The analysis findings show that the share of R&D expenditures in GDP (LR&D), high-tech exports (LHT), human capital index (HCI), the number of patents held by residents (LPAT), skilled labour (LSKL), and unskilled labour (USKL) have a statistically significant impact on income inequality. However, the global innovation index (LGI) and the misery index (LMI) do not have statistically significant effects, as their p-values exceed 0.05. Based on the coefficient interpretation, holding other variables constant, a 1% increase in the share of R&D expenditures in GDP reduces the Gini coefficient by approximately 0.008 points. A 1% increase in high-tech exports reduces the Gini coefficient by around 0.003 points. A one-point increase in the human capital index raises the Gini coefficient by 1.23 points. A 1% increase in the number of patents increases the Gini coefficient by 0.001 points. Each 1% increase in skilled labour decreases the Gini coefficient by 0.001 points. These results suggest that significant economic indicators, such as innovation and technology exports, which are often discussed in the economic literature, have adverse effects on income inequality.

8. Conclusion

Advances in artificial intelligence, robotics, and machine learning have rapidly transcended national borders, thereby influencing the global economy in two distinct ways. First, technological advancements not only enhance national income and economic competitiveness but also play a balancing role in increasing human capital and in the distribution of per capita income. Second, these advancements have heightened the risk of supply-side issues, unemployment, and inflationary pressures in national economies. In particular, concerns about job availability for workers and employers' demand for skilled labour have escalated in labour markets. This study employs a one-step and a two-step GMM model to assess the impact of technological advancements, fundamental human capital indices, and skilled labour on income inequality. The findings indicate that high-tech exports, the share of R&D expenditures in GDP, and variables related to skilled and unskilled labour reduce income inequality. At the same time, the human capital index and patent counts increase. The misery index is significant only in the one-step GMM model, whereas the global innovation index has no significant effect in either model.

In light of these findings, the implementation of inclusive labour market policies is essential to mitigate the potential inequality effects of technological advancements. Expanding vocational training and reskilling programs for low-skilled workers would enhance both labour market flexibility and the balance of income distribution. To further strengthen the inequality-reducing impacts of high-tech exports and R&D expenditures, tax incentives and financial support should be directed toward small and medium-sized enterprises operating in these sectors. Furthermore, to limit the inequality-enhancing effects of patents, a balanced legal framework should be established, one that safeguards intellectual

property rights without hindering competition while promoting wider access to innovative activities through mechanisms such as patent pools and licensing agreements.

Although technological advancements are generally expected to increase income inequality by raising the demand for skilled labour, this study presents a contrasting finding. The results indicate that when both skilled and unskilled labour increase simultaneously, income inequality tends to decline. This suggests that an inclusive expansion of the labour market, enabling the participation of individuals with varying skill levels, may contribute to a more balanced income distribution. These results highlight the importance of social and economic policies in preventing the disparities that technological advancements may create, particularly in middle- and high-income countries. Notably, the findings align with measures undertaken by high-income countries to mitigate income disparities, as reported in the IMF's *The Future of Jobs Report 2023* (Di Battista et al., 2023). When considering developing and developed countries on a broader scale, some measures that could minimize income inequality arising from technological advancements include providing training to unskilled labor to integrate them into the skilled workforce, securing the rights of unskilled workers through legal regulations, reviewing minimum wage policies, collaborating with employers through unions to ensure fair income distribution, implementing progressive tax policies to support the development of unskilled workers by taxing high-income companies at higher rates, offering opportunities to prevent skilled labor from emigrating to other countries, and improving work conditions compatible with technology to enhance productivity. Another important finding is that an increase in the human capital index is associated with greater income inequality. Generally, a negative relationship is expected between human capital and income inequality. However, two factors can alter this relationship. First, according to Lee and Lee (2018) and Hanushek and Woessmann (2023), education is a fundamental component of human capital. In this context, even if the duration of schooling is the same across countries, the quality of education provided may differ. This does not reduce income inequality among countries. Another critical factor is the level of schooling, as noted by Castelló-Climent and Doménech (2021). Increased schooling at the primary level does not significantly affect income inequality. However, higher education, where skilled-level competencies are acquired, can reduce income inequality. Lastly, the positive relationship between patent counts and income inequality suggests that companies acquiring patents may monopolise production processes, thereby contributing to income disparities. One way to prevent monopolisation is to establish a legal framework that protects both other producers and the original producer. In summary, while increasing the share of R&D expenditures in GDP and high-tech exports can help reduce income inequality, unchecked growth in patent numbers and monopolistic tendencies may exacerbate income disparities. Therefore, implementing social and economic policies that accompany technological advancements is essential for mitigating income inequality in middle- and high-income countries.

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Revisiting the Kuznets Hypothesis: The Role of HDI and GDP in High and Upper-Middle Income Countries (1990-2018) Using Panel Data¹

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Kuznets Hipotezinin Yeniden Değerlendirilmesi: Panel Veri Analizleri ile Yüksek ve Üst-Orta Gelirli Ülkelerde İGE ve GSYH'nin Rolü (1990-2018)²

Abstract

This study examines the Kuznets hypothesis in high and upper-middle-income countries from 1990 to 2018 using panel data analysis. Income inequality dynamics are analysed with two economic development indicators: the Human Development Index (HDI) and Gross Domestic Product (GDP) per capita. Two models are built to conduct cointegration analysis and estimate long-run coefficients. The Westerlund and Edgerton (2007) test assesses cointegration, while the Augmented Mean Group (AMG) approach estimates long-term coefficients. Findings indicate a pronounced U-shaped relationship in both country groups and suggest that HDI explains income inequality more effectively than GDP per capita.

Keywords : Kuznets Hypothesis, HDI, Income Inequality, Economic Development.

JEL Classification Codes : O11, O15.

Öz

Bu çalışma, 1990-2018 döneminde yüksek ve üst-orta gelirli ülkelerde Kuznets hipotezini panel veri analizi ile incelemektedir. Gelir eşitsizliği dinamikleri, İnsani Gelişme Endeksi (HDI) ve kişi başına Gayri Safi Yurt İçi Hasıla (GSYİH) olmak üzere iki ekonomik kalkınma göstergesiyle analiz edilmiştir. Eşbütünleşme analizi ve uzun dönem katsayılarını tahmin etmek için iki model oluşturulmuştur. Westerlund ve Edgerton (2007) testi eşbütünleşmeyi, Genişletilmiş Ortalama Grup (AMG) yaklaşımı ise uzun dönem katsayılarını tahmin etmektedir. Bulgular, her iki ülke grubunda

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belirgin bir U şeklinde ilişki olduğunu ve HDI'nin gelir eşitsizliğini GSYİH'den daha iyi açıkladığını göstermektedir.

Anahtar Sözcükler : Kuznets Hipotezi, İGE, Gelir Eşitsizliği, İktisadi Gelişme.

1. Introduction

From the twentieth century to the present, the world has transformed from a bipolar world order to one dominated by a single country. This shift has increasingly widened income distribution inequalities between countries, and economics has fallen short in finding solutions to this issue (Gönel, 2016: 2). To discuss the development and welfare increase of a country, income distribution should also be focused on. When per capita income rises significantly in a country, but only a small portion of the population utilises this increase while the living standards of the remaining population do not improve, economic growth may occur, but economic development cannot be claimed (Kaynak, 2009: 69).

While many factors lead to poverty, one of the foremost reasons is income inequality. The concentration of income in specific segments of the population results in a division between a group living in wealth and prosperity and another group living in poverty and misery. Income distribution inequalities are not merely an economic concern but also a fundamental issue for social cohesion and political stability. Income inequality limits individuals' access to essential services such as education, healthcare, and housing, reduces social mobility, and adversely impacts long-term sustainable development. Therefore, economic policies aimed at reducing income inequality should be aligned not only with growth objectives but also with efforts to enhance social welfare. The primary objective of economic policies is to increase the economic welfare level of society. Changes in the welfare level of society can be analysed through shifts in income distribution and poverty during economic development. Distribution of income and poverty data in a country can serve as important indicators for assessing the country's welfare level and changes in welfare over time (Çalışkan, 2010: 90-91).

Determining the level of income distribution and the factors that affect it can inform policies aimed at achieving fair income distribution and the country's development goals. Many studies have investigated the factors that affect and are related to inequalities in income distribution. One of these studies was conducted by Simon Kuznets in 1955. Kuznets (1955) indicated that in the initial phases of economic development, as a result of the economic structural change from agriculture to industry with industrial and urban transformation, the difference between rural and urban incomes will increase and income inequality will increase, but in later stages, as these processes mature, inequality will decrease. The association between inequality indicators, such as the Gini coefficient, and per capita production level is defined as the "Inverted-U" or "Kuznets Curve" (Barro, 2000: 9). Kuznets (1955) stated that "this work is perhaps based on 5% empirical information and 95% speculation" which opened the door for subsequent studies to examine the validity of

these assumptions. In subsequent years, numerous studies investigated the accuracy of the Kuznets hypothesis, and this research continues today.

In most studies testing the Kuznets hypothesis (Ram, 1991; Tribble, 1996; Oczki et al., 2017), per capita income is used as a proxy for economic development. However, economic development is defined not only by per capita income but also by increases in welfare in economic, social, and cultural terms (Kaynak, 2009; Berber, 2015; Han & Kaya, 2015). In this context, it is essential to assess the empirical support for the Kuznets hypothesis using a broader welfare measure, such as the HDI, rather than relying solely on per capita income. This is because some economists argue that per capita national income is insufficient to represent development comprehensively (Hopkins, 1991; Dynan & Sheiner, 2018; Costanza et al., 2009). According to them, per capita national income fails to capture the distribution of economic benefits adequately. It does not reflect economic and social issues such as poverty, malnutrition, illiteracy, and limited personal and social freedom, all of which contribute to low living standards. Since the 1960s, alternative measures of economic development, referred to as "social indicators," have gained popularity. The Human Development Report (HDR), launched by the United Nations Development Program (UNDP) in 1990, is one of the leading indicators aiming to measure development based on social criteria (Todaro, 1992: 359). Since 1990, the HDI has been calculated in the HDR developed by the UNDP. HDI is a multidimensional index that captures human development through three main aspects: life expectancy at birth as an indicator of health, mean and expected years of schooling as a measure of education, and gross domestic product as a representation of living standards (UNDP, 2018: 1).

In this study, to investigate the empirical support for the Kuznets hypothesis, two country groups, namely "High Income Group" and "Upper Middle Income Group", classified by the World Bank based on the per capita income level, are considered. To test the Kuznets Hypothesis, two models were constructed using data from 1990 to 2018. In the first model, GDP data are used as a proxy for economic development, whereas in the second, HDI data are used. Therefore, this study aims to assess the validity of the hypothesis using a different economic development indicator across countries in two income groups.

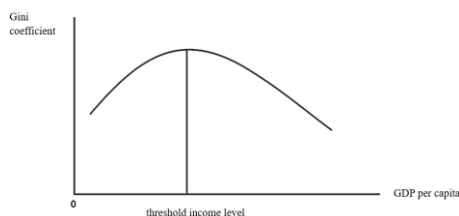
2. Kuznets Hypothesis

The link between economic development and income inequality has been analysed in the literature for many years. One of these studies was conducted by Simon Kuznets in 1955. Kuznets (1955), using data from Germany, the UK and the US, proposed that income inequality initially rises during the early stages of economic development but declines in the later phases. The link between an indicator of inequality and per capita production level is defined as the "Inverted-U" or "Kuznets Curve" (Barro, 2000: 9).

The Kuznets Curve is depicted in Figure 1. The vertical axis represents income inequality, and the horizontal axis shows per capita income as a proxy for economic development. In the initial stages of economic development, income inequality continues to

rise until it peaks. After a certain income threshold, however, income inequality declines as economic development progresses. According to Kuznets (1955), two factors influence income inequality. The first concerns the savings intensity of high-income groups. During the initial phases of economic development, savings are concentrated among the upper-income groups, while the total savings of lower-income groups are nearly zero. Due to capital scarcity in the early stages, returns on savings are high. As a result, the wealth of high-income groups increases further, exacerbating inequality. However, in the later stages of economic development, as capital becomes more abundant, lower-income groups also begin to save. This results in a decline in income inequality (Kuznets, 1955: 7).

Figure: 1
Kuznets Curve



Source: Cypher & Dietz, 2009: 58.

The second factor relates to the industrial structure of income distribution. In developed countries, the growth process is followed by the transition from agriculture to industrialisation and urbanisation. Per capita income is typically lower in rural areas than in urban areas. Furthermore, inequality within rural populations is lower than in urban populations. Thus, *ceteris paribus*, the increasing share of urban populations makes income distribution more unequal. During economic growth, as per capita productivity in the industrial sector grows faster than in agriculture, the relative income gap between rural and urban populations widens. Thus, inequality in overall income distribution increases (Kuznets, 1955: 7-17). However, as the agricultural sector's share of the economy declines amid ongoing urbanisation, poorer agricultural workers transition to the comparatively wealthier secondary sector. Additionally, the shrinking labour force in the agricultural sector leads to a rise in relative wages within the industry. When all these factors converge to reduce income inequality, the link between per capita production level and inequality tends to become negative again at the higher levels of development (Barro, 2000: 9). As economies progress to advanced stages, the increasing share of industrial sector in the economy leads to a rise in both the income and population shares of the industrial sector, ultimately resulting in a decline in income inequality (Kuznets, 1955: 17).

Kuznets' assumption is based on a migration-driven model in which a population with lower inequality transitions from agriculture to industry, characterised by significantly higher average income and inequality. This implies that, in the early stages of economic development, the movement of the labour force from low-wage, agriculturally dominated

rural areas to the higher-wage industrial sector tends to increase inequality between the two sectors. However, at higher levels of development, as the excess and low-productivity labour in agriculture is absorbed, total income grows, making sectors more productive and reducing inequalities (Hossain, 2013: 198).

The relationship proposed by Kuznets began to lose its validity in many developed countries in the 1960s and 1970s. Since the 1960s, income inequality has risen in many developed countries alongside increases in per capita income. One reason for this is attributed to the transition from manufacturing to services (Gallet & Gallet, 2004: 44). Milanovic (2018) states that since the 1980s, the downward portion of the inverted-U curve, in which inequality declines as income increases, has started to rise again, describing this phenomenon as "Kuznets Waves."

As Kuznets also indicated, Milanovic (2018: 58) argues that structural changes and urbanisation following the Industrial Revolution in wealthy countries led to increasing inequality, which peaked by the late 19th or early 20th century. From this peak, inequality has begun to decline, as Kuznets suggested. Milanovic highlights the presence of certain "benign" and "malign" forces that reduce inequality. Benign forces include the supply of an educated workforce, demands for equality, and declining returns on capital, whereas wars represent malign forces. He argues that the troops that reduced inequality ended after World War I, marking this period as the beginning of the "Second Kuznets Curve." The 1980s witnessed a new technological revolution characterised by globalisation, advances in information technology, and the emergence of diverse service-sector professions, which led to increasingly significant income disparities. The rise in inequality during this period was partly due to technological change, which increased the demand for skilled labour, thereby widening income and wage gaps (Milanovic, 2018: 58-59). The increase in inequality, as in the first technological revolution, results from the replacement of labour by capital through technological innovations and shifts in the workforce between sectors. During the first Kuznets wave, labour shifted from agriculture to industry, whereas in the second Kuznets wave, the transition occurred from industry to services. Compared with the industrial sector, the service sector is more heterogeneous and exhibits greater wage disparities. As a consequence, income inequality rises (Milanovic, 2018: 98-111).

3. Empirical Literature

Numerous studies tested the hypothesis proposed by Kuznets (1955) in the years that followed. The relevant literature shows studies supporting inverted-U hypothesis (Papanek & Kyn, 1986; Jha, 1996; List & Gallet, 1999; Oyvat, 2015; Lazar & Litan, 2023), studies that did not reach findings supporting the hypothesis (Matyas et al., 1998), studies suggesting a U-shaped relationship contrary to the inverted-U hypothesis (Ram, 1991; Tokatlıoğlu & Atan, 2007; Gallet & Gallet, 2004; Oczki et al., 2017; Çakmak & Tosun, 2017; Zungu et al. 2021), and studies suggesting an N or S shape relationship (Tribble, 1996; Akalin et al., 2018; Sinha, 2005). Studies indicate that the relationship between economic progress and income inequality is inverted-N or horizontal-S. The horizontal-S curve

suggests that the first turning point in the trajectory of income inequality during economic development aligns with the transition from agriculture to manufacturing, whereas the second corresponds to a structural shift from manufacturing to services. This curve indicates that the Kuznets (1955) process will continue, and that at advanced stages of economic development, income distribution may deteriorate again (Sinha, 2005: 371). The inverted-N curve describes a situation in which economic growth initially improves income distribution, then worsens after reaching a certain threshold, and improves again after surpassing another threshold (Akalin et al., 2018: 73). In these studies, GDP data were used as a proxy for economic development. In addition, further studies employ GDP as the proxy of economic development (Mbaku, 1997; Theyson & Heller, 2015; Ayhan, 2018). These studies examined the hypothesis at the level of a single country, within a specific group of countries over a particular time period, or through cross-sectional analysis. This section provides a comprehensive review of the related literature. Studies in the literature are categorised into two groups: those that traditionally test the hypothesis using GDP and those that employ a more comprehensive development indicator. Studies that analyse the Kuznets hypothesis using GDP as a measure of economic development are presented in Table 1.

Table: 1
Studies Analysing the Kuznets Hypothesis with GDP per capita

Author(s)	Country/ Countries	Period	Methods	Result
Papanek & Kyn (1986)	83 countries	1955-1971	OLS	Inequality increases with per capita income and decreases with subsequent increases in revenue; however, the empirical evidence is weak.
Jha (1996)	56 countries	1978-1992	OLS	Results indicate that the Kuznets hypothesis holds.
Dawson (1997)	36 less developed countries	The period is not mentioned.	OLS	Results support Kuznets's hypothesis.
Oyvatt (2015)	106 countries	1985-2005	2SLS	The inverted-U relationship holds only in developed economies.
List & Gallet (1999)	71 high and low-income countries	1961-1992	OLS, Fixed and Random Effect Models	The inverted-U hypothesis holds for low-income countries. Inequality and development exhibit a positive correlation in high-income countries.
Melikhova & Cizek (2014)	145 countries	1979-2009	Linear Regression	In countries with low levels of social welfare, the inverted-U curve is valid.
Özdemir et al., (2011)	15 transition economies	1992-2007	Fixed Effects Model	These countries were in the initial phase of the Kuznets curve
Topuz & Dağdemir (2016)	94 developed and developing countries	1995-2011	GMM	Their findings provided support for the inverted-U
Akinci & Akinci (2016)	Türkiye	1960-2014	Enders-Siklos Cointegration Test, Toda-Yamamoto causality test	The inverted-U hypothesis holds.
Günaydın & Çetin (2015)	Türkiye	1970-2006	VECM	The inverted-U hypothesis holds.
Ram (1991)	U.S.	1947 and 1988	OLS	Their results showed a U relationship.
Gallet & Gallet (2004)	U.S.	1947-1987	Gradual Switching regression	Their results showed a U relationship.
Çakmak & Tosun (2017)	11 middle-income and 14 high-income countries	2002-2013	Fixed Effects Model	Their results showed a U relationship.
Oczki et al. (2017)	European Union countries	2004-2013	LSDV and GLS	Their results showed a U relationship.
Ram (1997)	19 developed countries	1950-1992	Fixed Effects Model	Their results showed a U relationship.
Tribble (1996)	U.S.	1947-1990	OLS	The Kuznets curve was S-shaped in the country. Inequality increased with the transition to the service sector.
Sinha (2005)	India	1981-1998	OLS	The Kuznets curve was S-shaped in the country

Akalın et al. (2018)	Türkiye	1984-2011	ARDL	Their results showed inverted-U and inverted-N relationships.
Matyas et al. (1998)	47 and 62 countries	1970-1993	Fixed and Random Effect Models	They did not find strong evidence
Riveros-Gavilanes et al. (2022)	A total of 151 countries from the regions of East Asia and the Pacific, Europe and Central Asia, Latin America and the Caribbean, the Middle East and North Africa, North America, South Asia, and Sub-Saharan Africa.	1990-2019	Semiparametric regression	The Kuznets hypothesis holds in East Asia and the Pacific, and in Latin America and the Caribbean. In Sub-Saharan Africa, South Asia, and Europe and Central Asia, the data show an N-shaped pattern. In the Middle East and North Africa, a negative correlation is observed, whereas in North America, inequality increases with higher per capita income.
Zungu et al. (2021)	13 Southern African Development Community (SADC) countries	1990-2015	Panel smooth transition regression	A U-shaped relationship is observed, contradicting the Kuznets hypothesis.

The economic development process, which encompasses multiple dimensions, is captured by per capita income in studies investigating the Kuznets hypothesis. However, economic development is defined as progress in per capita income and in social areas such as education and health. HDI measures economic development using an index comprising per capita income, education, and health. In the recent literature testing the Kuznets hypothesis, there are a few studies that have used HDI as a proxy for development (Theyson & Heller, 2015; Mbaku, 1997; Martínez-Navarro et al., 2022; Martínez-Navarro & Guarnido-Rueda, 2020; Tarakcioğlu Altınay et al., 2024; Kılıç & Gökçeli, 2024). Studies that analyse the Kuznets hypothesis using alternative measures of economic development are presented in Table 2.

Table: 2
Studies Analysing the Kuznets Hypothesis with An Alternative Measure of Economic Development

Author(s)	Country/ Countries	Period	Methods	Result
Mbaku (1997)	58 countries	1970	Multivariate Analysis Method	This study, using both per capita income and HDI and Physical Quality of Life Index as alternative measures of economic development, confirmed the Kuznets hypothesis.
Theyson & Heller (2015)	147 countries	1992-2007	OLS, Fixed Effect model	The study's findings indicate that per capita GDP and the GDP Index exhibit an inverted-U-shaped relationship, whereas the HDI, Life Expectancy Index, and Education Index exhibit an S-shaped relationship. Furthermore, it is emphasised that the shape of the curve depends on the choice of development indicator.
Ayhan (2018)	45 countries	1995-2014	Driscoll-Kraay estimator	The study's results showed a U-shaped relationship. Moreover, his findings indicate that the HDI-based model has greater explanatory power than the GDP-based model.
Martínez-Navarro & Guarnido-Rueda (2020)	89 developing and developed countries	1990-2017	GMM	The findings confirmed the Kuznets hypothesis. The relationship described by Kuznets is also valid when a variable other than GDP is used as a measure of development, such as the HDI or the share of agriculture in GDP.
Martínez-Navarro et al. (2022)	45 African countries	1975-2019	PMG	The findings confirmed the Kuznets hypothesis in the model constructed using GDP across the countries considered; however, they did not obtain a significant result regarding the hypothesis's validity in the model built using the HDI.
Tarakcioğlu Altınay et al. (2024)	MIST countries	1990-2022	Panel ARDL model	The results indicate that economic development contributes to a decline in income inequality.
Kılıç & Gökçeli (2024)	Brazil and Ireland	1990-2020	ARDL model	The study's findings demonstrate that the Human Development Index has contributed to a reduction in income distribution inequality in both Brazil and Ireland.

In the literature, the econometric methods used to test the Kuznets hypothesis, the diversity of income inequality indicators, and the diversity of countries and country groups considered have yielded different results. Moreover, the choice of economic development indicators used to test the hypothesis plays an essential role in shaping the results. While most of the literature relies on GDP as the primary economic development indicator, studies that incorporate broader development indicators, such as the HDI, may yield different findings. In this context, the methodological heterogeneity of the literature provides valuable insights into how the hypothesis unfolds in various economic contexts and periods.

4. Data & Methodology

Consistent with the study's objective, a cointegration test was conducted to examine the long-run relationship among the variables. To investigate cointegration, it is essential to determine the stationarity properties of the series. Therefore, following the preliminary tests, such as cross-sectional dependency and homogeneity tests used to determine the appropriate econometric method, the stationarity levels of the series were examined using the unit root test. Cross-sectional dependency, defined as the correlation between the residuals estimated for each unit in a panel data model (Yerdelen-Tatoğlu, 2020a: 3), can arise from cross-sectional correlations, economic distance, and common unobservable shocks (Sarafidis et al., 2009: 149). Ignoring cross-sectional dependence in panel data can lead to critical errors (Baltagi et al., 2016: 1).

One of the pioneering studies in the literature testing cross-sectional dependency is based on the LM (Lagrange Multipliers) test introduced by Breusch & Pagan (1980) (Pesaran, 2004: 4). CD_{LM1} test is valid in cases where the time dimension is sufficiently large. The unit dimension is relatively small (Pesaran, 2004: 5). To address this limitation of the LM test by Breusch & Pagan (1980), Pesaran (2004) proposed a test known as CD_{LM2} test. Pesaran's (2004) CD test yields effective results under conditions where the time dimension is larger than the unit dimension ($T > N$). The null hypothesis for both tests is that the variables are cross-sectionally independent. Furthermore, the homogeneity or heterogeneity of the units in econometric models is crucial for determining the appropriate methods. Based on Swamy's (1970) study, Pesaran and Yamagata (2008) developed the $\tilde{A}$ and $\tilde{A}_{adj}$ tests under the null hypothesis that the slope coefficients are homogeneous.

This study employs the PANIC (Panel Analysis of Nonstationarity in Idiosyncratic and Common components) unit root test, accounting for cross-sectional dependency. The PANIC test serves two purposes. First, it determines whether nonstationarity arises from a common source or from a particular source. Second, it develops valid pooled tests for panel data when the units are interconnected (Bai & Ng, 2004: 1127). In their study, Bai and Ng (2004) propose combining the unit-level probability values and aggregating the results of individual ADF tests on distorted data (Baltagi, 2005: 248-249). In addition, examined the cointegration relationship using Westerlund & Edgerton's (2007) test, which accommodates cross-section dependence and heterogeneity. This test is based on the LM test of McCoskey & Kao (1998). It is represented in Equation 1.

$$y_{it} = \alpha_i + x'_{it}\beta_i + z_{it} \tag{1}$$

$$z_{it} = u_{it} + v_{it} \tag{2}$$

$$v_{it} = \sum_{j=i}^t \eta_{ij} \tag{3}$$

$$w_{it} = \sum_{j=0}^{\infty} \alpha_{ij}e_{it-j} \tag{4}$$

Here, $t=1,\dots, T$ and $i=1,\dots,N$ represent time series and cross-sectional units, respectively; η_{ij} is a random variable that follows an independent and identically distributed process with a zero mean and a finite variance. The vector x_{it} includes K -dimensional regressors, while z_{it} denotes the error term. The vector $w_{it} = (u_{it}, \Delta x'_{it})'$ provided in Equation 4 represents a satisfactory linear process (Westerlund & Edgerton, 2007: 186). To avoid misleading results, Westerlund & Edgerton (2007) recommend using bootstrap critical values for the test. The current test examines the cointegration relationship among the variables under the null hypothesis of cointegration (Westerlund & Edgerton, 2007: 187).

A significant limitation of cointegration tests is their inability to indicate the nature of the relationship between independent variables and the dependent variable. For this reason, the Augmented Mean Group (AMG) estimator was used to examine the validity of the Kuznets curve. The primary reason for choosing this estimator is the heterogeneous structure of the models considered in this study and the presence of cross-sectional dependency. This estimator, developed by Eberhardt and Bond (2009), accounts for cross-sectional correlation by employing heterogeneous estimators, SUR-type estimators, or common factors, thereby yielding efficient estimates (Yerdelen-Tatoğlu, 2020b: 72).

This study investigates the validity of the Kuznets hypothesis, with countries classified by the World Bank's 2021 income classification (Hamadeh et al., 2021) into two groups: High Income and Upper Middle Income. Accordingly, the analysis includes 22 High-Income and 15 Upper Middle-Income countries, for which data are available for the 1990-2018 period. The complete list of these countries is shown in Table 3.

Table: 3
Countries Examined in the Study

High Income Levels		Upper-middle Income Levels
Australia	Poland	Armenia
Austria	Portugal	Brazil
Canada	Slovenia	Bulgaria
Cyprus	Spain	Columbia
Czech Republic	Sweden	Costa Rica
Denmark	United Kingdom	Dominican Republic
Finland	Uruguay	Kazakhstan
Germany		Mexico
Greece		Panama
Ireland		Paraguay
Israel		Peru
South Korea		Romania
Netherlands		Russia
New Zealand		Thailand
Norway		Türkiye

Since the HDR featuring the HDI has been published since 1990, the earliest available year was set to 1990. Due to the limited availability of Gini coefficient data for several countries in recent years, the period was restricted to 1990-2018 to ensure coverage of more countries. Annual data were utilised in the analyses, which were conducted using Stata and GAUSS. Table 4 summarises the variables used in the study and their respective data sources.

Table: 4
Variables and Sources

Variables	Description	Source
Gini	The Gini coefficient represents inequality in disposable income after taxes and transfers.	Standardised World Income Inequality Database (SWIID) - Version 8-9.
GDP	Real GDP per capita in 2010 US dollars.	World Bank World Development Indicators Database.
GDP ²	The square of real GDP per capita.	
HDI	Human Development Index.	United Nations Development Programme (UNDP).
HDI ²	The square of the Human Development Index.	

The descriptive statistics of the study variables are provided in Table 5. The table shows that in high-income countries, the average, minimum, and maximum values of the Gini coefficient are 29.53, 20.2, and 42.4, respectively. In upper-middle-income countries, the average, minimum, and maximum values of the Gini coefficient are 42.34, 22, and 54.7, respectively. The average, minimum and maximum values of GDP in high-income countries are 34,688.5 USD, 5,510.618 USD and 92,119.52 USD, respectively. In upper-middle-income countries, the average, minimum, and maximum values of GDP are 6,458.585 USD, 885.217 USD, and 15,190.1 USD, respectively. The average, minimum, and maximum values of the HDI in high-income countries are 0.860, 0.694 and 0.956, respectively. In upper-middle-income countries, the average, minimum, and maximum HDI values are 0.714, 0.577, and 0.823, respectively.

Table: 5
Descriptive Statistics

High-Income Group					
	Gini	GDP	GDP ²	İGE	İGE ²
Mean	29.53	34,688.5	1,500,000,000	0.86	0.742
Maximum	42.4	92,119.52	8,490,000,000	0.956	0.914
Minimum	20.2	5,510.618	30,400,000	0.694	0.482
Standard Deviation	4.336	17,375.76	1,530,000,000	0.057	0.096
Skewness	0.245	0.848	2.33	-0.613	-0.485
Kurtosis	2.675	4.007	9.74	2.663	2.456
Upper-Middle-Income Group					
Mean	42.34	6,458.585	49,500,000	0.714	0.512
Maximum	54.7	15,190.1	231,000,000	0.823	0.677
Minimum	22	885.217	783,609.10	0.577	0.333
Standard Deviation	7.971	2,792.442	40,500,000	0.057	0.082
Skewness	0.509	0.438	1.26	-0.134	0.022
Kurtosis	2.195	2.555	4.64	2.309	2.265

This study utilises a commonly adopted model in the literature to examine the Kuznets hypothesis. The model assumes that income inequality is a function of linear and quadratic income terms (Ram, 1991; Gallet & Gallet, 2004; Dawson, 1997). In addition, the

explanatory power of the HDI as an indicator of economic development in the context of the Kuznets hypothesis is assessed. The models used in this context are given below.

$$\text{Gini}_{it} = \alpha_0 + \alpha_1 \text{GDP}_{it} + \alpha_2 \text{GDP}_{it}^2 + \varepsilon_{it}$$

$$\text{Gini}_{it} = \beta_0 + \beta_1 \text{HDI}_{it} + \beta_2 \text{HDI}_{it}^2 + \epsilon_{it}$$

In the model, $i=1, \dots, N$ represents the countries, $t=1, \dots, T$ represents the time period, “GDP”, representing economic growth, refers to the GDP value, GDP^2 denotes the square of GDP, included in the model to test the Kuznets hypothesis, and “Gini” represents income inequality, as measured by the Gini coefficient. In the second equation, “HDI” denotes the HDI value, used as a proxy for economic development, and “ HDI^2 ” represents the square of the HDI. If the possible estimation results of the coefficients are $\alpha_1, \beta_1 > 0$ and $\alpha_2, \beta_2 < 0$ the Kuznets Hypothesis (inverted-U curve) is valid.

5. Empirical Findings

The present study employed pre-tests, including cross-sectional dependence (CD), homogeneity, and unit root tests, to determine the appropriate econometric method. The CD test results obtained in this context are presented in Table 6.

Table: 6
CD Test Results

Variables	High-Income Group		Upper-Middle-Income Group	
	CD _{LM1}	CD _{LM2}	CD _{LM1}	CD _{LM2}
Gini	383.8***	7.11***	125.185*	1.393*
GDP	407.59***	8.216***	152.97***	3.31***
GDP2	468.05***	11.029***	173.575***	4.732***
HDI	358.329***	5.924***	163.85***	4.061***
HDI2	355.05***	5.771***	173.4***	4.72***

*** and * indicate 1% and 10% statistical significance levels, respectively.

When examining the CD test results for both income groups, the null hypothesis of cross-sectional independence is rejected, indicating that the variables under consideration exhibit cross-sectional dependence. In addition to applying the cross-sectional dependence test to the variables, this test is also applied to econometric models to determine which cointegration test to use. The results of the CD test and homogeneity tests conducted for this purpose are presented in Table 7.

Table: 7
CD and Homogeneity Test Results for Models

High-Income Group		
Test Statistics	Model 1	Model2
CD _{LM1}	1093.128***	1171.31***
CD _{LM2}	40.11***	43.747***
$\hat{\Delta}$	30.529***	36.375***
$\hat{\Delta}_{adj}$	32.794***	39.073***
Upper-Middle-Income Group		
Test Statistics	Model 1	Model2
CD _{LM1}	690.009***	841.825***
CD _{LM2}	40.369***	50.846***
$\hat{\Delta}$	27.552***	31.501***
$\hat{\Delta}_{adj}$	29.595***	33.838***

*** indicate 1% statistical significance level.

According to Table 7, cross-sectional dependence is identified in the models of both country groups. Moreover, the homogeneity test indicates that the slope coefficients are heterogeneous. Consequently, cointegration tests that address cross-sectional dependence and heterogeneity should be utilised.

Given the presence of cross-sectional dependence in the series, the PANIC unit root test, which accounts for this dependence, is employed to assess stationarity. The results obtained from the PANIC unit root test are presented in Table 8.

Table: 8
Unit Root Test Results

High-Income Group				
Variables		I(0)		I(1)
		Constant	Constant& Trend	Constant
Gini	P_c	-2.221	-1.821	2.387***
	P_m	23.158	26.915	66.390**
GDP	P_c	-3.167	-3.248	6.329***
	P_m	14.295	13.532	103.368***
GDP2	P_c	-3.413	-3.734	7.309***
	P_m	11.984	8.977	112.564***
HDI	P_c	-2.137	-0.818	7.263***
	P_m	23.951	36.329	112.130***
HDI2	P_c	-2.279	-0.991	6.643***
	P_m	22.621	34.700	106.312***
Upper-Middle-Income Group				
Variables		I(0)		I(1)
		Constant	Constant& Trend	Constant
Gini	P_c	-1.495	0.010	1.410*
	P_m	18.420	30.075	40.919*
GDP	P_c	-1.591	-1.397	4.267***
	P_m	17.679	19.181	63.054***
GDP2	P_c	-2.144	-1.853	2.872***
	P_m	13.389	15.650	52.242***
HDI	P_c	-0.349	0.718	8.5678***
	P_m	27.300	35.561	96.366***
HDI2	P_c	0.357	-0.951	8.373***
	P_m	32.768	22.632	94.856***

P_c and P_m represent the statistics proposed by Choi (2001) and Maddal & Wu (1999), respectively. *** and * indicate 1% and 10% statistical significance levels, respectively.

According to the unit root test results presented in Table 8, the variables of both country groups are stationary at the I(1) level. Since the series are detrended when

difference, the results for the model with only a constant term are presented (Gujarati, 2021).

The variables employed in the study were determined to be of the same order, that is, I(1). This allows for examining long-term relationships between the variables. In addition, the homogeneity test revealed that the models are heterogeneous. The results obtained from the panel cointegration test are presented in Table 9.

Table: 9
Cointegration Test Results

	High Income Group	
	Model 1	Model 2
LM statistic	3.272	0.065
Bootstrap probability value	0.121	0.915
	Upper Middle-Income Group	
	Model 1	Model 2
LM statistic	0.214	0.312
Bootstrap probability value	0.836	0.942

Note: The Schwarz information criterion is used to select the lag length. The maximum lag length is set to 3, and 10,000 bootstrap samples are used.

When examining the table, the null hypothesis cannot be rejected for both country groups. Therefore, there is a long-term relationship between the variables. Thus, the long-term coefficient was examined with the AMG estimator.

The AMG long-term coefficient estimation results for the first model in high-income countries are presented in Table 10, given in the appendix. According to the estimation results, the Inverted-U hypothesis is supported in five countries (Australia, Finland, Norway, Portugal, the United Kingdom), whereas the U hypothesis is supported in eight countries (Austria, Cyprus, Denmark, South Korea, the Netherlands, Slovenia, Spain, Sweden). In nine countries (the Czech Republic, Canada, Germany, Ireland, Greece, Israel, Poland, New Zealand, and Uruguay), there is no significant association between the Gini coefficient and economic growth. The AMG estimation results for the second model in the high-income group are presented in Table 11, given in the appendix. The results indicate that the Inverted-U hypothesis is valid in nine countries (Australia, the Czech Republic, Finland, Ireland, South Korea, Norway, New Zealand, the United Kingdom, Uruguay), while the U hypothesis is valid in nine countries (Austria, Cyprus, Denmark, Germany, Greece, the Netherlands, Poland, Portugal, Slovenia). In four countries (Canada, Israel, Spain, Sweden), no statistically significant relationship is found between the Gini coefficient and economic development.

The estimation results for the first model in the upper-middle-income group are presented in Table 12 in the appendix. The results suggest that the inverted-U hypothesis is valid in four countries (Colombia, Costa Rica, the Dominican Republic, Romania), while the U hypothesis is valid in six countries (Armenia, Brazil, Bulgaria, Panama, Russia, Türkiye). In five countries, there is no significant relationship between the Gini coefficient and economic growth. According to Table 13, given in the appendix, which shows the estimation results of the second model, the inverted-U hypothesis is valid in three countries

(Colombia, Costa Rica, Mexico), while the U hypothesis is valid in eight countries (Armenia, Brazil, Bulgaria, Panama, Paraguay, Romania, Russia, Türkiye). In four countries (the Dominican Republic, Kazakhstan, Peru, and Thailand), there is no statistically significant relationship between the Gini coefficient and economic development.

The study's findings indicate that a U-shaped relationship, contrary to the Kuznets Hypothesis, is more prevalent across both country groups. The empirical findings of this study align with previous research (Papanek & Kyn, 1986; Jha, 1996; Günaydın & Çetin, 2015; Topuz & Dağdemir, 2016; Lazar & Litan, 2023; Akıncı & Akıncı, 2016), which provides evidence for the inverted-U relationship. Similarly, our empirical analysis results revealing a U-shaped relationship between economic development and income inequality, contrary to the Kuznets hypothesis, are consistent with other studies in the literature (Ram, 1991; Tokathoğlu & Atan, 2007; Gallet & Gallet, 2004; Oczi et al., 2017; Çakmak & Tosun, 2017).

6. Conclusion

In addition to countries that have rapidly increased their wealth through technological innovation and globalisation, some countries are unable to utilise these advantages and continue to struggle with poverty. The UNDP also emphasises the issue of poverty, listing "ending poverty in all its forms everywhere" among the Sustainable Development Goals (United Nations, 2016: 3). One of the primary causes of poverty in countries is the unequal distribution of wealth and income. The wealthiest 10% of the global population receives 52% of total revenue, whereas the poorest 50% accounts for only 8.5%. Furthermore, income and wealth inequality within countries remains a crucial issue that warrants significant attention. Within countries, the average income difference between the wealthiest 10% and the poorest 50% has nearly doubled, growing from 8.5 to 15 (Chancel et al., 2022).

Determining the level of income distribution, identifying the factors influencing this distribution, and analysing the trajectory of income inequality during economic development play a guiding role in both formulating policies for equitable income distribution and achieving a country's developmental objectives. In the context of income inequality during economic development, this study investigates the validity of Kuznets' inverted-U hypothesis for two groups of countries: 22 high-income and 15 upper-middle-income countries. This study tested the Kuznets Hypothesis using both GDP per capita and the HDI, an alternative indicator of economic development. The primary reason for utilising the HDI in this study is to evaluate the validity of the inverted-U hypothesis using a more comprehensive measure of economic development than GDP per capita, given the criticisms regarding the inadequacy of GDP per capita as an indicator of economic development (Hopkins, 1991; Dynan & Sheiner, 2018; Costanza et al., 2009). Accordingly, the study aims to test the validity of the inverted-U hypothesis using a more comprehensive economic development indicator compared to GDP per capita. As the literature contains only a few studies on this subject, testing the inverted-U hypothesis by use of an alternative economic development indicator like HDI (Martínez-Navarro & Guarnido-Rueda, 2020; Mbaku,

1997; Theyson & Heller, 2015; Martínez-Navarro et al., 2022; Tarakcioğlu-Altınay et al., 2024; Kılıç & Gökçeli, 2024), this study may contribute significantly to the literature.

The empirical findings indicate that a U-shaped relationship, contrary to the Kuznets Hypothesis, is more prevalent across both country groups. Additionally, the empirical evidence suggests that the HDI, widely recognised as a more effective indicator of welfare, provides a stronger explanation of income inequality than GDP per capita, corroborating Ayhan's (2018) findings.

The greater explanatory power of the HDI is attributable to its inclusion of welfare indicators, such as education and health, which significantly influence both income and inequality. According to the empirical findings, variation in the two models' estimates for certain countries may stem from these countries' inability to fully translate their income levels or material wealth into other dimensions of human development, due to existing structural deficiencies. Therefore, using the HDI rather than GDP per capita would be more effective for assessing the Kuznets hypothesis. For instance, a country with a high GDP per capita may not be sufficiently developed in social terms or in redistribution mechanisms such as taxation and social transfers. As a result, an analysis using GDP per capita would yield different results than an analysis using an index such as the HDI, which includes not only income but also social indicators such as education and health.

In contrast to the Kuznets Hypothesis, the study finds that most countries examined exhibit an initial decrease in income inequality followed by a rise as economic development progresses. This points to the process referred to as the Second Kuznets Wave, as expressed by Milanovic (2018). Although the trend toward increasing income inequality varies across countries, it primarily stems from globalisation, developments in information technology, and the emergence of diverse professions in the services sector. These factors drive the growing demand for skilled labour, thereby increasing income and wage disparities.

The observed increase in income inequality following a decline in the analysis results can be attributed to rising spatial disparities between urban and rural areas, as well as to inequalities created by globalisation, technological development, and the transition to the services sector, particularly in developing countries. The primary factor driving inequality between rural and urban areas is the faster growth of urban incomes relative to rural incomes. Another factor lies in the labour market, where informal employment in many poor countries plays a significant role. Informal employment contributes to inequality in various ways, including lower wages, uncertainty about job termination, and limited opportunities, such as training and promotion, for workers (Keeley, 2015: 37-38).

The course of income inequality varies across countries, depending on domestic factors such as economic policies, income redistribution mechanisms, technological levels, and resource endowments, rather than solely on income. In other words, a higher average income does not necessarily imply lower inequality. Inequality within a society is primarily a consequence of political choices, as the structure of economic organisation, including the

rights and restrictions placed on firms, governments, individuals, and other economic actors, plays a crucial role in shaping income distribution (Chancel et al., 2022: 30).

Income distribution inequality impacts society in various ways, leading to significant adverse effects on welfare. Inequality, one of the primary triggers of poverty, causes an increase in social and political unrest within society. Therefore, it is crucial to focus on the factors that drive inequality within the country and to implement redistribution mechanisms and necessary structural transformations to reduce it. Although the policies implemented specifically in every country and their effects vary greatly, the following issues should be emphasised to reduce inequality:

- It is essential to minimise wage disparities between labour incomes through redistribution mechanisms. Reducing labour inequalities and maximising labour productivity can be achieved by investing in education (Piketty, 2021). Therefore, countries should always prioritise educational investments.
- The increasing demand for skilled labour in the current technology age is the main reason behind wage disparities between skilled and unskilled labour. Although unequal access to education remains a challenge in developing countries, and participation in education is very high in developed countries, the quality of school graduates plays a significant role in the labour market. Individuals with the same level of education are differentiated by the quality of the school from which they graduated, thereby contributing to the emergence of wage inequalities (Piketty, 2022). Therefore, promoting equal opportunities in quality education for all individuals is necessary.
- The issue of informal employment, which significantly impacts inequality, should be addressed with due attention, and appropriate policies should be adopted to ensure that the workforce is protected and secured.
- The proportion of public expenditure allocated to education and healthcare is a crucial factor. Taxes, as part of the redistribution mechanism, must be used effectively to fund social transfers, including retirement and unemployment benefits, to play a significant role in addressing redistribution issues.

The present study has certain limitations. Firstly, due to insufficient data on income distribution inequality, the analyses are limited to the period from 1990 to 2018, as well as high-income and upper-middle-income countries. Due to data unavailability, countries in the low- and lower-middle-income groups were excluded from the analysis. Additionally, due to the limited availability of data for alternative economic development indicators, the current study used HDI. Since the data used in this study comprises the period from 1990 to 2018, the effects of the COVID-19 pandemic are not included.

In light of the results of this study, further research could contribute to the literature by providing greater access to data on income distribution inequality and alternative economic development indicators for more countries. By utilising various economic development indicators and econometric methods for a larger number of countries, the

literature can be supported. Moreover, given estimates that the COVID-19 pandemic increased global poverty by 90 million and raised the global Gini index by 0.7 points relative to the pre-pandemic period (Mahler et al., 2022), future studies incorporating inequality data from the COVID-19 period could offer valuable insights into the pandemic's effects.

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Appendix

Table: 10
AMG Estimation Results of Model 1 in the High Income Group

Countries	Independent Variable Gini		Shape of the Curve
	GDP	GDP2	
Australia	0.0009213*** (0.0002428)	-0.00000000825*** (0.00000000224)	Inverted-U
	-0.0027561*** (0.0005288)	0.0000000271*** (0.00000000543)	
Austria	-0.0000509 (0.000365)	-0.00000000028 (0.00000000397)	-
	-0.0010265*** (0.0002512)	0.0000000156*** (0.00000000427)	
Cyprus	-0.0006538 (0.0005042)	0.00000000632 (0.0000000128)	-
	-0.0037651*** (0.0004793)	0.0000000327*** (0.00000000394)	
Denmark	0.0007148*** (0.0001627)	-0.00000000824*** (0.00000000193)	Inverted-U
	-0.000509 (0.0011286)	0.00000000861 (0.0000000013)	
Germany	0.0000271 (0.0005178)	-0.00000000146 (0.00000000101)	-
	0.0001019 (0.000071)	-0.00000000116 (0.000000000575)	
Ireland	-0.00000293 (0.0004402)	-0.00000000049 (0.00000000694)	-
	-0.0011373* (0.0006009)	0.0000000279** (0.0000000122)	
South Korea	-0.0020199*** (0.0002321)	0.00000002*** (0.00000000224)	U
	-0.0008875 (0.0008111)	0.0000000113 (0.0000000112)	
Netherlands	0.000548*** (0.0002104)	-0.00000000275** (0.00000000132)	Inverted-U
	-0.0013736 (0.0006707)	0.0000000288 (0.0000000254)	
Poland	0.0013235* (0.0007709)	-0.0000000318* (0.0000000182)	Inverted-U
	-0.0009257* (0.0004793)	0.0000000199* (0.0000000104)	
Slovenia	-0.0053612*** (0.0006899)	0.0000000807*** (0.0000000117)	U
	-0.000597* (0.0003302)	0.00000000663** (0.00000000318)	
Spain	0.0008594** (0.0003759)	-0.0000000119*** (0.00000000451)	Inverted-U
	-0.0000564 (0.0008831)	-0.00000000497 (0.00000000379)	
Sweden			-
United Kingdom			
Uruguay			

Standard errors are given in parentheses. *, ** and *** denote significance at 10%, 5% and 1% statistical significance levels, respectively.

Table: 11
AMG Estimation Results of Model 2 in the High Income Group

Countries	Independent Variable Gini		Shape of the Curve
	HDI	HDI2	
Australia	1529.47*** (-399.92)	-813.86*** (-215.92)	Inverted-U
Austria	-782.29*** (-524.68)	441.67*** (294.83)	U
Canada	-318.03 (465.27)	174.22 (258.14)	-
Cyprus	-93.32* (51.23)	63.79** (29.77)	U
Czech Republic	362.12*** (117.41)	-222.5*** (67.958)	Inverted-U
Denmark	-824.11*** (174.97)	485.69*** (94.81)	U
Finland	942.57*** (85.97)	-508.77*** (46.82)	Inverted-U
Germany	-620.45*** (175.70)	363.54*** (94.69)	U
Greece	-357.18*** (135.60)	198.72** (80.14)	U
Ireland	158.48*** (58.74)	-101.35*** (32.32)	Inverted-U
Israel	-545.06 (374.35)	292.64 (207.78)	-
South Korea	594.29*** (143.70)	-312.11*** (80.26)	Inverted-U
Netherlands	-742.33** (343.68)	413.93** (186.79)	U
New Zealand	1699.93*** (292.39)	-926.33*** (159.51)	Inverted-U
Norway	753.75** (351.88)	-393.81** (185.82)	Inverted-U
Poland	-284.92*** (103.95)	145.54** (61.69)	U
Portugal	-166.85*** (46.29)	87.32*** (27.57)	U
Slovenia	-537.51*** (162.96)	315.94*** (93.31)	U
Spain	68.05 (435.67)	-15.56 (246.97)	-
Sweden	-231.89 (149.2)	146.04 (81.79)	-
United Kingdom	274.34*** (63.33)	-159.95*** (34.42)	Inverted-U
Uruguay	1499.70** (749.63)	-1014.03** (477.58)	Inverted-U

Standard errors are given in parentheses. *, ** and *** denote significance at 10%, 5% and 1% statistical significance levels, respectively.

Table: 12
AMG Estimation Results of Model 1 in the Upper-Middle Income Group

Countries	Dependent Variable Gini		Shape of the Curve
	GDP	GDP2	
Armenia	-0.0028218*** (0.0007261)	0.000000575*** (0.000000146)	U
	-0.007003*** (0.001948)	0.000000247** (0.0000000993)	
Brazil	-0.0016102** (0.0008365)	0.000000269*** (0.0000000705)	U
	0.0127718*** (0.0016492)	-0.00000114*** (0.000000137)	
Columbia	0.0013817*** (0.0008262)	-0.000000276*** (0.0000000676)	Inverted-U
	0.0013817* (0.0008262)	-0.000000208* (0.0000000842)	
Costa Rica	0.0000969 (0.0001239)	-0.0000000387 (0.0000000852)	-
	0.004987 (0.0046006)	-0.000000408 (0.000000255)	
Dominican Republic	-0.0020811*** (0.0001765)	0.0000000878*** (0.0000000115)	U
	0.0003174 (0.006184)	-0.000000122 (0.000000714)	
Kazakhstan	-0.0015598 (0.0010005)	-0.0000000721 (0.000000114)	-
	0.0038084*** (0.0005452)	-0.000000146*** (0.0000000369)	
Mexico	-0.0031367*** (0.0009482)	0.000000207*** (0.000000054)	U
	-0.0017458 (0.0006816)	0.0000000317 (0.0000000784)	
Panama	-0.0019659*** (0.0001893)	0.0000000745*** (0.0000000901)	U
Paraguay			-
Peru			-
Romania			Inverted-U
Russia			U
Thailand			-
Türkiye			U

Standard errors are given in parentheses. *, ** and *** denote significance at 10%, 5% and 1% statistical significance levels, respectively.

Table: 13
AMG Estimation Results of Model 2 in the Upper-Middle Income Group

Countries	Dependent Variable Gini		
	HDI	HDI2	Shape of the Curve
Armenia	-267.97*	189.65*	U
	-145.90	-104.67	
Brazil	-2191.75***	1530.21***	U
	-365.62	-262.99	
Bulgaria	-1503.02***	1031.64***	U
	-115.13	-76.15	
Columbia	1566.37***	-1152.2***	Inverted-U
	-307.72	-223.31	
Costa Rica	503.41**	-313.46*	Inverted-U
	-241.99	-163.31	
Dominican Republic	300.44	-239.84	-
	-228.51	-168.71	
Kazakhstan	42.12	-44.47	-
	-50.60	-34.42	
Mexico	662.55***	-498.18***	Inverted-U
	-201.56	-140.30	
Panama	-584.07***	360.59***	U
	-138.77	-92.85	
Paraguay	-1587.88***	1170.73***	U
	-509.67	-382.32	
Peru	-391.45	238.42	-
	-206.56	-148.56	
Romania	-575.66***	424.25***	U
	-146.64	-97.20	
Russia	-650.72***	436.69***	U
	-230.54	-152.04	
Thailand	-60.97	24.11	-
	-61.22	-45.23	
Türkiye	-205.84***	136.33***	U
	-15.35	-10.97	

Standard errors are given in parentheses. *, ** and *** denote significance at 10%, 5% and 1% statistical significance levels, respectively.

Social Media Marketing Effect on Green Product Purchase Intention: The Mediating Role of the Bandwagon Effect¹

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Sosyal Medya Pazarlamasının Yeşil Ürün Satın Alma Niyeti Üzerindeki Etkisi: Bandwagon Etkisinin Aracılık Rolü²

Abstract

This study examines the mediating role of the bandwagon effect in the relationship between social media marketing and green product purchase intention. Data collected from 2,233 participants through an online survey were analysed using SPSS for reliability, descriptive statistics, correlation analysis, and mediation analysis. The results show that the bandwagon effect mediates the impact of social media marketing on green product purchase intention. The emphasis on the mediating role of the bandwagon effect in this relationship, combined with the limited research on this topic, makes this study original.

Keywords : Social Media Marketing, Bandwagon Effect, Green Product Purchase Intention.

JEL Classification Codes : M30, M31, M39.

Öz

Bu çalışma bandwagon etkisinin sosyal medya pazarlaması ve yeşil ürün satın alma niyeti arasındaki aracılık rolünü incelemeyi amaçlamaktadır. Çevrimiçi anketle 2.233 katılımcıdan toplanan veriler, SPSS aracılığıyla güvenirlik, betimsel, korelasyon ve aracılık analizleriyle değerlendirilmiştir. Bulgular, sosyal medya pazarlamanın yeşil ürün satın alma niyeti üzerinde bandwagon etkisinin aracılık role sahip olduğunu göstermektedir. Sosyal medya pazarlaması ve yeşil ürün satın alma niyeti arasındaki ilişkide bandwagon etkisinin aracılık rolüne odaklanılması ve bu ilişkiyi inceleyen çalışmaların eksikliği, bu araştırmaya özgünlük katmaktadır.

Anahtar Sözcükler : Sosyal Medya Pazarlama, Bandwagon Etkisi, Yeşil Ürün Satın Alma Niyeti.

¹ This study has been developed based on the paper presented at the 27th Marketing Congress, which took place in Erzurum from May 30 to June 1, 2024.

² Bu çalışma, 30 Mayıs - 1 Haziran 2024 tarihleri arasında Erzurum'da düzenlenen 27. Pazarlama Kongresi'nde sunulan bildiri temel alınarak geliştirilmiştir.

1. Introduction

The increasing daily use of social media affects not only individuals but also businesses, leading to its active use for advertising and marketing (Kim & Ko, 2012: 1481). While companies benefit from engaging with customers, increasing sales, and boosting brand awareness through social media marketing (Choi et al., 2016: 772), consumers can utilise social media to gather information about products and services, read reviews, and observe other users' experiences before making a purchase decision (Constantinides, 2014: 42).

The bandwagon effect refers to increased demand for a product when others are using it (Leibenstein, 1950: 189). In marketing literature, it is termed herd behaviour, a mental process in which individuals mimic the actions of those around them (Prechter, 2001: 120-121). This occurs when consumers imitate the opinions, intentions, or behaviours of other buyers when selecting a product (Ali et al., 2021: 348).

Green products conserve resources such as energy and water, minimise pollution and toxicity, cause less environmental damage, and provide a healthier alternative (Luo et al., 2020: 374). Green product purchase intention denotes consumers' willingness and readiness to purchase green products (Paul et al., 2016: 124).

Previous studies have often explored the impact of social media marketing on green product purchase behaviour. Meanwhile, the bandwagon effect has typically been discussed in relation to general purchase intention or consumer behaviour. However, no research has investigated the mediating role of the bandwagon effect in the relationship between social media marketing and green product purchase behaviour, nor has it directly examined the bandwagon effect in the context of green product purchase intention. This study addresses these gaps by analysing how social media marketing influences green product purchase intention and the direct and mediating roles of the bandwagon effect in this process, providing valuable insights from both theoretical and practical standpoints.

This study examined whether the bandwagon effect mediates the relationship between social media marketing and the intention to purchase green products. To achieve this, data were collected from 2,233 social media users aged 18 or older via an online survey. The data were analysed using reliability testing, exploratory factor analysis (EFA), descriptive statistics (frequency, mean, and standard deviation), correlation analysis, and mediation analysis with SPSS.

2. Theoretical Background

2.1. Social Media Marketing

Digital communication technologies (Internet, social media, and mobile applications) have become a vital part of people's daily lives (Stephen, 2016: 17), enabling quicker and easier access to other individuals, activities, and conversations (Yapraklı & Mutlu, 2023:

169). The increasing popularity of social networks has attracted the interest of both individuals and businesses, encouraging them to adopt social media as a new communication tool and actively use it for advertising and marketing purposes (Kim & Ko, 2012: 1481), leading traditional media advertising platforms to shift to social media platforms and prompting businesses to invest more in these platforms for social media advertising (Hamouda, 2018: 426).

According to Sarıtaş & Akgün (2023: 2622-2623), social media marketing encompasses all direct and indirect marketing activities that utilise various social media platforms, including microblogs, blogs, media sharing, and social networks. These activities offer opportunities for a business, brand, product, or individual to build awareness, recognition, and recall.

Social media marketing provides benefits to both consumers and businesses. Through social media platforms, businesses can create online marketing offers, communicate and disseminate these offers (Yadav & Rahman, 2017: 1296), foster word-of-mouth communication, increase customer loyalty to the company, and influence their purchase intentions for the company's products or services (Choi et al., 2016: 772). Consumers may use social media to research, evaluate, and select products and services before making a purchase (Constantinides, 2014: 42).

2.2. Bandwagon Effect

The bandwagon concept was introduced by Harvey Leibenstein in the 1950s (Rook, 2006: 6). According to Leibenstein (1950), a bandwagon is an increase in demand for a good when others consume it (Leibenstein, 1950: 189). Individuals influenced by the bandwagon effect act based on others' attitudes and decisions without rigorous questioning (Konak et al., 2022: 123) and are more willing to change their attitudes and behaviours to meet the conditions of a group they seek to join (Telli et al., 2021: 114).

In marketing literature, the bandwagon effect also signifies herd behaviour and appears in consumer purchasing patterns (Konak et al., 2022: 122). Banerjee (1992: 798) describes herd behaviour as individuals perceiving others' actions as more correct than their own beliefs. Prechter (2001: 120-121) defines it as a mental process where individuals model themselves on those around them. Chen (2008: 1978) characterises it as a situation in which individuals make decisions influenced by others, even though they know the correct answer.

The herd effect is defined as a change in a customer's product choice, purchasing behaviour, or other behaviour resulting from exposure to the opinions, intentions, and purchasing habits of others (Chen, 2008: 1978). In essence, it is a situation in which consumers mimic the thoughts, intentions, or behaviours of others when selecting products (Ali et al., 2021: 348).

2.3. Green Product Purchase Intention

In recent years, there has been a notable increase in consumer awareness of environmental issues, which has led to a rise in the purchase of green products that cause little or no harm to the environment (Onurlubaş, 2018: 7). Green products save resources such as energy and water, reduce pollution and toxicity, cause less environmental damage, and provide healthier alternatives (Luo et al., 2020: 374).

Intention refers to the willingness or preparedness to engage in a specific behaviour. In the context of green products, the intention to purchase reflects consumers' desire to buy environmentally friendly products (Paul et al., 2016: 124). Moreover, it is often a motivating factor for green purchases (Bozpolat, 2021: 708). Consumers' intention to purchase green products strongly indicates their willingness to buy them in the future (Onurlubaş, 2018: 7). However, despite having the intention to purchase green products, many consumers may face specific barriers when trying to turn this intention into actual purchases. Limiting factors such as price and lifestyle constraints are among the obstacles to purchasing green products (Bozpolat, 2021: 708). Furthermore, individuals with greater knowledge of ecological issues generally form more positive perceptions of green products and exhibit favourable purchase intentions. This knowledge also enhances positive perceptions of companies that produce green or environmentally friendly products (Costa et al., 2021: 2).

3. Methodology

3.1. Research Purpose and Importance

The main aim of this study is to examine whether the bandwagon effect mediates the influence of social media marketing on the intention to purchase green products among individuals aged 18 and above who use social media. The originality of this research lies in the need for further studies to examine the impact of the bandwagon effect on green product purchase intentions and its mediating role between social media marketing and these intentions.

3.2. Hypothesis Development and Research Model

A review of previous studies shows that many investigations have concentrated on social media marketing and the intention to buy green products (Bedard & Tolmie, 2018; Pop et al., 2020; Yang & Ha, 2021; Gupta & Syed, 2022; Alam et al., 2023; Arora et al., 2023; Nazish et al., 2024). The bandwagon effect has generally been studied in relation to overall purchase intention or consumer behaviour (Akturan & Bozbay, 2018; Cho et al., 2022; Anantharaman et al., 2023; Su et al., 2023; Andriana et al., 2024; Meydiawati et al., 2024); however, no studies have addressed the direct or mediating effects on green product purchase intention, and the theoretical and empirical links between these three variables are not sufficiently explained in the literature. To address this gap and establish a robust theoretical foundation for the study's model, the relationships among social media

marketing, the bandwagon effect, and green product purchase intention are examined in detail below.

Social media marketing can shape consumers' purchasing decisions at every stage of the buying process (Deshpande & Whiting 2016: 84). The ability of individuals with similar interests to form shared networks, along with the opportunity for people to choose lifestyle groups with common traits, makes advertisements a vital part of social media marketing (Sun & Wang, 2020: 864).

Interaction rates measure the effectiveness of advertisements. Ads that receive likes on social media can positively influence the attitudes of other individuals (Ekşi et al., 2022: 72), and this influence can encourage herding behaviour in individuals (Langley et al., 2014: 18; Can, (2017); Ekşi et al., 2022: 72). Numbers of likes, comments, and shares on social media can also trigger the bandwagon effect (Lim, et al., 2021: 853).

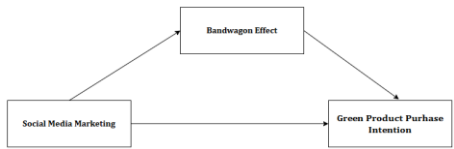
The rising use of social media is also reshaping individuals' consumption habits (Zafar et al., 2021). Sharing more information, experiences, opinions, and recommendations about products on social media may further encourage consumers to purchase green products.

Social media marketing has a strong and positive connection with green product purchase intention (Nekmahmud et al., 2022; Bedard & Tolmie, 2018), making social media an effective tool in green marketing (Gupta & Syed, 2022: 681) and a key platform for businesses to promote green products (Sun & Wang, 2020: 861; Nekmahmud et al., 2022: 2). Various social media platforms, including Facebook, microblogs, WeChat, wikis, and YouTube, serve as effective channels for green advertising because of their ability to facilitate interpersonal interactions (Luo et al., 2020: 372). Businesses can increase their market share by actively promoting green products on these platforms (Sun & Wang, 2020: 861). Additionally, sharing positive experiences on social media indicates that social media marketing positively influences consumers' green purchase intentions (Pop et al., 2020: 447; Armutcu et al., 2024).

Lasuin & Ching (2014: 5) state that social interaction effectively influences consumers' green product purchase decisions. The increasing number of green consumers on social media will generate a herd mentality, affecting individuals' green purchasing behaviours (Yang et al., 2023: 3). Kelkar et al. (2014: 44) suggest that consumers' motivation to buy green products can be linked to fashion. This connection can foster a herd psychology effect in green purchasing.

Figure 1 shows the research model.

Figure: 1
Research Model



The research model comprises three variables: social media marketing, the bandwagon effect, and green product purchase intention, as shown in Figure 1. Based on this model and the available information, the following research hypotheses were formulated.

- H1: Social media marketing is effective on the bandwagon effect.
- H2: Social media marketing is effective in influencing green product purchase intention.
- H3: The bandwagon effect is effective on green product purchase intention.
- H4: The bandwagon effect mediates the relationship between social media marketing and green product purchase intention.

3.3. Sampling Process, Data Collection Method, and Measurement Items

The research population consists of social media users. The chosen data collection method was an online survey. The survey access link was distributed to participants via social media (e.g., WhatsApp, Facebook, Instagram) using convenience sampling. Participants who completed the survey were asked to share the link on their social media networks to increase and diversify the sample, thereby employing a snowball sampling method. According to the Digital 2024 Türkiye report, as of January 2024, there are 54.30 million social media users in Türkiye (Kemp, 2024). The formula $n = \frac{NPQZ^2}{(N-1)d^2 + PQZ^2}$ was applied to calculate the sample size in this study (Oktay et al., 2013). In this formula, n = sample size, N = population size (the number of people using social media), P = rate of use of social media, Q = social media non-usage rate (1- P), Z = Z value at the (1- α) confidence level, α = significance level, and d = margin of error (tolerance). The minimum sample size for the population is 384, with a 5% significance level and a 5% margin of error. In this study, data were obtained from 2233 participants.

In this study, the eight-item bandwagon scale was adapted from the normative influence scale used by Bearden et al. (1989). The four-item social media marketing scale and the four-item green product purchase intention scale were adapted from Sun and Wang (2020). Permission to use the scales has been obtained from the authors via email.

The Ataturk University Social and Human Sciences Ethics Committee granted ethics approval (Decision dated: 31 May 2024; Number: E.88656144-000-2400176129, Session Number: 12; Decision No: 156).

4. Data Analysis & Evaluation

The data were analysed using SPSS, including reliability analyses, exploratory factor analysis (EFA), descriptive statistics, correlation analyses, normality tests, and mediation analyses.

4.1. Reliability Analysis and Exploratory Factor Analysis (EFA) for the Research Variables

Reliability analyses were conducted to evaluate the internal consistency of each factor. It is recommended to remove an item from the scale if the Cronbach's Alpha value increases following its exclusion (Pallant, 2020: 116). In conducting exploratory factor analysis (EFA), the corrected item-total correlations should exceed 0.30 (Field, 2009: 678).

Exploratory factor analysis (EFA) was conducted to assess whether the factor structure of this study, using a different sample, aligns with prior research. Kaiser-Meyer-Olkin (KMO) and Bartlett's test were utilised to evaluate the adequacy of the sample for factor analysis and the suitability of the dataset (Pallant, 2020; Shrestha, 2021: 6). The number of factors was determined based on Eigenvalues (Field, 2009: 644).

The results of the reliability and EFA analysis for the social media marketing bandwagon effect and green product purchasing intention variables are presented in Table 1.

Table: 1
Reliability and Exploratory Factor Analysis for Research Variables

Scale	Items	Cronbach's α	KMO	Bartlett's p	% Variance Explained
Social Media Marketing	4	0.898	0.828	< 0.001	76.53
Bandwagon Effect	6	0.904	0.897	< 0.001	67.88
Green Product Purchase Intention	3	0.917	0.755	< 0.001	85.81

Table 1 shows that the Cronbach's alpha for the social media marketing variable was 0.898, indicating acceptable internal consistency. Examination of the corrected item-total correlations revealed all values exceeded 0.30. Furthermore, an analysis of Cronbach's Alpha values for item removal indicated that removing any item would not improve the scale's reliability; instead, it would decrease it. The Kaiser-Meyer-Olkin (KMO) measure for the social media marketing scale was 0.826, and Bartlett's Test of Sphericity was significant at p (Sig) = 0.000. These results suggest that the sample size for the social media marketing scale is excellent and that the data are suitable for factor analysis. This scale accounted for 76.533% of the total variance within one factor, with factor loadings ranging from 0.869 to 0.885. According to the Cronbach's Alpha column, removing items bndwgn2

and *bndwgn1* would increase reliability, and these items were therefore excluded from the analysis (Field, 2009: 681; Pallant, 2020: 116).

Cronbach's Alpha for the bandwagon effect variable was 0.904, indicating high internal consistency. All corrected item-total correlations exceeded 0.30. The Kaiser-Meyer-Olkin (KMO) value was 0.897, and Bartlett's Test of Sphericity was significant at p (Sig) = 0.000. These findings suggest that the sample size for the bandwagon effect scale is perfect and suitable for factor analysis. This scale accounted for 67.88% of the total variance within a single factor, with factor loadings ranging from 0.792 to 0.871. According to the Cronbach's Alpha column, removing item *GPPI4* would improve reliability, so it was excluded from the analysis (Field, 2009: 681; Pallant, 2020: 116).

The Cronbach's alpha for the green product purchase intention variable was 0.917, indicating high internal consistency. Examination of the corrected item-total correlations showed all values exceeded 0.30. The Kaiser-Meyer-Olkin (KMO) value for the green product purchase intention scale was 0.755, and Bartlett's Test of Sphericity yielded a significance level of p (Sig) = 0.000. These results suggest that the sample adequacy for the green product purchase intention scale is moderate, and the data are appropriate for factor analysis. This scale accounted for 85.81% of the total variance in a single factor, with factor loadings ranging from 0.915 to 0.926.

4.2. Participants' Demographic Characteristics

A total of 69.9% ($n = 1,561$) of participants were female, and 30.1% ($n = 672$) were male. Regarding educational attainment, most participants held an undergraduate degree, accounting for 59.5% ($n = 1,328$) of the sample. Followed by associate degree holders at 20.6% ($n = 461$), high school graduates at 13.4% ($n = 300$), master's or doctoral degree holders at 3.0% ($n = 66$), secondary school graduates at 2.1% ($n = 47$), and primary school graduates at 1.4% ($n = 31$). The mean age of participants was 24.43 years, and the average monthly income was calculated as 11,001.47 Turkish Lira.

4.3. Participants' Social Media Usage of Frequency and Percentage Distributions

When examining the duration of social media use among participants, the largest group comprised those who had used social media for over 7 years, accounting for 39.9% ($n = 892$) of the sample. This group was followed by users with 4–6 years of experience at 33.6% ($n = 751$), 1–3 years at 20.9% ($n = 466$), and less than 1 year at 5.6% ($n = 124$). Regarding daily social media use, 44.5% ($n = 994$) of participants reported spending 3–4 hours per day, 25.8% ($n = 576$) spent 1–2 hours, 22.9% ($n = 511$) spent 5–6 hours, and 6.8% ($n = 152$) used social media for more than seven hours daily.

The most frequently used social media platforms were identified as WhatsApp (94.3%; $n = 2,106$), Instagram (90.3%; $n = 2,016$), and YouTube (82.1%; $n = 1,833$). These platforms were followed by Twitter (43.6%; $n = 974$), Snapchat (36.4%; $n = 813$), Facebook

(23.6%; n = 527), Pinterest (21.6%; n = 482), TikTok (21.4%; n = 477), LinkedIn (7.0%; n = 157), and Facebook Messenger (6.4%; n = 144). Instagram was the most preferred platform, with 47.0% (n = 1,049) of participants selecting it as their primary platform. WhatsApp was the next most popular at 29.5% (n = 658), followed by YouTube at 12.0% (n = 267). The preference rates for other platforms were relatively low: Twitter (5.1%; n = 113), Facebook (2.3%; n = 51), TikTok (2.0%; n = 45), Snapchat (1.3%; n = 28), Pinterest (0.4%; n = 9), LinkedIn (0.4%; n = 8), and Facebook Messenger (0.2%; n = 5).

4.4. Correlation Analysis Result

A correlation analysis was performed to identify relationships among variables; the results are shown in Table 2.

Table: 2
Correlation Analysis Results for Social Media Marketing, Bandwagon Effect, and Green Product Purchase Intention

Variables	SMM	BE	GPPI	Skewness	Kurtosis	Mean	Std. Deviation
SMM	1			-0.444	-0.811	3.16	1.090
BE	0.203**	1		1.085	0.784	1.91	0.870
GPPI	0.410**	0.126**	1	-0.772	0.948	3.57	0.863

SMM: Social Media Marketing; BE: Bandwagon Effect; GPPI: Green Product Purchase Intention; ** $p < .001$.

According to Table 2, there is a weak connection between social media marketing and the bandwagon effect ($r = 0.203$, $p < .001$), and between the bandwagon effect and green product purchase intention ($r = 0.126$, $p < .001$). However, a moderate connection is observed between social media marketing and green product purchase intention ($r = 0.410$, $p < .001$). The skewness and kurtosis values for all variables range from -2.0 to +2.0, indicating that the research data follow a normal distribution (George & Mallery, 2019: 115).

The overall mean score for participants' responses on the social media marketing scale was 3.16. Of the items, the highest mean value was 3.27, associated with the statement, "Using social media to search for information about green products I am considering purchasing is a very current behaviour." This was closely followed by a mean score of 3.23 for the statement, "I would like to share information about green products on social media with my friends."

For the bandwagon effect scale, the overall mean score was 1.91. The highest mean value within this scale was 2.10, associated with the statement, "When I want to buy a product, I generally buy products that I think others will approve of," followed by a score of 1.96 for the statement, "I do not purchase trendy products until I am sure that my friends accept them."

Regarding the green product purchase intention scale, participants' overall mean score was 3.57. The highest mean on this scale was 3.65 for the statement "I want to purchase green products," followed by 3.56 for the statement "I have plans to buy green products in the future."

4.5. Mediation Analysis of the Social Media Marketing Impact on Green Product Purchase Intention with the Mediating Role of the Bandwagon Effect

To examine whether the bandwagon effect mediates the impact of social media marketing on the intention to purchase green products, Model 4, developed by Hayes, was utilised. The results are shown in Table 3.

Table: 3
Mediation Analysis

Paths		P-Value	Effect	LLCI	ULCI
Direct Effect	SMM → GPPI	0.0000	0.3174	0.2868	0.3479
	SMM → BE	0.0000	0.1619	0.1294	0.1944
	BE → GPPI	0.0232	0.0443	0.0061	0.0826
Total Effect	SMM → GPPI	0.0000	0.3245	0.2946	0.3545
Indirect Effect	SMM → BE → GPPI		0.0072	0.0012	0.0136

Social Media Marketing: SMM; Bandwagon Effect: BE; Green Product Purchase Intention: GPPI.

According to Table 3, social media marketing ($\beta=0.3174$, $p<0.05$, 95% CI= [0.2868, 0.3479]) significantly and positively influences green product purchase intention, as does the bandwagon effect ($\beta=0.1619$, $p<0.05$, 95% CI= [0.1294, 0.1944]). The bandwagon effect ($\beta=0.0443$, $p<0.05$, 95% CI= [0.0061, 0.0826]) also significantly influences green product purchase intention. Additionally, because the bootstrap confidence interval does not include zero, the bandwagon effect ($\beta=0.0072$, 95% CI= [0.0012, 0.0136]) mediates the relationship with green product purchase intention. Therefore, hypotheses H1, H2, H3, and H4 are supported.

5. Conclusion

This study aimed to determine whether the bandwagon effect mediates the relationship between social media marketing and green product purchase intention. Data were collected from 2233 individuals aged 18 and older via an online survey to achieve this goal, and the data were then analysed.

All variables exhibited high reliability.

The participants were predominantly women, with a mean age of 24.43 years and an average income of 11,001.47 Turkish Liras; most held university degrees.

Based on the participants' responses to the items in the social media marketing scale, it was found that participants use social media to understand the positive effects of green products on human health and the environment, are inclined to express their opinions about the green products they are considering purchasing on social media, view social media as a current source for accessing information and exchanging ideas, and are eager to share the information they obtain about green products with those around them.

Regarding the participants' responses to the items in the bandwagon effect scale, it was observed that participants tend to adopt an individualistic and unique approach to consumption choices, selecting products based on their preferences and values rather than to align with others or gain approval, making consumption decisions that prioritise personal interests, and remaining true to their preferences independently of their friends' likes.

Based on participants' responses to the green product purchase intention scale, they intend to purchase green products and are committed to doing so.

The correlation analysis showed that the bandwagon effect has a weak positive association with both social media marketing and green product purchase intention. In contrast, social media marketing shows a moderate, positive, and significant association with green product purchase intention.

The following results were derived from the mediation analysis:

According to this study's findings, social media marketing has a significant effect on the intention to purchase green products. This result largely aligns with some previous academic studies. For example, Bedard & Tolmie (2018) found that social media use is positively associated with green purchase intention. Similarly, Pop et al. (2020) demonstrated that social media plays a vital role in shaping consumer attitudes and is an antecedent of green cosmetic purchase intention. Yang & Ha (2021) found that TikTok use effectively influences purchase intention, whereas Gupta & Syed (2022) found that social media marketing activities positively influence attitudes toward green products. Furthermore, Alam et al. (2023) and Kumar & Pandey (2023) reported that social media strengthens the intention to purchase green products. Similarly, Arora et al. (2023) found that social media influences sustainable consumption behaviours, while Sethuraman (2023) revealed that social media affects the environmentally conscious behaviours of Generation Y and Z individuals. Additionally, Sun & Xing (2022) found that information sharing via social media positively affects green purchase intentions. In contrast, Xie & Madni (2023) found that information shared on social media is positively associated with green consumption among the younger generation in China. In more recent studies, Armutcu et al. (2024) found that green food purchasing behaviour is influenced by social media use and interactions with digital marketing. In contrast, Nazish et al. (2024) demonstrated that social media can shape consumers' preferences for environmentally friendly products.

Another important finding of this research is that the bandwagon effect influences the intention to consume green products. This finding aligns with the study by Akturan & Bozbay (2018), who showed that the bandwagon effect impacts purchase intention and willingness to pay higher prices. Similarly, Cho et al. (2022) emphasised that the bandwagon effect directly affects purchase intention and is a key factor for Generation Z in relation to luxury brands. Anantharaman et al. (2023) observed that the bandwagon effect boosts trust and purchase intention, which is strategically significant in social commerce. Su et al. (2023) demonstrated that online word-of-mouth and spokesperson credibility enhance purchase

intention by fostering herd behaviour among consumers. More recent studies expand on these findings. For example, Andriana et al. (2024) found that the bandwagon effect directly influences purchase intention alongside materialism, while Meydiawati et al. (2024) revealed that the effect shapes purchase intention both directly and through reference groups and the attitude's value-expressing function. While these studies generally focus on purchase intention, this research places particular emphasis on green product purchase intention and, given the lack of similar studies on this topic, makes a unique contribution.

Furthermore, the study found that social media marketing influences the bandwagon effect, which in turn mediates the relationship between social media marketing and green product purchase intention. The scarcity of research exploring the mediating role of the bandwagon effect between these two variables adds originality to this study.

Consumers should utilise social media platforms as a source of information when selecting green products. However, they must consider product popularity and environmental impacts. Positive reviews and social media posts can help foster sustainable consumption habits. Therefore, guiding individuals' social media interactions to raise ecological awareness can promote the widespread adoption of eco-friendly products and encourage the acceptance of sustainable consumption practices.

Businesses can utilise social media platforms as a strategic tool to promote green products and showcase their environmental benefits. In particular, they can harness the bandwagon effect by forming influencer partnerships to boost the popularity of green products. These collaborations, which may reward consumers who try the products, can help promote green products to a broader audience via social media and increase environmental awareness. Such strategies can grow the market share of sustainable products and influence consumer behaviours, encouraging environmentally friendly habits.

The research faced several limitations. First, because the data used in the study were collected from a specific sample, the generalisability of the results is limited. The study focused exclusively on social media marketing, green product purchase intention, and the bandwagon effect; psychological, cultural, or economic factors were not incorporated into the model. Additionally, because the data were collected via self-report, participants' responses may have been influenced by social desirability bias or by differences in subjective perception. Future research should focus primarily on studies conducted in diverse cultural contexts and with larger samples to enhance the validity of the findings. Consumer behaviour can be more comprehensively examined by incorporating other social influences, such as the snob effect and the Veblen effect, into the model alongside the bandwagon effect.

The limited number of studies on the impact of social media marketing and the bandwagon effect on green product purchase intentions highlights the need for more academic research on these topics. Future research could expand this area by examining how social media marketing and social influence mechanisms shape sustainable consumption

habits and phenomenon-based marketing among different demographic groups. Including other types of social influences—such as the snob and Veblen effects—into the model could also offer a more complete understanding of consumer behaviour. Additionally, it is essential to examine how green product purchase intentions are influenced by social media marketing, traditional media, face-to-face communication, and digital word-of-mouth. Longitudinal studies could track changes in consumers' environmental awareness over time, while cross-cultural and cross-socioeconomic comparative research may uncover the varied ways in which social influence affects green product adoption, providing practical insights for international marketing strategies.

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Seasonality in the Airline Industry: An Empirical Analysis Based on Stock Prices

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Havayolu Sektöründe Mevsimsellik: Pay Fiyatlarına Dayalı Ampirik Bir Analiz

Abstract

This study aims to examine the impact of seasonality in the airline industry by analysing the daily stock prices of airline companies listed on the stock exchanges of France, Spain, Greece, and Türkiye, which have similar climate characteristics, as well as the global airline index over the period January 2012 to May 2024. The findings of the regression analysis using dummy variables indicate that seasonality is significant for the global airline index and for airlines in all countries except Türkiye. Notably, average returns during the winter months are higher than those in the summer months. Furthermore, even after accounting for outliers identified within the sample period, the seasonal effect persists.

Keywords : Seasonality, Airline Industry, Calendar Anomaly, Efficient Markets.

JEL Classification Codes : G110, G140, G150.

Öz

Bu çalışmada, benzer iklim özelliklerine sahip Fransa, İspanya, Yunanistan ve Türkiye menkul kıymet borsalarında işlem gören havayolu firmalarının ve global havayolu endeksinin Ocak 2012-Mayıs 2024 dönemleri arasındaki günlük pay fiyatları üzerinden, sektörde sezonsallığın etkisinin ortaya konulması amaçlanmaktadır. Kukla değişkenlerin kullanıldığı regresyon analiz bulguları, Türkiye dışındaki diğer ülkelerin havayolu firmalarında ve global havayolu endeksinde sezonsallığın anlamlı olduğunu ve kış aylarındaki ortalama getirinin yaz aylarına göre daha yüksek olduğunu ortaya koymaktadır. Bunun yanı sıra ilgili dönemlerde ortaya çıkan aykırı değerler dikkate alındığında sezonsallık devam etmektedir.

Anahtar Sözcükler : Mevsimsellik, Havayolu Sektörü, Takvim Anomalisi, Etkin Piyasalar.

1. Introduction

The Efficient Market Hypothesis (EMH), introduced by Fama (1965, 1970), posits that the price of a security reflects its intrinsic value by incorporating all available and accessible information. The hypothesis has been extensively examined by researchers over the years, and anomalies based on seasonal factors that have led to questioning the hypothesis have been observed (Tadepalli & Ravi, 2018: 19). Seasonal anomalies suggest that informational efficiency is not valid (Fountas & Segredakis, 2002: 292). Empirical studies revealing return seasonality not only provide significant insights for investment strategies but also challenge the assumptions of the EMH, thereby undermining its robustness (Fountas & Segredakis, 2002: 292; Carrazedo & Curto, 2016: 489-500).

Seasonality in the securities market refers to recurring, consistent upward or downward trends in the performance of securities at specific times or periods. Contrary to the EMH, seasonality consistently manifests in stock markets and can be leveraged by investors. The foundation of seasonal investment strategies lies in minimising or avoiding losses, reducing risk, and consequently enhancing profit potential (Arumugam & Soundararajan, 2013: 87). Seasonality significantly influences security returns; however, its impact may vary across sectors (Jacobsen & Visaltanachoti, 2009: 437-459). This variation can be attributed to differences in production and consumption patterns, business cycles, and the diverse responses of sectors to economic changes. Jacobsen and Visaltanachoti (2009) demonstrated that stock returns differ by sector during summer and winter seasons, with the manufacturing sector exhibiting a more pronounced seasonal effect.

The airline industry is highly seasonal, driven by fluctuations in demand for air transportation influenced by specific seasons, weather conditions, and social habits. According to the International Air Transport Association (IATA), the summer season in the industry spans from the last Sunday of March to the last Saturday of October, while the winter season extends from the last Sunday of October to the last Saturday of March (Kozuba et al., 2021: 88). Seasonality in this industry is stronger during the summer months compared to winter, primarily due to more favorable weather conditions and the holiday period (Merkert & Webber, 2018: 39). This phenomenon leads to excessive demand in the third quarter and idle capacity in the first and fourth quarters within the airline industry (Snider, 1994: 50). While leveraging this observed seasonality to trade in the airline industry is perceived as risky by many investors in the long term, it is also suggested that purchasing airline stocks in autumn and selling them in spring yields abnormal returns (Greene & Godyn, 2006: 498). In this context, this study examines seasonal sector rotation in the airline industry's stock returns. Even within the same sector, individual companies' responses to seasonality may vary. However, a company is a microeconomic unit, while a sector functions as a macroeconomic entity influenced by its unique dynamics. These dynamics are shaped by various factors, including demographic and socioeconomic structures, income levels, the degree of global integration, and resource availability (Sen & Chaudhuri, 2018: 182). Furthermore, despite the globalisation of capital markets, each capital market retains its unique identity, shaped by distinct cultural patterns, seasonal variations in earnings, and its

own managerial and regulatory frameworks (Murgea, 2016: 178). For this reason, this study examines publicly traded airlines listed on stock exchanges in countries with similar climatic characteristics.

This study investigates the impact of seasonality on the stock prices of airlines listed on exchanges in France, Spain, Greece, and Türkiye between 2012 and 2024. The analysis initially examines whether there are month-of-year differences in stock returns. Subsequently, the presence of seasonal rotation in stock returns during the summer and winter months is reviewed. Unlike other studies, this research does not analyse seasonality through an index but instead analyses it at the firm level. Existing studies primarily examine seasonality using indices. However, such indices are composed of companies from various sectors. The results derived from broad market indices may not adequately capture the seasonal patterns specific to industries (Marrett & Worthington, 2009: 16). Furthermore, by including airlines listed on stock exchanges across different countries, the study also examines whether seasonality differs across capital markets. In addition to these four countries, the NYSE Arca Global Airline Index, which tracks the performance of a broad portfolio of globally listed airlines, is also included in the study to assess whether the seasonal effects observed in the selected airlines are consistent with global trends. The airline industry is particularly susceptible to events such as wars, terrorism, pandemics, and economic crises, which often result in volatility in stock prices. The sample period of this study includes events that significantly impacted the industry, such as the 2014 Russia-Ukraine Crisis, the COVID-19 pandemic that began in 2020, and the Russia-Ukraine War that started in 2022. Notably, the industry was profoundly affected by the COVID-19 pandemic, which was declared a global pandemic by the World Health Organisation on March 11, 2020. According to the annual global statistics of the International Civil Aviation Organisation (ICAO), while the total number of passengers transported on scheduled flights increased steadily between 2012 and 2019, it declined by 60,1% in 2020 compared to the previous year (ICAO, 2020). Although passenger numbers increased by 18,1% in 2021 and 42,8% in 2022 compared to last year, they did not return to 2019 levels. Factors such as the pandemic and wars have caused volatility in stock prices, leading to the occurrence of outliers. Maberly and Pierce (2003, 2004) and Yılcı (2013) have demonstrated that outliers significantly influence anomalies. Therefore, this study accounts for outliers to further investigate the effects of seasonality. Given the limited number of studies on seasonality in airline stock returns, this research's findings are expected to contribute to the existing body of knowledge.

The subsequent sections of the study are as follows: the second section presents a review of the existing literature on seasonal anomalies. The third section provides details about the data set used in the study. The methodology employed is explained in the fourth section. The findings on the observed seasonal patterns in airline stock returns are presented in the fifth section. The findings are discussed in the sixth section. Finally, the seventh section summarises the findings and offers concluding remarks.

2. Literature Review

Seasonal anomalies have gained significant attention in the financial literature due to their relatively straightforward applicability within the context of market strategies (Schabek & Castro, 2017: 5). Existing studies have identified seasonality in securities markets as being influenced by various factors, such as holiday season sales, economic activities linked to the academic calendar, or peak travel periods. (Jacobsen & Visaltanachoti, 2009: 438), annual taxation periods, bonus disbursement periods, earnings announcement seasons, index rebalancing periods, seasonal psychological effects (Kamstra et al., 2003: 324-343), and sector-specific production and consumption cycles (Jacobsen & Marquering, 2009: 587-583).

Numerous studies have provided evidence that seasonality affects stock returns across countries. A significant portion of these studies focuses on the January effect, which hypothesises that average stock returns in January are higher than those in other months (Bilir, 2018: 150). Several factors have been proposed to explain the January effect. These include investors selling securities in December to minimise tax liabilities and repurchasing them at the beginning of the new year, increased year-end stock sales due to portfolio managers being evaluated on an annual basis, and subsequent demand for undervalued stocks in January. Additional factors include heightened buying activity in small-cap stocks, the overreaction effect, year-end window dressing of financial statements, and renewed demand for low-priced stocks in January (Küçüksille, 2012: 130).

The January effect has been extensively tested across various markets during different periods, particularly in the United States markets (Kein, 1983; Corhay et al., 1987; Lakonishok & Smidt, 1988; Haugen & Jorion, 1996; Chatterjee & Maniam, 1997; Mehdiian & Perry, 2002; Haug & Hirschey, 2006; Al-Rjoub & Alwaked, 2010). It has also been tested in various international markets, as well as the United Kingdom (Gu & Simon, 2003), Kuwait (Al-Saad & Moosa, 2005), Japan (Kato & Schallheim, 1985), Italy (Barone, 1990), Hong Kong (Cheung & Coutts, 1999), Greece (Mylonakis & Tserkezost, 2008; Floros, 2008), Jordan (Maghayereh, 2003; Alrabadi & Al-Qudah, 2012) and Türkiye (Ege et al., 2012; Aytekin & Sakarya, 2014; Yiğiter & İlgin, 2015; Bilir, 2018; Öztürk et al., 2018) as well as Vietnam (Friday & Hoang, 2015) and Malaysia (Annuar & Ariff, 2015). While some studies have found evidence of the January effect in stock markets, others have failed to identify it.

Santesmases (1986) identified the January effect in the Spanish stock exchange. Similarly, Corhay et al. (1987) investigated markets in the United States, the United Kingdom, France, and Belgium and uncovered a similar anomaly. Agrawal and Tandon (1984) conducted a study of the January effect across multiple markets, including developed and developing countries, and concluded that the anomaly was present in both. Plastun et al. (2020) also found evidence of the January effect in the markets of the United States, the United Kingdom, Canada, France, Germany, Italy, Japan, and Switzerland.

In the Türkiye stock market, studies on the January effect have yielded similar results. Ege et al. (2012), Aytekin and Sakarya (2014), Yiğiter and Ilgın (2015), and Bilir (2018) confirmed the presence of the January effect in Türkiye. Mills et al. (2000) identified elevated monthly returns in the Athens stock market during January and February. Similarly, Mylonakis and Tserkezos (2008) observed a notable increase in returns in January, accompanied by fluctuating lower returns in November within the Athens stock market. However, they noted a decline in January's average returns over the years, indicating a weakening of the January effect. In contrast, Floros (2008) found no empirical support for the January effect in the Greek stock exchange, while Öztürk et al. (2018) concluded that January had no significant impact on stock index returns or volatility in the Türkiye stock market. Giovanis (2009) conducted one of the most extensive studies into monthly anomalies. In this study, which included stock markets in France, Greece, Spain, and Türkiye, among the 55 markets analysed, no evidence of the January effect was found in 36 of them. Evidence from the Türkiye stock market indicated positive effects in April, October, and December, and adverse effects in May and August. In the Greek stock market, April had a positive effect, while October had an adverse effect. In France, only September showed a negative effect, while in Spain, October demonstrated a positive effect.

One of the significant seasonal anomalies emphasised by researchers and investors is the Halloween Effect, also known as the "Sell in May and Go Away" anomaly. This anomaly suggests that stock market returns tend to be higher between November and April than between May and October. Similarly, the Halloween Effect suggests investing in the stock market from the end of October to the end of April and exiting the market during the rest of the year (Bouman & Jacobsen, 2002: 3). The foundational work on the Halloween effect is that of Bouman and Jacobsen (2002). Their study, covering the period from 1970 to 1998, examined 37 developed and emerging stock markets, including France, Greece, Spain, and Türkiye, and found that returns were lower during the May-October period than during the November-April period in 36 of these markets, confirming the Halloween effect. Andrade et al. (2013) extended the analysis period of Bouman and Jacobsen's (2002) study to include data from 1998 to 2012. They identified the Halloween effect in 20 of the same 37 countries. However, during this extended period, the Halloween effect was not observed in France, Spain, Greece, and Türkiye, which were previously noted to exhibit the anomaly. Plastun et al. (2020), in their study examining the Halloween effect across various sub-periods, identified the anomaly in eight countries, including France, and highlighted that it was powerful during the 20th century. Zhang and Jacobsen (2021) found evidence of the Halloween effect across 65 countries, using the earliest available data through the most recent period. They identified evidence of the Halloween effect in 64 of these countries, including France, Greece, Spain, and Türkiye. Similarly, Magnusson (2021), in a study spanning 1958 to 2019, found evidence of the Halloween effect in 12 of 13 stock markets examined, including France. In contrast, Evci and Samırkaş (2023), in their study covering the period from 1998 to 2022, observed no evidence of the Halloween effect in the Türkiye stock market, concluding that the Sell in May and Go Away strategy was not valid in Türkiye.

Variations in return between the summer and winter seasons have been attributed to various factors in the literature. Bouman and Jacobsen (2002) suggested that these differences might stem from investors' tendency toward risk aversion during holiday periods. Kamstra et al. (2003) and Magnusson (2021) proposed that this effect could be associated with Seasonal Affective Disorder. Cao and Wei (2005) argued that temperature fluctuations could influence investor decisions, establishing a negative relationship between temperature changes and stock returns. Hirshleifer and Shumway (2003) and Gerlach (2010) asserted that variations in daylight hours might affect stock prices and contribute to the formation of seasonal effects. Hong and Yu (2009) suggested that investor holiday behaviour might explain these differences, while Jacobsen and Marquering (2002) posited that natural seasonal patterns could affect liquidity, production, and consumption, thereby serving as potential sources of seasonal effects.

Studies examining seasonal effects at the sectoral level are relatively limited. Greene and Godyn (2006), in their research on the United States airline industry covering the period 1995-2005, noted that buying airline stocks in October and selling them in July of the following year was a significant predictor of abnormal returns. They revealed that airline stocks outperformed a similar strategy applied to the S&P 500 by an average of 17%. Moreover, the highest average returns were achieved by purchasing airline stocks in October and selling them during the winter months. Even when stocks were bought in October and sold in November, the average return for airline companies was 9,6%, compared to 3,3% for the S&P 500. Investing in an airline stock portfolio in October and selling it in the spring of the following year also consistently yielded returns exceeding those of the S&P 500. This phenomenon was attributed to investor expectations of best-case earnings scenarios at the beginning of the year, which were typically revised downward as the year progressed. During the summer months, as forecasts declined, investor optimism waned, and selling pressure increased. By the fourth quarter, as stock prices hit their lows and investors began contemplating the following year's earnings growth potential, optimism about the future improved, leading investors to become net buyers of stocks. These patterns were suggested as possible explanations for seasonality. Jacobsen and Visaltanachoti (2009) demonstrated that calendar effects were seasonally associated with different sectors. They found that consumer sectors generally perform better in the summer months, whereas industrial sectors, on average, yield returns exceeding the market in the winter months.

3. Description of the Data

To analyse the impact of seasonal factors on stock prices in the airline industry, the stock prices of the largest airline companies by market capitalisation from countries with similar climatic conditions are used. The airline companies included in the study, along with their related information, are presented in Table 1.

Table: 1
Airline Companies and Market Capitalisations

Airline	Country	Abbreviation	Stock Exchange	Market Cap (million \$)*
International Consolidated Airlines	Spain	ICAG	Madrid (BME)	15.640
Turkish Airlines	Türkiye	THYAO	Istanbul (BIST)	11.040
Air France KLM	France	AIRF	Paris (EURONEXT)	2.040
Aegean Airlines	Greece	AGN	Athens (ATHEX)	880

* Obtained from <<https://companiesmarketcap.com/>>, 01.07.2024.

Spain, Türkiye, France, and Greece, which were included in the study, have Mediterranean climates, and seasonal transitions are observed. Tourism plays a significant role in the economies of these Mediterranean countries. During the summer months, an increase in tourism revenues is anticipated, accompanied by a rise in air traffic. This situation is critical for analysing seasonal effects on airline stock returns. The similarity of climatic conditions ensures that the external environmental impacts during the operating periods of the analysed companies are compatible. To construct the dataset, the largest airlines by market capitalisation in these countries were selected. As shown in Table 1, the company with the highest market capitalisation is ICAG, while the lowest is AGN.

International Airlines Group (IAG) was established in January 2011 following the merger of British Airways and Iberia, forming one of the world's largest airline holding companies. IAG is the parent company of British Airways, Iberia, Vueling, Aer Lingus, LEVEL, IAG Loyalty and IAG Cargo. It is a Spanish-registered company with shares trading on the London and Spanish stock exchanges (<<https://www.iairgroup.com/>>).

Turkish Airlines, established in 1933 in Türkiye, is an airline company that provides domestic and international passenger and cargo transportation services based in Türkiye. Since 1990, the company has been publicly traded on Borsa Istanbul under the ticker symbol THYAO. As of now, 50.88% of its shares are publicly held. A member of the Star Alliance, the company was ranked the 7th best airline in the world by Skytrax in 2024 (<<https://www.turkishairlines.com/>>; <<https://www.worldairlineawards.com/>>).

Air France-KLM is a Franco-Dutch multinational airline holding company headquartered in Paris, France. KLM was established in 1919, while Air France was founded in 1933. The current entity, Air France-KLM, was formed through the 2004 merger of the two airlines. The group operates primarily under three key brands: Air France, KLM, and Transavia (<<https://www.klm.com.tr/information/corporate/about-air-france-klm/>>).

Established in 1992 as Greece's first private airline, Aegean Airlines was listed on the Athens Stock Exchange in 2007. In 2013, the company acquired Olympic Air, further expanding its operations. As a member of the Star Alliance, Aegean Airlines was ranked the second-best regional airline worldwide by Skytrax in 2024 (<<https://en.about.aegeanair.com/company/history/milestones/>>; <<https://www.worldairlineawards.com/>>).

In addition to these four companies, the NYSE Arca Global Airline Index (AXGAL) has been included in the study. This index tracks the performance of a broad portfolio of airlines listed globally. It serves as a benchmark for assessing whether the seasonal effects observed in the selected companies are consistent with or differ from global trends. Therefore, the inclusion of AXGAL allows the study to place its findings within the broader context of the international airline market and helps validate the generalizability or regional specificity of the observed seasonal patterns.

In the study, daily natural logarithmic returns for ICAG, THYAO, AIRF, and AGN are used for the period from January 2012 to May 2024. The returns are calculated using Equation 1:

$$R_t = \ln \frac{P_t}{P_{t-1}} \quad (1)$$

In Equation 1, R_t represents the natural logarithmic return of the respective airline company at time t , while P_t and P_{t-1} denote the daily closing prices of the company at time t and $t-1$, respectively.

Descriptive statistics for the return series of airline companies and the global airline index (AXGAL) are exhibited in Table 2. The results indicate that all return series, except for AIRF, exhibit positive mean values, suggesting overall profitability during the sample period. Notably, AIRF demonstrates a negative average return, implying underperformance relative to peers. If the kurtosis coefficient is greater than 3, the distribution is flatter than the normal distribution, and if the skewness coefficient is less than 0, the distribution is skewed to the left. In this case, the return distributions of all assets display negative skewness and high kurtosis, indicative of frequent extreme adverse shocks and leptokurtic behaviour, respectively. These characteristics are particularly pronounced in ICAG and AGN, which have the highest kurtosis values, reflecting substantial tail risk. The Jarque-Bera test strongly rejects the null of normality for all series at the 1% significance level.

Table: 2
Descriptive Statistics

	ICAG	THYAO	AIRF	AGN	AXGAL
Mean	0,000176	0,001639	-0,000204	0,000800	0,000258
Median	0,000000	0,000800	0,000500	0,000000	0,000370
Maximum	0,231651	0,103436	0,242681	0,264596	0,147941
Minimum	-0,327484	-0,163219	-0,230929	-0,278981	-0,196225
Std. Dev.	0,027581	0,025208	0,027349	0,025717	0,018753
Skewness	-1,025004	-0,091293	-0,091413	-0,337143	-0,521132
Kurtosis	19,43642	5,689890	8,858251	17,67146	15,70318
Jarque-Bera	36272,48*	943,7385*	4543,123*	27457,64*	21471,41*
Observations	3173	3116	3174	3055	3172

* 1% significance level.

4. Research Methodology

In this study, the existence of monthly anomalies in each company's share returns is first examined. For this purpose, the following Equation 2, which incorporates dummy variables, is constructed and estimated using the Ordinary Least Squares (OLS) method.

$$R_t = \sum_{i=1}^{12} \phi_i D_{it} + \varepsilon_t \quad (2)$$

In Equation 2, R_t symbolises the natural logarithmic return of the respective airline company at time t ; D_{it} denotes the dummy variable for each month; ϕ_i represents the average return for each month of the year; and ε_t is a white noise error term. The dummy variable is assigned a value of 1 for observations corresponding to the specified month and 0 for all other cases. The size, direction, and statistical significance of the dummy variable coefficients indicate the existence of anomalies (Caporale & Plastun, 2017: 260). Within this framework, the null hypothesis posits that average returns remain constant across months, whereas the alternative hypothesis asserts that they vary, implying a month-of-the-year effect. If the coefficients of the dummy variables are statistically significant, the null hypothesis is rejected, leading to the conclusion that a month-of-the-year impact is present.

To reveal seasonal effects in the airline industry, the IATA-defined sectoral seasonal transition periods are considered. According to IATA, the industry's summer season runs from the last Sunday of March to the last Saturday of October, while the winter season runs from the last Sunday of October to the last Saturday of March. Within this framework, for this study, trading days between April and October are considered the summer period, while trading days between November and March are defined as the winter period. Dummy variables are defined for each period, and Equation 3 is estimated using OLS.

$$R_t = \lambda_0 + \lambda_1 D_t + \varepsilon_t \quad (3)$$

In Equation 3, D_t represents the seasonal dummy variable. The coefficient of D_t takes a value of 0 during the November-March period and 1 during the April-October period, and its deviation from zero is tested. The constant term (λ_0) represents the average return for the November-March period. If the dummy variable coefficient (λ_1) is statistically significant and positive, the null hypothesis of no seasonal effect in the airline industry is rejected. In other words, the average return in the summer is higher than in the winter. Under this condition, the average return during the April-October period will be $\lambda_0 + \lambda_1$.

Maberly and Pierce (2003,2004) and Yılcı (2013) have demonstrated in their studies that outliers significantly influence anomalies. Therefore, to determine whether outliers affect seasonality, Equation 3 is re-estimated while accounting for them. The model incorporating outliers is presented in Equation 4:

$$R_t = \lambda_0 + \lambda_1 D_t + \lambda_2 A_t + \varepsilon_t \quad (4)$$

In the equation, A_t is a dummy variable that equals 1 when t is an outlier month and 0 otherwise.

In this study, outliers are identified using the modified Z-score proposed by Iglewicz and Hoaglin (1993). Unlike the traditional Z-score, which uses the mean and standard deviation of the series, the modified Z-score employs the median and the median absolute deviation. The modified Z-score is expressed in Equation 5 (Iglewicz & Hoaglin, 1993: 11):

$$M_i = \frac{0.6745(x_i - \tilde{x})}{\text{median}_i\{|x_i - \tilde{x}|\}} \quad (5)$$

In Equation 5, $\tilde{x}$ represents the median of the series. Observations with an absolute value of the calculated modified Z-score greater than 3,5 are considered outliers.

During the estimation of models that utilize dummy variables, two main issues may arise: the first is the problem of autocorrelation, which refers to the correlation between the error terms obtained from the model; the second is the issue of heteroskedasticity, which refers to the non-constant variance of error terms over time, arises (Apolinario et al., 2006: 57; Aharon & Qadan, 2018: 57). To address the problems of autocorrelation and heteroskedasticity in this study, the Autoregressive models (AR(p)) and/or the Exponential Generalized Autoregressive Conditional Heteroscedasticity (EGARCH(p,q)) model which widely used in many studies (Wasiuzzaman, 2018: 273-281; Aggarwal & Jha, 2023: 1438-1452) is applied. The EGARCH(p,q) model proposed by Nelson (1991) is given by Equation 6.

$$\log(\sigma_t^2) = \alpha_0 + \sum_{i=1}^q \alpha_i \frac{|\varepsilon_{t-i}|}{\sigma_{t-i}} + \sum_{i=1}^q \gamma_i \frac{\varepsilon_{t-i}}{\sigma_{t-i}} + \sum_{j=1}^p \beta_j \log(\sigma_{t-j}^2) \quad (6)$$

In the above equation, σ_t^2 represents the conditional variance; ε_t is the error term with a zero mean and constant variance; q denotes the lag length of the squared errors; p represents the lag length of the conditional variance; α_i and β_j correspond to the Autoregressive Conditional Heteroscedasticity (ARCH) and Generalized Autoregressive Conditional Heteroscedasticity (GARCH) effects on the conditional variance, respectively; α_0 is the constant term in the conditional variance equation, and γ symbolizes the asymmetric impact. A statistically significant and negative γ parameter indicates that negative news creates more volatility than positive news (Asteriou & Hall, 2021: 269). For the model to be stationary, the sum of β_j must be less than one (Wang & Wu, 2012: 2173). In determining the appropriate model among various options, in addition to the stationarity condition, the Akaike Information Criterion (AIC) and Schwarz Information Criterion (SIC) are considered, with lower values indicating better model fit.

In an autoregressive model, R_t depends on a weighted sum of its own past values and an error term. The AR(p) model is expressed as follows:

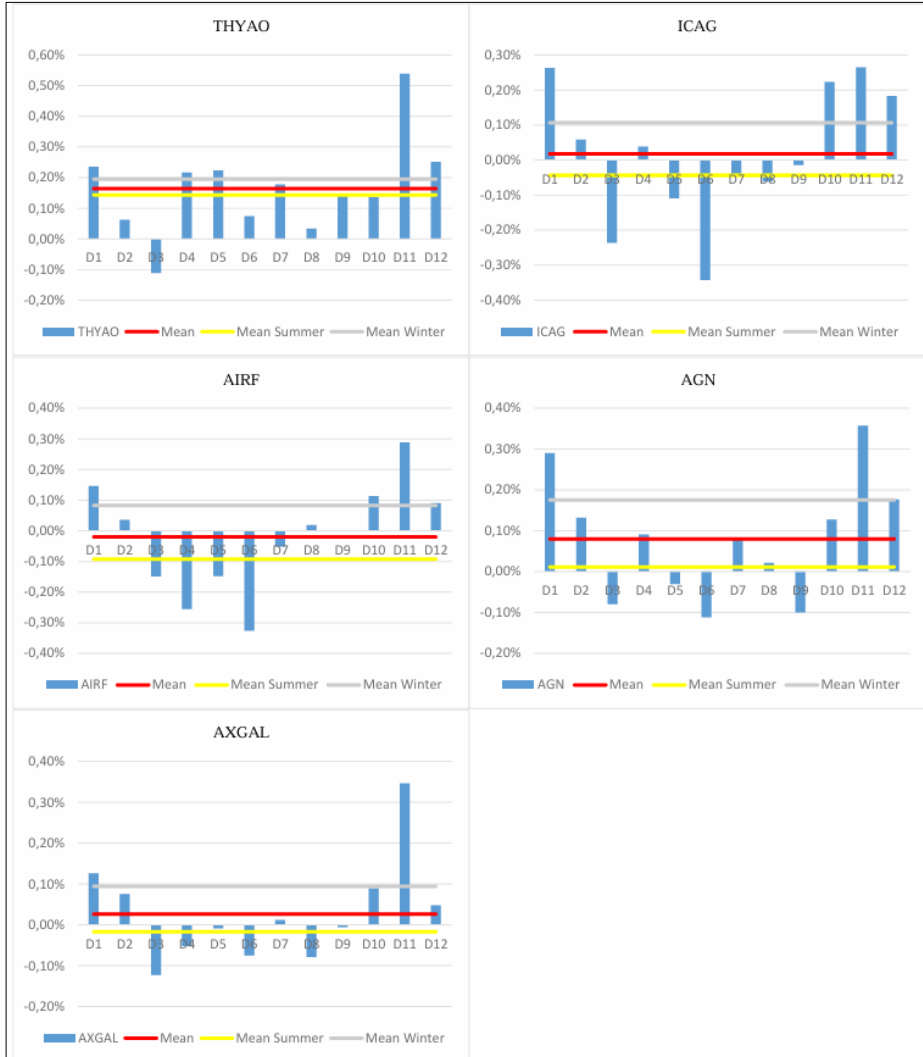
$$R_t = \lambda_0 + \sum_{i=1}^p \phi_i R_{t-i} + \varepsilon_t \quad (7)$$

In the above equation, p denotes the order of the autoregressive process and the number of lagged dependent variables included in the model. For the AR(p) model to be stationary, the sum of the ϕ parameters must be less than one. (Asteriou & Hall, 2021: 234).

5. Results

This study examines seasonal effects in the stock returns of companies in the airline industry. In this context, the monthly average returns of the airline companies and the airline index were calculated, and the results are presented in Graph 1. ICAG achieves above-average returns in January, February, April, October, November, and December; THYAO achieves above-average returns in January, April, May, July, November, and December. AIRF has a negative average return but obtains positive returns in January, February, October, November, and December. AGN achieves above-average returns in January, February, April, October, November, and December. When the sector is evaluated globally, AXGAL has a positive return above the average in January, February, October, November and December. Overall, all companies and the global index show positive average returns in January, February, October, November, and December, while March shows negative returns. Consistent with the sectoral index, all companies reach their highest average return in November during the sample period. The month with the most significant loss, aside from THYAO and AXGAL, is June. For THYAO and AXGAL, March is the month with the most significant loss.

Graph: 1
Monthly and Seasonal Averages



In terms of seasonal effects, all companies and AXGAL exhibit positive returns in winter, while only THYAO and AGN exhibit positive returns in summer. However, for these companies, returns during the summer are lower than those in the winter. The highest average return during both the winter and summer periods is observed for THYAO. The average monthly returns in Graph 1 suggest that the higher average return during the winter

season compared to the summer season in the industry is not due to an abnormal return in a particular month. During the winter months, the monthly average returns are generally above the period average, whereas in the summer months, they are below it.

Table: 3
Monthly and Seasonal Averages

Months	ICAG	THYAO	AIRF	AGN	AXGAL
Φ_1	0,002636	0,002347	0,001460	0,002900	0,001258
Φ_2	0,000581	0,000625	0,000354	0,001317	0,000749
Φ_3	-0,002363	-0,001112	-0,001494	-0,000795	-0,001225
Φ_4	0,000381	0,002161	-0,002549	0,000909	-0,000516
Φ_5	-0,001086	0,002235	-0,001479	-0,000304	-0,000080
Φ_6	-0,003421	0,000747	-0,003263	-0,001113	-0,000749
Φ_7	-0,000390	0,001769	-0,000508	0,000802	0,000112
Φ_8	-0,000609	0,000329	0,000184	0,000214	-0,000784
Φ_9	-0,000137	0,001439	-0,000015	-0,000997	-0,000058
Φ_{10}	0,002224	0,001356	0,001131	0,001276	0,000891
Φ_{11}	0,002646	0,005393	0,002884	0,003577	0,003461
Φ_{12}	0,001826	0,002518	0,000906	0,001766	0,000472
Mean	0,000176	0,001639	-0,000204	0,000800	0,000258
Mean Winter	0,001065	0,001954	0,000822	0,001753	0,000943
Mean Summer	-0,000434	0,001434	-0,000928	0,000112	-0,000169

To examine the month-of-year effect in the airline industry and determine whether monthly average returns are statistically significant, Equation 2 was estimated using OLS. For this purpose, the stationarity of the series was first analysed using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests. Subsequently, the presence of autocorrelation and heteroscedasticity in the return series was examined by calculating the Ljung-Box Q and ARCH-LM test statistics, respectively. The ADF and PP tests, as shown in Table 3, suggest that the return series are stationary at the 1% significance level in their level values. Furthermore, the Ljung-Box Q(36) test reveals autocorrelation in all series except THYAO and AIRF return series, while the ARCH-LM(5) test indicates heteroskedasticity in all series. In this context, the appropriate AR and EGARCH models were determined for each return series, and Equation 2 was estimated. The findings are displayed in Table 4.

Table: 3
Unit Root Test Results

	ICAG	THYAO	AIRF	AGN	AXGAL
ADF Test					
Constant	-54,13965*	-57,66492*	-54,03647*	-55,12711*	-50,83518*
Constant and trend	-54,15571*	-57,68625*	-54,06533*	-55,13302*	-50,83518*
PP Test					
Constant	-54,35865*	-57,74329*	-54,13257*	-55,12702*	-50,98492*
Constant and trend	-54,33917*	-57,75187*	-54,15092*	-55,13321*	-50,98492*
Q(36)	0,000	0,302	0,175	0,000	0,000
ARCH-LM(5)	0,000	0,000	0,000	0,000	0,000

* 1% significance level, Q(36) is the Ljung-Box Q statistic in return for 36 lags. ARCH-LM(5) is a Lagrange multiplier test used to detect ARCH effects of up to order 5 in the residuals. The values in parentheses in the Q(36) and ARCH-LM(5) test statistics are the probability values for autocorrelation and heteroscedasticity, respectively.

The results presented in Table 4 show that for ICAG, the returns for January, October, and December are statistically significant and positive, while the return for August is statistically significant and negative. For THYAO, the returns for May and November are

statistically significant and positive. For AGN, only the January return is positive and significant, while for AIRF, the returns for May and June are negative and significant. When evaluated using the airline index, only the average returns in January and November are positive and statistically significant. According to Table 3, November, which yielded the highest average return, is statistically significant only for THYAO and AXGAL. The lowest return is observed in June, and this difference is statistically significant for AIRF. The Ljung-Box Q and ARCH-LM test statistics indicate no issues of autocorrelation or heteroskedasticity. In the applied EGARCH(1,1,1) model, except for the AIRF, the γ parameter is statistically significant and negative, indicating that negative news increases volatility more than positive news in companies' stock returns. For AIRF, conversely, positive news causes more volatility than negative news.

Table: 4
OLS Estimations for Month of Year Effect

Coefficients	ICAG	THYAO	AIRF	AGN	AXGAL
Φ_1	0,002586** (0,001199)	0,000923 (0,001248)	0,001067 (0,001301)	0,003622* (0,000981)	0,002865* (0,000710)
Φ_2	0,001057 (0,001320)	0,000834 (0,001532)	7,43E-05 (0,001344)	0,001601 (0,001300)	0,001177 (0,001065)
Φ_3	-0,000712 (0,001363)	-0,000509 (0,001411)	0,000629 (0,001589)	-0,000327 (0,001078)	-0,000214 (0,000937)
Φ_4	0,000302 (0,001287)	0,001186 (0,001597)	-0,002079 (0,001487)	0,000610 (0,001231)	-0,001169 (0,000883)
Φ_5	-0,000907 (0,001270)	0,002587*** (0,001342)	-0,003542* (0,000946)	-0,001087 (0,001129)	-0,000432 (0,000879)
Φ_6	0,000569 (0,001101)	-0,000204 (0,001419)	-0,003360** (0,001436)	-0,001146 (0,001427)	-0,000539 (0,000906)
Φ_7	-0,000570 (0,001178)	-0,000357 (0,001467)	7,00E-05 (0,001489)	0,000204 (0,001441)	-0,000339 (0,000921)
Φ_8	-0,002524*** (0,001517)	0,000487 (0,001509)	4,64E-05 (0,001494)	-0,000467 (0,001134)	-0,001513 (0,000997)
Φ_9	0,000636 (0,001247)	0,000343 (0,001510)	0,000993 (0,001566)	0,000451 (0,001094)	-0,000296 (0,000888)
Φ_{10}	0,001985*** (0,001101)	0,001917 (0,001520)	-0,000108 (0,001059)	0,000584 (0,001167)	0,000408 (0,000872)
Φ_{11}	0,001461 (0,001356)	0,006331* (0,001310)	0,001662 (0,001369)	0,000500 (0,001244)	0,003292* (0,000802)
Φ_{12}	0,002330* (0,000849)	0,001260 (0,001493)	0,001967 (0,001750)	0,001327 (0,001129)	0,000280 (0,000977)
AR(1)	-	-	-	-	0,079817* (0,018407)
α_0	-0,208258* (0,016545)	-0,683575* (0,089443)	-0,735356* (0,071497)	-0,242291* (0,014225)	-0,254988* (0,024797)
α_1	0,129154* (0,007587)	0,180366* (0,018044)	0,214267* (0,017613)	0,172265* (0,009045)	0,145084* (0,010647)
γ_1	-0,049589* (0,006238)	-0,054255* (0,009350)	0,036798* (0,008601)	-0,029126* (0,004693)	-0,052974* (0,007458)
β_1	0,984912* (0,001920)	0,926244* (0,010694)	0,920911* (0,008768)	0,984426* (0,001585)	0,982549* (0,002473)
AIC	-4,605655	-4,600053	-4,436794	-4,749053	-5,477565
SIC	-4,575101	-4,568992	-4,406256	-4,717526	-5,445068
Q(36)	0,575	0,53	0,158	0,145	0,398
ARCH-LM (5)	0,4068	0,9071	0,8377	0,3285	0,8521

*, **, *** indicate 1%, 5% and 10% significance level, respectively. The figures in parentheses represent the standard errors. AR(1) means a first-order autoregressive process.

Equation 3 is used to examine the seasonal effect. The appropriate EGARCH model was determined for each return series, and Equation 3 was estimated for each series. The results are presented in Table 5. The EGARCH (1,1,1) regressions show that, for all airlines

except THYAO, the λ_1 parameter is statistically significant and negative. The negative sign of the parameter indicates that the monthly returns during the April-October period (summer) are lower than those during the November-March period (winter). The regression findings support the conclusion shown in Graph 1, which indicates that airlines' average stock returns are positive during the winter period.

Table: 5
OLS Results for Seasonal Effect

Coefficients	ICAG	THYAO	AIRF	AGN	AXGAL
λ_0	0,001528* (0,000507)	0,001257** (0,000602)	0,001136*** (0,000659)	0,001510* (0,000505)	0,001483* (0,000410)
λ_1	-0,001823* (0,000660)	-0,000344 (0,000867)	-0,002327* (0,000792)	-0,001919* (0,000662)	-0,002005* (0,000532)
AR(1)	-	-	-	-	0,079236* (0,018449)
α_0	-0,218523* (0,015485)	-0,697011* (0,091380)	-0,736067* (0,066891)	-0,246599* (0,013650)	-0,267843* (0,025420)
α_1	0,137549* (0,006125)	0,186063* (0,018491)	0,210166* (0,015413)	0,174404* (0,008877)	0,151754* (0,010594)
γ_1	-0,041157* (0,005697)	-0,042159* (0,009350)	0,035596* (0,007571)	-0,029218* (0,004572)	-0,046630* (0,007216)
β_1	0,984327* (0,001861)	0,924948* (0,010892)	0,920343* (0,008335)	0,984055* (0,001574)	0,981570* (0,002564)
AIC	-4,608131	-4,602505	4,440458	-4,754396	-5,479471
SIC	-4,596667	-4,590857	-4,428997	-4,742564	-5,466089
Q(36)	0,597	0,451	0,151	0,119	0,390
ARCH-LM (5)	0,3862	0,8904	0,8742	0,3620	0,7350

*, **, *** indicate 1%, 5% and 10% significance level, respectively. The figures in parentheses represent the standard errors.

Table: 6
OLS Results for Seasonal Effect Including Outliers

Coefficients	ICAG	THYAO	AIRF	AGN	AXGAL
λ_0	0,001615* (0,000529)	0,001226** (0,000618)	0,001315*** (0,000678)	0,001479* (0,000521)	0,001516* (0,000413)
λ_1	-0,001827* (0,000647)	-0,000361 (0,000873)	-0,002072** (0,000820)	-0,001967* (0,000673)	-0,001954* (0,000528)
λ_2	-0,009722* (0,0001190)	0,008380* (0,001189)	-0,028181* (0,001376)	-0,007003* (0,000951)	-0,007151* (0,001042)
AR(1)	-	-	-	-	0,076649* (0,018291)
α_0	-0,210080* (0,014697)	-0,704428* (0,094510)	-0,660984* (0,055622)	-0,245214* (0,012913)	-0,239636* (0,023539)
α_1	0,135283* (0,006489)	0,184401* (0,018873)	0,210330* (0,016409)	0,168269* (0,008645)	0,145851* (0,009891)
γ_1	-0,040794* (0,005559)	-0,042955* (0,009346)	0,024932* (0,007755)	-0,027984* (0,004666)	-0,043718* (0,007129)
β_1	0,985233* (0,001722)	0,92806* (0,011249)	0,930879* (0,006721)	0,983670* (0,001489)	0,984422* (0,002392)
AIC	-4,609394	-4,603399	-4,454849	-4,755369	-5,480772
SIC	-4,596019	-4,589810	-4,441478	-4,741565	-5,465479
Q(36)	0,559	0,454	0,112	0,109	0,4
ARCH-LM (5)	0,2591	0,9602	0,6697	0,3682	0,568

*, **, *** indicate 1%, 5% and 10% significance level, respectively. The figures in parentheses represent the standard errors.

The airline industry is adversely affected by numerous factors, including economic crises, terrorist attacks, wars, and pandemics. These events can introduce outliers that significantly influence anomalies. To investigate whether outliers impact seasonality, Equation 4, which incorporates outliers into the model, was estimated. The EGARCH (1,1,1) model results presented in Table 6 indicate that outliers are statistically significant and that

seasonal effects persist even when outliers are included in the analysis. The findings support the conclusion that returns during the winter period are positive relative to those in the summer period and that seasonality is absent for THYAO.

6. Discussion

The empirical findings of this study reveal that, except THYAO, the stock returns of the selected airlines exhibit statistically significant seasonal patterns, characterised by higher average returns in winter than in summer. These seasonal return patterns persist even after accounting for potential outliers and extraordinary events such as pandemics, wars, or natural disasters during the study period, suggesting the presence of structural anomalies in return behaviour rather than random fluctuations.

This seasonal behaviour is not only observable at the firm level but is also reflected in the global airline market index. The AXGAL index, which tracks the performance of a diversified portfolio of globally listed airline companies, also displays a similar winter-biased return pattern, consistent with the firm-level results. The alignment of AXGAL with the seasonal patterns found in ICAG, AGN, and AIRF reinforces the generalizability of the findings. It supports the assertion that these return anomalies are not limited to country- or firm-specific factors but rather indicate a broader global trend in the airline sector.

The observed seasonality is consistent with the limited previous literature on the airline industry. Greene and Godyn (2006), in their study covering the period from 1995 to 2005, found that buying airline stocks in October and selling them during the winter months yielded the highest average monthly returns, outperforming the S&P 500 index. Although this finding contradicts the EMH, it supports the notion that high returns can be achieved in the airline industry during the winter months.

Cao and Wei (2005) identified a negative relationship between temperature and stock returns, suggesting that stock returns differ between summer and winter, with higher returns during winter. Similarly, Jacobsen and Visaltanachoti (2009) found that average returns were positive in winter but negative in summer across 19 developed countries from 1998 to 2007. Additionally, they reported that in the United States. In the transportation sector, average returns during the summer months were lower than in the winter, with average returns falling below 1%. The study's findings support this by showing that airline companies' stock returns are positive in the winter months. Also, AXGAL's positive returns during winter months provide further empirical confirmation that the airline sector may consistently benefit from seasonal investor sentiment, demand cycles, and macroeconomic expectations.

While seasonality is not observed in THYAO, the average returns for May and November are statistically significant and positive for the month-of-the-year effect. For the industry, the period of excessive demand is typically the third quarter. The expectation that this demand would positively impact the company's financial statements, combined with the

fact that financial statements for this period are typically announced in November, may have contributed to the company's stock returns increasing during that month.

For ICAG and AGN, January returns are positive. The January effect may also affect these airlines. Indeed, Santesmases (1986) identified the January effect in Spain, while Mills et al. (2000) and Mylonakis and Tserkezos (2008) reported it in the Greek securities markets.

The findings of this study indicate that stock returns in the airline industry exhibit systematic variation during specific periods of the year and that these anomalies are not random. These results suggest that the EMH proposed by Fama (1970) does not hold in the airline industry. If the market were fully efficient, systematic returns arising from past price movements would not be observable, and investors would not be able to exploit these anomalies to achieve consistent abnormal profits. However, the study's findings demonstrate that investors may adjust their expectations based on seasonal patterns, leading to periods of systematically higher or lower returns, thereby indicating that market prices do not follow a purely random walk. This study contributes to the literature by providing robust evidence of seasonal anomalies in airline stocks, highlighting the importance of temporal factors in asset pricing, and suggesting that investors and portfolio managers may benefit from incorporating seasonal patterns into their transportation-sector trading strategies.

7. Conclusion

This study aimed to investigate seasonal patterns in the stock returns of selected airlines operating in countries with similar climatic conditions, as well as in the global airline index. The analysis, conducted using daily data, covers the period from 2010 to 2023 and includes ICAG, AIRF, AGN, THYAO, and AXGAL. The empirical findings demonstrate that, except for THYAO, the selected airlines and the global index exhibit apparent seasonal anomalies, with higher average returns in winter than in summer. Furthermore, the presence of outliers in the analysed periods does not significantly affect the observed seasonality.

These seasonal patterns support prior literature suggesting that airline stock returns are not entirely random but follow identifiable calendar-based trends. In particular, the January effect appears evident in ICAG, AGN, and AXGAL, while November returns were significantly positive for THYAO, potentially due to investor expectations ahead of third-quarter financial disclosures. This deviation from the EMH suggests that market participants may adjust their investment behaviour in line with seasonal expectations, thereby influencing asset pricing.

The inclusion of AXGAL as a global benchmark allows for the assessment of whether observed seasonal effects are firm-specific or industry-wide. The parallel findings between AXGAL and most individual firms strengthen the argument that these anomalies are not confined to local markets but reflect broader structural dynamics within the global airline industry. However, the relatively weak or irregular seasonality in THYAO's returns suggests

that national factors, such as regulatory structures, investor composition, or macroeconomic volatility, can moderate or mask these effects.

These findings suggest that investors planning to invest in these companies' shares could develop timing strategies by investing during periods of high returns and refraining during other periods. Moreover, the presence of seasonality in these companies implies that the EMH does not hold for their stock returns. Accordingly, the results of this study carry significant implications for both academic literature and investment strategies. From an educational perspective, they contribute to the ongoing discussion on how market anomalies emerge at the sectoral level and the underlying dynamics that sustain them. From an investment standpoint, recognising seasonal anomalies and incorporating them into investment decisions may provide a strategic advantage in terms of risk-return optimisation.

Studies in the literature suggest that no single factor is solely responsible for the emergence of seasonality; instead, a variety of factors, such as climatic conditions, holiday periods, religious events, economic cycles, and investors' moods, contribute to its occurrence, with these effects manifesting at different times. The results of this study, which investigates seasonality in the airline industry, reveal that although differences across countries are observed, seasonal effects are generally strong. The limited number of studies on the seasonality of stock returns in the airline industry complicates the formation of a definitive conclusion about whether this effect is attributable to geographic or market-specific factors or to a fundamental trait of the airline industry. With an increase in similar studies, the seasonal patterns in sector-level stock returns could be more robustly demonstrated.

Looking forward, future research may aim to explore whether these seasonal effects are consistent across longer time horizons and different market cycles, particularly in the post-COVID era, where structural shifts in consumer behaviour and airline operations may alter return dynamics. Moreover, integrating macroeconomic, sector-specific, and behavioural variables into the analysis may yield a more nuanced understanding of the mechanisms driving these seasonal return patterns.

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COVID-19 Pandemisinde Uzaktan Eğitimin Yükseköğretimdeki Sosyoekonomik Açından Dezavantajlı Öğrenciler Açısından İncelenmesi: Ankara İlinde Nitel Bir Araştırma

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Examination of Distance Education in Higher Education during the COVID-19 Pandemic from the Perspective of Socioeconomically Disadvantaged Students: A Qualitative Study in Ankara Province

Abstract

This study examines the experiences of socioeconomically disadvantaged higher education students with distance learning during the COVID-19 pandemic within the framework of educational equality of opportunity. In-depth interviews were conducted between January and March 2023 with 14 participants—children from families earning less than one-third of the minimum wage—who are undergraduate students at universities in Ankara Province. The collected data were analysed using thematic analysis. The findings indicate that students faced multiple disadvantages stemming from digital inequalities, financial pressures, and psychosocial burdens. Participants experienced learning setbacks due to limited access to course materials, inadequate study environments, and insufficient digital resources. The pandemic exposed structural inequalities that persisted into the post-pandemic period amid ongoing digitalisation. Based on these findings, social policy recommendations have been developed to enhance equality of educational opportunity.

Keywords : Social Policy, Distance Education, Socioeconomic Disadvantage, Higher Education, Equality of Opportunity in Education.

JEL Classification Codes : I24, I28, I29, I23, I32.

Öz

Bu araştırma, COVID-19 döneminde sosyoekonomik açıdan dezavantajlı yükseköğretim öğrencilerinin uzaktan eğitim deneyimlerini fırsat eşitliği bağlamında incelemektedir. Kişi başına düşen geliri asgari ücretin üçte birinden az olan ailelerin çocuklarından oluşan ve Ankara ilindeki üniversitelerde lisans eğitimini sürdüren 14 katılımcı ile Ocak-Mart 2023 döneminde derinlemesine mülakatlar gerçekleştirilmiş, elde edilen veriler tematik analiz yöntemiyle çözümlenmiştir. Bulgular, öğrencilerin dijital eşitsizlik, ekonomik baskı ve psikososyal yükler nedeniyle çok boyutlu dezavantajlar yaşadığını göstermiştir. Katılımcıların ders materyallerine erişememe, uygun çalışma ortamı bulamama ve dijital yetersizlikler nedeniyle eğitim kayıpları yaşadıkları gözlemlenmiştir. Pandemi, yapısal eşitsizlikleri görünür kılmış ve dijitalleşmenin kalıcılığıyla bu sorunlar post-pandemi dönemde de devam etmiştir. Elde edilen bulgular doğrultusunda eğitimde fırsat eşitliğini güçlendirmeye yönelik sosyal politika önerileri geliştirilmiştir.

Anahtar Sözcükler : Sosyal Politika, Uzaktan Eğitim, Sosyoekonomik Dezavantaj, Yükseköğretim, Eğitimde Fırsat Eşitliği.

1. Giriş

COVID-19 pandemisi, dünya genelinde eğitimin her kademesinde ani ve zorunlu bir uzaktan eğitim sürecini başlatmıştır. Yükseköğretimde yüz yüze eğitimin durmasıyla birlikte dersler çevrimiçi ortama taşınmış; ancak bu hızlı dönüşüm, her bölge ve toplumun her kesiminde aynı karşılığı bulmamıştır. Pandemi sürecinde uzaktan eğitim yalnızca pedagojik bir uyum süreci değil, aynı zamanda dijital erişim, ekonomik güçlük, motivasyon kaybı ve psikososyal kırılganlık gibi çok boyutlu sorunların kesiştiği bir deneyim alanı haline gelmiştir. Özellikle sosyoekonomik açıdan dezavantajlı konumdaki öğrenciler için önemli güçlükleri beraberinde getirmiştir.

Eğitimde fırsat eşitliği ilkesini zayıflatan bu dönüşüm, gelir düzeyi düşük, kırsal bölgelerde yaşayan veya dijital erişim olanakları sınırlı öğrenciler için yeni türden dezavantajlar yaratmıştır. Eğitimin niteliğini büyük ölçüde öğrencilerin dijital altyapıya erişimine, ev koşullarına ve pedagojik tasarımlara bağımlı hâle getirmiştir (Sezgin & Firat, 2020; Karakose, 2021; Goudeau et al., 2021). Pandemi döneminde çevrim içi eğitimin yaygınlaşması, mevcut sosyal ve ekonomik eşitsizlikleri derinleştirerek özellikle sosyoekonomik olarak dezavantajlı öğrenciler açısından yeni dezavantaj katmanlarının oluşmasına neden olmuştur. Bu süreçte öğretim süreci giderek dijital altyapıya, ev koşullarına ve bireysel imkânlarla bağımlı hale gelmiş; bu durum öğrenciler arasındaki sosyoekonomik farkları daha görünür kılmıştır. Dolayısıyla bu dönemde öğrencilerin öğrenme fırsatlarına erişimi; sahip oldukları cihaz, internet bağlantısı ve uygun çalışma ortamı kadar, içinde bulundukları hane yapısı, ekonomik koşullar ve psikolojik dayanıklılık düzeyine de bağlı olarak şekillenmiştir. Böylece eğitim alanındaki eşitsizlikler, yalnızca teknik değil, ekonomik ve sosyal düzlemlerde birikerek bileşik bir nitelik kazanmıştır (Howell et al., 2021).

Türkiye'deki yükseköğretim kurumları uzaktan eğitime kısa sürede uyum sağlamış olsa da, bölgesel farklılıklar ve sosyoekonomik çeşitlilik öğrenciler arasında katılım ve başarı farklarını derinleştirmiştir. Dezavantajlı öğrenciler için internet altyapısına erişim, dijital araç kullanımı, akademik destek mekanizmalarına ulaşma ve psikolojik dayanıklılığın sürdürülmesi ciddi birer sorun haline gelmiştir (Pençe, 2024). Bu koşullar, üniversitelerde dijital dönüşümün aynı zamanda bir sosyal politika meselesi olarak ele alınması gerekliliğini ortaya koymuştur.

Bu araştırmanın amacı, COVID-19 pandemisi sırasında yükseköğretimde uygulanan uzaktan eğitimin sosyoekonomik açıdan dezavantajlı öğrenciler üzerindeki etkilerini incelemektir. Çalışma kapsamında dijital eşitsizlikten kaynaklanan sorunlar ve bileşik dezavantaj olgusunun öğrencilerin eğitim deneyimine yansımaları değerlendirilmektedir. Bu doğrultuda araştırma, pandemi döneminde eğitimde fırsat eşitliğinin ne ölçüde sağlanabildiğini ve sosyoekonomik açıdan dezavantajlı öğrencilerin karşılaştığı engelleri belirlemeyi ve elde edilen bulgular doğrultusunda daha kapsayıcı ve eşitlikçi eğitim politikalarına yönelik önerilere zemin hazırlamayı hedeflemektedir.

2. Literatür

COVID-19 pandemisi, yükseköğretim sistemlerinde dijital dönüşümü hızlandırarak eğitimde eşitsizlik tartışmalarını yeniden gündeme getirmiştir. Pandeminin etkisiyle çevrim içi eğitime ani geçiş, öğrencilerin dijital altyapıya erişim düzeyi, sosyoekonomik konumları ve pedagojik uyum becerileri arasında belirgin farklılıklar oluşturmuştur. Konuya ilişkin yapılan birçok araştırma, çevrim içi eğitime erişim ile akademik başarı arasında güçlü bir ilişki olduğunu göstermektedir. Buna göre, genişbant internet erişimi, bağlantı hızı ve sürekliliği ile uygun cihaz sahipliği, öğrencilerin çevrim içi derslere katılımı ve öğrenme performansında belirleyici rol oynamaktadır (Katz et al., 2021; Cullinan et al., 2021).

Pandemi döneminde yürütülen yükseköğretim araştırmalarına ilişkin olarak uzaktan eğitime dair birçok olumlu ve olumsuz sonuç tartışılmıştır. Dolayısıyla, çevrim içi eğitimin bazı yönlerinin öğrenciler tarafından olumlu karşılandığı gösterilmektedir. Bunlar arasında öne çıkan bulgular, öğrencilerin ders kayıtlarını tekrar izleme ve mekândan bağımsız çalışma olanaklarını esneklik açısından avantajlı bulduklarıdır.

Ancak etkileşim eksikliği, ölçme-değerlendirmede adalet sorunları ve dikkat dağınıklığı gibi unsurlar ise öğrencilerin uzaktan eğitime yönelik en temel eleştirileri arasında yer almaktadır (Aksoy vd., 2021; Stevanović et al., 2021; Genç vd., 2020; Arar vd., 2022; Oyman-Bozkurt, 2022; Saltürk & Güngör, 2020; Yolcu, 2020). Özellikle üniversite birinci sınıf öğrencilerinde motivasyon ve derse bağlılık düzeylerinde belirgin düşüşler gözlemlenmiştir (Stevanović et al., 2021).

Uzaktan eğitimin olumsuz etkileri bağlamındaki bir diğer öne çıkan husus ise uygulamalı disiplinlerde (örneğin hemşirelik, mimarlık, mühendislik) çevrim içi ortama geçişin, pratik bilgi ve beceri kazanımını önemli ölçüde sınırlandırdığına yönelik bulgulardır. Laboratuvar ve klinik uygulamaların çevrim içi yürütülememesi, öğrencilerde öğrenme kalitesi ve mesleki yeterlik konularında öğrenme kayıplarına yol açmıştır (Kürtüncü & Kurt, 2020; Işık, 2021; Dinç & Erdoğan, 2021). Bu bağlamda, kısa video dersleri, simülasyonlar veya sosyal medya tabanlı öğrenme araçları belirli ölçüde destek sağlamış olsa da altyapı eksiklikleri ve kesintili bağlantı sorunları bu çözümlerin etkisini sınırlamıştır (Zamri et al., 2024). Aynı zamanda, öğrenme başarısının en güçlü belirleyicilerinden biri olan uzaktan eğitim sürecinde öğrenci-öğretim elemanı etkileşiminin, teknik kısıtlar tarafından sınırlandırılması durumlarında, öğrenme yeterliğini de düşürdüğü görülmüştür (Katz et al., 2021).

Pandemiye dair yükseköğretimde uzaktan eğitime ilişkin diğer bulgular, uzaktan eğitimin genel bir öğrenme kaybına neden olduğunu ve bu etkinin sosyoekonomik gruplar arasında eşitsiz biçimde dağıldığını ortaya koymaktadır (Donnelly & Patrinos, 2022). Her ne kadar ders kayıtlarının erişilebilir olması, zaman ve maliyet tasarrufu gibi faktörler öğrenciler tarafından olumlu değerlendirilse de (Genç vd., 2020; Oyman-Bozkurt, 2022; Inciso, 2021), sosyoekonomik açıdan dezavantajlı öğrenciler, dijital cihaz ve bağlantı eksikliğinin ötesinde, akademik motivasyon kaybı, yalnızlık hissi ve öğretim elemanlarıyla

iletişim güçlükleri gibi çok boyutlu sorunlar yaşamıştır (Themane & Mabasa, 2022; Azionya & Nhedzi, 2021; Katz et al., 2021; Teke-Lloyd vd., 2022). Bunun yanı sıra, uzaktan öğretimin sorumluluğunun ailelere yüklenmesi, düşük gelirli öğrencilerin akademik gerilemesini daha da derinleştirmiştir (Goudeau et al., 2021). Buna yönelik olarak ise literatürde, risk altındaki öğrencilerin erken tespit edilmesi, bu gruplara kampüs bilişim olanaklarının öncelikli sunulması ve kapsayıcı dijital pedagojilerin geliştirilmesi yönünde çeşitli politika önerileri bulunmaktadır (Cullinan et al., 2021; Karakose, 2021; Pençe, 2024).

Türkiye’de yapılan araştırmalar da sık bağlantı kesintileri, ev içi sorumluluklar ve yüz yüze etkileşim eksikliğinin akademik başarıyı olumsuz etkilediğini desteklemektedir (Altıparmak & Demircan, 2021; Aksoy & Özyürek, 2021). Ayrıca kırsal-kentsel farklılıklar, ebeveynlerin gelir ve eğitim düzeyleri ile hane kalabalıklığı, dijital uçurumun temel belirleyicileri olarak öne çıkmaktadır (Uyar, 2023; Nerse, 2020). Farklı illerde yürütülen alan araştırmaları, kırsal bölgelerdeki öğrencilerin internet erişimi ve dijital beceri düzeylerinin sınırlı kaldığını; evde özel çalışma alanı eksikliğinin de bu dezavantajı artırdığını ortaya koymuştur (Altıparmak & Demircan, 2021; Aksoy & Özyürek, 2021; Uyar, 2023). Türkiye’de sosyal hizmet öğrencileriyle yapılan başka bir araştırma ise öğrencilerin uzaktan eğitimin devamına sıcak bakmadıklarını; esnekliğin avantajlarına rağmen mesleki beceri gelişimi, etik ve adalet konularında ciddi endişeler taşıdıklarını göstermiştir (Buz & Afyonoğlu, 2021).

Sonuç olarak, pandemi sürecinde yükseköğretimde uzaktan eğitime ilişkin çalışmalar belirgin biçimde artmasıyla birlikte Türkiye’de de pandemi dönemi yükseköğretimde uzaktan eğitim üzerine kapsamlı bir betimleyici literatür oluşmuştur (Pençe, 2024; Teke-Lloyd vd., 2022). Bu çalışmaların önemli bir bölümü de genel öğrenci deneyimlerine odaklanmakta ve sosyoekonomik durum gözetilerek karşılaştırmalar yapılmaktadır. Bununla birlikte, sosyoekonomik açıdan dezavantajlı öğrencileri doğrudan odak alan çevrim içi öğrenme koşullarını derinlemesine ele alan araştırmalar literatürde görece daha az yer tutmaktadır. Bu çalışma da, alandaki mevcut literatüre katkı sunarak, kanıta dayalı politika geliştirme süreçlerine ve sosyoekonomik açıdan dezavantajlı öğrencilere yönelik hedefli müdahale tasarımlarına yön verebilecek bulgular üretmeyi amaçlamaktadır.

3. Kavramsal Çerçeve

Uzaktan eğitimle birlikte dijital teknolojilere erişim, eğitim süreçlerinde merkezi bir rol üstlenmiştir. Bu doğrultuda, uzaktan eğitimin getirdiği en büyük engellerden biri de dijital eşitsizlik olmuştur. Dijital eşitsizlik, internet bağlantısı ve cihazlara erişim imkânlarındaki adaletsizlikler ile altyapı, dijital beceriler ve maddi imkân farklılıklarından kaynaklanan bir uçurumu ifade etmektedir. Kavram, ilk olarak van Dijk (1999; 2005) tarafından, bireylerin bilgi ve iletişim teknolojilerine erişim imkânlarındaki farklılıkları açıklamak için kullanılmıştır. Daha sonra Norris (2001) ve DiMaggio & Hargittai (2001) tarafından geliştirilen yaklaşımlar, dijital eşitsizliğin yalnızca teknolojik araçlara sahip olup olmama durumu ile sınırlı olmadığını, aynı zamanda bireylerin bu teknolojileri etkin biçimde kullanabilme becerileriyle de ilişkili olduğunu vurgulamıştır. Bununla birlikte, bu

çalışmanın odağını dijital eşitsizliğin birincil boyutu olan erişim farklılıkları oluşturmaktadır. Erişime ilişkin sorunlar, uzaktan eğitim sürecinde sosyoekonomik açıdan dezavantajlı öğrencilerin derse katılımını ve öğrenim materyallerine ulaşımını kısıtlayarak mevcut eğitim eşitsizliklerini derinleştirme potansiyeli taşımaktadır (Warschauer, 2003; Helsper, 2012; van Dijk, 2020).

Erişim temelli bu dijital eşitsizlikler her öğrenci grubunu aynı ölçüde etkilememektedir; bazı bireyler, kesişen toplumsal ve ekonomik dezavantajlar nedeniyle bu süreci çok daha ağır yaşamaktadır. Eğitimde eşitsizliklerin anlaşılması ve giderilmesi noktasında bileşik dezavantajlılık olgusu da önem kazanmaktadır. Bileşik dezavantajlılık kavramı, Kimberlé Crenshaw'un 1989'da ortaya koyduğu kesişimsellik (intersectionality) yaklaşımına dayanmaktadır. Bu kuramsal çerçeve, bireylerin birden fazla dezavantajlı kimlik kategorisine aynı anda sahip olmaları durumunda maruz kaldıkları kesişen ve bileşik dezavantajların toplam etkisini vurgular. Örneğin, düşük gelirli bir aileden gelen, kırsal bölgede yaşayan ve internet bağlantısına erişimi kısıtlı olan bir öğrenci, uzaktan eğitim sürecinde her bir dezavantajın ayrı ayrı getirdiği zorlukların yanı sıra, bu dezavantajların bileşiminden doğan çok daha çetrefil engellerle karşılaşabilir. Kesişen kimlik öğelerinin yarattığı bu tür bileşik dezavantajlar, uzaktan eğitimde fırsat eşitliği ilkesinin gerçekleşmesini daha da güçleştirmektedir. Bu bağlamda, pandemi sürecinde eğitimde ve kapsayıcılık hedeflerine ulaşmak, yalnızca dijital cihaz ve internet erişimini sağlamakla sınırlı kalmayıp, aynı zamanda öğrencilerin farklı dezavantaj alanlarının bir arada ele alınmasını gerektirmektedir.

Söz konusu çok katmanlı eşitsizlikler, eğitimde fırsat eşitliği ilkesini yalnızca teknik erişim değil, toplumsal adalet boyutuyla birlikte ele almayı zorunlu kılmaktadır. Eğitimde fırsat eşitliği, tüm bireylerin toplumsal kökenleri veya kişisel özellikleri ne olursa olsun eğitim olanaklarına eşit erişim ve eğitim yoluyla benzer başarı şanslarına sahip olması gerektiği ilkesini ifade eder. Bu kavram, kitlesel eğitimin yaygınlaşmasıyla birlikte 20. yüzyılda eğitim politikalarının merkezine yerleşmiş ve farklı ülkelerde eğitimin demokratikleştirilmesi çabalarının odak noktası olmuştur (Evetts, 1970; Hallinan, 1988). Başlangıçta fırsat eşitliği yaklaşımı, okullara evrensel erişim sağlama ve eğitimden dışlanmayı önleme amacıyla, özellikle II. Dünya Savaşı sonrasındaki sosyal reformlar ve insan hakları hareketleriyle önem kazanmıştır (Hallinan, 1988). Ancak yalnızca eşit erişim sağlanmasının gerçek anlamda eşitliği tesis etmeye yetmediği görülmüştür; zira sosyoekonomik durum, aile arka planı, ırk ve cinsiyet gibi faktörler, herkesin okula erişebilse dahi eğitim çıktılarına belirleyecek seviyededir. Bu nedenle, eğitimde fırsat eşitliği kavramı zamanla biçimsel eşitlikten ziyade fiili eşitliği hedefleyecek şekilde genişlemiştir. Dezavantajlı grupların ek desteklerle güçlendirilerek benzer başarı olanaklarına kavuşmasını da içerecek biçimde yorumlanan çağdaş fırsat eşitliği anlayışı, literatürde kavramsal olarak farklı şekillerde tanımlanmakta ve yoğun biçimde tartışılmaktadır (Jencks, 1988).

Günümüzde eğitimde fırsat eşitliği, sosyal adalet bağlamında ele alınmakta ve kavramın çağdaş anlamı, eşitlik kadar eşitlikçilik (adalet) vurgusunu da içermektedir. Bu bakış açısına göre, herkesin aynı olanaklara sahip olması için bazen dezavantajlı gruplara

daha fazla kaynak sağlanması gerekebilir; zira farklı başlangıç koşullarını dikkate almadan herkese aynısını vermek, sonuçlarda eşitsizlikleri sürdürebilir (Levinson et al., 2022). Eğitimde fırsat eşitliği ile sosyal adalet kavramları yakından ilişkilidir: Eğitimde fırsatların eşitlenmesi, toplumdaki daha geniş eşitsizliklerin giderilmesi ve sosyal hareketliliğin artırılması için temel bir araç olarak görülür. Nitekim, eğitim, bireylerin yaşam şanslarını doğumla gelen rastlantısal koşulların belirlememesi için kritik bir alan olup, adil bir toplum idealinin önemli bir parçasıdır (Ding & Wang, 2023).

Dolayısıyla, pandemi döneminde mevcut sosyoekonomik ve bireysel eşitsizlikler, dijital teknolojilere erişim imkânlarındaki farklılıklarla birleşerek daha da belirgin hale gelmiştir. Bu durum, eğitimde başarı ve katılım açısından herkesin eşit imkânlarla sahip olmasını öngören eğitimde fırsat eşitliği ilkesini sınavan bir tablo ortaya çıkarmaktadır. Nitekim, eğitimde fırsat eşitliği, öğrencilerin sosyoekonomik statü, cinsiyet veya aile geçmişi gibi koşullardan bağımsız olarak benzer öğrenme olanaklarına sahip olmaları ve başarı sonuçlarındaki farklılıkların, öğrencilerin kendi kontrolleri dışındaki faktörlere dayanmaması gerektiğini ifade eder (OECD, 2018). Pandemi koşullarında ise bu ideale ulaşmak güçleşmiş; zira dijital imkânlardaki uçurum, uzaktan eğitim sürecinde bazı öğrencilerin diğerlerine kıyasla çok daha fazla zorluk yaşamasına neden olmuştur. Sonuç olarak, teknolojik altyapıya erişimde geri kalan öğrenciler ile tam erişime sahip akranları arasında öğrenme kayıpları ve başarı farklarının oluşması riski artmıştır.

4. Yöntem

Bu çalışmada nitel araştırma yöntemlerinden keşfedici durum çalışması ve iç içe geçmiş çoklu durum deseni kullanılmıştır. Bu desen, sosyal bir olgunun kendi bağlamı içinde derinlemesine incelenmesini, alt birimlerin birbiriyle ilişkilendirilmesini ve verilerin sistematik biçimde çözümlemesini mümkün kılmaktadır (Hitchcock & Hughes, 1995). Yöntemin amacı, sosyoekonomik açıdan dezavantajlı öğrencilerin uzaktan eğitim deneyimlerini çok boyutlu bir şekilde ortaya koymaktır.

Çalışma grubu, muhtaçlıkları gelir temelli yöntemle belirlenmiş ve sosyal yardım programlarından yararlanan hanelerde yaşayan yükseköğretim öğrencilerinden oluşmaktadır. Literatürde sosyal yardım yararlanıcılığı, sosyoekonomik dezavantajın temel bir göstergesi olarak kabul edilmektedir (Atkinson, 2019; OECD, 2021). Bu doğrultuda, hanede kişi başına düşen geliri asgari ücretin üçte birinden az olan bireyler, çalışmada dezavantajlı öğrenci grubunu temsil etmektedir. Örneklem, Ankara ili sınırlarında belirlenmiştir. Ankara, hem devlet hem de vakıf üniversitelerinin yoğunluğu (YÖK, 2024) hem de ülkenin farklı bölgelerinden öğrencileri barındırmasıyla, çeşitli sosyoekonomik profilleri temsil edebilecek bir araştırma sahası sunmaktadır. Katılımcılara, Ankara ilindeki sosyal yardımlaşma ve dayanışma vakıflarından sosyal yardım alan ailelerden amaçlı örnekleme yöntemlerinden biri olan kartopu yöntemiyle ulaşılmış ve katılım süreci tamamen gönüllülük esasına dayanmıştır (Creswell & Poth, 2016). Katılımcı seçim kriterleri ise şu şekildedir:

- Öğrencinin ailesinin sosyal yardım yararlanıcısı olması,
- Uzaktan eğitimi fiilen deneyimlemiş olması,
- Yükseköğretim kurumunda lisans düzeyinde eğitime devam etmesidir.

Araştırma, 15 Ocak - 17 Mart 2023 tarihleri arasında Ankara Yıldırım Beyazıt Üniversitesi Etik Kurulu'nun 06.01.2022/36 sayılı onayıyla yürütülmüştür. Veriler, yarı yapılandırılmış derinlemesine mülakat tekniği ile toplanmıştır. Katılımcılar sağlık bilimleri, mühendislik, fen bilimleri ve sosyal bilimler gibi farklı akademik alanlarda öğrenim görmektedir. Böylece uzaktan eğitim deneyimleri, disiplinler arası bir çeşitlilik içinde değerlendirilmiştir. 14 kişi ile yapılan derinlemesine mülakatlar sonucunda veri doygunluğu sağlandığı için araştırma sonlandırılmıştır. Nitel araştırmalarda örneklem büyüklüğünün gerekçelendirilmesinde kilit bir kavram olan veri doygunluğu, veri toplama sürecinde yeni bilgi veya tema ortaya çıkmamaya başladığı nokta olarak tanımlanır (Guest et al., 2006: 59). Görüşme formu, araştırma sorularına dayalı olarak hazırlanmış; araştırmacı, görüşme sürecinde katılımcıların yanıtlarına göre esnek biçimde hareket etmiş ve gerektiğinde takip soruları yönelmiştir (Yıldırım & Şimşek, 2021). Görüşmeler, katılımcıların tercih ettiği sessiz ortamlarda yüz yüze gerçekleştirilmiş; her biri ortalama 45 dakika sürmüştür (en kısa 35, en uzun 55 dakika). Görüşmeler, araştırmacı tarafından bizzat yürütülmüş, ses kaydı alınarak yazılı dökümler oluşturulmuştur. Katılımcıların gizliliği sağlanmış ve veriler anonimleştirilmiştir.

Araştırmadan elde edilen nitel veriler, tematik analiz yaklaşımı çerçevesinde çözümlenmiştir. Görüşme kayıtları önce yazıya aktarılmış, ardından MAXQDA 2024 yazılımı kullanılarak sistematik biçimde analiz edilmiştir. Analiz süreci üç aşamada yürütülmüştür. İlk olarak, veriler ayrıntılı biçimde okunmuş ve anlamlı ifadelerden açık kodlar oluşturulmuştur. İkinci aşamada, benzer anlamlar taşıyan kodlar birleştirilerek eksen kodlama yoluyla alt kategoriler tanımlanmış; bu kategoriler arasındaki ilişkiler belirlenmiştir. Son aşamada ise, elde edilen alt kodlar tematik düzeyde bir araya getirilerek dört ana tema oluşturulmuştur: dijital erişim ve altyapı eşitsizliği, öğretim süreci etkileşimi ve öğrenme kalitesi, ekonomik etkiler ve geçim zorlukları, psikososyal etkiler ve sosyal izolasyon, geleceğe ve sosyal politikalara ilişkin beklentiler. Kodlama süreci manuel olarak araştırmacı tarafından yürütülmüş, MAXQDA yazılımı ise kodların organizasyonu, sıklık analizleri ve kodlar arası ilişkilerin görselleştirilmesi (ör. Code Relations Browser, Code Co-occurrence Model) amacıyla kullanılmıştır. Veriler sürekli karşılaştırma yöntemiyle gözden geçirilmiş ve temalar arasındaki örüntüler doğrulanarak son tematik yapı oluşturulmuştur.

5. Bulgular ve Tartışma

Araştırma, Ankara ilinde öğrenim gören farklı lisans programlarındaki öğrencilerin katılımıyla 9'u kadın, 5'i erkek olmak üzere 14 öğrencinin katılımıyla gerçekleştirilmiştir. Tablo 1, katılımcıların yaş, cinsiyet, lisans bölümü ve uzaktan öğrenim süresi değişkenlerine göre dağılımını göstermektedir. Yaş aralıkları 18 ila 24 arasında olan katılımcılar en az 3 ay, en fazla ise 18 ay süreyle uzaktan eğitim almışlardır. Bölümler arası dağılım ise örneklemin çok disiplinli bir yapıya sahip olduğunu ortaya koymaktadır. Eğitim (İlköğretim Matematik

Öğretmenliği), sosyal bilimler (Sosyoloji, Maliye, İlahiyat), sağlık (Tıp, Diş Hekimliği, Çocuk Gelişimi), mühendislik (Elektrik-Elektronik, Otomotiv) ve mimarlık gibi alanların temsil edilmesi, öğrencilerin uzaktan eğitime ilişkin deneyimlerinin hem uygulamalı hem teorik ders yükü açısından karşılaştırılmasına olanak sağlamıştır.

Tablo: 1
Katılımcı Profilleri

Katılımcı kod	Yaş	Cinsiyet	Lisansta Devam Ettiği Bölüm	Uzaktan Öğrenim Gördüğü Süre
Ö1	22	Kadın	İlköğretim Matematik Öğretmenliği	18 ay
Ö2	22	Kadın	Sosyoloji	18 ay
Ö3	18	Erkek	Turizm İşletmeciliği	6 ay
Ö4	23	Kadın	Otomotiv Mühendisliği	18 ay
Ö5	24	Kadın	Maliye	18 ay
Ö6	21	Kadın	İlahiyat	12 ay
Ö7	19	Erkek	Mimarlık	12 ay
Ö8	20	Erkek	Diş Hekimliği	6 ay
Ö9	19	Kadın	Çocuk Gelişimi Bölümü	6 ay
Ö10	20	Kadın	Elektrik Elektronik Mühendisliği	18 ay
Ö11	24	Kadın	Tıp Fakültesi	3 ay
Ö12	21	Erkek	Tıp Fakültesi	6 ay
Ö13	24	Erkek	Tıp Fakültesi	12 ay
Ö14	22	Kadın	Biyoloji	18 ay

Yapılan tematik analiz sürecinde, öncelikle katılımcı görüşlerinden elde edilen veriler kodlanmış; daha sonra benzer içerik taşıyan kodlar bir araya getirilerek üst düzey temalar oluşturulmuştur. Bu temalar, öğrencilerin uzaktan eğitim sürecindeki deneyimlerini çok boyutlu biçimde yansıtan ‘dijital erişim ve altyapı eşitsizliği’, ‘ekonomik etkiler ve geçim zorlukları’, ‘psikososyal yükler’ ve ‘geleceğe ve sosyal politikalara ilişkin beklentiler’ olmak üzere dört ana başlık altında toplanmıştır (Tablo 2).

Tablo: 2
Tematik Çözümleme Özeti

Tema	Kodlar
Dijital Erişim ve Altyapı Eşitsizliği	Tek yönlü öğretim materyali kullanımı, Uygulamalı dersleri yapamama, Öğrenme kaynaklarına erişim sorunları, Dijital altyapı eksiklikleri
Ekonomik Etkiler ve Geçim Zorlukları	Ekonomik baskı ve motivasyon, Geçim odaklı ekonomik baskı, Ekonomik yüklerin değişimi
Psikososyal Yükler	Hane içi koşullar ve öğrenmeye etkileri, Psikolojik etkiler
Geleceğe ve Sosyal Politikalara İlişkin Beklentiler	Eğitimde fırsat eşitliği farkındalığı, Sosyal politikaları beklentisi, Mesleki gelişim ve istihdam endişesi

5.1. Dijital Erişim ve Altyapı Eşitsizliği

Araştırma bulguları göstermektedir ki uzaktan eğitimin teknik olanaklara bağımlı yapısı eğitime erişimi önemli ölçüde sınırlandırmıştır. Araştırmaya katılan sosyoekonomik olarak dezavantajlı olan öğrencilerin tamamı, ders takibini ve gerektiğinde uygulamasını daha verimli hale getirecek bilgisayar gibi araçlara sahip olamama, kitap ücretlerini karşılayamama, internet erişimine ilişkin çeşitli boyutlarda sorunlar yaşama ve kaçırılan bu içeriklerin telafisini yapamama sorunlarıyla karşılaştıklarını ifade etmişlerdir. Bu temanın kodları, tek yönlü öğretim materyali kullanımı, uygulamalı dersleri yapamama, öğrenme kaynaklarına erişim sorunları ve dijital altyapı eksiklikleridir.

5.1.1. Dijital Altyapı Eksiklikleri

Dijital altyapı eksikliklerine ilişkin olarak katılımcıların tamamı, çevrimiçi derslere katılmak için gerekli teknik araçlara (bilgisayar, tablet, sabit internet bağlantısı vb.) sahip olmadıklarını veya mevcut altyapının yetersiz kaldığını belirtmiştir. İnternet bağlantısının yetersizliği, düşük bant genişliği, sık sık yaşanan kesintiler ve cihaz eksikliği, öğrencilerin derslere düzenli katılımını ve öğrenme sürecine aktif biçimde dâhil olmasını güçleştirmiştir. Katılımcılardan biri bu durumu şöyle ifade etmiştir:

“Ailem Van’da yaşıyor, zaten ben burada kalıyorum. Pandemi döneminde eve dönmek zorunda kaldım. Yani orada barınma ve yemek masrafım olmadı ama... internet meselesi bayağı sıkıntı oldu. Evde zaten internet zayıftı, bir de biz kalabalık bir aileyiz. Kardeşlerim de derslere giriyordu. Bazen internet yetmiyordu, kota doluyordu, dersin ortasında atılıyordum. Bilgisayar da tek olduğu için sırayla kullanmak gerekiyordu. Mecburen bazen telefondan girdim ama o da çok yorucuydu. Hoca anlatılanlar sınavda çıkacak deyince çok üzülüyordum. Notları sonradan arkadaşlardan istemek zorunda kaldım ama her şey tam gelmiyordu. Ekstra internet almak zorunda kaldık birkaç defa, o da pahalıydı.” (Ö10)

Bu durum, dijital erişim yetersizliğinin hane içi koşullarla birleştiğinde nasıl çok boyutlu bir engel hâline geldiğini ortaya koymaktadır. Evdeki cihaz paylaşımı, derslere katılımın sürekliliğini bozmuş; zayıf internet bağlantısı ise öğrenme bütünlüğünü olumsuz etkilemiştir. Özellikle bilgisayar erişimi olmayan öğrencilerin derse yalnızca telefon aracılığıyla katılabilirdikleri ve bu durumun hem görsel materyalleri takip etmeyi hem de etkileşimi ciddi biçimde sınırladığı görülmüştür. Küçük ekranlar üzerinden derslere katılmak, öğrencilerin dikkatini sürdürmelerini ve not tutmalarını zorlaştırmış, dolayısıyla öğrenme verimini düşürmüştür. Bunun yanı sıra, başka bir katılımcının ‘En başta cihaz eksikliği... bilgisayarım yoktu. Telefonla bağlantı kuruyordum ama hem küçük hem de donuyordu. O yüzden dersin bir kısmını kaçıırıyordum, soru soramıyordum. Bu nedenle derse girebilsem bile odaklanamıyordum (Ö14)’ ifadesinden de anlaşılacağı üzere, katılımcılar, dijital altyapı eksikliklerinin sadece teknik bir engel değil, aynı zamanda motivasyonu, etkileşimi ve öğrenme kalitesini de olumsuz etkileyen temel bir faktör olduğunu ortaya koymaktadır.

5.1.2. Öğrenme Kaynaklarına Erişim Sorunları

Katılımcıların bir kısmı, öğretim elemanlarının paylaştığı dijital materyallere ulaşmakta gecikmeler yaşadıklarını ve bazen sistem hataları nedeniyle içeriklerin tamamen erişilemez olduğunu dile getirmiştir. Bu durumu bir öğrenci şu sözlerle ifade etmiştir.

“Eğitimimi engelledi demeyeyim ama çok zorladı. Özellikle internet ve kaynaklara ulaşmak konusunda. Bazı derslerin kitapları çok pahalıydı, alamadım. PDF bulmaya çalıştım. Ders çalışırken hem fiziksel ortam hem de

maddi imkânlar yetersiz kalıyordu. Ama yine de pes etmedim. Zaten başka şansım da yoktu. Bazen sabah erkenden kalkıp ders çalışıyordum ki ev halkı uyanmadan sessizce çalışabileyim. Böyle küçük yöntemlerle ilerlemeye çalıştım.” (Ö13)

Bir diğer öğrencinin ‘Maddi zorluk direkt okulu bırakayım dedirtmedi belki ama çok etkiledi. Mesela bir konuya çalışmak istiyorum ama elimde düzgün kaynak yok. Arkadaş PDF bulmuş ama ben telefona indirememişim. Bir dönem resmen sadece kendi yazdığım notlarla sınava girdim (Ö12)’ şeklindeki ifadesi, ekonomik imkânların yetersizliğinin öğrenme sürecini dolaylı biçimde sekteye uğrattığını göstermektedir. Öğrenci, doğrudan okuldan vazgeçme noktasına gelmemiş olsa da maddi yoksunluk, ders materyallerine ulaşımında belirleyici bir engel oluşturmuştur. Bu durum, kaynaklara erişimdeki sıkıntının, ekonomik dezavantajların eğitimde dolaylı öğrenme kayıplarına yol açtığını göstermektedir. Bu durum, ekonomik kısıtlılıklarla birlikte dijital kaynaklara erişim eksikliğinin eğitimde yarattığı çoklu dezavantajları göstermektedir. Öğrenci, internet ve materyal yetersizliğini telafi etmek için bireysel stratejiler geliştirmiş; sessiz çalışma saatleri yaratma gibi öz-düzenleme davranışları sergilemiştir. Bu durum, dezavantajlı öğrencilerin yapısal eksiklikleri kişisel çabalarıyla aşmaya çalıştığını, ancak bu çabanın sistemsel eksiklikleri telafi etmekte yetersiz kaldığını ortaya koymaktadır.

5.1.3. Uygulamalı Dersleri Yapamama

Araştırmaya katılan öğrencilerin tamamı uzaktan eğitim nedeniyle teknik alanlardaki uygulamalı derslerdeki öğrenme kayıpları olduğunu ifade etmişlerdir. Özellikle laboratuvar, atölye veya saha çalışması içeren derslerde öğrenciler uygulama eksikliği yaşamıştır. Bu durum, mesleki beceri gelişimini ve derslerin pratik yönünü önemli ölçüde sınırlamıştır. Bunun en çarpıcı örneklerinden biri de Tıp Fakültesinde uygulamalı eğitimlerin uzaktan sürdürülmesidir. Bir katılımcı bu durumu şu sözlerle ifade etmiştir:

“Açık konuşmak gerekirse, bizim fakültede hocalar gerçekten ellerinden geleni yaptılar. Ama tıp gibi bir bölümde uzaktan eğitim bazı şeyleri eksik bırakıyor. Uygulamalı dersleri görmeden, sadece anlatımı dinleyerek ilerlemek çok zor oldu. Bazı konularda video anlatımlar vardı ama uygulamalı taraflarını biz ya hayal etmeye çalıştık ya da kendi imkânımızla çözmeye çalıştık. Konuyu bir şekilde okuyup geçiyorsun ama görmediğin, yapmadığın bilgi çok kalıcı olmuyor. Biz çözüm üretmeye çalıştık bir nevi ama bazı şeyleri görmeden, dokunmadan anlamak çok zor. Sonradan telafisi yapılmalıydı bence, çünkü teorik olarak anlatılsa da pratiği eksik kaldı.” (Ö13)

Bu durum uzaktan eğitim alan tüm öğrenciler için benzer etkilere sebep olmakla birlikte, bazı durumlarda yalnızca ekonomik anlamda dezavantajlı olmasına bağlı olarak teknik donanım ve ekonomik kaynak yetersizliği, öğrencilerin uzaktan eğitim sürecine tam katılımını engelleyen bir faktör hâline gelmiştir. Bunun en bariz örneklerinden biri de kır/kent ayrımında karşımıza çıkmaktadır. Bu durumu bir katılımcı şu şekilde ifade etmiştir:

"Doğrusunu söylemek gerekirse, uzaktan eğitimin benim açımdan pek olumlu bir tarafı olmadı. O dönem şehir dışında, köydeydim ve dersleri takip etmek çok zordu. Uygulamalı dersleri telefon ekranı karşısında anlamaya çalışmak gerçekten yetersizdi. Biyoloji gibi bir bölümde deney yapmadan, mikroskop kullanmadan öğrenmek pek mümkün değil. Hocalarla iletişim kurmak zordu. Soru sorsan bazen cevap gelmiyordu ya da bağlantı kesiliyordu. Hocalar bazı deneylerin videosunu yüklüyordu ama indirmeye yetecek kadar internetim yoktu. Hocalar telafi yapmaya çalışsalar da o konular bende tamamen eksik kaldı." (Ö14)

Genel olarak bu tema, öğrencilerin dijital teknolojilere erişimde eşit olmayan koşullara sahip olduklarını ve bunun öğrenme sürecine doğrudan yansıdığını göstermektedir. Bu durum telafi imkânlarının yetersizliğiyle birleştiğinde, katılımcılarda öğrenme kayıplarının kalıcı hâle geldiği yönünde bir algı oluşturmuştur. Birçok araştırmada da benzer şekilde uygulamalı derslerin etkin bir yönetimi olmadığı görülmüştür (Sezgin & Fırat, 2020; Cullinan et al., 2021; Uyar, 2023; Nerse, 2020; Azionya & Nhedzi, 2021; Katz et al., 2021). Dolayısıyla dijital altyapı yetersizlikleri yalnızca teknik bir aksaklık olarak değil, eğitimde fırsat eşitliği ve öğrenme hakkı bağlamında yapısal bir sorun olarak karşımıza çıkmaktadır.

5.1.4. Tek Yönlü Öğretim Materyali Kullanımı

Bu temada bağlamında ele alınan bulgulardan biri de , öğretim elemanlarının büyük çoğunluğunun ders anlatımında tek yönlü, etkileşime kapalı materyaller kullanmasıdır. Öğrencilerin bazıları genellikle derslerin slayt üzerinden yürütüldüğünü, öğretim sürecinde görsel ve işitsel çeşitliliğin sınırlı olduğunu belirtmiştir. Bu durum, öğrenme sürecini pasifleştirici ve tekdüze bir deneyime dönüştürmüş, öğrencilerin derse katılım motivasyonunu zayıflatmıştır. Katılımcı ifadeleri, özellikle çevrim içi derslerde öğrencilere katılım fırsatı tanınmaması ve yalnızca dinleyici konumuna itilmelerinin öğrenme isteğini azalttığını göstermektedir. Buna bağlı olarak derslere olan ilgileri azaldığını bir katılımcı şu şekilde ifade etmiştir:

"Bazı dersler hakkında gerçekten hiçbir fikrim yok. Hoca sadece konuşuyordu, bize söz hakkı düşmüyordu. Dersi dinlemek zorundaydık ama bana pek bir şey katmıyordu. Küçük ekrandan notları görmek de oldukça zordu. Çoğu zaman telefon köşede duruyordu zaten." (Ö9)

Bu bulgular, uzaktan eğitimin teknik olarak erişilebilir olmasına rağmen pedagojik etkileşim eksikliği nedeniyle öğrenme kalitesinin zayıfladığını göstermektedir. Materyal/kayıt erişimi, platform hataları, fakülte iletişimi ve öğretim elemanları ile iletişim birçok araştırmada da uzaktan eğitimin yükseköğretimdeki başlıca sorunlarından (Katz et al., 2021; Aksoy vd., 2021; Arar vd., 2022).

5.2. Ekonomik Etkiler ve Geçim Zorlukları

Araştırma bulguları, sosyoekonomik açıdan dezavantajlı öğrencilerin uzaktan eğitim sürecinde karşılaştıkları ekonomik güçlüklerin, eğitim deneyimlerini derinden etkilediğini göstermektedir. Katılımcı ifadeleri, pandemi döneminde artan yaşam maliyetlerinin, gelir kayıplarının ve çalışma zorunluluğunun öğrencilerin eğitim süreçlerine katılımını sınırlandırdığını ortaya koymaktadır. Bu tema, ekonomik kırılganlıkların öğrenme süreciyle kesişimini üç alt boyut üzerinden açıklamaktadır: ekonomik baskı ve motivasyon, geçim odaklı ekonomik baskı ve ekonomik yüklerin değişimi.

5.2.1. Ekonomik Baskı ve Motivasyon

Katılımcıların bazıları, pandemi sürecinde aile gelirlerinin azalması veya işsiz kalmaya bağlı olarak sosyal yardımlarla geçinmeye başlamaları nedeniyle maddi baskı altında olduklarını ifade etmişlerdir. Bu durum, öğrencilerin akademik motivasyonlarını ve öğrenmeye odaklanma becerilerini olumsuz etkilemiştir. İlahiyat bölümü öğrencisi bir katılımcının ekonomik kaygıları, yalnızca eğitime erişimi değil, öğrencilerin gelecekteki mesleki yeterlilik ve öz-değer algısını da olumsuz etkilediğini şu sözlerle ortaya koymaktadır:

“Maddi açıdan bilgisayar sıkıntısı ile birlikte kitap teminatında da sıkıntılar yaşadım. Haciz olduğu için yıllardır burs alarak genelde bazı hayırsever hocaların verdiği bursla idare ediyorum. Babam uzun süredir apartman görevlisi kaymakamlık vesilesiyle ulaştılar. Ama en önemli ihtiyacım arapçayı öğrenemedim. Dil konusunda belki ileride bir din kültürü öğretmeni olarak Arapçaya ihtiyacım olacak yeteri kadar verebileceğimi düşünmüyorum. Bu nedenle bursların hakkını veremediğimi düşünüp çok gözümde büyüyor şu an.” (Ö6)

Bir başka katılımcının ise ekonomik zorlukları sadece maddi değil, aynı zamanda psikolojik bir yük olarak da deneyimlediği görülmektedir. Katılımcının söz konusu durumu şu ifadesinden anlaşılmaktadır:

“Kırtasiye masrafı bile dertti. Bu tür şeyleri her öğrenci yaşar diye düşünüyordum ama bazı arkadaşlar çok daha rahatmış, dönünce onu da gördüm. Bu farklar seni düşündürüyor. Ben daha çok çabalıyorum ama daha geriden geliyorum duygusu bazen moralimi kırıyor. Maddi olarak daha çok psikolojik baskı yaşadım diyebilirim. Yani aile zaten, evdesin ya kolay oluyordur, gibi bakıyor ama içimde sürekli yetişemiyorum, eksik kalıyorum hissi vardı. Ders çalışırken bazen resmen suçluluk hissediyordum, niye yeterince çalışmıyorum diye.” (Ö12)

Aynı zamanda katılımcı, arkadaşlarıyla olan imkân farkını fark ettikçe kendi çabasını değersizleşmiş hissetmiş ve bu durum moral bozukluğuna yol açmıştır. Ailesinin uzaktan eğitimi ‘evde kolay’ olarak algılaması, öğrencinin duygusal yalnızlığını derinleştirmiştir.

Katılımcının 'yetişemiyorum, eksik kalıyorum' ifadesi, ekonomik yetersizlik ile öz-yeterlik algısını ve akademik motivasyonu doğrudan zayıflatmaktadır. Benzer şekilde, literatürde de finansal stresin öğrencilerin öğrenme süreci üzerinde olumsuz etkiler yarattığı ve psikolojik yükü artırdığına dikkat çekilmektedir (Katz et al., 2021; Altıparmak & Demircan, 2021; Uyar, 2023).

5.2.2. Geçim Odaklı Ekonomik Baskı

Katılımcıların bir bölümü, pandemi sürecinde kendilerinin veya aile üyelerinin işlerini kaybettiklerini, bunun da ekonomik istikrarsızlık yarattığını belirtmiştir. Özellikle düşük gelirli hanelerden gelen öğrenciler için uzaktan eğitim süreci, ekonomik güvence yoksunluğu nedeniyle sürdürülebilir olmaktan çıkmıştır.

"Okuyup çalışan öğrenciydim pandemide iş bulamadım. İşten çıkarılma oranı büyüktü bu nedenle pandemi öncesi ve sonrası masraflarım eşitti. Hayatım boyunca sürekli bişeylerin kıymetini bilmek zorunda yarın akşam yiyeceğini ne giyeceğini bilmeyen biriydim. Pandemi döneminde de öyle oldu. Biz 4 kardeşiz en büyük benim. Babam da işten çıkarıldı bu nedenle çok zorlandık. Kardeşlerim üniversite sınavlarına hazırlanıyor. Şu an üçü de üniversite sınavına girecek. Üniversite hayatını etkiliyor ben sabah okula gidip akşam 5'te işe gidip 11'de yurda gelip ertesi gün derse çalışıyorum. Böyle bir insanın çalıştığından aldığı eğitimden ne derece faydalanabileceğini bilmiyorum." (Ö2)

Katılımcının ifadesi, pandemi sürecinde işsizlik ve gelir kaybının öğrencilerin eğitim yaşamına doğrudan yansıdığını göstermektedir. Hem kendi işini hem de babasının işini kaybetmesi, hanedeki ekonomik yükü artırmış ve öğrenciyi eğitimle geçim sorumluluğu arasında sıkışmış bir konuma getirmiştir. Öğrencinin 'sabah okula gidip akşam işe gitmek' şeklindeki ifadesi, geçim baskısının öğrenmeye ayrılan zamanı ve zihinsel enerjiyi önemli ölçüde azalttığını ortaya koymaktadır. Bu durum, düşük gelirli hanelerde pandemi kaynaklı işsizliğin yalnızca ekonomik değil, aynı zamanda eğitsel ve psikolojik bir dezavantaj oluşturduğunu göstermektedir. Öğrenim-iş yükü çatışmasına ilişkin bu bulgu, öğrencilerde devamsızlık, düşük performans ve motivasyon kaybına yol açtığını belirten önceki araştırma bulgularını (Arar vd., 2022; Altuntaş vd., 2020) desteklemektedir.

Diğer yandan bazı öğrenciler de, ekonomik zorluklar nedeniyle eğitimlerine devam ederken aynı zamanda gelir elde etmek zorunda kaldıklarını ifade etmiştir. Çalışma zorunluluğu, bu öğrencilerin derse devam oranlarını azaltmış ve akademik performanslarını olumsuz yönde etkilemiştir. Örneğin, 'Çalıştığım için sınavların bazılarını giremedim (Ö3)' ifadesi bunun önemli bir göstergesidir. Bir başka katılımcı ise hem ekonomik hem de bölgesel koşulların uzaktan eğitime erişimde yarattığı çoklu dezavantajı vurgulamaktadır. Öğrenci, ailesine destek olma gerekliliği nedeniyle derslere katılamadığını, ancak internet altyapısının da yetersiz olduğunu belirtmiştir. Bu durum, dezavantajlı bölgelerde yaşayan öğrenciler için ekonomik yoksunluğun dijital erişim sorunlarıyla birleşerek eğitimi daha da zorlaştırdığını göstermektedir. 'Evde olunca, eve bir destek lazımdı, çalıştığım için derslere

giremedim. Ama doğudayken internet olabilmesi mümkün değil. O yüzden çalışmasaydım da derslere giremezdim. Maddi olarak aileme destek oldum (Ö7).’ Katılımcının ifadesi, kısa vadede çalışma deneyiminin ekonomik rahatlatma sağlasa da uzun vadede akademik kazanımları sınırladığına işaret etmektedir.

5.2.3. Ekonomik Yüklerin Değişimi

Katılımcılar, uzaktan eğitimin başlangıcında ulaşım ve konaklama giderlerinin ortadan kalktığını, bu durumun öğrencilerin çoğu için ekonomik yüklerin azalmasına neden olduğunu belirtmişlerdir. Bu durumu destekleyen öğrenci ifadeleri şu şekildedir:

“Masraflar olarak iyi olduğunu düşünüyorum pandeminin. Kredi yurda gidiyordu, yemeğe gidiyordu, otobüse gidiyordu, ailemden de almak zorunda kalıyordum o da eksik oluyordu. Şimdi tamamen cebimize kaldı.” (Ö3)

“Maddi anlamda eşit denebilir. Çünkü ben yurttan kalıyorum. Yurtta kaldığım için kredinin bir kısmını yurt ücreti olarak ödedim. Bunların hepsi tamamen gitti. Aldığım kredi sadece bana kalıyordu. Maddi olarak güzel bir süreçti.” (Ö2)

“Yurtta kalıyordum. Tabiki pandemi yüzünden bizden bi para alınmadı o dönemde bu çok iyiydi. Maddi olarak daha iyi oldu üniversitedeyken başka şehirde okuduğum için çok fazla maddiyat gerekiyordu yemek ulaşım barınma her türlü ihtiyacımız masraftı. Bu masraflar yarı yarıya düştü Fakat evde kalan arkadaşlarımıza iyi olmadı. ev sahipleri ödedikleri parayı almaya devam etti haliyle. Sürecin ne kadar devam edeceğini bilemeyen insanlar kira ödemeye devam etti. Aylarca boş evlere kira ödediler.” (Ö4)

Tüm katılımcılardan farklı olarak yalnızca bir öğrenci, bu durumun maddi olarak daha fazla yük getirdiğini ve bunun başlıca sebebinin internete erişim amacı olduğunu şu şekilde ifade etmiştir:

“Ben köyde yaşıyorum mesela bizim orda internet altyapısı asla yok, derslere girmek için şehirde bir yakınımızda kaldım. Ama yine de sık sık eve gidip geldim, bu nedenle çok yol parası harcadım. Yurtlardan ücret almamaları güzeldi fakat bu sefer de böyle bir masrafım oldu. Otobüs biletleri çok arttı. Bu nedenle bir süre eve hiç gidemediğim de oldu.” (Ö13)

Katılımcının ifadesi, uzaktan eğitimin her öğrenci için ekonomik açıdan aynı sonucu doğurmadığını göstermektedir. Diğer öğrenciler, çevrim içi eğitim sürecinde ulaşım ve barınma giderlerinin azaldığını belirtirken, bu katılımcı için süreç tam tersine ek bir maddi yük oluşturmuştur. Kırsal bir bölgede yaşaması ve internet altyapısının bulunmaması nedeniyle, derslere katılabilmek için yakındaki bir şehir merkezine gidip gelmek zorunda kalmış; bu durum hem zaman hem de finansal kaynaklar açısından yeni bir külfet yaratmıştır.

Genel olarak bu bulgular, uzaktan eğitimin ekonomik açıdan dezavantajlı gruplar üzerinde çift yönlü bir baskı yarattığını ortaya koymaktadır. Bir yandan hane gelirlerindeki

düşüş, öğrencilerin eğitime katılımını sınırlandırırken; diğer yandan uzaktan eğitimin gerektirdiği yeni harcamalar (internet, cihaz, elektrik vb.) mevcut eşitsizlikleri derinleştirmiştir. Literatür de bu bulguyu destekler niteliktedir (Katz et al., 2021; Cullinan et al., 2021; Işık, 2021). Fakat buna ek olarak, bu çalışmanın bulguları, aynı dönemde internet, cihaz ve enerji maliyetlerinin arttığını göstermesine rağmen, bu durum uzaktan eğitimin ekonomik avantajını ortadan kaldırmamıştır.

5.3. Psikososyal Etkiler ve Sosyal İzolasyon

Araştırma bulguları, pandemi sürecinde uzaktan eğitimin öğrenciler üzerinde yalnızca akademik değil, aynı zamanda psikolojik ve sosyal açıdan da derin etkiler yarattığını göstermektedir. Katılımcıların büyük çoğunluğu, uzun süreli çevrimiçi eğitimin sosyal ilişkileri zayıflattığını, ev içi rollerin artmasıyla birlikte stres, yalnızlık ve motivasyon kaybı yaşadıklarını belirtmiştir. Bu tema altında yer alan veriler, öğrencilerin psikososyal deneyimlerini iki alt boyutta yansıtmaktadır: psikolojik etkiler ve hane içi koşullar ile öğrenmeye etkileri.

5.3.1. Psikolojik Etkiler

Pandemi sürecinde öğrencilerin en çok dile getirdiği konulardan biri de sosyal çevrelerinden kopma ve yalnızlık hissinin artması olmuştur. Uzaktan eğitim, öğrencilerin akranlarıyla doğal etkileşim kurma imkânını ortadan kaldırmış; ev ortamında geçirilen uzun süreler, aile içi ilişkilerde gerginlik ve duygusal yorgunluk yaratmıştır. Katılımcıların çoğu, bu süreçte sosyalleşme imkânlarının azalmasıyla birlikte içe kapanma eğilimi gösterdiklerini ve ders motivasyonlarını korumakta zorlandıklarını ifade etmiştir. Bir katılımcı bu durumu şu sözlerle dile getirmiştir:

"Eğitim herkes için aynı değil. Evin ortamı, ailenin durumu, internetin kalitesi... bunlar eşit değil. Bu yüzden bence bu sistem uygulanacaksa önce öğrencilere bireysel destek sağlanmalı. Cihaz, internet gibi temel ihtiyaçlar karşılanmadan eğitim hakkında söz etmek biraz hayal oluyor. Bir de uzaktan eğitim süreci sadece akademik değil, psikolojik destek açısından da zayıftı. Çok fazla öğrenci kendini yalnız, çaresiz hissetti. Belki bir danışmanlık sistemi ya da gönüllü destek ağı kurulabilirdi. O dönem gerçekten tek başına mücadele ettik gibi hissediyorum." (Ö13)

Özellikle kalabalık hanelerde yaşayan öğrenciler için hem fiziksel alan yetersizliği hem de sürekli etkileşim, psikolojik olarak yıpratıcı bir ortam oluşturmuştur. Literatürdeki diğer çalışmalar da bu bulguyu destekler nitelikte, uzaktan eğitimin yalnızca akademik değil, aynı zamanda duygusal dayanıklılığı da sınayan bir süreç hâline geldiğini göstermektedir (Genç vd., 2020; Stevanović et al., 2021; Dinç & Erdoğan, 2021).

5.3.2. Hane İçi Koşullar ve Öğrenmeye Etkileri

Pandemi döneminde öğrencilerin öğrenme deneyimlerini en fazla etkileyen faktörlerden biri de, hane içi koşullar olmuştur. Özellikle kız öğrenciler, evde geçirilen sürenin artmasıyla birlikte ev içi sorumlulukların da yoğunlaştığını 'Biz dört kardeşiz, evde herkes aynı anda çevrim içi olunca bana genelde ev işleri düşüyordu. Anneme yardım etmek zorundaydım, o yüzden derse tam olarak odaklanamıyordum' (Ö14) ifadeleriyle belirtmişlerdir. Bu durum, öğrencilerin derslere odaklanmasını güçleştirmiş, motivasyonlarını azaltmış ve öğrenme süreçlerinde yorgunluk hissini artırmıştır. Ev ortamının kalabalık olması, sessizlik ve uygun çalışma alanı eksikliği, öğrencilerin derslere aktif katılımını sınırlamıştır. Bir başka öğrenci ise benzer şekilde şu ifadeleri kullanmıştır:

"Kardeşlerim ilkokulda olduğu için genelde ders saatlerinde telefonu onlar kullanıyordu. Kardeşlerimle ilgilenmem de gerekiyordu, bu yüzden kendi derslerime giremiyordum; akşam tekrarlarını dinlemeye çalışıyordum." (Ö1)

Katılımcı ifadeleri, uzaktan eğitim sürecinde evin aynı zamanda bir çalışma ve öğrenme alanına dönüşmesinin ciddi bir duygusal yük yarattığını göstermektedir. Evdeki rollerin ve beklentilerin artması, özellikle kız öğrencilerde eğitim sorumluluklarıyla hane içi görevler arasında çatışma doğurmuştur. 'Sürekli evde olmak' ve 'kardeşlerle aynı ortamda ders dinlemek' gibi ifadeler, öğrencilerin fiziksel mekânın kısıtlayıcılığını ve bu durumun psikolojik yıpranma üzerindeki etkisini açık biçimde ortaya koymaktadır. Bir katılımcı bu durumu 'Evdeki ortam da beni çok etkiledi. Sürekli evde olmak, kardeşlerinle aynı ortamda ders dinlemeye çalışmak gerçekten yıpratıcıydı. Aç şu dersi de bitsin moduna giriyorsun (Ö1)' şeklinde ifade etmiştir. Benzer biçimde başka bir katılımcı da, ev içi sorumluluklarla teknik sıkıntıların birleşmesinin öğrenme sürecini daha da zorlaştırdığını dile getirmiştir.

"Ev ortamında herkes bir şeyle uğraşıyor. Kardeşlerim var, bazen sessizlik olmuyor. Bazen bağlantı yetmiyor. O yüzden birçok derste sadece varmış gibi yapıyordum. Gerçekten öğrenmek çok zor oldu. Zaten psikolojik olarak da stresliydi; hem teknik sıkıntı hem ailevi sorumluluk birleşince iyice yıpratıcı oldu." (Ö14)

Bu ifadeler, uzaktan eğitimin öğrencilerin psikolojik dayanıklılığını zayıflattığını, sosyal izolasyonun ise duygusal yıpranmayı artırdığını göstermektedir. Pandemi döneminde öğrenciler yalnızca eğitim ortamından değil, aynı zamanda üniversite yaşamının sosyal boyutundan da uzaklaşmış; bu durum aidiyet duygusunu ve öz düzenleme becerilerini olumsuz etkilemiştir. Sonuç olarak, hane içi koşullar, öğrencilerin uzaktan eğitim sürecindeki psikososyal iyi oluşu ve akademik başarıları arasındaki dengeyi zayıflatan önemli bir etken olarak öne çıkmaktadır (Genç vd., 2020; Seyhan, 2021; Saltürk & Güngör, 2020).

5.4. Geleceğe ve Sosyal Politikalara İlişkin Beklentiler

Araştırma bulguları, pandemi sürecinde dezavantajlı öğrencilerin uzaktan eğitim deneyimlerini yalnızca mevcut sorunlar üzerinden değil, aynı zamanda geleceğe dair

beklentileri ve sosyal adalet algıları çerçevesinde değerlendirdiklerini göstermektedir. Katılımcılar, pandemi süreciyle birlikte eğitimde fırsat eşitliği, psikolojik destek hizmetleri, kurumsal destek mekanizmaları ve istihdam olanakları konularında daha duyarlı hale geldiklerini ifade etmiştir. Bu tema, öğrencilerin geleceğe yönelik algılarının sosyal politika beklentileriyle kesiştiği bir alanı temsil etmektedir. Bulgular, psikolojik destek ihtiyacının artması, eğitimde fırsat eşitliği farkındalığı, sosyal politika beklentisi, mesleki gelişim ve istihdam endişesi alt başlıkları altında değerlendirilmiştir.

5.4.1. Eğitimde Fırsat Eşitliği Farkındalığı

Pandemi süreci, öğrencilerin eğitimde fırsat eşitliğine dair algılarını ve duyarlılıklarını önemli ölçüde etkilemiştir. Katılımcıların büyük bölümü, uzaktan eğitimin yalnızca teknik bir dönüşüm olmadığını, aynı zamanda var olan sosyoekonomik farklılıkların daha görünür hâle getirdiğini belirtmiştir. İnternet erişimi, bilgisayar sahipliği ve öğrenme ortamı gibi temel unsurlarda yaşanan farklılıklar, öğrenciler arasında ciddi bir katılım uçurumu oluşturmuştur. Bu süreç, öğrencilerin kendi deneyimleri üzerinden eğitimde eşitlik kavramını sorgulamalarına neden olmuştur. Bir katılımcı bu durumu şu sözlerle dile getirmiştir:

"Yani... şunu söylemek isterim. Uzaktan eğitim bir ihtiyaçtı belki ama herkesin eşit imkânlara sahip olmadığı da unutulmamalıydı. Bizim gibi ailelerden gelen öğrenciler daha çok zorlandı. İnterneti olmayan, bilgisayarı olmayan çok arkadaşım vardı. Onlar tamamen koptu." (Ö10)

Benzer şekilde başka bir katılımcı da, eğitim sürecinde fırsat eşitliğinin sadece erişim meselesiyle sınırlı olmadığını, sürece katılım biçimlerini de doğrudan etkilediğini vurgulamıştır:

"Uzaktan eğitim döneminde öğrencilere daha fazla destek verilmeliydi. Bilgisayar, internet erişimi gibi şeyler herkes için aynı değil. Hâlâ da değil. Bazı arkadaşlarım daha rahat katıldı, bazıları hiç katılamadı." (Ö14)

Katılımcıların ifadeleri, pandemi sürecinde fırsat eşitliği tartışmasının öğrenciler açısından daha somut bir anlam kazandığını göstermektedir. Uzaktan eğitime erişimde yaşanan farklılıklar, bireysel çabanın ötesinde yapısal koşulların belirleyici olduğunu ortaya koymuştur. Bu farkındalık, öğrencilerin sosyal adalet ve eşitlik kavramlarına dair bakışlarını derinleştirmiş; eğitime erişimin yalnızca bireysel çabayla değil, aynı zamanda kurumsal destek ve sosyal politikalarla sağlanabileceğine dair bir bilinç geliştirmelerine yol açmıştır.

5.4.2. Sosyal Politika Beklentisi

Katılımcıların büyük bir kısmı, pandemi sürecinde üniversiteler ve kamu kurumları tarafından öğrencilere yönelik sosyal destek mekanizmalarının yetersiz kaldığını dile getirmiştir. Uzaktan eğitime geçişle birlikte artan dijital gereksinimler, internet erişimi ve cihaz ihtiyacı, mevcut burs ve yardımların çok ötesine geçmiştir. Özellikle dezavantajlı

gruplardan gelen öğrenciler, temel ihtiyaçlarını karşılamakla eğitim giderleri arasında seçim yapmak zorunda kaldıklarını belirtmiştir. Bu durum, öğrencilerin sosyal devletten beklentilerini artırmış ve sosyal yardım politikalarının kapsayıcılığına dair farkındalıklarını güçlendirmiştir. Bir katılımcı bu durumu şu şekilde dile getirmiştir:

"Pandemi döneminde çoğu arkadaşım interneti ya da bilgisayarı olmadığı için derse giremedi. Ben de telefonumdan bağlanıyordum, sürekli kota bitiyordu. Devletin öğrencilere internet desteği vermesini çok isterdim. Burs alıyordum ama o para faturalara gidiyordu." (Ö6)

Bir başka katılımcı ise, sağlanan sosyal yardımların öğrencilerin gerçek ihtiyaçlarıyla örtüşmediğini vurgulamıştır:

"Bizim evde sosyal yardımdan gıda paketi geldi ama bu yardım öğrenci olarak benim ihtiyaçlarıma bir katkı sağlamadı. İnternet, kitap, materyal gibi şeyler için ayrı bir destek olmalıydı. Üniversite öğrencisi olunca herkes 'zaten burs alıyordur' diye düşündü, ama o burs yetmiyordu." (Ö11)

Benzer biçimde başka bir katılımcı, yerel düzeyde sağlanan yardımların eşit dağılmadığını ve bazı üniversitelerin bu konuda yeterli inisiyatif göstermediğini şu ifadelerle belirtmiştir:

"Sosyal yardım aldığımız söylendi ama ben hiç faydalanmadım. Belediyelerin bazı yerlerde öğrencilere bilgisayar verdiğini duydum, bizde öyle bir imkân yoktu. Üniversitelerin bu konuda inisiyatif alması gerekirdi." (Ö5)

Bir diğer katılımcı ise, sosyal desteklerin yalnızca ekonomik değil, aynı zamanda duygusal boyut taşıması gerektiğini vurgulamıştır:

"Bence sadece burs değil, moral desteği de lazımdı. O kadar uzun süre evdeydik ki birçok arkadaşım motivasyonunu tamamen kaybetti. Üniversiteler sadece ders değil, öğrencinin ruh hâlini de gözetmeliydi." (Ö13)

Katılımcıların ifadeleri, pandemi sürecinde sosyal desteklerin hem kapsam hem de hedefleme açısından yetersiz kaldığını ortaya koymaktadır. Öğrenciler, uzaktan eğitim sürecinde yalnızca maddi değil, aynı zamanda psikososyal destek mekanizmalarına da ihtiyaç duyduklarını ifade etmiştir. Bu bulgular, sosyal destek politikalarının olağanüstü koşullarda hem biçim hem kapsam açısından esneklik gerektirdiğini göstermektedir. Pandemi süreci, sosyal yardımların yalnızca ekonomik değil, dijital ve psikososyal boyutları da içerecek biçimde yeniden tanımlanması gerektiğini ortaya koymuştur. Katılımcı ifadeleri, öğrencilerde bu yönde bir farkındalık ve beklenti geliştiğini, sosyal yardımların sahaya yönelik, ihtiyaca duyarlı ve fırsat eşitliğini gözetten bir biçimde yeniden tasarlanması gerektiğini düşündüklerini göstermektedir.

Benzer şekilde literatürde de, uzaktan eğitim sürecinde cihaz ve internet erişimi gibi altyapı desteklerinin özellikle risk altındaki öğrencilere yönelik hedeflenmesi gerektiğine vurgu yapılmaktadır. Cullinan ve arkadaşları (2021), bağlantı kalitesi ve coğrafi eşitsizliklerin öğrencilerin çevrimiçi öğrenme deneyimlerinde belirleyici olduğunu; Hasudungan, Ofianto ve Ningsih (2022) ise dezavantajlı bölgelerdeki öğrenciler için erişim desteği sağlanmadığında öğrenme kayıplarının hızla arttığını belirtmiştir. Türkiye örneğinde yapılan bir çalışmada da (Teke-Lloyd vd., 2022), sosyoekonomik ve cinsiyet temelli farklılıkların uzaktan eğitim sürecinde belirginleştiği ve cihaz/bağlantı desteğinin bu gruplara öncelikli olarak yönlendirilmesi gerektiği vurgulanmıştır. Bu sonuçlar, mevcut araştırmadaki öğrencilerin sosyal destek mekanizmalarına dair beklentileriyle paralellik göstermekte ve eğitimde fırsat eşitliğinin ancak hedeflenmiş, erişim temelli politikalarla güçlendirilmesi gerektiğini ortaya koymaktadır.

5.4.3. Mesleki Gelişim ve İstihdam Endişesi

Katılımcılar, pandemi sürecinde uygulamalı derslerin, stajların ve saha çalışmalarının yapılamaması nedeniyle mesleki gelişim olanaklarının önemli ölçüde azaldığını belirtmiştir. Özellikle uygulama temelli bölümlerde öğrenim gören öğrenciler, mesleki yeterliliklerini geliştirme fırsatını kaybettiklerini, bunun da hem kendilerine olan güvenlerini hem de geleceğe yönelik planlarını olumsuz etkilediğini ifade etmiştir. Katılımcılar, bu durumun sadece mevcut eğitim sürecini değil, ilerideki iş yaşamlarını da olumsuz etkileyeceği yönünde güçlü bir kaygı taşımaktadır. Bir katılımcı bu durumu şu sözlerle ifade etmiştir:

“Kendimi geliştirmek için daha fazlasına ihtiyacımız olduğunu düşünüyorum. Disiplin için o çatıya ihtiyacımız var. Online eğitimle çok şey kaçırdık. Kendimi geliştirme noktasında okuldan alamadım birçoğumu. Bölümü yazarken bölüm bitireceğim diye düşünüyordum ama okul dışında da kurslar, etkinlikler hep iptal oldu. Süreç çok uzadı.” (Ö2)

Benzer biçimde başka bir katılımcı, zorunlu stajını gerçekleştirememesi nedeniyle mesleki becerilerinin eksik kaldığını belirtmiştir:

“Stajı yapmam gereken dönemde yapamadım. Fabrikalar da çalışmıyordu. Geçen yaz biraz daha pandemi azaldığında staj yapabildim ama normalde 5 gün olması gereken stajı 3 güne düşürmüşlerdi. O da eksik kaldı.” (Ö4)

Pandemi sürecinde değişen iş gücü piyasası koşulları da öğrencilerin geleceğe dair kaygı düzeylerini artırmıştır. Katılımcılar, uzaktan eğitim nedeniyle yeterli uygulama deneyimi kazanamadıklarını düşündüklerinden, mezuniyet sonrası iş bulma süreçlerinde dezavantaj yaşayacaklarına inanmaktadır. Bir katılımcı bu endişesini şu şekilde dile getirmiştir:

“İş bulabilecek miyim endişesi çok fazla var. İşverenlerin uzaktan eğitim görenlere nasıl baktığını bilmiyoruz ama bunun bizi olumsuz etkileyeceğini düşünüyorum.” (Ö7)

Başka bir katılımcı ise uzaktan eğitim sürecinde alınan eğitimin işverenler tarafından yeterli görülmeyeceği kaygısını şu sözlerle ifade etmiştir:

"İnsanlar önyargılı bakıyor. 1,5 sene uzaktan eğitim gördük, faydalı olduğunu düşünmüyorlar. İşe başlayacağım zaman uzaktan eğitim görmüş olmamın önüme engel çıkaracağını düşünüyorum." (Ö5)

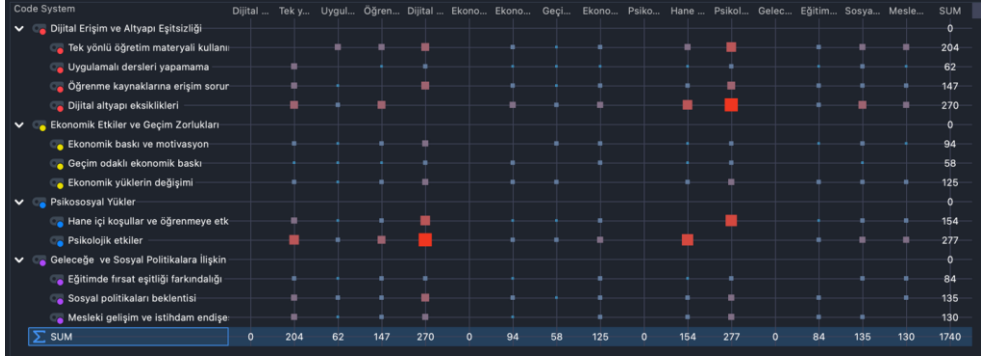
Benzer biçimde literatürde de, pandemi döneminde mesleki gelişim fırsatlarının azalmasının öğrencilerin beceri edinimi ve mesleki özgüveni üzerinde olumsuz etkiler yarattığı vurgulanmaktadır (Zamri et al., 2024; Kürtüncü & Kurt, 2020; Işık, 2021). Ayrıca, istihdam kaygısının artması ve öğrencilerin geleceğe yönelik belirsizlik algısının yükselmesi, birçok araştırmada ortak bir bulgu olarak karşımıza çıkmaktadır (Arar vd., 2022; Aksoy & Özyürek, t.y.; Pençe, 2024). Bu bulgular, mevcut çalışmadaki katılımcı ifadeleriyle paralellik göstermekte ve pandemi koşullarının, gençlerin mesleki gelişim, iş gücü piyasasına geçiş ve sosyal adalet algıları üzerinde uzun vadeli etkiler bıraktığını ortaya koymaktadır. Dolayısıyla bu bulgular, öğrencilerin uzaktan eğitim deneyimlerinin yalnızca geçmişte yaşanan kayıplara değil, geleceğe ilişkin fırsat eşitliği algılarına da etki ettiğini göstermektedir. Öğrenciler, pandemi sürecinde edinemedikleri uygulamalı bilgi ve becerilerin istihdam süreçlerinde dezavantaj oluşturacağını düşünmektedir. Bu durum, gençlerin mesleki yönelimlerinde belirsizlik duygusunu güçlendirmiş ve sosyal adalet algılarında yeni bir farkındalık yaratmıştır.

5.5. Kodlar Arası Birlikte Kodlanma Analizi

MAXQDA24'te gerçekleştirilen birlikte kodlanma analizi, sosyoekonomik olarak dezavantajlı öğrencilerin uzaktan eğitime ilişkin deneyimlerinin sadece tekil sorunlar üzerinden değil, birbirini etkileyen çoklu dezavantajlar üzerinden şekillendiğini göstermektedir (Şekil 1). Bu analize göre "dijital altyapı eksiklikleri", "ev içi rollerin öğrenmeye etkisi" ve "psikolojik etkiler" arasındaki yoğun kesişim, dijital eşitsizliğin sadece teknik bir sorun olmadığını, aynı zamanda ev ortamı ve ruhsal yükler üzerinden de öğrencilerin eğitim deneyimini derinden etkilediğini ortaya koymaktadır. Bu çoklu ve iç içe geçmiş sorunlar, bileşik dezavantajlılık olarak tanımlanabilecek bir kırılganlık durumu yaratmakta; bu durum ise eğitimde fırsat eşitliğini doğrudan tehdit etmektedir.

Dolayısıyla öğrencilerin uzaktan eğitim sürecinde yaşadığı sorunların birbirinden bağımsız değil, birbiriyle bağlantılı ve çoğu zaman eşzamanlı olarak deneyimlendiğini göstermektedir. Bu kesişim, aynı zamanda bireysel değil, yapısal bir sorun olarak ele alınması gereken dijital eşitsizliğin farklı alanlarda nasıl etkiler ürettiğini ortaya koymaktadır.

Şekil: 1
Kodlar Arası Birlikte Kodlanma Analizi



Benzer biçimde, öğrenme kaynaklarına erişim sorunu ile istihdam endişesi ve sosyal politika beklentisinin birlikte yer aldığı kod eşleşmeleri, öğrencilerin yaşadığı zorlukların yalnızca bugüne değil, aynı zamanda geleceğe yönelik kaygılarla da derinleştiğini göstermektedir. Öğrenciler, şu anda yaşadıkları erişim ve destek yoksunluğunu, ileride iş bulma şanslarını azaltan bir etken olarak görmektedir. Bu da eğitimde fırsat eşitliği kavramının yalnızca fiziksel erişimle değil, aynı zamanda uzun vadeli yapısal desteklerle ilişkili olduğunu ortaya koymaktadır.

Sonuç olarak ekonomik baskı, psikososyal yükler ve dijital eşitsizlik gibi unsurların birlikte ortaya çıkması, çoklu ve iç içe geçmiş sorunların öğrenciler üzerinde bileşik dezavantajlar yarattığını göstermektedir. Bu bağlamda ‘dijital eşitsizlik - ekonomik kırılganlık - psikolojik yıpranma’ üçgeni, sosyoekonomik açıdan dezavantajlı öğrencilerin uzaktan eğitim sürecinde karşılaştıkları temel kırılganlık alanlarını tanımlamaktadır.

6. Sonuç ve Öneriler

Bu araştırma, COVID-19 pandemisi sürecinde Türkiye’de sosyoekonomik açıdan dezavantajlı yükseköğretim öğrencilerinin uzaktan eğitim deneyimlerini eğitimde fırsat eşitliği çerçevesinde ele almıştır. Araştırma, nitel veri toplama sürecinin doğasına bağlı olarak belirli sınırlılıklar taşımaktadır. Katılımcı sayısının 14 kişiyle sınırlı olması, bulguların genellenebilirliğini azaltmaktadır. Ayrıca çalışma yalnızca Ankara’daki üniversitelerde lisans okuyan öğrencilerle gerçekleştirilmiş; dolayısıyla elde edilen bulgular farklı sosyoekonomik ve bölgesel bağlamlara doğrudan aktarılmamalıdır. Veri toplama süreci pandemi sonrası dönemde yapıldığından, öğrencilerin ifadelerinde geriye dönük değerlendirme eğilimi etkili olmuş olabilir. Bununla birlikte, araştırma derinlemesine görüşmeler aracılığıyla dezavantajlı öğrencilerin deneyimlerine ilişkin zengin ve anlamlı içgörüler sunarak alanyazına nitel bir katkı sağlamaktadır.

Bulgular, ekonomik, dijital, pedagojik ve psikososyal faktörlerin birbirini besleyen yapısal ilişkiler aracılığıyla öğrencilerin eğitim fırsatlarına erişimini sınırladığını göstermektedir. Dezavantajın tek bir boyutta değil, gelir düzeyi, mekânsal koşullar, dijital erişim ve psikolojik dayanıklılık gibi farklı alanlarda keşilen biçimlerde biriktiği; bu etmenlerin zaman içinde birbirini güçlendirerek bileşik bir eşitsizlik zinciri yarattığı tespit edilmiştir. Bu durum, pandemi sürecinin yalnızca geçici bir kriz değil, yükseköğretimdeki yapısal eşitsizliklerin görünür hale geldiği bir dönüm noktası olduğunu ortaya koymaktadır.

Pandemi sona ermiş olsa da elde edilen bulgular, dijitalleşmenin kalıcılığıyla birlikte bu eşitsizlik biçimlerinin post-pandemi dönemi için de geçerliliğini koruduğunu göstermektedir. Uzaktan ve hibrit eğitim modelleri artık yükseköğretimin kalıcı bir bileşenine dönüşmüş, böylece dijital erişim, pedagojik etkileşim ve psikososyal dayanıklılık yeni sosyal politika alanları haline gelmiştir. Bu bağlamda, post-pandemi döneminde yükseköğretimde sosyal dayanıklılığı artırmak ve eşitlikçi bir öğrenme ortamı oluşturmak için bir dizi sosyal politika önlemi alınmalıdır.

Üniversiteler, Yükseköğretim Kurulu (YÖK) ve kamu kurumları arasında koordineli biçimde yürütülecek politikaların, dijital eşitsizliklerin azaltılması açısından temel bir gereklilik olduğu görülmektedir. Bu çerçevede yükseköğretim sistemine entegre edilecek bir “dijital eşitlik eylem planı”nın oluşturulması önem taşımaktadır. Bu yaklaşım, dijital erişimi sosyal devletin bir sorumluluk alanı olarak ele alan yeni bir politika paradigmasına işaret etmektedir.

Pandemi sonrası dönemde yükseköğretim kurumlarının kriz koşullarına hazırlıklı olabilmesi için sosyal dayanıklılığı esas alan kurumsal programlar geliştirmesi gerekmektedir. Bu bağlamda dijital dönüşümün nitelikli bir pedagojik altyapı ile desteklenmesi, teknolojik erişim kadar öğrenme kalitesini de güvence altına alacaktır. Üniversitelerde karma eğitim modellerinin kalitesini ve eşitliğini güvence altına alacak kalite ofislerinin kurulması, öğretim elemanlarına yönelik dijital pedagojik yeterlilik eğitimlerinin kurumsallaştırılması ve öğrenci katılımını artıracak etkileşim tabanlı öğretim tasarımlarının yaygınlaştırılması bu sürece katkı sağlayabilir.

Sosyoekonomik destek politikalarının da bileşik dezavantajlılık yaklaşımına göre yeniden yapılandırılması gerekmektedir. Mevcut burs ve yardım sistemlerinin yalnızca gelir düzeyine odaklanması, dezavantajın çok boyutlu doğasını göz ardı etmektedir. Bu nedenle, gelir düzeyi, internet erişimi, hane koşulları ve psikososyal durum gibi değişkenleri birlikte değerlendiren bir “bileşik dezavantaj endeksi” geliştirilmesi önerilmektedir. Bu endeks doğrultusunda öğrencilere farklılaştırılmış destekler sunulabilir; üniversite bünyelerinde kurulacak sosyal hizmet birimleri, öğrencilerin ekonomik, teknik ve psikolojik ihtiyaçlarını bütüncül biçimde izleyebilir. Ayrıca, kamu-özel sektör ortaklığıyla oluşturulacak “dijital dayanışma fonları” aracılığıyla cihaz, bağlantı ve yazılım desteği sürdürülebilir hale getirilebilir.

Bir başka dezavantajlılık unsuru olarak kaynaklara erişime yönelik çözümlerin ele alınması gerekmektedir. Bu bağlamda, kütüphane kaynaklarının, ders notlarının ve eğitim materyallerinin dijital ortama aktarılması ve tüm öğrencilere eşit erişim sunulması teşvik edilmelidir. Ayrıca, yerel yönetimlerle iş birliği yaparak sessiz çalışma alanları, etüt merkezleri, mobil kütüphaneler ve teknoloji erişim noktaları oluşturulabilir. Bu ortamlar, evde uygun çalışma ortamı bulamayan öğrencilere destek olacaktır.

Diğer yandan araştırmanın sonuçları, öğrencilerin psikososyal iyi oluşunu korumanın da eğitimde eşitliğin bir parçası olduğunu göstermektedir. Psikolojik refah, akademik devamlılık ve başarı göstergeleriyle birlikte izlenmeli ve yükseköğretim politikalarında bu değişkenler dikkate alınmalıdır. Bu kapsamda üniversitelerde psikolojik dayanıklılık merkezlerinin kurulması, çevrimiçi danışmanlık ve stres yönetimi destek programlarının yaygınlaştırılması gerekmektedir. Öğrenci aidiyetini güçlendirmek için çevrimiçi ve yüz yüze etkileşimi bütünleştiren mentorluk sistemleri ve sanal kampüs etkinliklerinin teşvik edilmesi önerilmektedir.

Sonuç olarak, bu araştırma pandeminin yükseköğretimde kalıcı eşitsizlikleri görünür kıldığını, ancak aynı zamanda bu eşitsizliklerin sosyal politika düzeyinde ele alınması gerektiğini göstermektedir. Post-pandemi dönemi artık dijitalleşmiş bir eğitim düzenine işaret etmektedir. Bu düzenin adil ve kapsayıcı biçimde sürdürülebilmesi için, bileşik dezavantajlılık yaklaşımına dayalı çok boyutlu sosyal politika stratejilerinin geliştirilmesi ve yükseköğretimde dijital dönüşümün insan odaklı bir biçimde ilerletilmesi önem taşımaktadır. Böyle bir yaklaşım, hem sosyal adaletin güçlendirilmesine hem de Türkiye’de fırsat eşitliği bakımından daha kapsayıcı bir yükseköğretim sisteminin inşasına katkı sağlayabilir.

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Satınalma Gücü Paritesinin Sektörel Düzeyde Sınanması: Türkiye Değerlendirmesi¹

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Testing the Validity of Purchasing Power Parity at the Sectoral Level: The Case of Türkiye²

Abstract

Because the purchasing power parity (PPP) hypothesis is a key element of equilibrium exchange rate models, many scholars have examined its validity. While factors such as the tradability of goods and varying tax rates on products are expected to influence the validity of the PPP, few studies have examined it at the sectoral level. In this research, the validity of the PPP hypothesis is tested sector-by-sector by analysing real effective exchange rates for 23 manufacturing sectors in Türkiye. Using standard unit root tests, the validity of PPP is confirmed in 11 of the 23 sectors. Evidence supporting the stationarity of the exchange rate increases when nonlinearity is taken into account; the PPP hypothesis is supported for all sectors except tobacco products and clothing.

Keywords : Purchasing Power Parity, Real Exchange Rates, Unit Root Tests, Sectoral Analysis.

JEL Classification Codes : F20, F31, F41.

Öz

Satın alma gücü paritesi (SAGP) hipotezi, denge döviz kuru modellerinin önemli bir bileşeni olduğundan, geçerliliği birçok çalışmanın konusu olmuştur. Malların ticarete konu olması ve ürün bazında uygulanan vergi oranı gibi unsurların SAGP'nin geçerliliğine etki etmesi beklenirken, SAGP hipotezinin sektörel bazda geçerliliğiyle ilgili sınırlı sayıda çalışma bulunmaktadır. Bu çalışmada, SAGP hipotezinin geçerliliği Türkiye'de 23 imalat sanayi sektörü için reel efektif döviz kurları elde edilerek sektörel bazda sınanmıştır. Doğrusal birim kök testleri uygulandığında, 23 sektörün 11'i için döviz kurunda birim kökün varlığı reddedilmiş; bu sektörler için SAGP'nin geçerliliği yönünde kanıt elde edilmiştir. Doğrusal olmama durumunu dikkate alan birim kök testleri kullanıldığında, daha fazla sektör için döviz kurunun durağan olduğu gözlemlenmiş; bütün ürünleri ve giyim eşyası dışındaki tüm sektörlerde SAGP hipotezinin geçerli olduğuna dair ampirik kanıtlar elde edilmiştir.

Anahtar Sözcükler : Satınalma Gücü Paritesi, Reel Döviz Kuru, Birim Kök Testleri, Sektörel Analiz.

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1. Giriş

Nominal döviz kuru, ülke para birimlerinin piyasadaki değişim oranını gösterirken; reel döviz kuru, para birimlerinin alım gücünü ifade eder. Ülkelerin uluslararası ticaretteki rekabet gücünün önemli bir belirleyicisi olduğundan, reel döviz kuru seviyesi, politika yapımcılar ve piyasa aktörlerinin yakından takip ettiği bir değişkendir. Bu önemden dolayı, reel döviz kurunun denge seviyesinin tespiti ile ilgili farklı modeller geliştirilmiştir. 1960’lı yılların başında Marcus Fleming (1962) ve Robert Mundell (1960, 1961, 1963) bir dizi makalede, birbirlerinden bağımsız olarak, açık ekonomi Keynesyen makroekonomik modele sermaye akışlarını dahil ederek bir denge döviz kuru modeli oluşturmuşlardır (Boughton, 2002). Mundell-Fleming modelinde denge döviz kuru, ödemeler dengesinin dengede olduğu ve döviz arz ve talebinin birbirine eşit olduğu noktada oluşmaktadır. Para arzı ve talebi dengesine göre, denge döviz kurunu belirleyen öncelikli unsur para piyasaları dengesidir. Clements ve Frenkel (1980) parasalcı modelin temel özelliğinin, iki para biriminin nispi fiyatı olan denge döviz kurunun, iki ülke para birimine yönelik nispi arz ve talep tarafından belirleneceğini belirtmektedir. Bir diğer yaklaşım, döviz kuru ve faiz oranı ilişkisini inceleyen faiz paritesi yaklaşımıdır. Bu yaklaşıma göre denge döviz kuru, ülkelerin faiz oranı farkı, spot döviz kurları ve beklentiler göz önünde bulundurularak elde edilmektedir (Frankel, 1979).

Farklı para birimlerinin satın alma güçlerini eşitleyen satın alma gücü paritesi (eşitliği) (SAGP) hipotezi, döviz kuru seviyesiyle ilgili parasalcı yaklaşımın ve faiz paritesi yaklaşımının önemli bir bileşenini oluşturmaktadır. SAGP hipotezi, ticari engellerin ve nakliye maliyetlerinin olmadığı varsayımı altında, benzer malların farklı piyasalarda aynı fiyattan alışverişe konu olacağını söyleyen tek fiyat yasası (TFY) teorisinden yola çıkarak geliştirilmiştir (Alptekin, 2016). SAGP hipotezi, TFY’nin fiyatların geneline uyarlanmış halidir. SAGP’nin geçerli olduğu durumda, ülkeler arasında fiyat düzeyinde meydana gelen değişimler, nominal döviz kurunda meydana gelecek değişimler tarafından dengelenecektir. Böylece, SAGP’nin geçerli olduğu durumda, reel döviz kuru sabit bir ortalama etrafında dalgalanacaktır. Bu itibarla, SAGP’nin geçerliliği reel döviz kuruna ait birim kök testleriyle belirlenmektedir. Reel döviz kurunun birim kök içermemesi (veya durağan olması), uzun vadede ortalama değerine döneceği anlamı taşıdığından, SAGP’nin geçerli olduğunu gösterir. Bu konuda yapılan ampirik çalışmalar, teoriyle uyumlu bir şekilde, SAGP’nin genellikle uzun dönemde geçerli olduğunu ortaya koymaktadır (Sollis, 2005; Alba & Park, 2005; Narayan & Narayan 2007; Uğur & Alper, 2023).

İlk defa Cassel (1918) tarafından sistematik bir şekilde incelenen SAGP, 1973 yılında Bretton Woods sisteminin çöküşünü izleyen süreçte iktisatçılar, merkez bankaları ve politika yapımcılar için önemli bir araştırma konusu olmuştur. SAGP hipotezi, denge döviz kuru başta olmak üzere birçok açık ekonomi modelinin temelini oluşturduğu için geçerliliği büyük önem arz etmektedir (Sarno & Taylor, 2002). İşlem maliyetleri, tam rekabet koşullarının mevcut olmaması, vergi, teşvik ve ticaret engelleri gibi unsurlar nedeniyle SAGP hipotezi kısa vadede geçerli olmayabiliyorsa da, arbitrajın ortadan kalkmasıyla uzun dönemde geçerli olması beklenir. Yapılan ampirik çalışmalar da SAGP hipotezinin genellikle uzun dönemde

geçerli olduğunu ortaya koymakla birlikte, döviz kuru rejimi, enflasyon politikası veya gümrük uygulamaları gibi alanlarda gerçekleşen yapısal değişiklikler SAGP hipotezinin geçerliliğini etkileyebilmektedir.

SAGP'nin üzerine kurulduğu TFY ve bu konuda yapılan çalışmalar, bu hipotezin geçerliliğinin söz konusu malların ticarete konu olan miktarı ve ürünlere uygulanan vergi oranlarındaki farklılıklar gibi sektöre özel değişkenlere bağlı olduğunu işaret etmektedir. Dolayısıyla, sektörel bazda yapılacak analizlerin SAGP'nin geçerliliğinin anlaşılmasına katkı sağlayacağı değerlendirilmektedir. Ne var ki mevcut literatür ülke düzeyindeki reel döviz kurlarına odaklanmaktadır; sadece birkaç çalışma (Chen, 2004; Lee & Yi, 2005) sektörel reel kur dinamiklerini incelemiştir. Bu çalışma, söz konusu boşluğu doldurmayı amaçlayarak Türkiye'de sektörel düzeyde SAGP'nin geçerliliğini test etmektedir. Bu amaçla öncelikle, 2000:01-2022:12 dönemini kapsayacak şekilde NACE Rev. 2. sınıflandırmasına göre 23 imalat sanayi sektörü için sektörel seviyede reel efektif döviz kurları elde edilmiştir. Ardından, döviz kurunun durağanlığı ve dolayısıyla SAGP'nin geçerliliği, literatürdeki çalışmalara uygun olarak, doğrusal ve doğrusal olmayan birim kök testleri ile incelenmiştir.

Makalenin geri kalanı şu şekilde düzenlenmiştir: İkinci bölümde, SAGP'nin geçerliliğine yönelik literatürde yer alan ampirik çalışmalar incelenmiştir. Bu kapsamda, doğrusal olmayan birim kök testlerine neden ihtiyaç duyulduğu açıklanmakta ve çalışmalardaki ampirik bulgular paylaşılmaktadır. Üçüncü bölümde, imalat sanayi sektörü için sektörel düzeyde hesaplanan reel efektif döviz kurundan (real effective exchange rate, REER) oluşan veri seti tanıtılmakta, SAGP hipotezinin geçerliliğini sınamak için kullanılan ekonometrik yöntemlerden bahsedilmektedir. Dördüncü bölümde, 2000:01-2022:12 dönemi için SAGP hipotezi sektörel düzeyde birim kök testleriyle incelenmekte ve model sonuçları sunulmaktadır. Sonuç bölümünde ise çalışmadan elde edilen sonuçlar değerlendirilmekte, bu alanda ileride yapılabilecek çalışmalar için önerilere yer verilmektedir.

2. Literatür

Döviz kurunun yapısına ve denge döviz kuruna ilişkin yaklaşımlar, enflasyon, faiz oranı, büyüme ve portföy akımı gibi bir dizi makroekonomik değişken arasındaki ilişkinin açıklanmasında önemli bir yer tutmaktadır. Özellikle, ithal ara ve nihai malların fiyat seviyeleri üzerindeki etkisinden dolayı, döviz kurlarında belirgin sapmaların meydana gelmesi üreticiler ve tüketiciler açısından maliyetli olabilmektedir. Dolayısıyla, döviz kurlarının kısa ve uzun dönemdeki hareketlerini ve denge döviz kurunu inceleyen çalışmalar uluslararası iktisat literatüründe geniş bir yer tutmaktadır.

SAGP'nin denge döviz kuru seviyesinin belirlenmesinde ve uluslararası karşılaştırmalarda önemli rol oynaması bu hipotezin geçerliliğinin test edilmesini yaygın hale getirmiştir. Ekonomi politikalarında gerçekleşen değişiklikler ve yapısal kırılmalar SAGP'nin geçerliliğini etkiledikçe ekonometri alanında geliştirilen yeni teknikler, SAGP'nin geçerliliğinin test edilmesinde uygulanmıştır (Elliott & Pesavento, 2006).

SAGP'nin test edilmesinde genişletilmiş (augmented) Dickey-Fuller (ADF), Kwiatkowski-Phillips-Schmidt-Shin (KPSS) ve Phillips Perron (PP) birim kök testleri gibi geleneksel birim kök testlerini kullanan birçok çalışma vardır. Örneğin, Demir ve Kıymaz (1999) SAGP hipotezini 1969-1996 döneminde Türkiye ile en yüksek dış ticaret hacmine sahip olan Almanya, Fransa, ABD, İtalya ve İngiltere için ADF ve PP birim kök testleri ile eşbütünleşme testi çerçevesinde test etmiştir. Geleneksel birim kök testi sonuçları, çalışmada kullanılan döviz kuru ve fiyat rasyolarının düzeyde durağan olmadıklarını; birinci farklarının ise durağan olduğunu göstermiştir. Bir sonraki adımda, serilere eşbütünleşme testi yapılmış ve test sonuçları SAGP hipotezinin Türkiye ile Almanya ve Fransa arasında geçerli olduğunu, İtalya, İngiltere ve ABD arasında geçerli olmadığını ortaya koymuştur. Analiz, 1980-Ocak öncesi ve sonrası olarak iki alt döneme ayrılarak yapıldığında, sonuçlar SAGP hipotezinin bu alt dönemlerde geçerli olmadığını göstermiştir. Sonuç olarak elde edilen bulgular, SAGP hipotezinin Türkiye ve adı geçen ülkeler için kısa dönemde geçerlilik taşımadığını gösterirken, uzun dönem için geçerli olduğunu gösteren çalışmalarla örtüşmektedir.

Benzer şekilde Kalyoncu (2009), SAGP hipotezinin Türkiye için geçerliliğini, 1980-2005 döneminde tüketici fiyat endeksi bazlı reel kur verilerini kullanarak, Fransa, Almanya, Japonya, Hollanda, İngiltere ve Amerika Birleşik Devletleri'ni baz ülke olarak sınamıştır. Araştırma sonucunda ADF ve PP birim kök testi kullanılarak baz ülke olarak İngiltere hariç tüm durumlarda reel döviz kuru serilerinin birim kök içerdiği; KPSS testi kullanıldığında ise reel döviz kurunun durağan olduğu ve uzun dönemde SAGP'yi desteklediği görülmüştür. Dolayısıyla yazar, Türkiye'de SAGP'nin baz ülke seçimine duyarlı olduğu ve birim kök testi türünden etkilenebileceği sonucuna varmıştır.

Geleneksel birim kök testleri literatürde yaygın olarak kullanılsa da gecikme uzunluğundaki artışların boyut bozulmalarına neden olduğu ve bu durumun geleneksel birim kök testlerinde güç kaybı oluşturduğu belirtilmiştir (Stock, 1994). Bu sorunu çözmek için birçok araştırmacı, yalnızca testlerin gücünde önemli bir artış sağlamakla kalmayan aynı zamanda SAGP'nin uzun vadede geçerli olduğu görüşüyle tutarlı olarak çalışmalarında uzun dönemli veriler kullanmıştır (Lothian & Taylor, 1996; Cuddington & Liang, 2000). Bununla birlikte, verilerin dönem sayısındaki artış, döviz kurlarında yapısal kırılmalar ve doğrusallıktan sapma gibi yeni problemler getirmiştir. Nitekim, daha uzun vadede döviz kurları, rejim değişiklikleri, beklenmeyen şoklar ve enflasyon politikasındaki değişimler nedeniyle yapısal kırılmalara maruz kalabilmektedir (Hegwood & Papell, 1998). Ayrıca, fiyatlardaki katılık, işlem maliyetleri, gümrük vergileri, gümrük dışı diğer engeller ve asimetrik bilgi gibi piyasa bozuluklukları durumunda, döviz kurları doğrusal olmayan davranışlar gösterebilmektedir (Taylor & Taylor, 2002; Sercu et al., 1995). Perron (1989) durağan süreçteki bir yapısal kırılmanın göz ardı edilmesi durumunda, ADF testinin birim kök varlığının reddedilmemesine doğru eğilim gösterdiği bulgusuna ulaşmaktadır. Dolayısıyla, birim kök tespit sürecinde yapısal bir kırılmanın ve doğrusal olmama durumunun göz ardı edilmesi, geleneksel birim kök testlerinin hatalı bir sonuca ulaşabileceğini göstermektedir (Harvey et al., 2010; Taylor et al., 2001).

Bu zorlukları aşmak için, birçok çalışma SAGP'nin geçerliliğini yapısal kırılmalı ve doğrusal olmayan birim kök testleriyle sınamıştır. Bu bağlamda, Papell (2002), 1973 yılı sonrasında SAGP'nin geçerliliğini kuvvetli bir şekilde ortaya koyan çalışmaların olmamasının sebebinin, 1980'li yıllarda ABD dolarında gerçekleşen sert değerlenmeler ve değer kayıplarının olduğunu öne sürmüştür. Yazar bu zorluğu aşmak için, dolarda yaşanan sert değerlenme ve değer kayıp dönemlerini kukla değişken kullanarak trend kırılmaları olarak belirledikten sonra, ABD dolarının durağanlığını panel birim kök testi kullanarak 20 sanayileşmiş ülke para birimine karşı test etmiştir. Sonuçlar, SAGP'nin özellikle ABD dolarındaki dalgalanmaları takip eden para birimine sahip Avrupa ülkelerinde geçerli olduğunu gösterirken, tüm ülkeler için geçerli olmadığını ortaya koymuştur.

Sollis (2005), Papell (2002)'nin trend kırılmalı modellerle yaptığı SAGP'nin geçerliliği sınamasını, aynı 20 ülke için tek değişkenli yumuşak geçiş modeli (STR, smooth transition regression) kullanarak yapmıştır. 1973Ç1-1998Ç4 dönemini analiz ettiği çalışmada yazar, 1980'lerde dolarda gerçekleşen değer kaybı ve değer kazancı dönemlerini yumuşak geçişli durağan süreçler olarak tahmin etmiştir. İncelenen bazı ülke para birimlerinde, kurda değer kazancı öncesinde veya değer kaybı sonrasında negatif deterministik trend tespit edilmiş ve bu durum, kurda dolara karşı uzun dönemli reel değer kaybına sebep olmuştur. Dolayısıyla, SAGP incelenen tüm ülke para birimleri için geçerli olmasa da sonuçlar 11 ülke için ABD ile uzun vadeli SAGP'nin geçerli olduğunu ortaya koymuştur.

Koçak ve Özbek (2020), Türkiye'de 1994-2019 dönemine ait aylık reel döviz kuru verileriyle SAGP hipotezinin geçerliliği sınamıştır. Geleneksel birim kök testleri kullanılarak elde edilen sonuçlar SAGP hipotezinin geçersiz olduğunu ortaya koymaktadır. Diğer yandan, yapısal kırılmaya izin veren test bulguları SAGP hipotezinin geçerliliğini ortaya koymuştur. Yapısal kırılmaları dikkate almanın sonucunda hipotezin geçerli olması, Türkiye'de reel döviz kuru serisine gelen şokların geçici olduğunu göstermiştir. Reel döviz kurunun durağan olması, bir başka deyişle istikrarlı bir şekilde uzun dönem denge değeri etrafında dalgalanması, özellikle enflasyon hedeflemesi yapan merkez bankalarına, para politikası uygulamalarında destek olacağı değerlendirilmiştir.

Yardımcı (2024), SAGP hipotezinin geçerliliğini Türkiye için yapısal kırılmaları ve doğrusal olmama durumunu dikkate alarak incelemiştir. Çalışmanın bulguları, 2013-2023 döneminde geleneksel birim kök testleri ile yapısal kırılmaları hesaba katan testlerin reel döviz kurunun birim kök içerdiğini, buna karşılık doğrusal olmayan modellerin ise reel döviz kurunun durağan olduğunu ortaya koymuştur. Bu sonucun, Türkiye'de reel efektif döviz kurunun doğrusal olmadığına yönelik görüşleri desteklediği değerlendirilmiştir.

Türkiye ile beş ana dış ticaret partneri (Avrupa Birliği, ABD, İngiltere, Çin ve Rusya) arasındaki SAGP hipotezinin geçerliliğini doğrusal olmayan birim kök testleri ile sınanan Karademir ve Ceylan (2025), incelediği 2010-2024 döneminde SAGP hipotezinin geçerli olduğu bulgusuna ulaşmıştır. Çalışmada, analiz döneminde SAGP hipotezinin geçerli olmasının, Türkiye'de son yıllarda tecrübe edilen fiyat artışlarının döviz kurlarında aşırı

değerlenmeye neden olmadığı ve ülkeler arası rekabet koşullarını döviz kurları üzerinden bozmadığı öne sürülmüştür.

Alba ve Park (2005), Türk lirası ve Alman markı arasında SAGP’nin geçerli olup olmama durumunu, Ocak 1973 ve Ekim 2004 dönemini kapsayan ve doğrusal dışılığı ve durağan dışılığı dikkate alan Caner ve Hansen (2001) tarafından geliştirilen eşik otoregresif (TAR, threshold autoregressive) model kullanarak birim kök varlığını sınamıştır. Yazarlar, incelenen dönemin iki rejimden oluştuğunu ortaya koymuştur. Bunlardan eşik rejimde reel döviz kurunun durağan olduğu, diğer rejimde ise reel döviz kurunun birim kök barındırdığı bulgusuna ulaşılmıştır. Reel döviz kurunun durağan bulunduğu rejimin iki alt döneme ayrıldığı; bunlardan ilkinin yüksek enflasyon ve kurda sert değer kayıpları barındırarak makroekonomik istikrarsızlığa işaret ettiği öne sürülmüştür. Reel döviz kurunun durağan olduğu rejimdeki diğer dönemde ise enflasyonun görece düşük olduğu ve nominal döviz kurunun istikrarlı seyrettiği belirtilmiştir. Yazarlar, SAGP’nin geçerli bulunduğu ikinci dönemde görülen makroekonomik istikrarın Türkiye’nin AB adaylığı sürecine olumlu katkı sağlayacak bir unsur olduğunu değerlendirmiştir.

Narayan ve Narayan (2007) eşik otoregresif model kullanarak, 6 ticaret ortağına karşı İtalya’nın döviz kurunun durağanlığını test etmişlerdir. Sonuçlar, döviz kurunun doğrusal olmayan bir süreç izlediğini ve birim kök içermediğini ortaya koyarak SAGP’nin geçerliliğini desteklemiştir. Uğur ve Alper (2023) 1994-2021 yılları arasında 38 OECD ülkesi için doğrusal olmama durumunu ve yapısal kırılmaları da dikkate alarak SAGP hipotezini test etmiştir. Sonuçlar, 22 OECD ülkesi için SAGP hipotezinin geçerli olduğunu, diğer ülkeler içinse döviz kuru şoklarının kalıcı olduğunu göstermiştir.

Papell ve Prodan (2020) birim kök ve eşbütünleşme testleri yerine, nominal döviz kuru değer kaybı ile enflasyon farklılaşması arasındaki uzun dönemli ortak değişkenliği (covariability) test etmenin SAGP’nin geçerliliğini sınamada daha sezgisel ve etkili olabileceğini savunmuşlardır. Bu amaçla yazarlar, 1873-2013 yılları arasında, 16 ülkenin ABD’ye karşı tüketici fiyat endeksi ve döviz kuru farklılaşmasının ortak değişkenliğini test etmişlerdir. Sonuçlar, 16 ülkeden dokuzu için SAGP’nin geçerliliğini reddedememiş ve geçerliliğin yüksek enflasyon/yüksek döviz kuru değer kaybı olan ülkelerde daha yüksek olduğunu ortaya koymuştur.

Literatürde, SAGP’nin geçerliliğinin sınanması üzerine yoğunlaşan çalışmalarda genellikle reel kurun durağanlığına yönelik analizler bulunurken, sektörel bazda reel kurun durağanlığının sındığı kısıtlı sayıda araştırma mevcuttur. Chen (2004), panel birim kök testi kullanarak, 1981:01-1997:12 dönemini kapsayan verilerle 6 AB ülkesinde SAGP hipotezini sektörel düzeyde incelemiştir. Ülkeler ve sektörler arasında fiyatların davranışını açıklamada önemli farklılıklar olup olmadığını inceleyen çalışmada SAGP’nin, nominal döviz kuru oynaklığı, pazarların coğrafi bölümlenmesi, tarife dışı engeller, endüstriyel yoğunlaşma, dikey farklılaşma ve ürünlerin ticarete elverişliliğine bağlı olarak, belli başlı ülkeler ve sektörlerde geçerli olduğu sonucuna ulaşılmıştır. Nominal döviz kurunun sektörlerin rekabetçiliği üzerindeki etkisinin önemini vurgulayan Lee ve Yi (2005), Güney

Kore için reel efektif döviz kurunu sektörel seviyede hesaplamıştır. Yazarlar, nominal döviz kurundaki değişikliklerin REER üzerindeki etkisinin her sektörde farklılık gösterdiğini ve REER'in ihracat hacmi üzerindeki etkilerinin sektörlere göre değiştiğini ortaya koymuştur.

Sektörel REER, rekabet dinamiklerinin izlenmesi açısından da önem taşımaktadır. Sektörel reel efektif döviz kurlarının seyri, imalat sanayinde faaliyet gösteren alt sektörlerle ilişkin rekabet dinamiklerinin tespit edilmesi ve bu çerçevede uygun politika adımlarının belirlenmesi konusunda bilgi içerici niteliktedir. Ürünlerin ticarete konu olması ve uygulanan farklı vergi oranları gibi sektörel düzeydeki özellikler SAGP'nin geçerliliğini etkilemektedir. Döviz kurlarının ihracat üzerindeki etkileri de değerlendirildiğinde, SAGP'nin sektörel seviyede çalışılması önem arz etmektedir. Buna karşın bu alanda yapılan çok az çalışma olması, SAGP'nin sektörel seviyede geçerliliğini inceleyen bu çalışmanın literatüre önemli bir katkı sağlayacağı değerlendirilmektedir.

3. Veri ve Metodoloji

Yukarıda da belirtildiği gibi, bu çalışma sektörel düzeyde SAGP'nin geçerliliğini sınamayı amaçlamaktadır. Bu sebeple öncelikle sektörel düzeyde REER'nin hesaplanması gerekmektedir. Sektörler, Avrupa Topluluğu ekonomik faaliyetlerinin istatistiki sınıflandırması olan NACE Rev. 2'ye göre seçilmiş ve 23 imalat sanayi sektörü belirlenmiştir. Reel efektif kur hesaplamasında, Türkiye Cumhuriyet Merkez Bankasının (TCMB) kullandığı aşağıdaki formül kullanılmıştır:

$$REER = \prod_{j=1}^N \left(\frac{P_{TUR}}{P_j * E_{j,TUR}} \right)^{w_j} \quad (1)$$

Denklemden yer alan w_j , j ülkesinin Türkiye'nin reel efektif kur endeksindeki ağırlığını, P_{TUR} Türkiye'nin fiyat endeksini, P_j , j ülkesinin fiyat endeksini, $E_{j,TUR}$, j ülkesinin parasının TL cinsinden kur değerini ve N ülke sayısını göstermektedir. Denklemden REER'deki artış, TL'nin reel olarak değer kazandığına ve Türk mallarının yabancı mallar cinsinden fiyatının arttığına işaret etmektedir. REER hesaplamalarında, 2000:01-2022:12 dönemi aylık verileri kullanılmıştır.

Sektörel reel döviz kuru hesaplama yöntemi olarak Lee ve Yi (2005) tarafından kullanılan geometrik hesaplama yöntemi benimsenmiştir. Her bir sektör için dış ticaret ağırlıklı reel döviz kuru denklemi aşağıda verilmiştir:

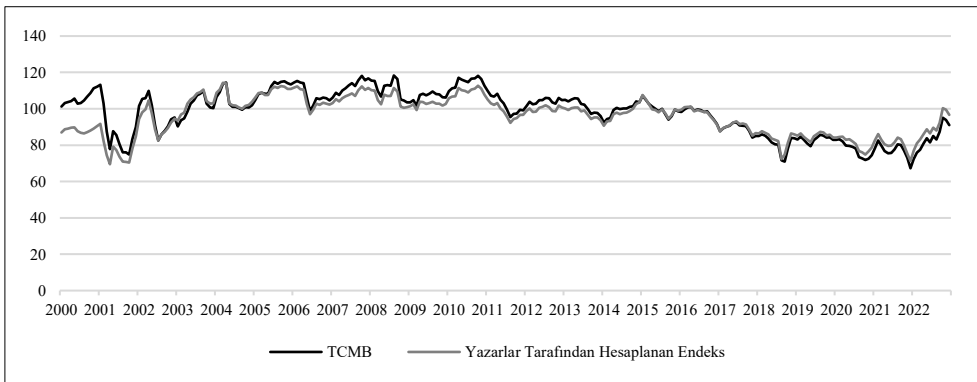
$$REER_{t,s} = \prod_{j=1}^N \left(\frac{P_{t,s}}{P_{t,s}^j * E_{t,j}} \right)^{w_j} \quad (2)$$

Denklemden, $REER_{t,s}$, t anında s sektöründeki REER'yi; N , ele alınan ülke sayısını göstermektedir. Tüketici fiyat endekslerinin genellikle ticarete konu olmayan mal bileşenlerini içermesi nedeniyle, Chen (2004) tarafından yapılan çalışmada olduğu gibi, bu çalışmada da SAGP hipotezinin test edilmesinde ticarete konu olan malların daha yüksek bir

oranını kapsayan üretici fiyat endeksleri kullanılmıştır. Dolayısıyla, $P_{t,s}$, t anında Türkiye’de s sektöründeki yurt içi üretici fiyat seviyesi, $P_{t,s}^j$, ise j ülkesindeki s sektörünün t anındaki yurt içi üretici fiyat seviyesidir. $E_{t,j}$ ise t anında bir birim j ülkesi parası karşılığı TL miktarı şeklinde ifade edilen ikili döviz kurunu göstermektedir. Ayrıca, w_j , j ülkesinin 2021 yılındaki dış ticaret hacminin, ele alınan ülkelerle yapılan toplam dış ticaret hacmine oranını belirtmektedir. Ülke ağırlıkları için yakın dönemi yansıtmayı amacıyla 2021 yılı tercih edilmiştir. Ülke ağırlıkları, ilgili ülkeyle gerçekleştirilen ihracat ve ithalat toplamının belirlenen 67 ülkeyle gerçekleştirilen ihracat ve ithalat toplamına oranlanmasıyla elde edilmiştir³. Sektörel reel kurlar hesaplanırken, 2015 yılı baz yılı olarak endekslenmiştir.

Türkiye’ye ait sektörel üretici fiyatları Türkiye İstatistik Kurumu’ndan (TÜİK) alınmıştır. Sektörel yurt dışı üretici fiyatları için, Avrupa’daki 32 ülkenin fiyatları Avrupa İstatistik Ofisi’nden (European Statistical Office, EUROSTAT) alınmıştır. Çin’in sektörel üretici fiyatı verileri National Bureau of Statistics of China’dan, Rusya’nın verileri Rus Federal Devlet İstatistik Servisi’nden (Rosstat), ABD’nin verileri Federal Reserve Economic Data’dan (FRED), İngiltere’nin verileri ise Office for National Statistics’ten (ONS) alınmıştır. Söz konusu 36 ülkenin örneklem içindeki payı %75’i bulmaktadır. Çin ve ABD’nin verileri NACE Rev. 2’ye uygun hale getirilmiştir. Geriye kalan ülkelerin sektörel üretici fiyatları olmadığı için tüm sektörler için üretici fiyatları, yoksa tüketici fiyatları kullanılmıştır. Geçmiş dönemlere ait eksik veriler, bir üst grubun değişimiyle oluşturulmuştur. Nominal kurlar ise, BIS’ten aylık ortalama olarak alınmış olup çarpıraz kurlar kullanılarak ülke para birimlerinin TL karşılıkları bulunmuştur.

Şekil: 1
Yurt İçi Üfe Bazlı Reel Efektif Döviz Kurları



Kaynak: Yazarların hesaplamaları. TCMB, TÜİK, EUROSTAT, National Bureau of Statistics of China, Rosstat, Fred, ONS, Trading Economics, BIS verileri kullanılarak.

³ Söz konusu 67 ülkenin toplam ihracat ve ithalatımız içindeki payı 2021 yılı itibarıyla %83’tür.

Şekil 1’de 2015 yılı baz olmak üzere yurt içi ÜFE bazlı TCMB tarafından hazırlanan REER ile bu çalışma için hazırlanan REER değerleri birlikte verilmiştir. İki döviz kuru değerinin birbirine oldukça yakın olduğu görülmektedir. Küçük sapmalar, ülke sayısı, ülke ağırlıklarının tespitindeki yıl ve eksik verilerin tamamlanmasında izlenen yöntemsel farklılıklarından kaynaklanmaktadır. 2015 yılı baz yılı olarak hesaplanan ÜFE bazlı sektörel düzeydeki reel efektif döviz kuru endeksleri Ek 2’de gösterilmektedir.

3.1. Ekonometrik Yöntem

SAGP hipotezinin geçerli olup olmadığına ilişkin birçok çalışmada genellikle birim kök testleri, panel veride birim kök testleri ve eşbütünleşme testleri kullanılmaktadır. Bu çalışmada, bir dizi birim kök testi üzerinde durulmaktadır. Birim kök testleri reel döviz kuru serisinin durağan olduğunu gösterirse SAGP’nin geçerli olduğu, eğer reel döviz kuru serisi birim kök testi sonuçlarına göre durağan değilse SAGP’nin geçersiz olduğu sonucuna varılmaktadır.

Durağanlık, en temel haliyle serilerin zaman içerisinde sürekli artan veya sürekli azalan bir yapıya sahip olmamaları; ortalama bir değer etrafında salınmaları anlamına gelmektedir. Diğer bir ifadeyle, zaman serilerinde durağanlık, bir zaman serisinin, ortalama, varyans ve kovaryans gibi istatistiksel özelliklerinin zamana bağlı olarak değişmemesi şeklinde ifade edilebilmektedir (Gujarati & Porter, 2009).

Bu çalışmada, SAGP hipotezi geleneksel doğrusal birim kök testlerinin yanı sıra doğrusal olmayan birim kök testleri kullanılarak test edilmektedir. Bu doğrultuda, geleneksel birim kök testi olarak ADF birim kök testi kullanılmıştır. ADF birim kök testinin uygulanmasının ardından doğrusal olmama durumunu dikkate alan Kapetanios, Shin ve Snell (2003) tarafından üstel yumuşak geçişli otoregresif (Exponential Smooth Transition Autoregressive Model, ESTAR) modeline dayalı olarak geliştirilen KSS ve Sollis (2009) tarafından geliştirilen asimetrik üstel yumuşak geçişli otoregresif (Asymmetric Exponential Smooth Transition Autoregressive Model, AESTAR) modeli çerçevesinde formüle edilen birim kök testlerine başvurulmaktadır.

3.1.1. Genişletilmiş Dickey-Fuller (ADF) Birim Kök Testi

Dickey-Fuller testinin geçerliliği modeldeki hata terimine yönelik iki varsayımın geçerliliğine bağlıdır. Birinci varsayım, hata teriminde ardışık bağımlılığın olmaması, ikinci varsayım ise değişen varyans sorunun olmaması şeklinde tanımlanmaktadır. ADF testi, hata teriminde ardışık bağımlılık sorununu ortadan kaldırmak için bağımlı değişkenin gecikmeli değerlerini dikkate almaktadır. ADF testi, bir değişkene ait zaman serisinin gecikmeli değerlerini kullanarak otokorelasyonu ortadan kaldırmaktadır (Dickey & Fuller, 1979, 1981).

ADF testi aşağıda yer alan 3, 4 ve 5 numaralı denklemlerin tahmin edilmesi ile gerçekleştirilmektedir. Δ değişkenin birinci farkını, X_t teste konu olan değişkeni, ϕ sabit

terimi, k gecikme uzunluğunu, ω trend değişkenine ait katsayıyı ve ϵ_t ise bağımsız ve eşit dağılımlı hata terimini ifade etmektedir.

$$\Delta X_t = \sigma X_{t-1} + \sum_{i=1}^k \delta_i \Delta X_{t-i} + \epsilon_t \quad (3)$$

$$\Delta X_t = \varphi + \sigma X_{t-1} + \sum_{i=1}^k \delta_i \Delta X_{t-i} + \epsilon_t \quad (4)$$

$$\Delta X_t = \varphi + \omega t + \sigma X_{t-1} + \sum_{i=1}^k \delta_i \Delta X_{t-i} + \epsilon_t \quad (5)$$

Modelin sıfır hipotezi " σ " katsayısının sıfıra eşit olmasıdır:

$$H_0: \sigma = 0; H_1: \sigma < 0$$

Buna göre, her üç modelde de $H_0: \sigma = 0$ boş hipotezinin reddedilmesi X_t değişkeninin durağan olduğu anlamına gelmektedir. Ayrıca, $\sigma = 0$ eşitliğinin sınanmasında kullanılan kritik değerler üç modelde de birbirinden farklıdır. Bu kapsamda, $H_0: \sigma = 0$ hipotezini reddetmek için, t istatistiğinin mutlak değeri kritik değerden daha büyük olmalıdır. Denklem (3) sabitsiz-trendsiz, denklem (4) sabitli-trendsiz ve denklem (5) sabitli-trendli ADF testi olarak kullanılmaktadır.

ADF birim kök testi uygulamasında gecikme uzunluğu (k) seçimi kritik öneme sahiptir. Zira, ADF testlerinin gecikme uzunluğuna duyarlılığı oldukça fazladır (Perron, 1989). Gecikme uzunluğu belirlenirken, serbestlik derecesini de dikkate alacak şekilde, nispeten küçük ancak hata terimindeki otokorelasyonun varlığını dikkate alacak kadar da büyük olan tercih edilmelidir. Gecikme uzunluğu arttıkça, tahmin edilecek ilave parametre sayısını artırarak, serbestlik derecesini azaltmaktadır. Bu nedenle, gecikme sayısındaki artış sıfır hipotezini reddetmek için yapılacak testin gücünü azaltmaktadır. Gecikme uzunluğu olan k 'nin belirlenmesi amacıyla, Akaike (Akaike Information Criteria, AIC) ve Shwarz (Shwarz Information Criteria, SIC) gibi bilgi kriterleri kullanılabilir (Gujarati & Porter, 2009).

3.1.2. Kapetanios, Shin, Snell (2003) Birim Kök Testi (KSS)

Makroekonomik ve finansal verilerin veri üretme sürecinde yapısal kırılmalar ve zamana bağlı değişen oynaklık yapısı görülebilir. Bu durum, serilerin otoregresif ve ağırlıklı ortalamalar ile tanımlanmasını zorlaştırmakta ve rejimler arası farklılık meydana getirmektedir. Modellerin doğru tanımlanması için rejimler arası farklılıkların ve rejimler arası geçişin doğru tanımlanması gerekmektedir. Rejim kavramı ekonomik yapıdaki değişimleri ifade etmektedir. Ekonomik değişkenlerin ortalaması, varyansı ve otokorelasyonu gibi dinamik davranışları ekonomilerdeki rejimlere bağlı olmaktadır (Franses & Dijk, 2000). Örneğin, LeBaron (1992) hisse senedi getirilerinde otokorelasyonun, düşük oynaklık döneminde daha fazla, yüksek oynaklık döneminde ise daha düşük olduğunu göstermiştir. Burada, düşük ve yüksek oynaklık, rejim belirleme işlemi olarak tanımlanabilir. Krager ve Kugler (1993), özellikle yönetilen dalgalanmalı sistemlerde olduğu gibi, döviz kurlarının rejim değişikliği davranışı gösterebileceğini öne sürmektedir.

İlk olarak Tong ve Lim (1980) tarafından önerilen ve Tong (1990) tarafından kapsamlı bir şekilde tartışılan TAR modeli, t zamanında meydana gelen rejimin gözlemlenebilir bir değişken tarafından belirlenebileceğini varsayan bir modeldir. TAR modeli, rejimin λ olarak ifade edilen bir eşik değerine göre belirlendiğini varsaymaktadır. Caner ve Hansen (2001), TAR modeline dayanan iki rejimli bir birim kök testi öne sürmüştür. TAR modelinin yer aldığı daha önceki çalışmalardan farklı olarak, bu çalışmada durağanlık ve doğrusal olmama durumu eş zamanlı olarak sınanabilmektedir. Test sürecinde aşağıdaki model dikkate alınmıştır:

$$\Delta y_t = \theta'_1 x_{t-1} 1_{\{z_{t-1} < \lambda\}} + \theta'_2 x_{t-1} 1_{\{z_{t-1} \geq \lambda\}} + \epsilon_t \quad (6)$$

$t = 1, \dots, T$. Modelde yer alan, $x_{t-1} = (y_{t-1} r'_t \Delta y_{t-1} \dots \Delta y_{t-k})', 1_{\{\cdot\}}$ gösterge fonksiyonunu ve ϵ_t hata terimini ifade etmektedir. $Z_t = y_t - y_{t-m}$ olarak tanımlanmakta ve $m \geq 1$ gecikme uzunluğunu ifade etmektedir. r_t sabit terim ve doğrusal trendi içeren deterministik bileşenler vektörünü ifade etmektedir. λ ise eşik değerdir ve değeri bilinmemektedir. λ parametresinin değeri $[\lambda_1, \lambda_2]$ aralığında yer almaktadır. Modelde yer alan θ_1 ve θ_2 ,

$$\theta_1 = \begin{pmatrix} \mu_1 \\ \beta_1 \\ p_1 \end{pmatrix}, \theta_2 = \begin{pmatrix} \mu_2 \\ \beta_2 \\ p_2 \end{pmatrix} \quad (7)$$

şeklinde. μ_1 ve μ_2 , y_{t-1} 'in eğim parametrelerini, β_1 ve β_2 , deterministik bileşenlerin eğim parametrelerini, p_1 ve p_2 ise $(y_{t-1} r'_t \Delta y_{t-1} \dots \Delta y_{t-k})'$ e eğim parametrelerini ifade etmektedir.

Doğrusaldışı formda yer alan veri hareketlerinin farklılaşmasının kesikli bir şekilde değişim yerine, yumuşak geçişli olması ise yumuşak geçişli otoregresif (Smooth Transition Autoregressive, STAR) modeller ile açıklanabilmektedir. Kapetanios, Shin ve Snell (2003), zaman serilerinde birim kökün varlığına ilişkin temel hipotezi ESTAR modeli ile sınamıştır. Buna göre, testin temel hipotezi birim kökün varlığını, alternatif hipotezi ise doğrusal olmayan durağanlığı ifade etmektedir.

KSS birinci dereceden tek değişkenli (STAR(1)), denklem (8) ile gösterilmiştir:

$$y_t = \beta y_{t-1} + \gamma y_{t-1} F(\theta; y_{t-d}) + \epsilon_t \quad (8)$$

Denklemden ϵ_t hata terimi sıfır ortalama ve sabit varyans ile bağımsız ve eşit dağılımlıdır ($\epsilon_t \sim iid(0, \sigma^2)$). β ve γ bilinmeyen parametrelerdir. γ geçiş parametresidir ve değeri iki rejim arasındaki geçiş hızı hakkında bilgi vermektedir. Geçiş fonksiyonu olarak $F()$ üstel geçiş fonksiyonu denklem (9)'da tanımlanmıştır.

$$F(\theta; y_{t-d}) = 1 - \exp(-\theta(y_{t-d} - c)^2) \quad (9)$$

Denklemden $\theta \geq 0$ ve gecikme parametresi $d \geq 1$ varsayılmaktadır. 0 ve 1 sınırları içinde geçiş fonksiyonu $F(0) = 0; \lim_{x \rightarrow \pm\infty} F(x) = 1$ şeklinde tanımlanmaktadır.

Burada $c = 0$ varsayımı altında denklem aşağıdaki şekilde yazıldığında ESTAR modeli elde edilir:

$$y_t = \beta y_{t-1} + \gamma y_{t-1} [1 - \exp(-\theta y_{t-d}^2)] + \epsilon_t \quad (10)$$

Denklem yeniden parametrelendirildiğinde:

$$\Delta y_t = \phi y_{t-1} + \gamma y_{t-1} [1 - \exp(-\theta y_{t-d}^2)] + \epsilon_t \quad (11)$$

şeklinde gösterilebilir. Burada, $\phi = \beta - 1$ 'dir. $\phi = 0$ ve $d = 1$ değerleri verildiğinde ESTAR modeli aşağıda gösterilmiştir:

$$\Delta y_t = \gamma y_{t-1} [1 - \exp(-\theta y_{t-1}^2)] + \epsilon_t \quad (12)$$

Test hipotezi doğrudan θ parametresine odaklanmaktadır ve θ pozitif ise ortalamaya dönme hızının belirleyicisi olacaktır. Öte yandan, γ parametresi sıfır hipotezi altında tanımlanmadığından, temel hipotezin doğrudan test edilmesi mümkün olmamaktadır. Bu sorunu aşmak için, ESTAR modeli, birinci dereceden Taylor serisi yaklaşımı ile dönüştürülür ise aşağıdaki yardımcı regresyon elde edilir:

$$\Delta y_t = \delta y_{t-1}^3 + \epsilon_t \quad (13)$$

Denklem (17), hata terimlerinin otokorelasyon içermesi sorunun önüne geçmek için genişletilmiştir (Kapetanios et al., 2003):

$$\Delta y_t = \delta y_{t-1}^3 + \sum_{j=1}^p p_j \Delta y_{t-j} + \epsilon_t \quad (14)$$

3.1.3. Sollis Doğrusal Olmayan Birim Kök Testi

KSS testinde ortalamaya dönüşün simetrik olduğu varsayılmaktadır. Bu varsayımda, pozitif ve negatif sapmaların aynı etkiye sahip olduğu anlamına gelmektedir. Diğer bir ifadeyle, ortalamaya dönen modellerde, ortalamaya dönüşün simetrik olması sebebiyle pozitif veya negatif dönüş etkileri ayırt edilememektedir. Birçok ampirik araştırma, doğrusal ve doğrusal olmayan ortalamaya dönen serileri simetrik olarak kabul ederek kısıtlamıştır. Ancak reel kurların, yerli ve yabancı politika yapıcılarının etkisiyle asimetrik davrandığı kabul edilebilir. Sollis, Laybourne ve Newbold (2002), ABD doları karşısında reel kurların asimetrik olarak ortalamaya döndüğünü gözlemlemiştir. Sollis (2009), bu varsayımı genişleterek simetrik ve asimetrik doğrusal olmayan ayarlamalara izin veren bir birim kök testi geliştirmiştir. Sollis (2009) tarafından geliştirilen asimetrik ESTAR (AESTAR) modeli hem üstel hem de lojistik fonksiyonu kullanmaktadır. KSS testinde olduğu gibi geçiş değişkeninin y_{t-1} olduğu varsayılarak AESTAR modeli aşağıda ifade edilmiştir.

$$\Delta y_t = G_t(y_1, y_{t-1}) \{S_t(y_2, y_{t-1}) \rho_1 + (1 - S_t(y_2, y_{t-1})) \rho_2\} y_{t-1} + \epsilon_t \quad (15)$$

$$G_t(y_1, y_{t-1}) = 1 - \exp(-\gamma_1 (y_{t-1}^2)) \quad \gamma_1 \geq 0 \quad (16)$$

$$S_t(y_2, y_{t-1}) = [1 + \exp(-\gamma_2 y_{t-1})]^{-1} \quad \gamma_2 \geq 0 \quad (17)$$

Burada, ϵ_t hata terimi, bağımsız ve eşit dağılımlıdır ($\epsilon_t \sim iid(0, \sigma^2)$). Denklem (16) üstel fonksiyonu, denklem (17) ise lojistik fonksiyonu göstermektedir. γ_1 ve γ_2 rejimler arası geçiş hızlarını belirleyen parametrelerdir. γ_2 modeldeki asimetrinin derecesini kontrol etmektedir. $\rho_1 \neq \rho_2$ eşitsizliği asimetrik yapıyı ifade etmektedir. $\rho_1 = \rho_2$ olması durumunda ise AESTAR modeli KSS'deki ESTAR modeline dönüşmektedir.

ESTAR modelinde olduğu gibi AESTAR modeli de yüksek dereceden dinamiklere izin vermek için aşağıdaki gibi genişletilebilmektedir.

$$\Delta y_t = G_t(\gamma_1, y_{t-1})\{S_t(\gamma_2, y_{t-1})\rho_1 + (1 - S_t(\gamma_2, y_{t-1}))\rho_2\}y_{t-1} + \sum_{i=1} \kappa_i \Delta y_{t-i} + \epsilon_t \quad (18)$$

Sollis (2009) testinde, birinci derece Taylor çözümü ile denklemin genişletilmiş versiyonu aşağıdır:

$$\Delta y_t = \phi_1 y_{t-1}^3 + \phi_2 y_{t-1}^4 + \sum_{i=1} \kappa_i \Delta y_{t-i} + \epsilon_t \quad (19)$$

Denklem (19), ham seri, ortalamadan arındırılmış seri ve trendden arındırılmış seri için kullanılabilir. Hata terimi normal dağılmaktadır. Test edilecek hipotez, $H_0: \phi_1 = \phi_2 = 0$ olarak gösterilmektedir. F istatistiği tablo değerlerini Sollis (2009) oluşturmuştur.

4. Ampirik Bulgular

Bu bölümde yukarıda bahsedilen ekonometrik çerçeve kapsamında sırasıyla değişkenlere uygulanan ADF, KSS ve Sollis birim kök testlerine dair sonuçlar sunulmaktadır⁴. Analizlerde serilerin logaritmik değerleri kullanılmıştır.

4.1. SAGP'nin Genişletilmiş Dickey Fuller Birim Kök Testi ile Sınanması

Ampirik analizde öncelikle, geleneksel birim kök testlerinden olan ve doğrusal olmama durumunu dikkate almayan ADF birim kök testi ile sektörel reel döviz kurunun sabitli ve sabit trendli olmak üzere durağan olma durumu sınanmıştır. Belirtilen analize ait sonuçlar Tablo 1'de yer almaktadır.

⁴ ADF testine ilişkin sunulan sonuçlar EViews 11 kullanılarak elde edilmiştir. KSS ve Sollis testine ilişkin sonuçlar Excel programı kullanılarak elde edilmiştir.

Tablo: 1
ADF Birim Kök Testi Sonuçları

Sektörler	ADF Test İstatistikleri	
	Sabit	Sabit ve Trend
Gıda Ürünleri	-3.14 (1)**	-3.22 (1)*
İçecekler	-2.01 (2)	-2.29 (2)
Tütün Ürünleri	-1.53 (0)	-2.9 (0)
Tekstil Ürünleri	-3.65 (1)***	-3.75 (1)**
Giyim Eşyası	-0.28 (1)	-1.7 (0)
Deri ve İlgili Ürünler	-0.55 (3)	-2.68 (1)
Ağaç ve Mantar Ürünleri (mobilya hariç)	-2.07 (2)	-4.73 (1)***
Kâğıt ve Kâğıt Ürünleri	-3.53 (2)***	-3.8 (2)**
Basım ve Kayıt Hizmetleri	-1.19 (0)	-2.6 (0)
Kok ve Rafine Petrol Ürünleri	-2.7 (1)*	-3.24 (1)*
Kimyasallar ve Kimyasal Ürünler	-2.69 (2)*	-5.05 (1)***
Temel Eczacılık Ürünleri ve Müstahzarları	-0.86 (2)	-3.03 (2)
Kauçuk ve Plastik Ürünler	-1.83 (3)	-4.54 (1)***
Metalik Olmayan Diğer Mineral Ürünler	-2.02 (2)	-2.16 (2)
Ana Metaller	-2.66 (1)*	-3.06 (1)
Fabrikasyon Metal Ürünler (Makine ve Ekipmanlar Hariç)	-2.19 (0)	-3.25 (1)*
Bilgisayar ile Elektronik ve Optik Ürünler	-0.84 (0)	-3.93 (0)**
Elektrikli Teçhizat	-2.79 (3)*	-4.87 (1)***
Başka Yerde Sınıflandırılmayan Makine ve Ekipmanlar	-1.47 (2)	-2.42 (2)
Motorlu Kara Taşıtları, Treyler (römork) ve Yarı Treyler (yarı römork)	-2.24 (2)	-3.48 (0)**
Diğer Ulaşım Araçları	-0.59 (0)	-3.76 (1)**
Mobilya	-2.48 (2)	-2.71 (2)
Diğer Mamul Eşyalar	-1.39 (2)	-2.98 (1)
Kritik değerler (%1-%5-%10)	-3.45 -2.87 -2.57	-3.99 -3.43 -3.14

Notlar: (1) Parantez içi değerler Schwarz Bilgi Kriterine göre belirlenen optimal gecikme sayısını göstermektedir. Maksimum gecikme sayısı Schwert (1989)'in önerdiği $12 \cdot (T/100)^{1/4}$ formülü ile hesaplanarak 15 olarak alınmıştır. (2) *** ** ve * işaretleri, Mackinnon (1996) tarafından hazırlanan kritik değerlere göre boş hipotezin sırasıyla %1, %5 ve %10 düzeyinde reddedildiğini göstermektedir.

ADF testinde en uygun gecikme sayısı Shwarz bilgi kriterine göre belirlenmiştir. Tablo 1’de yer alan ADF testi sonuçlarına göre, sabit terimli modelde gıda ürünleri, tekstil ürünleri, kâğıt ve kâğıt ürünleri, kok ve rafine petrol ürünleri, kimyasallar ve kimyasal ürünler, ana metaller ile elektrikli teçhizat sektörlerinde; sabit ve trendli modelde ise gıda ürünleri, tekstil ürünleri, ağaç ve mantar ürünleri, kâğıt ve kâğıt ürünleri, kok ve rafine petrol ürünleri, kimyasallar ve kimyasal ürünler, kauçuk ve plastik ürünler, fabrikasyon metal ürünler, bilgisayar ile elektronik ve optik ürünler, elektrikli teçhizat, motorlu kara taşıtları ile diğer ulaşım araçları sektörlerinde birim kök hipotezi reddedilmektedir. Diğer sektörlerde reel döviz kurunun durağan olmadığını belirten sıfır hipotezi reddedilememiştir. Dolayısıyla ADF testi sonuçları, belirtilen 11 sektörde SAGP hipotezinin geçerli olduğunu ortaya koymuştur.

4.2. SAGP’nin KSS Birim Kök Testi ile Sınanması

Geleneksel birim kök testleri uygulanırken, reel döviz kuru (q) serilerinin doğrusal olduğu varsayımı yapılmıştır. Bu nedenle, doğrusal olmama durumunu dikkate alan Kapetanios, Shin ve Snell (2003) tarafından ESTAR modeline dayalı olarak geliştirilen KSS birim kök testine başvurulmuştur. Orijinal, ortalamadan arındırılmış ve trendden arındırılmış seriler için KSS testi sonuçları Tablo 2’de raporlanmıştır⁵. Doğrusal olmama durumunu da

⁵ AIC ile belirlenen değerlere ilişkin Tablo EK 3’te verilmiştir.

dikkate alan KSS testi sonuçlarına göre, ortalamadan arındırılmış veride 23 imalat sanayi sektöründen 15’inde boş hipotez reddedilmiştir. Trendden arındırılmış seriler için ise 21 imalat sanayi alt sektöründe birim kökün varlığı reddedilmiştir. Diğer bir ifadeyle, doğrusal olmama durumu dikkate alındığında, trendden arındırılmış serilerde, bütün ürünleri ve giyim eşyası dışında tüm sektörlerde SAGP hipotezinin geçerli olduğu görülmektedir.

Tablo: 2
KSS Birim Kök Testi Sonuçları

Sektörler	KSS Test İstatistikleri		
	Ham Veri	Ortalamadan Arındırılmış Veri	Ortalama, Trendden Arındırılmış Veri
Gıda Ürünleri	-0.01 (2)	-5.19 (1)***	-4.58 (1)***
İçecekler	-0.06 (2)	-5.45 (1)***	-4.75 (1)***
Tütün Ürünleri	-0.76 (0)	-2.77 (0)*	-2.78 (0)
Tekstil Ürünleri	0.26 (2)	-4.91 (1)***	-4.62 (1)***
Giyim Eşyası	-0.96 (1)	-0.67 (1)	-2.69 (1)
Deri ve İlgili Ürünler	-0.76 (3)	-1.56 (1)	-3.57 (1)**
Ağaç ve Mantar Ürünleri (mobilya hariç)	-0.66 (2)	-3.26 (2)**	-3.27 (2)*
Kâğıt ve Kâğıt Ürünleri	-0.14 (2)	-4.52 (2)***	-3.24 (2)*
Basım ve Kayıt Hizmetleri	-0.95 (0)	-1.24 (0)	-4.08 (1)***
Kok ve Rafine Petrol Ürünleri	0.42 (2)	-3.32 (1)**	-5.04 (1)***
Kimyasallar ve Kimyasal Ürünler	-0.09 (2)	-4.53 (2)***	-4.62 (1)***
Temel Eczacılık Ürünleri ve Müstahzarları	-1.9 (2)	-2.02 (2)	-3.98 (2)***
Kauçuk ve Plastik Ürünler	-0.62 (3)	-2.98 (3)**	-5.78 (1)***
Metalik Olmayan Diğer Mineral Ürünler	0.11 (2)	-3.62 (2)***	-5.27 (1)***
Ana Metaller	0.56 (1)	-2.03 (1)	-3.36 (1)*
Fabrikasyon Metal Ürünler (Makine ve Ekipmanlar Hariç)	-0.3 (2)	-4.11 (1)***	-3.63 (1)**
Bilgisayar ile Elektronik ve Optik Ürünler	-1.46 (0)	-1.55 (0)	-6.91 (1)***
Elektrikli Teçhizat	-0.25 (3)	-6.1 (1)***	-5.99 (1)***
Başka Yerde Sınıflandırılmayan Makine ve Ekipmanlar	-0.35 (2)	-3.5 (2)***	-3.48 (2)**
Motorlu Kara Taşıtları, Treyler (römork) ve Yarı Treyler (yarı römork)	-0.31 (2)	-3.81 (2)***	-5.54 (1)***
Diğer Ulaşım Araçları	-1.12 (0)	-1.61 (0)	-5.63 (1)***
Mobilya	-0.08 (2)	-3.4 (2)**	-3.56 (2)**
Diğer Mamul Eşyalar	-0.67 (2)	-2.05 (2)	-4.1 (1)***
Kritik değerler (%1-%5-%10)	-2.82 -2.22 -1.92	-3.48 -2.93 -2.66	-3.93 -3.40 -3.13

Notlar: (1) Kritik değerler Kapetanios vd. (2003) tarafından hazırlanan tablodan alınmıştır. Parantez içi değerler Schwarz Bilgi Kriterine göre belirlenen optimal gecikme sayısı; göstermektedir. Maksimum gecikme sayısı Schwert (1989)’ın önerdiği $12*(T/100)^{(1/4)}$ formülü ile hesaplanarak 15 olarak alınmıştır. (2) ***, ** ve * işaretleri, Mackinnon (1996) tarafından hazırlanan kritik değerlere göre boş hipotezin sırasıyla %1, %5 ve %10 düzeyinde reddedildiğini göstermektedir.

4.3. SAGP’nin Sollis Birim Kök Testi ile Sınanması

Doğrusal olmama durumunun yanı sıra asimetrik uyumu da dikkate alarak AESTAR modeli çerçevesinde formüle edilen Sollis (2009) birim kök testinin sonuçları Tablo 3’te raporlanmıştır⁶. Buna göre ortalamadan arındırılmış yapıda, 8 sektör için reel kur serisinin birim kök içerdiği hipotezi reddedilememiştir. Trendden arındırılmış yapı için ise yalnızca bütün ürünleri ve giyim eşyası sektörlerinde sıfır hipotezi reddedilemezken diğer sektörlerde asimetrik ve doğrusal olmayan yapı dikkate alındığında reel kur serisinin durağan olduğu sonucuna ulaşılmıştır.

⁶ AIC sonuçlarının dikkate alındığı Tablo Ek 4’te verilmiştir.

Tablo: 3
Sollis Birim Kök Testi Sonuçları

Sektörler	Sollis Test İstatistikleri		
	Ham Veri	Ortalamadan Arındırılmış Veri	Ortalama, Trendden Arındırılmış Veri
Gıda Ürünleri	3.22 (2)	13.48 (1)***	10.48 (1)***
İçecekler	1.46 (2)	17.43 (1)***	11.61 (1)***
Tütün Ürünleri	0.85 (0)	3.89 (0)	4.43 (0)
Tekstil Ürünleri	6.33 (1)***	12.34 (1)***	10.77 (1)***
Giyim Eşyası	0.48 (1)	0.28 (1)	3.62 (1)
Deri ve İlgili Ürünler	0.92 (1)	1.22 (1)	6.35 (1)*
Ağaç ve Mantar Ürünleri (mobilya hariç)	2.06 (2)	5.37 (2)**	7.35 (2)**
Kâğıt ve Kâğıt Ürünleri	5.8 (2)**	10.21 (2)***	5.91 (2)*
Basım ve Kayıt Hizmetleri	1.06 (0)	1.09 (0)	8.32 (1)**
Kok ve Rafine Petrol Ürünleri	3.64 (1)*	5.64 (1)**	12.83 (1)***
Kimyasallar ve Kimyasal Ürünler	3.65 (2)*	10.24 (2)***	20.71 (1)***
Temel Eczacılık Ürünleri ve Müstahzarları	1.79 (2)	2.05 (2)	8.16 (2)**
Kauçuk ve Plastik Ürünler	1.79 (3)	4.73 (3)*	16.88 (1)***
Metalik Olmayan Diğer Mineral Ürünler	1.78 (2)	6.9 (2)***	16.71 (1)***
Ana Metaller	4.83 (1)**	3.86 (1)	5.63 (1)*
Fabrikasyon Metal Ürünler (Makine ve Ekipmanlar Hariç)	2.21 (0)	10.24 (1)***	6.68 (1)**
Bilgisayar ile Elektronik ve Optik Ürünler	1.25 (0)	1.33 (0)	23.84 (1)***
Elektrikli Teçhizat	3.5 (3)*	19.75 (1)***	17.97 (1)***
Başka Yerde Sınıflandırılmayan Makine ve Ekipmanlar	0.9 (2)	6.44 (2)**	6.21 (2)*
Motorlu Kara Taşıtları, Treyler (römork) ve Yarı Treyler (yarı römork)	2.01 (2)	21.2 (1)***	15.62 (1)***
Diğer Ulaştırma Araçları	0.66 (0)	1.32 (0)	17.32 (1)***
Mobilya	2.87 (2)	5.78 (2)**	6.4 (2)*
Diğer Mamul Eşyalar	0.88 (2)	5.46 (1)**	8.41 (1)**
Kritik değerler (%1-%5-%10)	-6,07 -4,30 -3,50	-6,81 -4,97 -4,17	-8,95 -6,60 -5,59

Notlar: (1) Kritik değerler Sollis (2009) tarafından hazırlanan tablodan alınmıştır. Parantez içi değerler Schwarz Bilgi Kriterine göre belirlenen optimal gecikme sayısını göstermektedir. Maksimum gecikme sayısı 15 olarak alınmıştır. Gözlem sayısı 200 olarak kabul edilmiştir. (2) ***, ** ve * işaretleri, Mackinnon (1996) tarafından hazırlanan kritik değerlere göre boş hipotezin sırasıyla %1, %5 ve %10 düzeyinde reddedildiğini göstermektedir. (3) Sollis testi F istatistiğine dayanmaktadır.

5. Sonuç ve Değerlendirme

SAGP hipotezi, uluslararası iktisatın üzerinde en fazla çalışma yapılan konularından biri olmasına rağmen, geçerliliği hususunda tam bir uzlaşa sağlanabilmiş değildir. Bu nedenle, ekonometri alanında geliştirilen yeni yöntemlerle SAGP hipotezi test edilmeye devam etmektedir. Ürünlerin ticarete konu olması ve sektörel vergi farklılıkları gibi hususların SAGP hipotezinin geçerliliğini etkilemesi beklenirken, literatürde SAGP hipotezinin sektörel düzeyde sınıandığı çok az çalışmaya rastlanmaktadır.

Bu alandaki boşluğu doldurmak amacıyla bu çalışmada Türkiye için sektörel düzeyde reel efektif döviz kuru endeksleri oluşturulmuş ve bu endeksler üzerinden sektörel bazda SAGP'nin geçerliliği doğrusal (ADF) ve doğrusal olmayan (KSS ve Sollis) birim kök testleri ile sınıanmıştır. ADF test sonuçlarına göre, sabit terimli ve trendli modelde 23 sektörün 11'inde birim kökün varlığı reddedilmiştir. Doğrusal olmama durumunu da dikkate alan KSS testi sonuçlarına göre, ortalamadan arındırılmış veride 23 imalat sanayi sektöründen 15'inde boş hipotez reddedilmiştir. KSS ve Solis testlerinde, trendden arındırılmış seriler için ise 21 imalat sanayi alt sektöründe birim kökün varlığı reddedilmiştir. Diğer bir ifadeyle, doğrusal olmama durumu dikkate alındığında, trendden arındırılmış serilerde, tütün ürünleri ve giyim eşyası dışındaki tüm sektörlerde SAGP hipotezinin geçerli olduğu görülmektedir.

Bu bulgular, Türkiye’de SAGP hipotezinin geçerliliğinin sektörel düzeyde değiştiğini ve reel efektif döviz kurundaki ayarlamaların sektörler arasında asimetrik bir şekilde gerçekleştiğini göstermektedir. Sektörlerin farklı üretim yapısı, ithal girdi bağımlılığı, vergilendirme ve fiyatlama davranışlarındaki heterojenlik SAGP’nin farklı sektörlerde farklı biçimlerde çalışmasının nedenleri arasında sayılabilir. Tütün ürünleri ve giyim eşyası sektörlerinde SAGP’nin geçerli olmamasının temel nedeninin, fiyat oluşumunda ulusal düzenlemelerin, vergisel uygulamaların ve maliyet yapılarındaki farklılıkların etkili olduğu değerlendirilmektedir. Tütün ürünlerinde ÖTV ve KDV gibi vergilerin yüksek olması ve sık değişir yapıda olması, ülkeler arasındaki fiyat farklılıklarının döviz kuru hareketleriyle dengelenmesini engellemektedir. Benzer şekilde hazır giyim sektöründeki yüksek işgücü yoğunluğu, düşük verimlilik ve tüketim sepetlerindeki heterojenliğin reel döviz kurunun uzun dönemde tekrar parite değerine dönüşünü engelleyebildiği değerlendirilmektedir. Türkiye için önemli bir istihdam ve ihracat kaynağı olan hazır giyim sektöründe verimliliği artırıcı dijitalleşme ve teknoloji adaptasyonu sağlanması, tasarım kapasitesinin artırılması, markalaşma ve teknik tekstil üretiminin geliştirilmesi suretiyle daha yüksek katma değerli üretime geçilmesinin sektöre daha fazla istikrar ve fiyatlama davranışlarına öngörülebilirlik sağlayacağı değerlendirilmektedir.

Politika yapıcılar açısından, SAGP’nin geçerli olduğu sektörlerde fiyatlama davranışları daha öngörülebilir olduğundan, sektörel REER göstergeleri rekabet gücünün izlenmesinde güvenilir bir referans noktası olacaktır. Sektör bazlı rekabetçilik analizleri, ihracat desteklerinin daha etkili bir şekilde planlanmasında kullanılabilir. Benzer şekilde, para politikası aktarım mekanizması bu sektörlerde daha etkili çalışacağından, fiyat istikrarını korumaya yönelik parasal sıkılaştırma veya gevşeme adımları da bu sektörlerde nispeten daha etkili olacaktır. Kur şoklarının hangi sektörlerde kalıcı olabileceğinin belirlemesi de yine politika tasarımında kullanılabilecek önemli bir veri olacaktır. Firmalar açısından bakıldığında ise, SAGP’nin geçerli olduğu sektörlerde fiyatlama stratejileri ve kur riski yönetimi daha öngörülebilir olurken, geçerli olmayan sektörlerde riskten korunma araçlarının kullanımına daha fazla ihtiyaç duyulacağı ortaya çıkmaktadır. Firmaların bu bilgileri döviz tutma, stok yönetimi ve üretim planlaması süreçlerini iyileştirmek için kullanmaları verimliliklerini artırmalarına katkı sağlayacaktır.

Türkiye’de sektörel bazda SAGP hipotezini test eden ilk çalışma olması itibarıyla, bu çalışmanın bundan sonra yapılacak benzer çalışmalar için öncü nitelik taşıyacağı beklenmektedir. Bu çalışmada, özellikle düşük gelirli ve küçük ülkelerin verilerinin temininde sıkıntı yaşanmıştır. Söz konusu ülkelerin fiyat endekslerine ilişkin daha geniş bir veri seti kullanılarak bu çalışmanın genişletilmesinin literatüre katkı sağlayacağı değerlendirilmektedir. SAGP hipotezinin imalat sanayi sektörünün daha alt kırılımlarında test edilmesi de sektörel bazda heterojenliğin daha detaylı ortaya koyulmasını sağlayacaktır. Markov-switching modelleri veya yapısal kırılmalı rejim değişikliği modelleri ile kur şoklarına uyumun farklı dönemlerde nasıl değiştiğini tespit etmenin politika yapıcılara önemli bir bilgi sağlayacağı değerlendirilmektedir. Son olarak, sektörel SAGP’nin belirleyicileri olduğunu tahmin ettiğimiz ithal girdi oranı, verimlilik, piyasa yoğunlaşması ve vergi farklılıkları gibi değişkenlerin panel regresyon modelleri kullanılarak analiz

edilmesi hem sektörlerle hem de politika yapıcılara önemli bir veri sağlayacağı değerlendirilmektedir.

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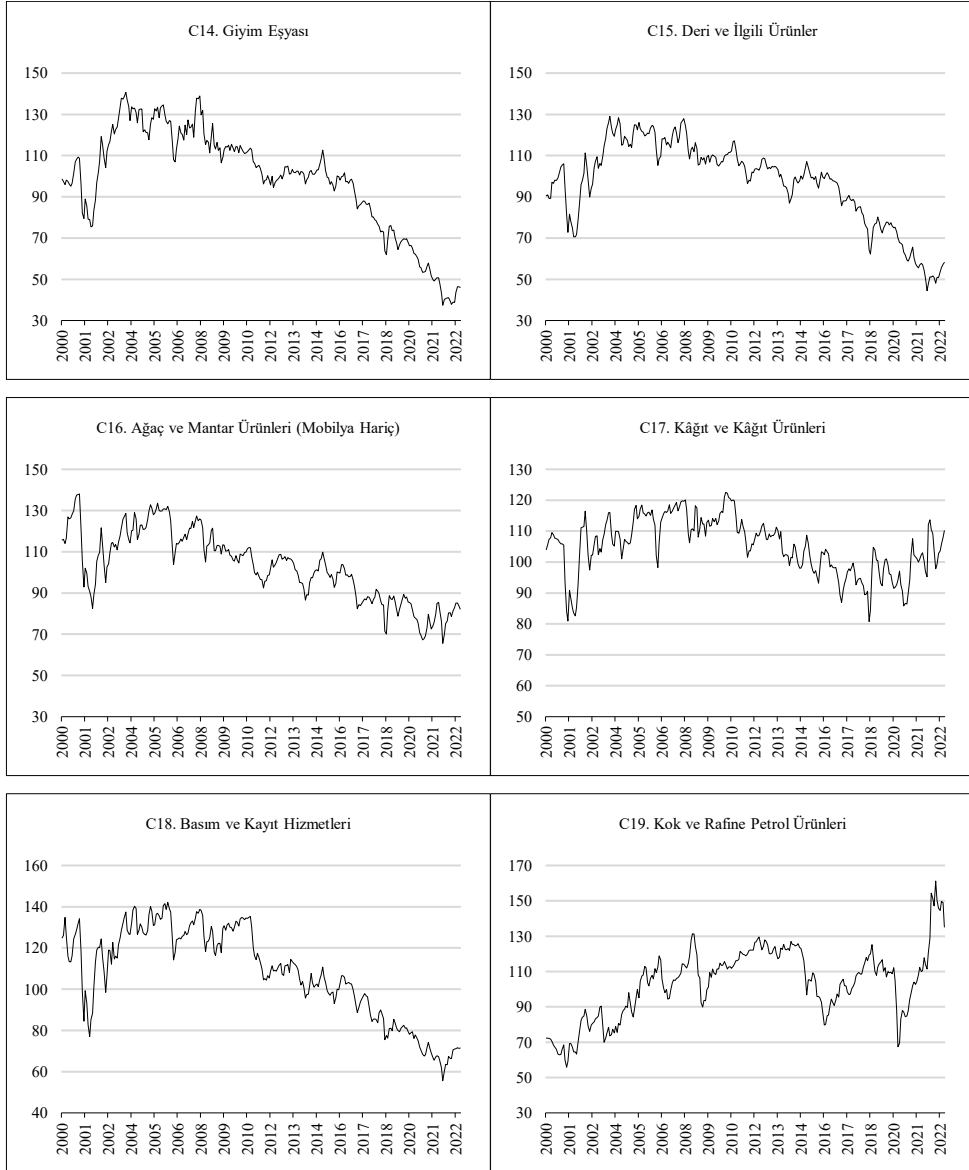
EKLER

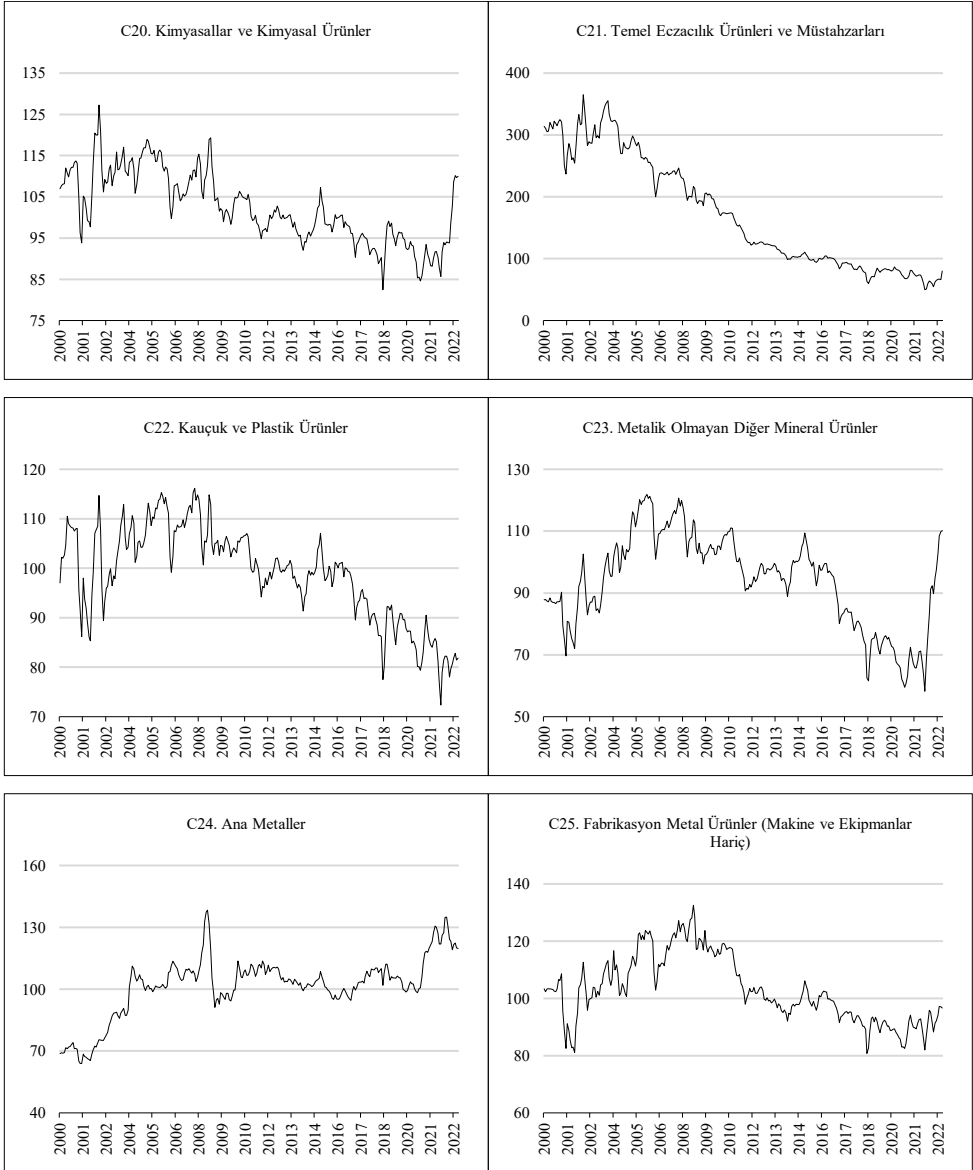
Ek Tablo: 1
NACE Rev 2.’ye Göre İmalat Sanayi Alt Sektörleri

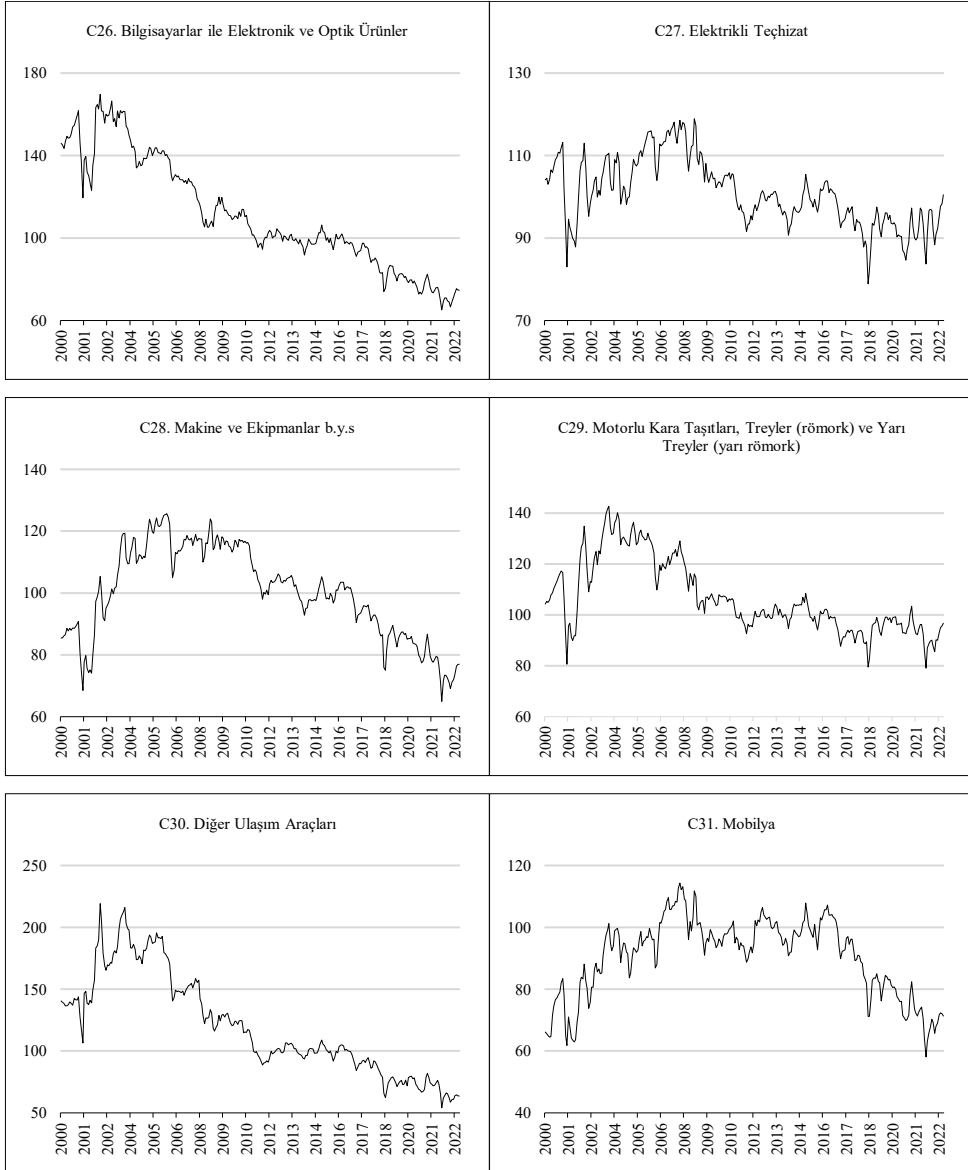
NACE Rev 2 Kodu	Sektör Adı
C	İmalat
10	Gıda ürünlerinin imalatı
11	İçeceklerin imalatı
12	Tütün ürünleri imalatı
13	Tekstil ürünlerinin imalatı
14	Giyim eşyalarının imalatı
15	Deri ve ilgili ürünlerin imalatı
16	Ağaç, ağaç ürünleri ve mantar ürünleri imalatı (mobilya hariç); saz, saman ve benzeri malzemelerden örülerek yapılan eşyaların imalatı
17	Kâğıt ve kâğıt ürünlerinin imalatı
18	Kayıtlı medyanın basılması ve çoğaltılması
19	Kök kömürü ve rafine edilmiş petrol ürünleri imalatı
20	Kimyasalların ve kimyasal ürünlerin imalatı
21	Temel eczacılık ürünlerinin ve eczacılığa ilişkin malzemelerin imalatı
22	Kauçuk ve plastik ürünlerin imalatı
23	Diğer metalik olmayan mineral ürünlerin imalatı
24	Ana metal sanayii
25	Fabrikasyon metal ürünleri imalatı (makine ve teçhizat hariç)
26	Bilgisayarların, elektronik ve optik ürünlerin imalatı
27	Elektrikli teçhizat imalatı
28	Başka yerde sınıflandırılmamış makine ve ekipman imalatı
29	Motorlu kara taşıtı, treyler (römork) ve yarı treyler (yarı römork) imalatı
30	Diğer ulaşım araçlarının imalatı
31	Mobilya imalatı
32	Diğer imalatlar
33	Makine ve ekipmanların kurulumu ve onarımı

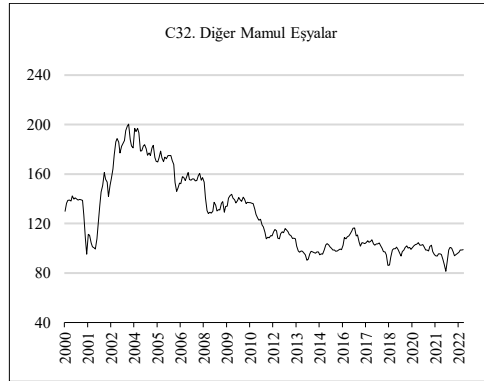
Ek Tablo: 2
Sektörel Düzeyde Reel Efektif Döviz Kuru Serileri











Kaynak: Yazarların hesaplamaları. TÜİK, EUROSTAT, National Bureau of Statistics of China, Rosstat, Fred, ONS, Trading Economics, BIS verileri kullanılarak.

Ek Tablo: 3
KSS Birim Kök Testi Sonuçları

Sektörler	KSS Test İstatistikleri		
	Ham Veri	Ortalamadan Arındırılmış Veri	Ortalama, Trendden Arındırılmış Veri
Gıda Ürünleri	0.19 (5)	-4.59 (2)***	-4.02 (2)***
İçecekler	-0.01 (2)	-4.83 (2)***	-4.21 (2)***
Tütün Ürünleri	-0.06 (2)	-3.21 (1)**	-3.21 (1)*
Tekstil Ürünleri	-0.87 (11)	-4.54 (2)***	-4.28 (2)***
Giyim Eşyası	0.36 (5)	-0.48 (2)	-2.69 (1)
Deri ve İlgili Ürünler	-1 (2)	-1.05 (3)	-2.84 (3)
Ağaç ve Mantar Ürünleri (mobilya hariç)	-0.76 (3)	-3.26 (2)**	-3.27 (2)*
Kâğıt ve Kâğıt Ürünleri	-1.2 (14)	-3.778 (5)***	-2.6 (5)
Basım ve Kayıt Hizmetleri	-0.13 (5)	-1.4 (2)	-3.59 (2)**
Kok ve Rafine Petrol Ürünleri	-1.05 (2)	-2.66 (3)*	-5.04 (1)***
Kimyasallar ve Kimyasal Ürünler	0.56 (3)	-4.53 (2)***	-3.83 (2)**
Temel Eczacılık Ürünleri ve Müstahzarları	-0.08 (3)	-2.02 (2)	-3.98 (2)***
Kauçuk ve Plastik Ürünler	-1.9 (2)	-1.37 (14)	-4.21 (5)***
Metalik Olmayan Diğer Mineral Ürünler	-1.29 (14)	-3.62 (2)***	-4.92 (8)***
Ana Metaller	0.17 (6)	-2.03 (1)	-3.36 (1)*
Fabrikasyon Metal Ürünler (Makine ve Ekipmanlar Hariç)	0.88 (5)	-3.41 (3)**	-2.87 (3)
Bilgisayar ile Elektronik ve Optik Ürünler	-0.53 (12)	-1.55 (0)	-6.89 (9)***
Elektrikli Teçhizat	-2.63 (14)**	-4.7 (5)***	-4.17 (12)***
Başka Yerde Sınıflandırılmayan Makine ve Ekipmanlar	-0.48 (13)	-3.5 (2)***	-3.48 (2)**
Motorlu Kara Taşıtları, Treyler (römork) ve Yarı Treyler (yarı römork)	-0.41 (5)	-3.81 (2)***	-4.16 (12)***
Diğer Ulaşım Araçları	-0.75 (12)	-1.44 (3)	-5.63 (1)***
Mobilya	-1.14 (3)	-3.25 (4)**	-3.54 (4)**
Diğer Mamul Eşyalar	-0.03 (4)	-2.05 (2)	-3.63 (2)**
Kritik değerler (%1-%5-%10)	-2.82	-3.48	-3.93
	-2.22	-2.93	-3.40
	-1.92	-2.66	-3.13

Notlar: (1) Kritik değerler Kapetanios vd. (2003) tarafından hazırlanan tablodan alınmıştır. Parantez içi değerler Akaike Bilgi Kriterine göre belirlenen optimal gecikme sayısını göstermektedir. Maksimum gecikme sayısı Schwert (1989)'ın önerdiği $12 \cdot (T/100)^{(1/4)}$ formülü ile hesaplanarak 15 olarak alınmıştır. (2) ***, ** ve * işaretleri, Mackinnon (1996) tarafından hazırlanan kritik değerlere göre boş hipotezin sırasıyla %1, %5 ve %10 düzeyinde reddedildiğini göstermektedir.

Ek Tablo: 4
Sollis Birim Kök Testi Sonuçları

Sektörler	Sollis Test İstatistikleri		
	Ham Veri	Ortalamadan Arındırılmış Veri	Ortalama, Trendden Arındırılmış Veri
Gıda Ürünleri	3,22 (2)	10,53 (2)***	8,06 (2)**
İçecekler	1,46 (2)	14,02 (2)***	9,16 (2)***
Tütün Ürünleri	0,38 (11)	5,23 (1)**	5,91 (1)*
Tekstil Ürünleri	5,17 (2)**	10,6 (2)***	9,27 (2)***
Giyim Eşyası	0,64 (3)	0,2 (2)	3,62 (1)
Deri ve İlgili Ürünler	0,38 (3)	0,66 (3)	4,03 (3)
Ağaç ve Mantar Ürünleri (mobilya hariç)	2,06 (2)	5,37 (2)**	7,35 (2)**
Kâğıt ve Kâğıt Ürünleri	3,26 (5)	7,23 (5)***	3,61 (5)
Basım ve Kayıt Hizmetleri	1,42 (2)	1,39 (2)	6,41 (2)*
Kok ve Rafine Petrol Ürünleri	2,44 (3)	3,61 (3)	12,83 (1)***
Kimyasallar ve Kimyasal Ürünler	2,9 (3)	10,24 (2)***	16,48 (2)***
Temel Eczacılık Ürünleri ve Müstahzarları	1,79 (2)	2,05 (2)	8,16 (2)**
Kauçuk ve Plastik Ürünler	1,05 (14)	1,11 (14)	8,85 (5)**
Metalik Olmayan Diğer Mineral Ürünler	1,44 (6)	6,9 (2)***	14,15 (2)***
Ana Metaller	4,83 (1)**	3,86 (1)	5,63 (1)*
Fabrikasyon Metal Ürünler (Makine ve Ekipmanlar Hariç)	1,8 (3)	6,94 (3)***	4,22 (3)
Bilgisayar ile Elektronik ve Optik Ürünler	3,75 (14)*	1,33 (0)	23,78 (9)***
Elektrikli Teçhizat	2,34 (5)	12,03 (5)***	9,18 (12)***
Başka Yerde Sınıflandırılmayan Makine ve Ekipmanlar	0,9 (2)	6,44 (2)**	6,21 (2)*
Motorlu Kara Taşıtları, Treyler (römork) ve Yarı Treyler (yarı römork)	0,47 (12)	17,51 (2)***	10,24 (12)***
Diğer Ulaşım Araçları	0,65 (3)	1,08 (3)	16,25 (2)***
Mobilya	2,28 (4)	5,25 (4)**	6,25 (4)*
Diğer Mamul Eşyalar	0,88 (2)	4,19 (2)*	6,61 (2)**
Kritik değerler (%1-%5-%10)	-6,07	-6,81	-8,95
	-4,30	-4,97	-6,60
	-3,50	-4,17	-5,59

Notlar: (1) Kritik değerler Sollis (2009) tarafından hazırlanan tablodan alınmıştır. Parantez içi değerler Akaike Bilgi Kriterine göre belirlenen optimal gecikme sayısını göstermektedir. Maksimum gecikme sayısı 15 olarak alınmıştır. Gözlem sayısı 200 olarak kabul edilmiştir. (2) *** ** ve * işaretleri, Mackinnon (1996) tarafından hazırlanan kritik değerlere göre boş hipotezin sırasıyla %1, %5 ve %10 düzeyinde reddedildiğini göstermektedir. (3) Sollis testi F istatistiğine dayanmaktadır.

Türkiye’de Pembe Vergileme Üzerine Nicel Bir Araştırma¹

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A Quantitative Study on Pink Taxation in Türkiye²

Abstract

The term “pink tax” in the literature refers to the additional cost paid for products marketed to women that are otherwise equivalent to those offered to men. This phenomenon not only exacerbates gender inequality but also amplifies economic disparities. Consumers often lack sufficient awareness regarding the pink tax. In this context, this study aims to identify the scope of the pink tax in Türkiye, raise awareness, and propose solutions to address gender inequality. The study first examines the impact of the pink tax through a document analysis conducted on e-commerce websites in Türkiye. Subsequently, the influence of gendered packaging designs on purchasing preferences and perceptions of the pink tax is analysed. Based on the findings, recommendations are provided to enhance public awareness of the pink tax.

Keywords : Pink Tax, Gender Inequality, Perception of the Pink Tax, Türkiye.

JEL Classification Codes : H20, H22, J16, H31, D63, I38, E62.

Öz

Piyasada birbirinin muadili olan ürünlerin kadınlar için sunulanların fiyatının erkekler için sunulanlardan daha pahalı olması durumunda ödenen fazla vergi miktarı literatürde “pembe vergi” olarak adlandırılmaktadır. Bu vergi, toplumsal cinsiyet eşitsizliğini derinleştirmesinin yanında ekonomik eşitsizliği de artırmaktadır. Tüketiciler pembe vergi konusunda yeterince bilgi sahibi değildir. Bu kapsamda çalışmanın amacı; pembe verginin Türkiye’deki boyutunu tespit etmek, farkındalığı artırmak ve toplumsal cinsiyet eşitsizliğine yönelik öneriler sunmaktır. Çalışmada öncelikle pembe verginin etkisi Türkiye’deki e-ticaret siteleri üzerinden yapılan doküman analiziyle incelenmiştir. Ardından satın alma tercihlerinin belirlenmesinde cinsiyetçi ambalaj tasarımlarının etkisi ile pembe vergi algısı analiz edilmiş, veriler değerlendirilerek pembe vergi bilincinin artmasına yönelik öneriler geliştirilmiştir.

Anahtar Sözcükler : Pembe Vergi, Toplumsal Cinsiyet Eşitsizliği, Pembe Vergi Algısı, Türkiye.

¹ Bu çalışma, Betül Ertuğrul tarafından Doç.Dr. Ufuk Gencel danışmanlığında, İzmir Demokrasi Üniversitesi, Sosyal Bilimler Enstitüsü, Maliye Anabilim Dalında 2024 yılında tamamlanan “Türkiye’de Pembe Vergileme Üzerine Nicel Bir Araştırma” adlı yüksek lisans tezinden üretilmiştir.

² This study is derived from the master’s thesis titled “A Quantitative Study on Pink Taxation in Türkiye”, completed in 2024 by Betül Ertuğrul under the supervision of Assoc.Prof. Ufuk Gencel at İzmir Democracy University, Institute of Social Sciences, Department of Public Finance.

1. Giriş

Tarih boyunca kadın, her toplumda ve her dönemde toplumsal cinsiyetine bakılarak bazı rollere sahip olmuştur. İlk çağlarda erkeğin avcılık-toplayıcılık yapması, kadının ise erkeğin getirdiği avı pişirmesi ve yaşam alanında kalarak çocuklar ile ev işleriyle ilgilenmesi şeklinde başlayan iş bölümü zamanla modern çağın ataerkil yapısına evrilmiş, kadını eşitsiz bir dünya içinde yaşamaya zorlamıştır (Akalin & Baş, 2018: 113). Eğitim, sağlık, siyaset, demokrasi gibi kavramların yanı sıra ekonomik eşitsizlik de kadınların cinsiyet eşitsizliğine maruz kaldığı diğer alanlardır.

Bir işte çalışmak ve para kazanmak, bir erkeğin geleneksel aile yükümlülüğü olarak kabul edilirken, ev ve çocuklarla ilgilenmek geleneksel olarak bir kadının birincil yükümlülüğü olarak kabul edilmektedir (Chrisler & McCreary, 2010: 473). Toplum yaşantısındaki yerinin ailesi ve evi olduğu görüşü nedeniyle kadınlar, bireysel kazanç elde etmeye yönelik iktisadi faaliyetlerin dışında bırakılarak ev odaklı işleri yapmak zorunda kalmıştır. Ancak yaşanan sosyal, siyasal ve ekonomik gelişmeler çerçevesinde, kadınların işgücüne katılımı artmaktadır (Karabiyik, 2012: 232).

21. yüzyılda kadınlar, dünya çapında çeşitli meslek alanlarında kendilerine yer bulmuşlardır. Fakat istihdam olanaklarının kısıtlı olması, işgücüne katılım oranlarının düşük olması, düşük ücretler, esnek olmayan çalışma saatleri, kısmi çalışma gibi nedenlerle işgücü piyasasında kadınların rekabet gücü zayıf kalmıştır (Ataklı-Yavuz, 2016: 78). İşgücüne katılım artsa da hamilelik, doğum izni ve çocuk bakımı gibi maliyetler yüzünden işverenlerin kadınlara yönelik işgücü talebi düştüğü için kadın istihdamı sınırlı olmuştur (Toksöz, 2011: 27).

Kadınların istihdam imkânlarının erkeklere oranla daha düşük olmasının yanı sıra iktisadi eşitsizliğin en önemli sebeplerinden bir diğeri cinsiyetler arasındaki ücret farklılığıdır. Çalışma hayatına giren kadınların karşılaştığı ayrımcılık türlerinden biri olan cinsiyete dayalı ücret ayrımcılığı, kadınların erkekler ile aynı eğitim düzeyi, mesleki yeterlilik, tecrübe ve kariyerde olmasına rağmen daha düşük ücret elde etmesidir (Halaçlı & Karaalp-Orhan, 2021: 68). Benzer işlerde çalışılmasına rağmen kadınların erkeklere göre daha az ücret alması ekonomik eşitsizliğin önemli nedenlerinden birisidir. Ek olarak aynı tür mal ve hizmetin tüketilmesi nedeniyle kadınların erkeklerden daha fazla vergi veriyor olması (pembe vergi) bu eşitsizliği artırmaktadır.

Kadınlar, emek piyasasında çoğunlukla düşük ücretli ve kayıt dışı işlerde çalıştıkları için sosyal güvenceden ve yasal haklardan mahrum kalmaktadır. Yapılan araştırmalar, kadınların yalnızca ücret düzeyinde değil; terfi, işin niteliği ve çalışma koşulları gibi birçok alanda ayrımcılığa uğradığını ortaya koymaktadır. Kadınların emek piyasasındaki yeri, bir toplumun gelişmişlik düzeyinin önemli bir göstergesi olarak kabul edilmektedir. Onların üretime katılımı, istihdamın artmasına, yoksulluğun azalmasına ve yaşam standartlarının yükselmesine katkı sağlamaktadır (Türşucu & Yalçın, 2021: 214).

Kadınların kamu yönetimindeki yetersiz temsili, hem istihdam hem de karar alma düzeylerinde erkeklerin gerisinde kalmalarıyla kendini göstermektedir. Bu durum, dünya genelinde olduğu gibi Türkiye'de de toplumsal cinsiyet eşitliğinin sağlanmasında önemli bir sorun oluşturmaktadır. Hukuki bir engel bulunmamasına rağmen özellikle üst düzey görevlerde kadınların yeterince yer bulamaması, daha kararlı politikalar ve etkili düzenlemelerle aşılması gereken bir eşitsizlik tablosunu ortaya koymaktadır (Öztepe, 2023: 219).

Kadın olmanın ekonomik bedeli olarak da ifade edilebilen pembe vergi, gelir eşitsizliği yanında kadınların tüketim tercihleri etkileyen önemli bir faktördür. Çocukluktan yetişkinliğe kadar süren cinsiyete dayalı ayrımcılığı ve mali eşitsizliği etkileyen pembe vergi, kişisel bakım ürünlerinden giyime kadar pek çok alanda görülmektedir. Yaşanan fiyat farklılıkları mali dezavantajlar yaratmasının yanı sıra kadınları temel ihtiyaçlardan vazgeçmeye kadar zorlayabilmektedir.

2. Pembe Vergi Kavramı

Üretilen ürünün ya da sunulan hizmetin maliyetinde farklılık gözetilmeksizin pazarlama stratejisi olarak ortaya çıkan ve kadınlara sunulan dezavantajlı fiyat farkı olarak ifade edilen pembe vergi, gerçek bir vergi olmayıp fiyat farkının sebep olduğu daha fazla vergi yükü ile karşı karşıya kalma halidir.

Birbirinin muadili olan ürünlerin ve/veya hizmetlerin, kadınlar için sunulanın fiyatının erkekler için sunulanın fiyatına kıyasla daha pahalı olması durumunda katlanılan/ödenen fazla vergi pembe vergi olarak değerlendirilmektedir.

Cinsiyete göre fiyat farklılaştırılması piyasadaki ürünlerle sınırlı olmayıp sunulan hizmetlerde de görülmektedir. Kadınların kuaför hizmeti için erkeklerden daha fazla fiyat ödemesi bu ayrıma örnektir. Benzer şekilde sigorta hizmetleri de pembe vergi uygulanan bir diğer hizmet sektörüdür. Bazı sigorta şirketleri, kadınların daha uzun yaşam süresine sahip olmaları ve sağlık hizmetlerine daha fazla ihtiyaç duymaları gibi faktörlere dayanarak kadınlara daha yüksek primler uygulayabilmektedir (Oxera, 2010: 2).

Kadın tüketicilere hitap eden ürünlerde genellikle pembe ve benzeri renklerin tercih edilmesi, söz konusu tüketimlerde ortaya çıkan vergisel etkinin literatürde "pembe vergi" olarak nitelendirilmesinin gerekçesini oluşturmuştur. Örneğin; "Pembe kurdele" meme kanseri farkındalığı için uluslararası sembol hâline gelmiştir. Kadınlara daha güvenli bir ortam sağlamak amacıyla kullanılan "pembe taksi" birçok ülkede bulunmaktadır. Çin'de kadın sürücülerin kullanımına yönelik ekstra büyük "pembe park alanları" mevcuttur. (Yazıcıoğlu, 2018: 8).

Pembe verginin çağdaş bir bakış açısıyla "vergi" olarak kabul edilebilmesi için verginin özelliklerini taşıması gerekmektedir. Verginin temel özellikleri ile karşılaştırıldığında pembe vergi gerçek bir vergi değildir ancak vergiye benzeyen özellikleri bulunmaktadır. Pembe verginin çağdaş vergi ile benzerliklerinden bir tanesi karşılıksız

olmasıdır. Bu bağlamda pembe verginin karşılıksız olması, benzer veya aynı ürünlerin kadınlar için sunulduğundaki fiyatı erkek ürünlerine göre daha pahalı olmasına rağmen, kadınların bu ürünlerin kalitesinde veya miktarında ek olarak bir fayda elde edememesini ifade etmektedir. İlgili kapsamda, kadın ürünlerinin daha pahalı olması kadınlara fazladan bir fayda sağlamamaktadır (Yazıcıoğlu, 2018: 53). Bir diğer vergiye benzeyen özelliği ise zorunlu olmasıdır. Piyasada kadınlar aleyhine fiyat farkı ile sunulan mal ve hizmetlerin alternatifi bulunmaması nedeniyle kadınların aynı ürüne daha fazla fiyat ödemek zorunda kalmaları verginin zorunluluk özelliğiyle bağdaşmaktadır. Bu kapsamda kadınlar talep ettikleri ürünlerde pembe vergi olsa dâhi mal veya hizmetin bedelini ödemek zorundadır. (Yazıcıoğlu, 2018: 50).

Pembe vergi ve çağdaş vergi arasındaki farklılıklar ve benzerlikler göz önüne alındığında, pembe vergi yasal açıdan gerçek bir vergi olmamasına rağmen sahip olduğu karşılıksız olma ve zorunlu olma özellikleri nedeniyle vergi benzeri etkileri vardır.

3. Doküman Analizi: Pembe Verginin Tüketim Vergileri İçindeki Etkisi

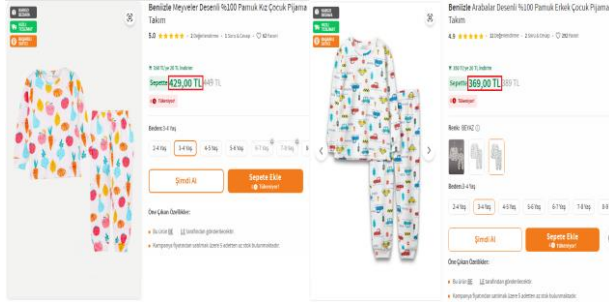
KDV herkes için eşit oranda uygulanan objektif karakterli bir vergidir. Bununla birlikte birbirinin muadili olan mal ve hizmetlerin kadın için olanlarının fiyatının erkek ürünlerine göre daha fazla olması yani pembe vergi etkisi, kadınların daha fazla KDV vb. harcama vergisi ödemelerine neden olmaktadır.

Bu çalışmada, Türkiye’de pembe vergi etkisini belirleyebilmek amacıyla tüketicilerin kullandığı e-ticaret sitelerinde satışa sunulan malların cinsiyete göre fiyat farklılıkları ve ödenen KDV miktarları incelenmiştir. Birbirine muadil olan bazı mal ve hizmetlerin fiyatlandırılması aşağıda şekiller halinde gösterilmiştir. Fiyatları karşılaştırılan ürünlerin aynı markaya ait olma, aynı satıcı tarafından satılma, ölçü ve ağırlıklarının eş olması dikkate alınmış, ürünler günler arası ortaya çıkan fiyat farklılığına engel olmak için belirli bir günde incelenmiştir.

Pembe vergi sebebiyle kadınların daha fazla KDV’ye maruz kalmasına dair örnekler aşağıdaki şekillerde gösterilmiştir.

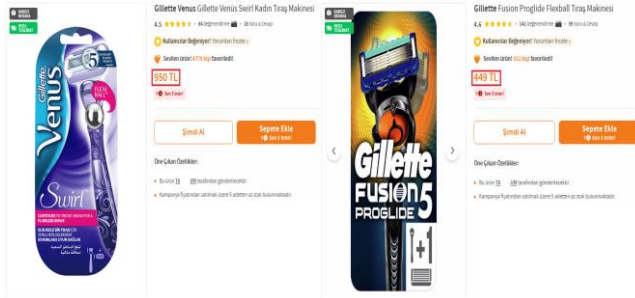
Şekil 1’de aynı satıcı tarafından satılan Beniizle markalı, desenli, %100 pamuklu, çocuk pijama takımı; kız çocuk ve erkek çocuk için satılan ürünlerin fiyatı karşılaştırılmıştır. Aynı firma tarafından satılan ve aynı özelliklere sahip kız çocuk pijaması 429 TL iken erkek çocuk pijaması 369 TL’dir. Tekstil ürünleri için KDV oranı %10 olarak dikkate alındığında, satış fiyatları üzerinden kız çocuk pijaması için 39 TL, erkek çocuk pijaması için 33,55 TL KDV ödenecektir. Aradaki 5,45 TL “pembe vergi” olarak nitelendirilmektedir.

Şekil: 1
Pembe Vergi Örneği 1



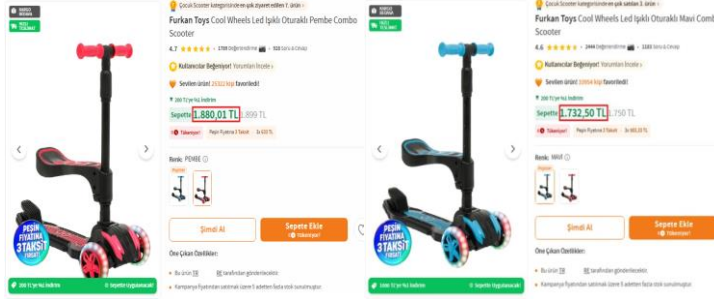
Benzer şekilde aynı satıcı tarafından satılan, bıçak sayısı ve özellikleri göz önüne alınarak birbirinin muadili olan kadın ve erkek tıraş makinelerinin fiyatı Şekil 2’de verilmiştir. Aynı firma tarafından satılan ve aynı özelliklere sahip Kadın tıraş makinesi 950 TL iken erkek tıraş makinesi 449 TL’dir. Kişisel bakım ürünleri için KDV oranı %20 olarak dikkate alındığında, satış fiyatları üzerinden kadın ürünü için 158,33 TL, erkek ürünü için 74,83 TL KDV ödenecektir. Aradaki 83,5 TL pembe vergi olarak nitelendirilmektedir.

Şekil: 2
Pembe Vergi Örneği 2



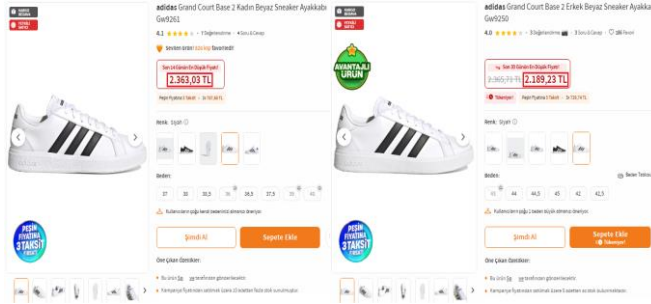
Şekil 3’te aynı satıcı tarafından satılan, led ışıklı, oturaklı çocuk scooter; kız çocuk ve erkek çocuk için satılan ürünlerin fiyatı karşılaştırılmıştır. Aynı firma tarafından satılan ve aynı özelliklere sahip kız çocuk scooteri 1.880,01 TL iken erkek çocuk scooteri 1.732,5 TL’dir. Oyuncaklar için KDV oranı %20 olarak dikkate alındığında, satış fiyatları üzerinden kız çocuk scooteri için 313,34 TL, erkek çocuk scooteri için 288,75 TL KDV ödenecektir. Aradaki 24,59 TL pembe vergi olarak nitelendirilmektedir.

Şekil: 3
Pembe Vergi Örneği 3



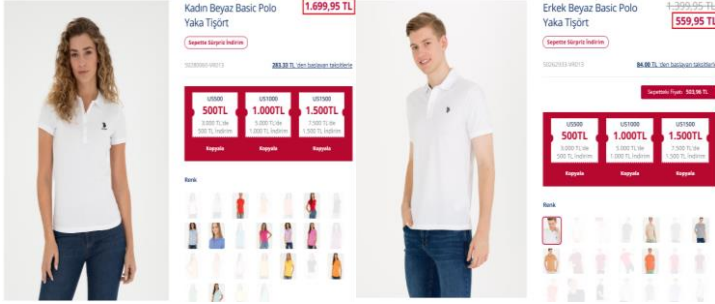
Şekil 4’te aynı satıcı tarafından satılan, Adidas markalı, Grand court, basic, beyaz sneaker ayakkabı; kadın ve erkek için satılan ürünlerin fiyatı karşılaştırılmıştır. Aynı firma tarafından satılan ve aynı özelliklere sahip kadın ayakkabısı 2.363,03 TL iken erkek ayakkabısı 2.189,23 TL’dir. Tekstil ürünleri için KDV oranı %10 olarak dikkate alındığında, satış fiyatları üzerinden kadın ayakkabısı için 214,82 TL, erkek ayakkabısı için 199,02 TL KDV ödenecektir. Aradaki 15,8 TL pembe vergi olarak nitelendirilmektedir.

Şekil: 4
Pembe Vergi Örneği 4



Şekil 5’te aynı satıcı tarafından satılan, U.S. Polo Assn. markalı, beyaz renk, polo yaka tişört; kadın ve erkek için satılan ürünlerin fiyatı karşılaştırılmaktadır. Kadın tişörtü 1.699,95 TL iken erkek tişörtü 559,95 TL’dir. Tekstil ürünleri için KDV oranı %10 olarak dikkate alındığında, satış fiyatları üzerinden kadın tişörtü için 154,54 TL, erkek tişörtü için 50,9 TL KDV ödenecektir. Aradaki 103,64 TL pembe vergi olarak nitelendirilmektedir.

Şekil: 5
Pembe Vergi Örneği 5



Aynı satıcı tarafından satılan, Burberry markalı, klasik, 100 ml parfüm; kadın ve erkek için satılan ürünlerin fiyatı Şekil 6’da karşılaştırılmıştır. Aynı marka kadın parfümü 2.923 TL iken erkek parfüm 2.798 TL’dir. Kişisel bakım ürünleri için KDV oranı %20 olarak dikkate alındığında, satış fiyatları üzerinden kadın parfümü için 487,17 TL, erkek parfümü için 466,33 TL KDV ödenecektir. Aradaki 20,84 TL pembe vergi olarak nitelendirilmektedir.

Şekil: 6
Pembe Vergi Örneği 6



Yukarıdaki örneklerde de açık bir şekilde görüleceği üzere aynı marka tarafından sunulan ve aynı özelliklere sahip kadın ürünlerinin satış fiyatı erkek ürünlerine göre daha fazladır. Bu fazlalık nedeniyle satış fiyatı üzerinden hesaplanan harcama vergilerinde de aynı oranda farklı olmaktadır. Bu farklılık kadınların erkeklere göre daha fazla vergi ödemesi anlamına gelmektedir. Fazla ödenen bu vergi ise pembe vergi olarak nitelendirilmektedir.

4. Toplumun Pembe Vergi Kavramına İlişkin Algı Düzeyi

Çalışmanın bu bölümünde Türkiye’de pembe vergi kavramına yönelik algının belirlenebilmesi için katılımcılardan Google anket yardımıyla elde edilen verilerin analizleri yapılmış, oluşturulan hipotezler test edilmiş ve elde edilen bulgular ışığında sonuç ve önerilere yer verilmiştir. Çalışmanın amacı, kadınların satın alma tercihlerinde cinsiyetçi ambalajın etkisini tespit etmek, katılımcıların vergi yükünün cinsiyete göre farklılık gözetip gözetmediği hususunda bilgi sahibi olmak ve toplumda pembe vergiye kavramına karşı bilinç ve farkındalık düzeyini belirlemektir.

4.1. Literatür

Pembe vergiye ilişkin olarak literatür taraması yapılmış ve yapılan incelemeler sonucunda dünyanın çeşitli coğrafyalarında farklı alanlarda ve farklı şekillerde pembe verginin ele alındığı gözlemlenmiştir. İncelenen çalışmaların yayımlandıkları tarihler değerlendirildiğinde pembe vergi kavramının çok yakın bir geçmişte ortaya çıktığı görülmektedir.

Pembe vergiyle ilgili ilk çalışma 1992 yılına dayanmaktadır. New York City Tüketici İşleri Departmanı’nın (NYCTID) gerçekleştirdiği araştırma, piyasada kadınlara yönelik fiyat ön yargısını incelemiş ve bulgularını “*Gyped by Gender*” adlı bir raporda yayınlamıştır. 5 ilçede 80 kuaför salonunun incelenmesine dayanan çalışmaya göre kadınların aynı saç kesimi için ortalama olarak erkeklere göre %25 daha fazla ödediği belirlenmiştir. Benzer şekilde, beyaz pamuklu bir gömleği yıkatma hizmeti için kadınların ortalama olarak erkeklere göre %27 daha fazla ödediği görülmüştür (New York City Department of Consumer Affairs, 2015). 2015 yılında yeniden NYCTID tarafından yapılan “Bebek Beşiğinden Yaşlı Bastonuna Kadar: Kadın Tüketici Olmanın Maliyeti” adlı çalışma 1992 yılında yapılan araştırmanın güncel hâli niteliğindedir ve pembe vergi üzerine yapılan en kapsamlı çalışmalardan biridir. Araştırma kapsamında 397 ürün incelenmiş ve bu ürünlerin %42’si için kadınların, %18’i için erkeklerin daha fazla fiyat ödediği tespit edilmiştir. %40 oranında eşit ödeme söz konusudur (New York City Department of Consumer Affairs, 2015). Geetha (2018), “Hanımlar, gizli pembe vergiye dikkat edin!” isimli makalesinde, Hindistan’daki kadınlar ve erkekler için olan 64 ürünün fiyat farkını incelemiştir. Araştırma, kadınlar için olan ürünlerin fiyatlarının erkekler için olan ürünlerden en az 50 Rubi, bazen ise binlerce Rubi daha pahalı olduğunu ortaya koymuştur. Araştırmaya göre, Hindistan’da pembe vergi özellikle kot pantolon, saat, spor ayakkabı, oyuncak, çocuk tişörtü, cüzdan ve sağlık ürünleri gibi 25 ürün üzerinde etkili olmaktadır.

Beşirli ve Boz (2022), “Türkiye’de Pembe Vergi Eğilimi” adlı çalışmasında Türkiye’de pembe vergi olan ürünlerini araştırmaktadır. Araştırmanın bulgularına göre, 21 kategoriden 17’sinde kadın tüketimine yönelik olan ürünlerin fiyatı, erkek ürünlerine göre daha pahalı iken, bazı yetişkin giyim ürünlerinde erkek ürünlerinin fiyatının daha yüksek olduğu gözlemlenmiştir. Araştırma kapsamında elde edilen sonuçlara göre, kadın ürünlerinin ortalama olarak erkeklerinkine göre %7,4 oranında daha yüksek fiyatlarla

piyasaya sunulduğu sonucuna ulaşılmıştır (Beşirli & Boz, 2022). Barnes ve Brounstein (2023), “Pembe Vergi: Kadınlar Neden Daha Fazla Ödüyor?” isimli makalesinde kadınların satın aldıkları ürünler için pembe vergi ödeyip ödemediklerini araştırmaktadır. Araştırma sonucuna göre kadınların erkeklere göre birim başına %4 daha fazla fiyat ödediği tespit edilmektedir. Özellikle kadınlar kişisel bakım ürünleri gibi açıkça cinsiyete göre ayrılmış ürünler için ortalama %15 daha yüksek fiyat ödemektedir.

Corckett (2016), “Kadın Ürünleri Daha Pahalı. İşte Pembe Vergiyi Nasıl Önleyebilirsiniz” isimli çalışmasında, pembe vergi fenomeninin genel bir değerlendirmesini yapmış ve pembe verginin sebep olduğu fiyat farkından nasıl kaçınılabileceğini incelemiştir. Cinsiyetsiz ürünler satın almak, cinsiyet eşitsizliği sunan piyasadaki şirketleri şikâyet etmek ve tekrar kullanılabilir kadın ürünleri tercih etmek bu öneriler arasındadır. Gebre-Ab (2023), “Pembe Vergi: Kadınlar Aynı Ürünleri Erkeklerden Daha Fazla Para Ödüyor” adlı makalesinde, “pembe vergi” olarak adlandırılan durum ele alınmakta, özellikle iç çamaşırı gibi günlük ürünlerde kadınların daha yüksek tarifeler ödediğini ortaya koymaktadır. Makaleye göre, kadın iç çamaşırlarının ortalama tarife oranı %15,5 iken, erkek iç çamaşırları için bu oran %11,5’tir. Sonuç olarak, kadınların erkeklere göre %3,5 daha fazla vergi ödediği anlamına gelmektedir. Genel olarak makale, pembe vergi sorununu ele almak için devam eden çabalara ışık tutmakta ve bu konudaki yasal önlemlerin önemini vurgulamaktadır.

Wehner vd. (2017), “Reçetesiz Satılan ‘Minoxidil’: Cinsiyet ve İlaç Maliyeti Arasındaki İlişki” isimli makalesinde, pembe vergiyi ilaç sektörü açısından ele almıştır. *Minoxidil* genellikle saç dökülmesinin tedavisinde kullanılan bir ilaçtır. Bu çalışma aynı ilacın farklı cinsiyetlere göre farklı fiyata satılıp satılmadığını incelemektedir. Araştırmaya göre, 4 farklı eyalette bulunan 24 eczanede toplam 41 farklı *minoxidil* ürünü incelenmiştir. Bunların 14’ü kadınlar için 27’si erkekler için satılmaktadır. Kadınlara satılan ürünlerin erkeklere kıyasla ürün başına 30 mL fiyatında %40’lık bir fazlalık görülmüştür. Veriler, *minoxidil* ürünlerinin cinsiyete göre fiyatlandırılmasında bazı eşitsizliklerin varlığını ortaya koymaktadır. Christensen (2023), “Kadınlara Uygulanan ‘Pembe Vergi’, Özellikle Meme Kanseri Hastalarının Sağlığına Nasıl Zarar Verebilir?” isimli makalesine göre, ABD’de, işyerleri aracılığıyla sağlık sigortasına sahip olan kadınlar, benzer sigortaya sahip erkeklerden prim maliyetleri hariç olmak üzere, yaklaşık olarak 15.4 milyar dolar daha fazla sağlık harcaması yapmaktadırlar. Christensen çalışmasında kadınların maruz kaldığı pembe vergiyi sağlık açısından ele almıştır.

Stevens ve Shanahan (2017), “Yapılandırılmış Özet: Öfke mi, İstek mi, Bilgisizlik mi? Kadınların Tükettikleri Ürünleri Neden Pembe Vergi Ödediklerini Anlamak” isimli makalesinin amacı, kadınların tükettiği ürünlere neden pembe vergi ödediklerini anlamaktır. Kadınların tercih ettiği ürünlerden dolayı daha fazla vergi ile karşılaşması nedeniyle kadın tüketiciler bu ek maliyeti ödemek zorunda kalmaktadır. Kadınların pembe vergiye tepkileri, genellikle öfke veya isteksizlik şeklindedir. Bazı kadınlar bu eşitsizliği öğrenince öfkelenirken, bazıları ise durumu kabullenmekte veya farkında olmamaktadır. Chua vd. (2022), “Pembe Güç: Filipinler Metro Manila’daki Filipinli Genç Tüketicilerin Pembe Pazarlama Stratejisinin Neden Olduğu Pembe Vergi Konusundaki Farkındalığının Kapsamı,

İtici Faktörler ve Genel Algısı” isimli makalesinde, Filipinler’in Metro Manila şehrindeki genç tüketicilerin, pembe pazarlama stratejileri nedeniyle ortaya çıkan pembe vergi olgusuna ilişkin farkındalık düzeyini, satın alma kararlarını etkileyen ana faktörleri ve bu tüketici grubunun pembe vergi konseptine yönelik genel tutumunu araştırmaktadır. Araştırmaya katılan genç tüketiciler, pembe vergi kavramını sosyal medya, okul, arkadaş çevresi veya farklı literatürler aracılığıyla tanımaktadır. Filipinli genç tüketiciler, kendileri alıcı konumunda olduklarında pembe vergiye olumlu bakış açısına sahip değildir. Ancak kendilerini üreticiler veya imalatçılar perspektifinden değerlendirdiklerinde, bu uygulamanın işletme sahipleri için avantajlı olduğunu düşünmektedirler çünkü kadınların satın alma gücünün farkındadırlar. Qubeia (2022), “Kadın olmanın maliyeti: Pembe vergi perspektifinden tüketici algısı” adlı yüksek lisans tezinde, Türkiye’deki bireylerin pembe vergiye yönelik bakış açılarını yarı yapılandırılmış mülakat yöntemi kullanılarak incelemiştir. Toplumda belirgin derecede pembe vergi kavramına ilişkin farkındalık saptanamamıştır.

Kaufman vd. (2018), “Ulaşımda Pembe Vergi” isimli makalesinde New York Rudin Ulaşım Merkezi tarafından hazırlanan çevrimiçi anket kullanılarak araştırılmıştır. Ankete katılan kadın katılımcıların %54’ü taciz, laf atma ya da genel rahatsızlık gibi nedenlerle ulaşımında toplu taşıma kullanırken tacize uğramaktan endişe duyduğunu belirtmişlerdir. Gece geç saatlerde yapılan yolculuklar için katılımcıların çoğu kendilerini en güvende hissettikleri ulaşım aracının kiralık araçlar (%42), ardından taksiler (%16) ve son olarak toplu taşıma (%15) olduğunu ifade etmişlerdir. Anket sonuçları, güvenlik nedenleriyle gece alternatif ulaşım yöntemlerini kullanmanın kadınların aylık seyahat masraflarını artırdığını ortaya koymaktadır. Güvenlik nedenleriyle erkeklerin aylık ek maliyeti \$0 iken, kadınların aylık ek maliyeti \$26-\$50 arasındadır.

Bhatia vd. (2021), “Pembe Vergiyi Araştırmak: Tüketim Mallarında Kadınlar İçin Sistematik Bir Fiyat Primine Karşı Kanıtlar” isimli makalesinde farklı cinsiyetlere yönelik kişisel bakım ürünlerindeki fiyat farklılıklarını ve bunların neden farklı olduğunu araştırmaktadır. Araştırma sonuçlarına göre kadın deodorantları yaklaşık %6 daha pahalı iken, kadın tek kullanımlık tıraş bıçakları yaklaşık %8 daha ucuzdur. Bu sonuçlara dayanarak neden kadın deodorantının daha pahalı olduğunun potansiyel nedenlerini araştırılmaktadır. Toptan ve perakende satış fiyatlarının analizi yapılmış ancak fiyat farklarını tamamen açıklayamayacağı tespit edilmiştir. Bunun yerine kadın deodorantına olan talebin nispeten esnek olmadığı öne sürülmektedir. Ayrıca TV reklamlarının daha yüksek bir kısmının kadın ürünlerini öne çıkardığı tespit edilmiştir.

Yazıcıoğlu (2018), “Pembe Vergi ve Hukuk: Kadın Tüketicilere Karşı Ayrımcılık” adlı kitabında pembe vergiyi hukuki açıdan ele almıştır. İlk olarak, “pembe vergi” ve “tampon vergisi” olarak adlandırılan uygulamaların ilgili ekonomik, sosyolojik ve psikolojik bileşenleri aydınlatılarak mevcut bilgi karmaşasını temizlemiştir. Ardından, pembe vergi uygulamasının aslında hukuki anlamda bir vergi olup olmadığını değerlendirilmiştir.

Literatür incelendiğinde Türkiye için az sayıda araştırma yapıldığı gözlemlenmiştir. Pembe vergi çalışmalarına ilişkin olarak yapılan çalışmalar Tablo 1’de verilmiştir.

Tablo: 1
Literatür Özeti

Çalışma Kapsamı	Çalışma Kapsamına İlişkin Çalışma Yapan Yazarlar
Cinsiyetler arası fiyat karşılaştırması	NYC Department of Consumer Affairs (1992-2015) Geetha (2018) Beşirli & Boz (2022) Barnes & Brounstein (2023)
Cinsiyetler arası fiyat farkının nedenini araştırma	Bhatia et al. (2021)
Pembe vergiyi sağlık sektörü açısından ele alma	Wehner et al. (2017) Christensen (2023)
Pembe vergiyi ulaşım maliyetleri açısından ele alma	Kaufman et al. (2018)
Pembe vergiye ilişkin toplumdaki algıyı tespit etme	Stevens & Shanahan (2017) Chua et al. (2022) Qubeia (2022)
Pembe vergiyi hukuki açıdan ele alma	Yazıcıoğlu (2018)
Pembe vergiden kaçınmaya yönelik öneriler getirme	Corckett (2016) Gebre-Ab (2023)

Pembe vergiye yönelik olarak yapılan çalışmaların genellikle fiyat karşılaştırması üzerine yoğunlaştığı görülürken ulaşım sektörü, sağlık sektörü ve hukuki açıdan inceleme gibi spesifik konularda da çalışmaların gerçekleştirildiği görülmektedir.

4.2. Araştırmanın Evreni ve Örneklem Belirlenmesi

Çalışmanın evrenini Türkiye’de yaşayan kadın ve erkekler oluşturmaktadır. Örneklem ise ankete katılmayı kabul eden 514 kadın ve erkekten oluşmaktadır. Araştırmaya katılan katılımcılara ilişkin özellikler Tablo 2’de verilmiştir.

Tablo: 2
Katılımcılara İlişkin Demografik Özellikler

Değişkenler	Özellik	Frekans	Yüzde
Cinsiyet	Kadın	338	65,8
	Erkek	176	34,2
	Toplam	514	100,0
Yaş	18-24	275	53,5
	25-34	67	13,0
	35-44	62	12,1
	45-64	99	19,3
	65+	11	2,1
	Toplam	514	100,0
Meslek	Öğrenci	299	58,2
	Öğretmen	18	3,5
	Akademisyen	12	2,3
	Emekli	29	5,6
	Ev Hanımı	17	3,3
	Muhasebeci	31	6,0
	Memur	29	5,6
	Doktor	6	1,2
	Avukat	2	0,4
	Hemşire	6	1,2
	Ticaret Erbabı	6	1,2
	İşsiz	5	1,0
	Mühendis	5	1,0
	Diğer	49	9,5
	Toplam	514	100,0

Katılımcıların %65,8’i kadınlardan oluşmakta iken %34,2’si erkeklerden oluşmaktadır. %53,5 oranıyla 18-24 yaş arası olan katılımcıların çoğunlukta olduğu görülmektedir. Katılımcıların %58,2’si en fazla katılım sağlayan grup olan öğrencilerden oluşmaktadır.

4.3. Araştırmanın Modeli ve Yöntemi

Bu araştırmada, toplumun ürün satın alma tercihlerinin belirlenmesinde cinsiyetçi ambalaj tasarımlarının etkisi ve toplumda pembe vergi kavramına karşı duyarlılık analiz edilmektedir.

Çalışmada nicel bir yöntem (anket tekniği) benimsenmiştir. Nicel deseni güçlendirmek için iki adet açık uçlu soruya da yer verilmiştir.

4.4. Araştırma Verilerinin Toplanması

Çalışma kapsamında veri toplamak için anket yöntemi kullanılmıştır. Kişilerin cinsiyetçi ambalaj tasarımlarına yönelik tercihleri ve pembe vergi kavramına yönelik algılarının araştırılmasına yönelik hazırlanan Google anketi katılımcılara yöneltilmiştir. Katılımcıların cinsiyet, yaş ve meslek bilgilerine kişisel bilgi formu ile ulaşılmıştır. Ankette üç farklı ürün ve bu ürünlerin muadili olan ürünler ile toplamda altı adet ürün grubuna dair görseller (sabun, kolonya ve tişört) bulunmaktadır ve bu ürünlerin fiyatlarının değişmesi durumunda kadın-erkek katılımcıların tercihlerini inceleyen ölçek sorularına yer verilmiştir. Ayrıca anket içerisinde katılımcılara pembe vergi ile ilgili düşünceleri ve önerileri açık uçlu şekilde sorularak katılımcıların görüşlerinin daha kapsamlı analizi için imkân sağlanmıştır.

Anket formu hazırlanırken, iki husus dikkate alınmıştır. İlk olarak, demografik sorularda kullanıcı kolaylığı sağlamak ve katılımcının dikkatini azaltmamak amacıyla yalnızca yaş, cinsiyet ve meslek sorulmuştur. İkinci olarak sorular genelden özele doğru sıralanmış ve katılımcılarda araştırma konusuna ilişkin doğrudan farkındalık yaratacak soru en sonda tutulmuştur.

Anket formunun ilk bölümünde, piyasada var olmayan üç farklı ürünün (sabun, kolonya, tişört) biri kadınsı diğeri erkeksi olacak biçimde tasarlanmış olan iki farklı ambalaj tasarımı sunulmuş ve katılımcılara hangi ürünü satın almayı tercih edecekleri sorulmuştur (Tablo 3).

Tablo: 3
Ankette Yer Alan Cinsiyetçi Ambalaj Tasarımları

1. Aşağıda görselleri verilen sabunların içerikleri, miktarları ve fiyatları aynıdır. Satın alacak olsaydınız seçiminiz aşağıdakilerden hangisi olurdu?	 Şekil A Şekil B ☐ Şekil A ☐ Şekil B
2. Aşağıda görselleri verilen sabunların içerikleri ve miktarları aynıdır ancak fiyatları farklıdır. Satın alacak olsaydınız seçiminiz aşağıdakilerden hangisi olurdu?	 Şekil A 10 TL Şekil B 7 TL ☐ Şekil A ☐ Şekil B
3. Aşağıda görselleri verilen kolonyaların içerikleri, kokuları, miktarları ve fiyatları aynıdır. Satın alacak olsaydınız seçiminiz aşağıdakilerden hangisi olurdu?	 Şekil A Şekil B ☐ Şekil A ☐ Şekil B
4. Aşağıda görselleri verilen kolonyaların içerikleri, kokuları ve miktarları aynıdır ancak fiyatları farklıdır. Satın alacak olsaydınız seçiminiz aşağıdakilerden hangisi olurdu?	 Şekil A 10 TL Şekil B 7 TL ☐ Şekil A ☐ Şekil B

5. Aşağıda görselleri verilen Tişörtlerin kumaşları, kaliteleri ve fiyatları aynıdır. Satın alacak olsaydınız seçiminiz aşağıdakilerden hangisi olurdu?
Şekil A  Şekil B  ☐ Şekil A ☐ Şekil B
6. Aşağıda görselleri verilen Tişörtlerin kumaşları ve kaliteleri aynıdır ancak fiyatları farklıdır. Satın alacak olsaydınız seçiminiz aşağıdakilerden hangisi olurdu?
Şekil A 10 TL  Şekil B 7 TL  ☐ Şekil A ☐ Şekil B

Araştırma kapsamında toplumsal cinsiyet ve cinsiyet normlarına göre, katılımcıların kendi cinsiyetlerine uygun gördükleri ambalaj tasarımlarını satın almayı tercih edip etmediklerini ortaya koymak hedeflenmiştir.

Anketin sonraki bölümünde katılımcıların vergi yükünün cinsiyet değişkenine göre farklılık gözetip gözetmediklerine ilişkin düşünceleri ve bu yanıtlar doğrultusunda kadınlar mı yoksa erkekler mi daha fazla vergi öder sorusu yöneltilmiştir. Tablo 4’te araştırmacıların vergi yüküne ilişkin düşüncelerinin belirlenmesine yönelik olarak sorulan sorular verilmiştir.

Tablo: 4
Ankette Yer Alan Vergi Yükü-Cinsiyet İlişkisi Soruları

7. Sizce vergi yükü cinsiyete göre farklılık gözetmekte midir?
☐ Evet
☐ Hayır
8. Sizce erkekler mi yoksa kadınlar mı daha fazla vergi ödüyor?
☐ Kadınlar
☐ Erkekler

Anketin devamında pembe vergi kavramına yer verilmiştir. Katılımcıların kendi kelimeleriyle düşüncelerini ifade etmelerine olanak tanımak ve katılımcılardan daha ayrıntılı ve kapsamlı yanıtlar almak amacıyla anket içinde açık uçlu sorulara ver verilmiştir. Bu sorular Tablo 5’te gösterilmiştir.

Tablo: 5
Ankette Yer Alan Pembe Vergiye İlişkin Sorular

9. "Pembe Vergi" kavramını duydunuz mu?
o Evet
o Hayır
10. (Pembe verginin tanımı verilerek) "Pembe Vergi" kavramı ile ilgili düşünceniz nedir?
11. "Pembe Vergi" ile ilgili önerileriniz nelerdir?

4.5. Araştırma Verilerinin Analizi

Çalışmada SPSS 29.00 analiz programında nicel analiz tekniklerinden Ki-Kare testi uygulanmıştır. Ki-Kare testlerinden bağımsızlık testine göre analiz yapılmıştır. Bağımsızlık testinin amacı, iki veya daha fazla değişken arasında ilişki olup olmadığının tespit edilmesidir. Ki-Kare testi kullanılarak cinsiyet değişkenine göre katılımcıların cinsiyetçi ambalaj tercihi ve pembe vergi algısı incelenmiştir. Anlamlılık seviyesi olarak 0,05 kullanılmış olup, $p < 0,05$ olması durumunda anlamlı bir ilişkinin olduğu, $p > 0,05$ olması durumunda ise anlamlı ilişkinin olmadığı kabul edilmiştir.

Araştırmada yer alan dokuz adet anket sorusundan elde edilen veriler için ki-kare analizi, sütun ve pasta grafikleri kullanılarak nicel analiz gerçekleştirilmiştir. Diğer iki adet açık uçlu sorulardan elde edilen veriler ise tümevarımsal içerik analizi yöntemiyle analiz edilmiştir.

4.6. Araştırmanın Hipotezleri

Katılımcıların ürün satın alma tercihlerinin belirlenmesinde cinsiyetçi ambalaj tasarımlarının etkisini ve toplumun pembe vergi kavramına karşı duyarlılığını araştıran bu çalışmada aşağıda belirtilen araştırma soruları cevaplanmıştır.

- Araştırma Sorusu 1: Kadınların satın alma tercihlerinin şekillenmesinde cinsiyetçi ambalaj tasarımları etkili midir?
- Araştırma Sorusu 2: Katılımcılar vergi yükünün cinsiyete göre farklılık gözettilmesini düşünmekte midir? Düşünüyorlar ise erkeklerin mi daha fazla vergi ödediğini düşünmekte?
- Araştırma Sorusu 3: Toplumda pembe vergiye karşı anlamlı bir duyarlılık ve farkındalık bulunmakta mıdır?

Araştırma sorularının cevaplanması için analiz edilen hipotezler şunlardır:

- Hipotez 1: İçerikleri, miktarları ve fiyatları aynı olan ancak ambalaj tasarımları farklı olan sabun şişeleri arasında, kadın katılımcılar, anket içerisinde gösterilen Şekil A'daki ürünü tercih ederken, erkek katılımcılar Şekil B'deki ürünü tercih eder.
- Hipotez 2: İçerikleri ve miktarları aynı olan ancak fiyatları ve ambalaj tasarımları farklı olan sabun şişeleri arasında, erkek ve kadın katılımcılar anket içerisinde gösterilen ucuz olan Şekil B'deki ürünü tercih eder.

- Hipotez 3: İçerikleri, miktarları ve fiyatları aynı olan ancak ambalaj tasarımları farklı olan kolonya şişeleri arasında, kadın katılımcılar, anket içerisinde gösterilen Şekil A’daki ürünü tercih ederken, erkek katılımcılar Şekil B’deki ürünü tercih eder.
- Hipotez 4: İçerikleri ve miktarları aynı olan ancak fiyatları ve ambalaj tasarımları farklı olan kolonya şişeleri arasında, erkek ve kadın katılımcılar anket içerisinde gösterilen ucuz olan Şekil B’deki ürünü tercih eder.
- Hipotez 5: Kumaşları, kaliteleri ve fiyatları aynı olan ancak tasarımları farklı olan tişörtler arasında, kadın katılımcılar, anket içerisinde gösterilen Şekil A’daki ürünü tercih ederken, erkek katılımcılar Şekil B’deki ürünü tercih eder.
- Hipotez 6: Kumaşları ve kaliteleri aynı olan ancak fiyatları ve tasarımları farklı olan tişörtler arasında, erkek ve kadın katılımcılar anket içerisinde gösterilen ucuz olan Şekil B’deki ürünü tercih eder.
- Hipotez 7: Kadın ve erkek katılımcılar vergi yükünün cinsiyete göre farklılık gözettiğini düşünmektedir.
- Hipotez 8: Vergi yükünün cinsiyete göre farklılık gözettiğini düşünen katılımcılar erkeklerin daha fazla vergi ödediğini düşünmektedir.
- Hipotez 9: Katılımcılar pembe vergi kavramını daha önce duymamışlardır.
- Hipotez 10: Katılımcıların pembe vergiye ilişkin algıları “Olumsuz” yöndedir.
- Hipotez 11: Katılımcılar pembe vergiye ilişkin önerilerini farklı şekillerde ifade eder.

Araştırma sorularını test etmeye yönelik olarak hazırlanan hipotezler ve sorular arasındaki ilişki aşağıdaki Tablo 6’ da gösterilmiştir.

Tablo: 6
Araştırma Sorusu - Hipotez İlişkisi

Araştırma Sorusu 1	H1, H2, H3, H4, H5, H6
Araştırma Sorusu 2	H7, H8
Araştırma Sorusu 3	H9, H10, H11

4.7. Araştırmanın Bulguları

Araştırma soruları 1, 2 ve 3’ün cevaplanması için hipotezler test edilmiştir. Buna ilişkin olarak nicel verilerin analizinde ki-kare testinden, sütun ve pasta grafiğinden yararlanılarak analiz yapılmıştır. Açık uçlu soruların analizi için ise tümevarımsal içerik analizi gerçekleştirilmiştir.

4.7.1. Hipotez 1’in Ki-Kare Testi İle Çözümlemesi

Hipotez 1: İçerikleri, miktarları ve fiyatları aynı olan ancak ambalaj tasarımları farklı olan sabun şişeleri arasında, kadın katılımcılar, anket içerisinde gösterilen Şekil A’daki ürünü tercih ederken, erkek katılımcılar Şekil B’deki ürünü tercih eder.

Hipotez 1’in değerlendirilmesi için SPSS 29.00 programı kullanılarak ki-kare testi gerçekleştirilmiş ve Tablo 7’de gösterilmiştir.

Tablo: 7
Hipotez 1’in Ki-Kare Testi İle Çözümlemesi

		Şekil A	Şekil B	Toplam	Ki-Kare	p
Kadın	Hesaplanan Değer	242	96	338	129,931	< 0,001
	Beklenen Değer	180,8	157,2	338,0		
Erkek	Hesaplanan Değer	33	143	176		
	Beklenen Değer	94,2	81,8	176,0		
Toplam	Hesaplanan Değer	275	239	514		
	Beklenen Değer	275,0	239,0	514,0		

Ki-kare testi sonucuna göre Hipotez 1 desteklenmiştir ve cinsiyet değişkene göre ankette gösterilen Şekil A’daki ürünün ve Şekil B’deki ürünün katılımcılar tarafından tercih edilmesinde anlamlı bir ilişki olduğu görülmektedir ($p<0,05$). Kadın katılımcılar genellikle ankette gösterilen Şekil A’daki ürünü seçerken erkek katılımcılar genellikle Şekil B’deki ürünü seçmişlerdir.

4.7.2. Hipotez 2’nin Ki-Kare Testi İle Çözümlemesi

Hipotez 2: İçerikleri ve miktarları aynı olan ancak fiyatları ve ambalaj tasarımları farklı olan sabun şişeleri arasında, erkek ve kadın katılımcılar anket içerisinde gösterilen ucuz olan Şekil B’deki ürünü tercih eder.

Hipotez 2’nin değerlendirilmesi için SPSS 29.00 programı kullanılarak ki-kare testi gerçekleştirilmiş ve Tablo 8’de gösterilmiştir.

Tablo: 8
Hipotez 2’nin Ki-Kare Testi İle Çözümlemesi

		Şekil A	Şekil B	Toplam	Ki-Kare	p
Kadın	Hesaplanan Değer	74	264	338	11,890	< 0,001
	Beklenen Değer	59,8	278,2	338,0		
Erkek	Hesaplanan Değer	17	159	176		
	Beklenen Değer	31,2	144,8	176,0		
Toplam	Hesaplanan Değer	91	423	514		
	Beklenen Değer	91,0	423,0	514,0		

Ki-kare testi sonucuna göre Hipotez 2 desteklenmiştir ve cinsiyet değişkene göre anket içerisinde gösterilen Şekil B’deki ürünün erkek ve kadın katılımcılar tarafından tercih edilmesinde anlamlı bir ilişki olduğu görülmektedir ($p<0,05$). Erkek ve kadın katılımcılar anket içerisinde gösterilen ucuz olan Şekil B’deki ürünü seçmişlerdir.

4.7.3. Hipotez 3’ün Ki-Kare Testi İle Çözümlemesi

Hipotez 3: İçerikleri, miktarları ve fiyatları aynı olan ancak ambalaj tasarımları farklı olan kolonya şişeleri arasında, kadın katılımcılar, anket içerisinde gösterilen Şekil A’daki ürünü tercih ederken, erkek katılımcılar Şekil B’deki ürünü tercih eder.

Hipotez 3’ün değerlendirilmesi için SPSS 29.00 programı kullanılarak ki-kare testi gerçekleştirilmiş ve Tablo 9’ da gösterilmiştir.

Tablo: 9
Hipotez 3’in Ki-Kare Testi İle Çözümlemesi

		Şekil A	Şekil B	Toplam	Ki-Kare	p
Kadın	Hesaplanan Değer	265	73	338	129,667	< 0,001
	Beklenen Değer	205,2	132,8	338,0		
Erkek	Hesaplanan Değer	47	129	176		
	Beklenen Değer	106,8	69,2	176,0		
Toplam	Hesaplanan Değer	312	202	514		
	Beklenen Değer	312,0	202,0	514,0		

Ki-kare testi sonucuna göre Hipotez 3 desteklenmiştir ve cinsiyet değişkene göre ankette gösterilen Şekil A’daki ürünün ve Şekil B’deki ürünün katılımcılar tarafından tercih edilmesinde anlamlı bir ilişki olduğu görülmektedir ($p<0,05$). Kadın katılımcılar genellikle ankette gösterilen Şekil A’daki ürünü seçerken erkek katılımcılar genellikle Şekil B’deki ürünü seçmişlerdir.

4.7.4. Hipotez 4’ün Ki-Kare Testi İle Çözümlemesi

Hipotez 4: İçerikleri ve miktarları aynı olan ancak fiyatları ve ambalaj tasarımları farklı olan kolonya şişeleri arasında, erkek ve kadın katılımcılar anket içerisinde gösterilen ucuz olan Şekil B’deki ürünü tercih eder.

Hipotez 4’ün değerlendirilmesi için SPSS 29.00 programı kullanılarak ki-kare testi gerçekleştirilmiş ve Tablo 10’ da gösterilmiştir.

Tablo: 10
Hipotez 4’ün Ki-Kare Testi İle Çözümlemesi

		Şekil A	Şekil B	Toplam	Ki-Kare	p
Kadın	Hesaplanan Değer	91	247	338	19,307	< 0,001
	Beklenen Değer	71,7	266,3	338,0		
Erkek	Hesaplanan Değer	18	158	176		
	Beklenen Değer	37,3	138,7	176,0		
Toplam	Hesaplanan Değer	109	405	514		
	Beklenen Değer	109,0	405,0	514,0		

Ki-kare testi sonucuna göre Hipotez 4 desteklenmiştir ve cinsiyet değişkene göre anket içerisinde gösterilen Şekil B’deki ürünün erkek ve kadın katılımcılar tarafından tercih edilmesinde anlamlı bir ilişki olduğu görülmektedir ($p<0,05$). Erkek ve kadın katılımcılar anket içerisinde gösterilen ucuz olan Şekil B’deki ürünü seçmişlerdir.

4.7.5. Hipotez 5’in Ki-Kare Testi İle Çözümlemesi

Hipotez 5: Kumaşları, kaliteleri ve fiyatları aynı olan ancak tasarımları farklı olan tişörtler arasında, kadın katılımcılar, anket içerisinde gösterilen Şekil A’daki ürünü tercih ederken, erkek katılımcılar Şekil B’deki ürünü tercih eder.

Hipotez 5’in değerlendirilmesi için SPSS 29.00 programı kullanılarak ki-kare testi gerçekleştirilmiş ve Tablo 11’de gösterilmiştir.

Tablo: 11
Hipotez 5’in Ki-Kare Testi İle Çözümlemesi

		Şekil A	Şekil B	Toplam	Ki-Kare	p
Kadın	Hesaplanan Değer	300	38	338	265,977	< 0,001
	Beklenen Değer	215,7	122,3	338,0		
Erkek	Hesaplanan Değer	28	148	176		
	Beklenen Değer	112,3	63,7	176,0		
Toplam	Hesaplanan Değer	328	186	514		
	Beklenen Değer	328,0	186,0	514,0		

Ki-kare testi sonucuna göre Hipotez 5 desteklenmiştir ve cinsiyet değişkene göre ankette gösterilen Şekil A’daki ürünün ve Şekil B’deki ürünün katılımcılar tarafından tercih edilmesinde anlamlı bir ilişki olduğu görülmektedir ($p<0,05$). Kadın katılımcılar genellikle ankette gösterilen Şekil A’daki ürünü seçerken erkek katılımcılar genellikle Şekil B’deki ürünü seçmişlerdir.

4.7.6. Hipotez 6’nın Ki-Kare Testi İle Çözümlemesi

Hipotez 6: Kumaşları ve kaliteleri aynı olan ancak fiyatları ve tasarımları farklı olan tişörtler arasında, erkek ve kadın katılımcılar anket içerisinde gösterilen ucuz olan Şekil B’deki ürünü tercih eder.

Hipotez 6’nın değerlendirilmesi için SPSS 29.00 programı kullanılarak ki-kare testi gerçekleştirilmiş ve Tablo 12’de gösterilmiştir.

Tablo: 12
Hipotez 6’nın Ki-Kare Testi İle Çözümlemesi

		Şekil A	Şekil B	Toplam	Ki-Kare	p
Kadın	Hesaplanan Değer	189	149	338	75,940	< 0,001
	Beklenen Değer	142,7	195,3	338,0		
Erkek	Hesaplanan Değer	28	148	176		
	Beklenen Değer	74,3	101,7	176,0		
Toplam	Hesaplanan Değer	217	297	514		
	Beklenen Değer	217,0	297,0	514,0		

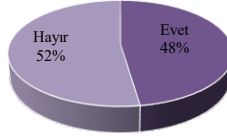
Ki-kare testi sonucuna göre Hipotez 6 desteklenmiştir ve cinsiyet değişkene göre anket içerisinde gösterilen Şekil B’deki ürünün erkek ve kadın katılımcılar tarafından tercih edilmesinde anlamlı bir ilişki olduğu görülmektedir ($p<0,05$). Erkek ve kadın katılımcılar anket içerisinde gösterilen ucuz olan Şekil B’deki ürünü seçmişlerdir.

4.7.7. Hipotez 7’nin Pasta Grafiği İle Çözümlemesi

Hipotez 7: Kadın ve erkek katılımcılar vergi yükünün cinsiyete göre farklılık gözettiğini düşünmektedir.

Hipotez 7’nin değerlendirilmesi için pasta grafiğinden yararlanılmış ve Şekil 7’ de gösterilmiştir.

Şekil: 17
Hipotez 7’nin Pasta Grafiği İle Çözümlemesi



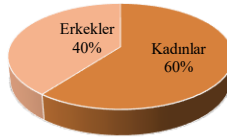
Analiz sonuçlarına göre Hipotez 7 desteklenmemiştir. Katılımcıların %52’si vergi yükünün cinsiyete göre farklılık gözetmediğini düşünmektedir.

4.7.8. Hipotez 8’in Pasta Grafiği İle Çözümlemesi

Hipotez 8: Vergi yükünün cinsiyete göre farklılık gözetmediğini düşünen katılımcılar erkeklerin daha fazla vergi ödediğini düşünmektedir.

Hipotez 8’in değerlendirilmesi için pasta grafiğinden yararlanılmış ve Şekil 8’ de gösterilmiştir.

Şekil: 8
Hipotez 8’in Pasta Grafiği İle Çözümlemesi



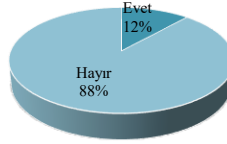
Analiz sonuçlarına göre Hipotez 8 desteklenmemiştir. Katılımcıların %60’ı kadınların daha fazla vergi ödediğini düşünmektedir.

4.7.9. Hipotez 9’un Pasta Grafiği İle Çözümlemesi

Hipotez 9: Katılımcılar pembe vergi kavramını daha önce duymamışlardır.

Hipotez 9’un değerlendirilmesi için pasta grafiğinden yararlanılmış ve Şekil 9’ da gösterilmiştir.

Şekil: 9
Hipotez 9’un Pasta Grafiği İle Çözümlemesi



Analiz sonuçlarına göre Hipotez 9 desteklenmiştir. Katılımcıların %88’i pembe vergiyi duymamıştır.

4.7.10. Hipotez 10’un Tümevarımsal İçerik Analizi İle Çözümlemesi

Hipotez 10: Katılımcıların pembe vergiye ilişkin algıları “Olumsuz” yöndedir.

Hipotez 10’un test edilmesi için anket içerisinde açık uçlu soruya yer verilmiş ve katılımcıların pembe vergi kavramını nasıl algıladıklarına ilişkin yanıtlar kategorize edilmiştir. Kategorilere ayırma işleminde birbirine yakın yanıtların kümelenmesi dikkate alınmıştır. Bu kategoriler Tablo 13’ te gösterilmiştir.

Tablo: 13
Hipotez 10’un Tümevarımsal İçerik Analizi İle Çözümlemesi

Kategori 1	“Adaletsiz”, “Eşitlik ilkesine ters”, “Anayasaya aykırı”, “Haksızlık”, “Yanlış”, “Fırsatçılık”
Kategori 2	“Saçma”, “Gereksiz”, “Şaşırtıcı”, “Böyle bir şeye inanmıyorum”, “Bilmiyorum”
Kategori 3	“Kadın olmak her konuda zor”, “Cinsiyetçi”, “Ataerkil düzenin yansıması”
Kategori 4	“Pazarlama stratejisi sebebiyle olduğu”, “Kapitalizm sebebiyle olduğu”, “Arz-Talep nedeniyle normal olduğu”, “Kadın ürünlerinin maliyetinin daha fazla olması nedeniyle normal olduğu”, “Kadınların daha fazla tüketim alışkanlığı nedeniyle olduğu”
Kategori 5	“Tam tersi, erkek ürünleri daha pahalı”
Kategori 6	“İlk defa duyulduğu ve bundan sonra dikkat edileceği” “Alışverişte farkına varıldığı ama adının ne olduğunun bilinmediği”

Analiz sonuçlarına göre Hipotez 10 desteklenmiştir. Yanıtların genel değerlendirmesi 6 kategori altında incelenmekte olup katılımcıların pembe vergiye ilişkin algıları genellikle “Olumsuz” yöndedir.

4.7.11. Hipotez 11’in Tümevarımsal İçerik Analizi İle Çözümlemesi

Hipotez 11: Katılımcılar pembe vergiye ilişkin önerilerini farklı şekillerde ifade eder.

Hipotez 11’in test edilmesi için anket içerisinde açık uçlu bir soruya daha yer verilmiş ve katılımcıların pembe vergiye yönelik olarak sundukları öneriler kategorize edilmiştir. Kategorilere ayırma işleminde birbirine yakın yanıtların kümelenmesi dikkate alınmıştır. Bu kategoriler Tablo 14’te gösterilmiştir.

Tablo: 14
Hipotez 11’in Tümevarımsal İçerik Analizi İle Çözümlemesi

Kategori 1	“Adalet ve eşitlik sağlanmalı”, “Kaldırılmalı”, “Karşı çıkılmalı”, “Kapitalizme karşı çıkılmalı”
Kategori 2	“Serbest piyasa ekonomisi nedeniyle olduğu için yapılacak bir şey olmadığı görüşü”, “Önerim yok görüşü”, “Böyle bir şey olmadığı/erkek ürünlerinin daha pahalı olduğu sebebiyle önerilecek bir şey olmadığı görüşü”
Kategori 3	“Bilinçlenmeli ve farkındalık sağlanmalı”, “Eğitim verilmeli”, “İmza kampanyaları yürütülmeli”, “Kadınları tüketim konusunda eğitilmeli”
Kategori 4	“Kadınların erkek ürünlerini tercih etmesi”, “Cinsiyetsiz ürünler tercih edilmeli”
Kategori 5	“Erkekler için de olmalı”
Kategori 6	“Devlet denetlemeli”

Analiz sonuçlarına göre Hipotez 11 desteklenmiştir. Pembe vergiye ilişkin olarak ifade edilen öneriler 6 farklı kategoride değerlendirilmektedir.

4.8. Araştırma Sorularının Cevaplanması

Toplumun ürün satın alma tercihlerinin belirlenmesinde cinsiyetçi ambalaj tasarımlarının etkisi, vergi yükünün cinsiyete göre farklılık gözetip gözetmediğine dair katılımcı algısı ve toplumda pembe vergi kavramına karşı farkındalık analizinin araştırılmasına yönelik yapılan bu çalışmanın hipotezleri test edilmiş ve araştırma soruları yanıtlanmıştır. Sonuçlar Tablo 15’ te gösterilmiştir.

Tablo: 15
Araştırma Sonuçları

Araştırma Sorusu No	Test Edilen Hipotezler No	Araştırma Sorusu	Sonuç
Araştırma Sorusu 1	H1, H2, H3, H4, H5, H6	Kadınların satın alma tercihlerinin şekillenmesinde cinsiyetçi ambalaj tasarımları etkili midir?	Kabul Edildi
Araştırma Sorusu 2	H7, H8	Katılımcılar vergi yükünün cinsiyete göre farklılık gözettiğini düşünmekte midir? Düşünüyorlar ise erkeklerin mi daha fazla vergi ödediğini düşünmekteler?	Reddedildi
Araştırma Sorusu 3	H9, H10, H11	Toplumda pembe vergiye karşı anlamlı bir duyarlılık ve farkındalık bulunmakta mıdır?	Reddedildi

Kadınların satın alma tercihlerinin belirlenmesinde cinsiyetçi ambalajın oldukça etkili olduğu görülmüştür. Ankette katılımcılara yöneltilen ürünlerin içeriklerinin ve fiyatlarının birbirinin aynısı olması durumunda kadın katılımcıların çoğunlukla “kadınsı” ambalajlı ürünü tercih ettiği tespit edilmiştir. Ürünlerin içeriklerinin birbirinin tamamen

aynısı olduğu ancak fiyatlarının farklılaştığı ve pahalı olan ürünün "kadınsı" ambalajlı ürün olması durumunda ise satın alma tercihi çoğunlukla "erkeksi" olan ürün olmuştur.

Katılımcılar vergi yükünün cinsiyete göre farklılık gözetmediğini düşünmemektedir. Düşünenler ise "erkeklerin" değil "kadınların" daha fazla vergi ödediğini ifade etmişlerdir.

Toplumda pembe vergiye ilişkin anlamlı bir duyarlılık ve farkındalık tespit edilememiştir. Bu çalışma sayesinde farkındalık kazandıklarını ve bundan sonra alışverişlerde dikkat edeceklerini belirtmişlerdir.

Pembe vergiye ilişkin yapılan çalışmalar hâlâ çok kısıtlıdır ve bu konuda toplumun daha fazla bilinçlenmeye ihtiyacı vardır. Özellikle Türkiye için yapılan pembe vergiye ilişkin çalışmalar toplumda algı ve bilinç oluşması için yetersiz kalmıştır. Yalnızca kadın ürünlerinin daha pahalı olarak sunulması değil çocuk oyuncaklarında da görülen pembe vergi, cinsiyet eşitsizliğini derinleştiren bir kavramdır ve toplumsal cinsiyet eşitsizliğinin ekonomik boyutunda olumsuz sonuçlar doğurmaktadır.

5. Sonuç ve Öneriler

Ekonomide toplumsal cinsiyet eşitsizliği, kadınlar ile erkekler arasında ekonomik fırsatlarda, erişimde, istihdamda ve ücretlerde görülen adaletsizlik ve farklılıkları ifade etmektedir. Dünya geneli için bakıldığında istihdam tercihlerinde erkeklerin ön planda olduğu görülmektedir. Bunun yanı sıra aynı işi yapan kadınlar ve erkek için eşit olmayan ücretler söz konusudur. Gelir elde etme boyutunda erkeklerden daha az ücret geliri elde eden kadınlar, tüketim boyutunda da adaletsiz durumlar ile karşılaşmaktadır. Kadınlar birbirinin muadili olan ürün ve/veya hizmetler için erkeklere kıyasla daha fazla fiyat ödemektedir.

Dünya çapında cinsiyet eşitsizliğinin azaltılması için ulusal ve uluslararası düzeyde anlaşmalar ve yasal düzenlemeler yapılmaktadır. Bu amaca ulaşmak için Türkiye'de sosyal devlet anlayışının uzantısı olarak maliye politikaları kullanılmaktadır. Başlıca gelir politikası (vergi politikası) ve gider politikası (harcama politikası) cinsiyet eşitliğini sağlamak için önemlidir. Türk Vergi Sistemi içinde yer alan subjektif karakterli gelir vergisinde cinsiyet eşitliğini sağlamaya yönelik muafiyet ve istisna uygulamalarına yer verilmiştir. Ancak toplumsal cinsiyet eşitsizliğini derinleştiren pembe vergi, tüketim vergilerine benzeyen etkiler yaratmakta ve olumsuz sonuçlar doğurmaktadır.

Araştırmada tüketicilerin alışverişlerinde genellikle tercih ettikleri e-ticaret siteleri incelenmiş ve birbirinin muadili olan ürünlerin kadınlar için sunulanın fiyatının daha pahalı olduğu tespit edilmiştir. Fiyat karşılaştırması yalnızca kadın-erkek ürünlerini kapsamamakta ve kız çocuk - erkek çocuk ürünlerini de içermektedir. Bu bağlamda Türkiye'de pembe verginin olduğu sonucuna ulaşılmıştır.

Serbest piyasanın getirisi olan ve arz-talep dengesinden kaynaklanarak ortaya çıkan bu durum cinsiyet eşitsizliği sorununu ekonomik eşitsizliğin tüketim boyutunda derinleştirerek olumsuz etkilemektedir. Bu nedenle toplumda özellikle kadınlar tarafından

bu kavramın bilinmesi ve farkına varılması önemlidir. Bu doğrultuda çalışmada, üç temel araştırma problemi benimsenmiştir. Araştırmanın birinci problemi; tüketicilerin satın alma tercihlerinde cinsiyetçi ambalajın dikkate alınıp alınmamasıdır. İkinci problem; vergi yükünün cinsiyete göre farklılık gözetip gözetmediğine dair katılımcıların görüşlerinin hangi yönde olacağıdır. Üçüncü problem ise toplumda pembe vergiye ilişkin algının nasıl olacağıdır.

Anket yöntemi kullanılarak yapılan nicel araştırmanın verileri SPSS programı yardımıyla analiz edilmiştir. Araştırmanın bulgularına göre kadın tüketiciler “kadınsı” ürünleri satın alma eğilimi göstermekte iken erkek tüketiciler “erkeksi” ürünleri satın alma eğilimi göstermektedir. Ancak fiyatlar farklılaştığında genel olarak katılımcıların çoğu ucuz olan “erkeksi” ürünü satın almayı tercih etmektedir. Bu doğrultuda birbirinin muadili olan ürünler için satın alma tercihinin belirlenmesinde fiyat faktörü cinsiyetçi ürün faktörünün önüne geçmektedir.

Katılımcılar vergi yükünün cinsiyete göre farklılık gözetmediğini düşünmemektedir. Düşünenler ise “erkeklerin” değil “kadınların” daha fazla vergi ödediğini ifade etmişlerdir.

Toplumda pembe vergiye ilişkin anlamlı bir duyarlılık ve farkındalık tespit edilememiştir. Pembe vergiye ilişkin farkındalık oluşmaması nedeniyle tüketicilerin satın alma tercihlerinde cinsiyet eşitsizliği yaşanmaktadır.

Cinsiyet eşitsizliğinin ortadan kaldırılması için kadın ve erkeğin eşit haklara ve imkânlara sahip olmalarını sağlamak, toplumsal cinsiyet rollerini eşitlikçi bir şekilde yeniden değerlendirmek ve cinsiyete dayalı ayrımcılığı önlemek önemlidir. Bu, toplumların daha adil, eşitlikçi ve sürdürülebilir bir gelecek inşa etmesine yardımcı olacaktır. Cinsiyet eşitsizliğini ve pembe vergiyi yükünü azaltmaya yönelik olarak aşağıdaki öneriler geliştirilmiştir.

- Farkındalığı Artırma Faaliyetleri

Tüketicileri pembe vergi hakkında bilinçlendirmek ve bu konuda farkındalık yaratmak için kampanyalar düzenlemek önemlidir. Bu, tüketicilerin daha bilinçli seçimler yapmasını teşvik edecektir. Ayrıca fiyat ayrımcılığı ve tüketici hakları hakkında eğitim programları düzenlemek etkili olacaktır.

Sosyal ve konvansiyonel medyanın pembe vergiyi gündeme taşıması ve pembe vergiye karşı kampanyalar düzenlenerek geniş kitlelere ulaşılması etkili olacaktır.

Tüketici haklarını savunan derneklerin ve kadın hakları örgütlerinin pembe vergi konusunda aktif rol alması ve buna karşı çıkan faaliyetler yürütmeleri önemlidir.

Yapılan literatür taramasında pembe vergi kavramının akademik düzeyde de yeterince incelenmediği görülmüştür. Bu konuda daha fazla akademik çalışmalar, projeler yapılarak farkındalık artırılabilir. Pembe vergi, özellikle sosyoloji, pazarlama, halkla ilişkiler

ve reklamcılık gibi anabilim dalları tarafından da incelenmeli ve pembe verginin oluşmasına sebebiyet veren etkiler tespit edilmelidir.

- Cinsiyetsiz Ürün Tercihleri

Tüketiciler ihtiyaçlarına yönelik olarak yaptıkları alışverişlerde tamamen özgürdür ancak sunulan hizmetler ve ürünler birbirinin muadili iken farklı fiyat politikalarıyla karşı karşıya kalınması halinde cinsiyetsiz ürünler tercih etmek pembe vergiden kaçınmaya imkân sağlamaktadır.

- Regl Yoksulluğu ve Tampon Vergisine Yönelik Yasal Düzenlemeler

Regl yoksulluğu, kadınların menstrual dönemlerde kullanmak zorunda kaldığı hijyen ürünlerine ulaşamama hâlidir. “Regl Ürünleri Yasası”nın yürürlüğe girdiği İskoçya, dünyada temel ihtiyaç olan regl ürünlerine bedava ulaşılabilen ilk ülke olmuştur. Türkiye’de de menstrual ürünler ücretsiz olarak sunulmalıdır. Bu konuya ilişkin yasal düzenlemeler geliştirilmeli ve uygulanmalıdır.

- Kadın İstihdamını Artırmaya Yönelik Yasal Düzenlemeler

Aynı işi yapan kadın ve erkekler arasında ücret eşitsizliği ortadan kaldırmalıdır. Bunun için eşit ücret politikaları geliştirilmeli ve uygulanmalıdır. Bu uygulamaları yapan firmalara vergisel avantajlar ve teşvikler verilebilir. Yönetim pozisyonlarında ve karar alma süreçlerinde kadın temsiliini artırmak için kota uygulamaları getirilmeli ve teşvik programları sunulmalıdır.

Esnek çalışma saatleri ve uzaktan çalışma imkânları sunularak kadınların iş-aile dengesini sağlamalarına yardımcı olunmalıdır. Ayrıca hem anneler hem de babalar için ücretli ebeveyn izinleri sağlayarak ebeveynlik yükümlülüklerinin paylaşılması teşvik edilmelidir. Uygun fiyatlı ve kaliteli çocuk bakım hizmetlerine erişimi artırarak kadınların işgücüne katılımı kolaylaştırılmalıdır.

Kadın girişimciler için uygun faizli kredi imkânları sunularak ekonomik bağımsızlık desteklenmeli ve vergisel avantajlar sağlanmalıdır.

- Bütçeleme Süreçlerinde Toplumsal Cinsiyet Eşitliğinin Gözetilmesi

Pembe vergi, kadınların aynı nitelikteki ürün ve hizmetler için erkeklere kıyasla daha yüksek fiyat ödemesi sonucu oluşan örtük bir mali yük olarak değerlendirilmektedir. Bu durum, yalnızca piyasa temelli bir fiyatlandırma sorunu değil, aynı zamanda kamu bütçeleme süreçlerinde toplumsal cinsiyet eşitliğinin gözetilmemesinin bir yansımasıdır. Toplumsal Cinsiyete Duyarlı Bütçeleme yaklaşımı, kamu harcama ve gelir politikalarının kadınlar ve erkekler üzerindeki farklı etkilerini analiz ederek, bütçe süreçlerine eşitlik perspektifinin entegre edilmesini amaçlar (Yakar-Önal, 2023: 9,10). Bu çerçevede; pembe vergi farkındalığının artırılması, mikro düzeyde tüketici haklarının makro düzeyde ise adil

vergi politikalarının oluşturulması açısından işlevsel olarak değerlendirilebilir. Kadınlara yönelik örtük vergi yükünün azaltılması için yerel yönetimlerin toplumsal cinsiyet etki analizleri yapması ve kamu bütçelerinde telafi edici düzenlemelere yer vermesi önerilmektedir.

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Satın Almak ya da Almamak? Tüketici Boykot Motivasyonları Üzerine Bir Araştırma

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To Buy or Not to Buy? A Study on Consumer Boycott Motivations

Abstract

As consumers can find information about brands much more quickly and easily today, this has led to a growing tendency to boycott businesses or brands that engage in unethical practices. Boycotts can trigger feelings of animosity toward targeted businesses or countries among consumers. In this context, this study aims to examine the effects of consumer animosity, make a difference, and self-enhancement factors on boycott participation, and to determine the moderating role of country of origin on the relationship between consumer animosity and boycott participation. The research was conducted with 205 individual consumers using convenience sampling, and the data were analysed using Structural Equation Modelling. The findings revealed that self-enhancement and making a difference had a significant, positive effect on boycott participation, whereas consumer animosity did not. Also, the moderating role of the country-of-origin effect was found not to be substantial.

Keywords : Boycott Participation, Boycott Motivations, Consumer Animosity, Country of Origin Effects.

JEL Classification Codes : M31, M39.

Öz

Günümüzde tüketicilerin markalar hakkında daha hızlı ve kolay bilgiye erişebilmesi etik dışı uygulamalarda bulunan işletme veya markalara karşı gösterilen boykot davranışlarını giderek yaygın hale getirmektedir. Boykotlar ile hedef gösterilen işletme veya ülkelere yönelik tüketicilerde düşmanlık duyguları tetiklenebilmektedir. Bu kapsamda çalışmanın amacı tüketici düşmanlığı, fark yaratma arzusu ve kendini geliştirme faktörlerinin boykota katılım üzerindeki etkisini incelerken menşei ülke etkisinin tüketici düşmanlığı ve boykota katılım ilişkisindeki düzenleyici rolünü tespit etmektir. Araştırma kolayda örnekleme yöntemi ile 205 bireysel tüketici üzerinde gerçekleştirilmiş olup veriler Yapısal Eşitlik Modellemesi ile analiz edilmiştir. Bulgular, kendini geliştirme ve fark yaratma arzusunun boykota katılım üzerinde anlamlı ve olumlu etki göstermesine karşın tüketici düşmanlığının anlamlı etki göstermediği yönündedir. Ayrıca menşei ülke etkisinin düzenleyici rolünün anlamlı etki göstermediği tespit edilmiştir.

Anahtar Sözcükler : Boykota Katılım, Boykot Motivasyonları, Tüketici Düşmanlığı, Menşei Ülke Etkisi.

1. Giriş

Dünya pazarının küreselleşme süreci ciddi değişimleri beraberinde getirmiştir. Küreselleşme, işletmelere sunduğu çeşitli fırsatlar olmasına karşın birtakım zorluklar da bulunmaktadır (Abdul-Talib & Mohd Adnan, 2017). Özellikle küresel ekonomi ortamında tüketiciler siyasi savaşlar, kültürel/dini çatışmalar, ticari kısıtlamalar ve ekonomik yaptırımlar gibi pek çok ülke arası krizle karşı karşıya kalmaktadır (Kim et al., 2022). Yaşanan kaotik durumlar, tüketicilerin tutum ve davranışlarını etkileyerek çatışma içerisinde olunan ülkeye karşı öfke, nefret ve kin gibi yoğun duygusal tepkiler geliştirmelerine neden olabilmektedir. Bu duygusal tepkiler, zamanla grup düzeyinde, ülke düzeyinde veya dünya genelinde işletmelerin hedef alındığı geniş çaplı boykotlara dönüşebilir.

Küresel pazarlarda ülkeler arasında yaşanan bu tür çatışmaların ardından pazarlama literatürüne tüketici düşmanlığı, boykot gibi kavramlar girmeye başlamıştır (Barutçu et al., 2016). Genel olarak boykotlar, işletmelerin ahlaki normlara aykırı davrandığını düşünen tüketicilerin bu duruma yönelik duygusal tepkileri sonucunda bireysel ya da toplu şekilde satın alma davranışından vazgeçmesi ile ortaya çıkan etik bir tüketim biçimidir (Makarem & Jae, 2016). Günümüz pazar yerinde tüketicilerin tatminsizliklerini dile getirmelerinin güçlü ve etkili bir aracı olan boykotlar (Sen et al., 2001), işletmelerin söz konusu faaliyetlerinde tüketici beklentilerini anlamayı gerekli kılmaktadır. Hedef alınan işletmelere yönelik duygusal ve etik temelli tepkilerin dışı vurumu olarak değerlendirilen tüketici boykotları, “bir ülkeye, işletmeye veya markaya karşı bir tepki veya muhalefet biçimidir” (Ulker-Demirel et al., 2021). Bu tepkiler tüketicilerin yalnızca bireysel tatminsizliklerini değil, aynı zamanda toplumsal duyarlılıklarını da yansıtmaktadır. Bu açıdan boykotlar, gerek tüketici davranışları gerekse kurumsal itibar açısından işletmeler için kritik bir alan oluşturmaktadır. Ekonomik, siyasi veya sosyal nedenlerle ortaya çıkabileceği gibi, işletmelerin etik bulunmayan faaliyetleri de boykota yol açabilmektedir (Ulker-Demirel et al., 2021). Nitekim kurumsal itibar ve marka imajını zedeleme potansiyeli taşıyan bu tür eylemler, işletmelere finansal veya finansal olmayan kayıplar yaşatabilmektedir.

Öte yandan, tüketici boykotları belirli bir ülkeye, markaya veya ürüne yönelik geliştirilen düşmanlık duygularıyla da tetiklenebilmektedir. Bu bağlamda, boykotların meydana gelmesinde güçlü duygusal temellere dayalı tutumlar da etkili olabilmektedir. Özellikle, ülkeler arasındaki savaşlar nedeniyle tüketicilerin edindiği düşmanlık duygusu, hedef ülke markasına yönelik boykot davranışına yol açması nedeniyle araştırmacılar tarafından kritik bir konu olarak görülmektedir (Akhtar et al., 2023). Bununla birlikte, uluslararası pazarlama alanında, menşei ülke etkisi, işletmelerin dış pazarlarda ürünlerini konumlandırırken zorluk yaşadığı bir unsur olup, tüketicilerin satın alma karar süreçleriyle ilintili bir durum haline gelmiştir (Wang et al., 2023). Nitekim, uluslararası pazarlamada ürünün üretim yeri, marka ismi veya ürün etiketi gibi dışsal özellikler, tüketicilerin algılarını şekillendirmede önemli bir rol oynayarak, tüketicilerin menşei ülkeye dair çıkarımlarda bulunmasını sağlamaktadır (Klein et al., 1998). Türkiye perspektifinden bakıldığında; Türkiye’nin tarihsel, kültürel, siyasi ve ticari ilişkilerinin bulunduğu ülkelerle yaşanan kimi olumsuz durumlar veya gerilimli ilişkiler, tüketiciler tarafından o ülkeye yönelik çeşitli

düşmanlık duygularını tetikleyebilmekte ve satın alma tercihlerine yansıyabilmektedir. Türk tüketiciler üzerinde mal (Erçin-Yurcu & Eryiğit, 2019) ve hizmet (Sánchez et al., 2018) düzeyinde yapılan çalışmalarda, tüketicilerin askeri, tarihi ve sosyokültürel sebeplerle oluşan düşmanlık duygularının hedef ülkeye yönelik tutum ve davranışlarını olumsuz yönde etkilediği belirtilmiştir. Ayrıca, tüketicilerdeki bu olumsuz duyguların menşei ürün etkisi ile hedef ülkeye ait ürünleri satın alma niyetlerini de olumsuz yönde etkilediği tespit edilmiştir (Erçin-Yurcu & Eryiğit, 2019).

Literatürde tüketicilerin boykot motivasyonlarında etkili olduğu öne sürülen birtakım değişkenler bulunmaktadır. Bunlardan ilki, tüketici düşmanlığı (consumer animosity) kavramıdır. Günümüzde tüketiciler, yaşanan politik olayları satın alma davranışıyla daha fazla ilişkilendirmekte ve belirli bir ülkeye veya ülkelere yönelik düşmanca bir tutum sergileyebilmektedirler (Mrad et al., 2014). Kavram olarak tüketici düşmanlığı, "Sevilmeyen bir ulus veya topluluğun ürünlerini satın almaya yönelik güçlü olumsuz duygular" olarak tanımlanabilmektedir (Rose et al., 2009: 330). Bu kapsamda, dış ülke pazarlarında pazar payını artırmak isteyen çok uluslu işletmelerin, pazarlama faaliyetlerini yürütecekleri ülkenin tarihine ve geçmişte yaşanan olaylara yönelik hassasiyetlerine dikkat etmesi beklenmektedir (Smith & Li, 2010). Öte yandan, yabancı veya ithal ürünlerin boykot edilmesinde menşei ülke etkisi, belirleyici bir faktör haline gelerek bilişsel, duygusal ve normatif mekanizmalar aracılığıyla tüketici satın alma tercihlerini etkileyebilmektedir (Altintas et al., 2013). Bu kapsamda, çalışmada ele alınan diğer bir kavram ise menşei ülke etkisi (country of origin) olup, "bir ürünün nerede üretildiğine ilişkin bilgiler" olarak ifade edilebilmektedir (Zhang, 1996: 51). Kimi araştırmacılar ise, tüketicilerin bir ülkeye yönelik düşmanlık veya öfke duymasına rağmen, o ülke menşesine ait ürünlere yönelik kalite algısı veya ürün değerlendirmelerinden etkilenmeyerek sadece hedef ülkenin ürününü satın almayı reddedebileceğini öne sürmüştür (Klein, 2002). Yani, tüketiciler, bir ülkenin ürünlerini kalite açısından tarafsız olarak değerlendirebilmekte, ancak hedef ülke ile olan tarihsel geçmiş ve duygusal faktörler bu ürünlere yönelik satın alma tercihinin olumsuz etkileyebilmektedir (Klein et al., 1998).

Bunun yanı sıra, tüketicilerin boykota katılım motivasyonlarında ele alınan bir diğer faktör ise fark yaratma arzusu (make a difference) olup; tüketicilerin boykot aracılığıyla toplumsal değişim yaratabileceğine inanmaları durumunda eylemde bulunma isteklerini ifade etmektedir (Zhai & Luo, 2023). Bu kavram, literatürde algılanan etkinlik kavramı ile benzerlik göstermekte olup; tüketicilerin boykota yönelik yapacakları bireysel katkının, boykotun hedefine ulaşmasında etkili olacağını düşünmeleri durumunda diğer bireylere bağlı kalmadan katılım gösterebilecekleri anlamına gelmektedir (Sen et al., 2001). Bu anlamda, algılanan etkinlik, tüketicilerin eylemlerinin istenilen sonuçlara ulaşabileceğine inandıklarında veya kendilerini etkili hissettiklerinde davranışta bulunmaya daha istekli oldukları anlamına gelmektedir (Leary et al., 2019). Tüketicilerin boykota katılım göstermesinde olumlu motivasyon faktörlerinden biri ise kendini geliştirme (self-enhancement) olup, bireyin öz benliğini koruma ve kendini değerli hissetme çabasında olduğu içsel bir güdüdür (Bosson et al., 2003). Bu güdü, sosyal baskı ve bireyin olumlu bir öz imaj yansıtmaya istekinden kaynaklanarak, bireylerde öz saygıyı artırma ve suçluluk

duygusundan kaçınma amacıyla boykota katılma eğilimi oluşturabilmektedir (Makarem & Jae, 2016).

Literatürde tüketici boykotu genellikle ekonomik ve politik motivasyonlar üzerinden tartışılmaktadır (Garrett, 1987; Wang et al., 2023). Buna karşın, tüketici boykotlarının ortaya çıkmasında etkili olan bireysel düzeydeki psikolojik ve sosyolojik faktörler giderek önem kazanmaktadır. Dolayısıyla, mevcut çalışma ile tüketici düşmanlığı, fark yaratma arzusu ve kendini geliştirme faktörlerinin tüketicilerin boykota katılımları üzerindeki etkileri saptanmaya çalışılacaktır. Bununla birlikte, çalışma kapsamında tüketicilerin yabancı ürün satın alma tercihlerinde ele alınan menşei ülke etkisi faktörü de göz önüne alınarak, tüketici düşmanlığı ile boykota katılım arasındaki ilişkinin düzenleyici etkisi incelenecektir. Menşei ülke etkisi, tüketicilerin yabancı ürünlere yönelik algılarında ve tutumlarında önemli rol oynayan bir faktör olup, boykot davranışlarının oluşmasında belirleyici olabilmektedir (Bayır et al., 2022). Bununla birlikte, tüketicilerin etnosentrik eğilimleri, yerli ürün satın alma tercihleri, boykot eğilimleri ve satın alma davranışlarını açıklama konusunda menşei ülke etkisinin tüketici düşmanlığı ile olan ilişkisi incelenmesine rağmen (Hoang et al., 2022; K.-P. Huang et al., 2020), bu kavramların tüketicilerin bireysel boykot motivasyonları ile olan etkileşiminin incelendiği çalışmalar sınırlıdır. Nitekim, menşei ülke etkisi ürüne ilişkin yalnızca bilişsel bir gösterge olmayıp, tüketicilerde ulusal kimlik, aidiyet, gurur gibi duygusal ve sembolik çağrışımlar uyandırabilmektedir (Verlegh & Steenkamp, 1999). Dolayısıyla, duygusal bağlamda etkisi olduğu öne sürülen menşei ülke etkisinin, tüketicilerin düşmanlık duygularının boykot davranışlarına dönüşmesinde önemli bir belirleyici olması beklenmektedir.

Dolayısıyla mevcut çalışmada menşei ülke etkisinin düzenleyici etkisinin incelenmesiyle literatüre katkı sağlanacaktır. Bununla birlikte işletmelerin karar alma süreçlerinde önemli bir faktör olmasına rağmen, bireysel tüketicilerin boykot motivasyonları üzerine yapılan çalışmalar literatürde sınırlıdır (Altintas et al., 2013). Ayrıca literatürde boykot motivasyonlarının incelendiği çalışmalar genellikle yabancı ülkeler örnekleminde ele alınmış olup Türkiye’de boykota katılıma yönelik motivasyon faktörlerinin incelendiği çalışmaların eksik olduğu tespit edilmiştir. Bu kapsamda mevcut çalışma, tüketici düşmanlığı, fark yaratma arzusu ve kendini geliştirme faktörlerinin boykota katılım üzerindeki etkisini incelemeyi amaçlamaktadır.

Çalışmanın birinci bölümünde tüketici boykotları ve motivasyonel faktörlere dair kavramsal çerçeveden bahsedilmiştir. İkinci olarak araştırmanın yöntemi, veri analizleri ve bulgular yer almaktadır. Çalışmanın devamında ise araştırmanın sonucu ve tartışması yer almakta olup, elde edilen bulgular literatür kapsamında tartışılmıştır. Son bölümde ise araştırmanın sınırlılıkları ve gelecek çalışmalar için önerilere yer verilerek çalışma sonlandırılmıştır.

2. Kavramsal Çerçeve ve Hipotezler

2.1. Boykot Kavramı ve Boykota Yönelik Motivasyonlar

Boykot, yeni bir fenomen değildir (Shaheer et al., 2018). Boykot kavramı ilk olarak John O'Malley tarafından dile getirilmiş ve Amerikan gazeteci John Redpath tarafından yazılı bir şekilde ele alınmıştır. Bu kavramın kökeni, 19. yy'da İngiliz emekli yüzbaşı ve aynı zamanda toprak sahiplerinin vekili olan "Charles Cunningham Boycott" adlı kişi aracılığıyla, toprak sahipleri sınıfının İrlandalı işçilere karşı yaptığı insanlık dışı muamele ve emek sömürüsü sonucu gelişen iş bırakma eylemlerine dayanmaktadır (Friedman, 1999). Uzun bir tarihi geçmişe sahip olan boykot, modern zamanlarda güçsüz grupları dezavantajlı durumdan kurtarabilmek adına yapılan eylemler -örneğin; 1955 yılındaki Montgomery otobüs boykotu ve Hindistan'da Gandhi'nin bağımsızlık mücadelesi adına yapmış olduğu İngiliz tuzu ve kumaşına yönelik boykotları- ile başlamış ve tarihte pek çok örnekle desteklenmiştir (Yu et al., 2020). Boykot kavramı, sosyoloji (Friedman, 1985), psikoloji ve pazarlama (Garrett, 1987; Woodside et al., 2023) alanlarında da dikkat çeken bir konu haline gelmiştir.

Tüketiciler, belirli bir işletme, organizasyon ya da ülke tarafından gerçekleştirilen eylemlerden rahatsızlık duyduklarında tepkilerini davranışsal biçimde gösterebilmektedirler. Bu tepkilerin en etkili türlerinden biri de boykotlardır. Kavram olarak Friedman (1985: 97) tüketici boykotunu "Bir veya daha fazla tarafın, bireysel tüketicileri pazarda belirlenen satın almalarından kaçınmaya teşvik ederek belirli hedeflere ulaşma girişimi" olarak tanımlamıştır. Bu bağlamda boykotlar, tüketicilerin olumsuz tutumlarını davranışa dönüştürerek hedef gösterilen işletmeyi değişime zorlamaya veya cezalandırmaya yönelik tepkisel araç niteliğindedir. Boykotlar, birçok tüketim karşıtı eylem gibi kısa süreli tepkilerdir ve boykot hedefinin talepleri karşılandığı zaman sona ermektedir (Sandıkci & Ekici, 2009).

Öte yandan, boykotlar, finansal ve finansal olmayan ölçütler de dahil olmak üzere işletmenin kurumsal itibarını zedeleyerek marka değerini azaltabilmektedir (Shin & Yoon, 2018). Bunun yanı sıra, internet ve sosyal medyanın giderek yaygınlık göstermesi (Dalakas et al., 2023; Yu et al., 2020), ağızdan ağıza iletişim (WOM) (Bayır & Osmanoğlu, 2022), toplumsal normlar ve çevre baskısı (Sandıkci & Ekici, 2009), adalet ve etik değerlere yönelik toplumsal eylemlerin artması (Shaheer et al., 2018) gibi faktörler de boykotların kolay bir şekilde organize edilmesine ve geniş kitlelere duyurulmasına fırsat sağlamaktadır.

Boykotlar, genellikle bireylerin bir ürünü tüketmeme yönündeki bireysel kararlarından farklı bir şekilde ortaya çıkmaktadır. Nitekim, bireylerin o ürünü tüketmeyi reddetmesi kolektif şekilde gerçekleştirilirken, tam tersi durumda resmi yaptırımların uygulanmadığı, yani bireyin zorunlu tutulmadığı bir şekilde gerçekleşmektedir (Friedman, 1985; Shin & Yoon, 2018). Bu anlamda, bireyin boykot kararı vermesinde yatan dinamik nedenler, çeşitli toplumlarda meydana gelen grev gibi örgütlü ve kolektif olan ancak bireysel katılımı zorunlu kılmayan işçi hareketlerine bir yönden benzetilmektedir (Sen et al., 2001:

28). Aynı zamanda, boykot tüketicilerin pazardaki bir işletmeye karşı güçlerini gösterme de etkili bir yol olmakta ve tüketiciler, hedef firmayı olumlu yönde değiştirmek için haklarını ve güçlerini kullanmaya çalışmaktadırlar.

Tüketicilerin bu şekilde gösterdiği satın almama kararı bir nevi bireylerin oy kullanma davranışlarına benzetilebilmektedir. Nasıl ki tüketiciler seçimlerde oy kullanarak içinde yaşadıkları toplumun siyasi yönetimini etkiliyorsa, satın alma davranışlarıyla da içinde yaşadıkları toplumun tüketim davranışını doğrudan etkileyebilmektedirler (Balıkcıoğlu vd., 2007). Ancak boykotlar, oy verme davranışı ile ilintili gözükmesine rağmen bundan daha karmaşık ve çözilemeyen bir davranış olarak tartışılmaktadır. Nitekim kimi araştırmacılara göre oy verme davranışı belirli dönemlerde meydana gelerek bir vatandaşlık görevi ya da fedakârlık duygusu ile bireyi güdüleyebilmektedir. Öte yandan boykotlar, bundan daha sık ve süreklilik gösteren eylemler olup bireyi tercih ettiği üründen vazgeçmesine zorlamaktadır (John & Klein, 2003). Ayrıca, politik tüketiciler için belirli bir ürün veya markayı satın almaktan kaçınma kararı sadece fiyat, kalite, imaj, trendler gibi faktörlerle sınırlı olmayıp sosyal, politik veya etik kaygılar da satın alma davranışlarında itici bir güç oluşturmaktadır (Kam & Deichert, 2020). Politik tüketim bağlamında ise bireysel ve kolektif eylemler arasında en sık karşılaşılan tüketim davranışlarının boykot (*boycott*) ve pozitif satın alma (*buycott*) olduğu belirtilmektedir (Nonomura, 2017; Sandikci & Ekici, 2009). Pozitif satın alma veya buycotting, sosyal olarak olumlu özelliklere sahip olan ürünlerin tüketilmesini ifade ederken, boykot ise bireysel veya kolektif olarak markalardan kaçınılarak işletmeleri olumsuz davranışlarından ötürü cezalandırılmasını ifade etmektedir (Basci, 2014). Her iki pro-sosyal nitelikteki bu davranışlar ile tüketiciler, kişisel çıkarlarını korumanın yanı sıra toplumsal çıkarları da gözeterek hareket etmektedirler (Fernandes, 2020).

Dolayısıyla tüketiciler öfkelerini ifade etmek, özsayıgılarını korumak, kimliklerini ve aidiyet duygularını güçlendirmek gibi pek çok sebepten dolayı boykot eğilimi gösterebilmektedirler. Tüketiciler sahip oldukları bu motivasyonlarla şikayet ettikleri işletmeleri doğrudan hedef alabilmekte veya üçüncü taraflara (tüketici örgütleri, medya, hukuk uzmanları vb.) seslerini duyurarak hedef aldıkları işletmeler üzerinde baskı oluşturmayı amaçlayabilmektedirler (Swimberghe et al., 2011). Kimi düşünceye göre, bireylerin benlik kavramları sadece tükettikleri ya da tüketmedikleri markalar veya ürünler aracılığıyla değil, aynı zamanda kendilerini özdeşleştirdikleri veya özdeşleştirmedikleri işletmeler aracılığıyla da tanımlanabilmekte ve geliştirilebilmektedir (Sandikci & Ekici, 2009). Özdeşleşmeme durumunda ise, tüketiciler tatminsizliğini iletme aracı olarak o işletmeyi, ürünü veya markayı reddetmektedir (Swimberghe et al., 2011). Nitekim, bir marka ile sosyopolitik konuda tutarlı bir bakış açısına sahip olan tüketicilerin, markaya desteklerini göstermek için ürünlerini satın alma olasılıkları daha yüksek iken, tam tersine tutarsız bir sosyopolitik görüşe sahip olmaları durumunda tüketicilerin markayı destekleme ihtimali azalacak ve markayı boykot etme eğilimi daha yüksek olacaktır (Hong & Li, 2021).

2.2. Boykot Türleri

Tüketici boykotları iki şekilde görülebilir. Birincisi, ekonomik veya pazarlama boykotu olup, ürünlerin fiyatını düşürmek gibi pazarlama faaliyetlerini değiştirmeyi amaçlamaktadır. Diğer türü ise sosyal, siyasi veya etik boykotlar olup, bunlar sorumlu istihdam ve üretim uygulamalarından belirli toplumsal olaylara uzanan çeşitli etik ve sosyal talepler doğrultusunda şekillenmektedir (Sen et al., 2001). Friedman (1999: 15-16) ise boykotu; birincil ve ikincil boykotlar olarak kategorize etmiştir. Buna göre, birincil boykotlar, doğrudan boykotçuların pazara erişebildiği bir kuruma veya işletmeye odaklanmayı; ikincil boykotlar ise, boykotçuların genellikle perakendeci işletmeler gibi araçlara odaklanarak üretici işletmeleri cezalandırmak için gösterdikleri tepkileri ifade etmektedir.

Boykotlar ayrıca, doğrudan veya dolaylı olmak üzere iki şekilde ayrılabilir (Friedman, 1999). Doğrudan boykotlarda, tüketiciler sakıncalı eylemlerde bulunduğunu düşündükleri işletmenin ürünlerini satın almaktan kaçınabilmektedir. Dolaylı boykotlarda ise tüketiciler, hedef alınan işletme ile ilişkisi olan aracı firmaları da kapsayan bir tepki göstererek, hedef işletme üzerinde baskı kurmaya çalışmaktadırlar (Ettenson & Klein, 2005; Friedman, 1999). Makro düzeyde ise boykotlar araçsal veya dışavurumcu olarak sınıflandırılmaktadır. Araçsal boykotlar, hedef işletmenin eylemini değiştirmesi yönünde baskı kurmayı amaçlamaktadır. Dışavurumcu boykotlar ise, tüketicilerin hedef işletmenin uygun olmadığı düşünülen eylemlerinden duydukları hayal kırıklığını veya hoşnutsuzluklarını dile getirmek amacıyla gerçekleştirilmektedir (Friedman, 1999). Kimi düşünceye göre, araçsal boykotlar bilinçli bir değerlendirme sürecine dayanırken, dışavurumcu boykotlar daha çok duygusal durumlara dayanmaktadır (Lasarov et al., 2023).

Öte yandan, belirli bir markanın ürününe yönelik talepler, satışlar gibi somut verilerle ölçülebilse de, boykotların başarısına yönelik değerlendirmeler ve ölçümler yapmak kolay olmamaktadır (Chatzidakis & Lee, 2012). Bu anlamda, Friedman (1985: 106-107) boykotların değerlendirilmesinde karşılaşılan zorluklardan birinin belirlenen kriterlerin seçim aşamasında ortaya çıktığını belirtmiş olup, bu kriterleri uygulama ve sonuç kriterleri olarak sınıflandırmıştır. Uygulama kriterlerinden kasıt, boykotun planlandığı gibi sonuçlanıp sonuçlanmadığına odaklanırken, sonuç kriterleri ise boykot kampanyasının daha geniş hedeflere ulaşp ulaşmadığını değerlendirmektir. Bu duruma örnek vermek gerekirse, güçlü bir grubun boykot tehdidi, herhangi bir eylem olmaksızın hedeflerine başarıyla ulaşırken, tam tersine, bir grubun tüketicilerle iş birliği sağlamasına rağmen, boykot edilen firma bu taleplere boyun eğmezse, boykotun hedefine ulaşması zorlaşabilmektedir.

2.3. Boykot Katılımına Etki Eden Faktörler

Başarılı bir boykot, tüketicilerin satın alma alışkanlıklarında uzun vadeli değişimlere yol açarak kalıcı bir yapısal değişime öncülük edebilmektedir (Shin & Yoon, 2018). Burada boykot örgütlerinin amacı, hedef işletmenin rahatsız edici davranışlarını değiştirmeye yönelik baskı kurmaktır. Bununla birlikte, boykot örgütlerinin organize biçimi, hedef

gösterilen kuruluşların gücü ve boykota verecekleri tepkiler de boykotun başarısını ve etkinliğini belirleyebilmektedir (Balıkçıoğlu vd., 2007). Hedef gösterilen işletmenin aldığı tepkiler sonucunda kabul edilemez eylemlerini veya politikalarını değiştirmesi durumunda boykotun amacına ulaşacağı söylenebilmektedir (Shin & Yoon, 2018).

Tüketicilerin olumsuz eylemlerde bulunduğunu gördükleri markaya veya işletmeye tepkisini göstererek bir nevi markayı cezalandırma yoluna gittikleri boykot eylemlerinden olumlu sonuçlar elde edilse de, boykot eylemlerinin amacına ulaşamaması nedeniyle başarısız bir şekilde sonuçlanabilmektedir. Balıkçıoğlu vd.'ye göre (2007: 95-96), tüketici boykotunun başarısız olmasına neden olan birkaç faktör bulunmaktadır. Öncelikle, boykotun hedefi genellikle çok uluslu işletmeler olduğu için, bu tür büyük ölçekli işletmeler baskılardan fazla etkilenmemektedir. Bir diğer neden olarak, boykotu organize eden örgütlerin elindeki boykotu etkili hale getirecek mekanizmaların yetersiz kalmasıdır. Ayrıca, tüketicilerin o işletmenin markasına duydukları sadakat de boykota katılma konusunda çekimser olmalarına yol açabilmektedir. Son olarak ise, hedef işletmenin elindeki kaynakların, boykotu düzenleyen organizasyonlardan daha güçlü olması, boykotun bastırılmasını kolaylaştırabilmektedir.

Bunun yanı sıra, tüketiciler tek başına hedef firmanın yaptığı uygun olmayan davranışlarını veya işletme politikalarını değiştirebilecek güce sahip olmayabilmektedirler. Bu sebeple, tüketiciler kolektif bir şekilde harekete geçerek hedef işletmenin ürünlerini satın almama davranışı göstererek hedef işletmenin mali açıdan kayıplar yaşamasına yol açmaktadır. Dolayısıyla, tüketiciler satın alma kararlarını, hedef işletmelerin politikalarını iyileştirme veya değiştirme çağrısında bulunmak için bir araç olarak kullanabilmektedirler (Shin & Yoon, 2018). Ayrıca, tüketiciler, boykotun etkili bir sonuç vereceğini düşündükleri zaman, bireysel olarak yapacakları katkının yüksek olacağına inanmakta ve boykota katılma olasılıkları artmaktadır. Kimi düşünceye göre ise, hükümetlerin uyguladığı ticari engeller ve tüketici boykotları, yabancı ürünlerin ve popüler kültürün ülkede yayılması durumunda uzun vadeli ve kapsamlı bir etki yaratma konusunda yetersiz kalacaktır (Sandıkci & Ekici, 2009). Lasarov vd.'ye göre (2023), tüketicilerin mevcut kullandıkları üründen vazgeçip alternatif marka arayışına yönelmenin getirdiği maliyetler nedeniyle boykot istekleri zamanla azalabilir. Nitekim, tüketiciler, işletmelerin yaptığı etik dışı davranışlara karşılık, boykotun getireceği maliyet ve faydayı da göz önüne almaktadırlar (Tuan et al., 2023). Tüketiciler, boykot edilen ürüne yönelik tercih durumu ve pazardaki ikame ürünlerin varlığına göre maliyete katlanmakta ve bu nedenle, önemli derecede ürünlerden vazgeçmekte zorlanan tüketicilerin boykota katılım düzeyleri azalabilir. Bunun aksine, pazardaki ikame ürünlerin tüketiciyi tatmin etmesi durumunda, tüketiciler, katlandıkları maliyeti, yeni ürünün sağladığı fayda ile minimize edebilmektedirler (Sen et al., 2001). Yani, tüketicilerin boykot edilen ürün yerine benzer algılanan değere sahip ikame ürünlere sahip olması durumunda, boykota katılım isteklerinin güçlenmesi beklenmektedir. Böylelikle, tüketiciler küresel ticaretin olumsuz etkilerini temsil ettiğini düşündükleri markaları kalıcı biçimde reddetme eğilimi göstererek boykot davranışına yönelebilmektedirler (Sandıkci & Ekici).

Tüketiciler, işletmelerin olumsuz eylemleri karşısında sadece o eylemi durdurmasını beklemeyip, yapmış oldukları ciddi ve kabul edilemez eylemlerle kendilerinde güçlü bir duygu açığa çıkararak boykot çağrılarına sebep olmaktadır (Dalakas et al., 2023). Örneğin, dünya çapında Adidas (Poulter, 2012), Nestlé (Veraldi, 1988), Danone (Öztürk & Nart, 2021) gibi markaların karşılaştığı çeşitli kriz ve skandallar, sektörde büyük boykot kampanyalarına yol açarak firmaların finansal ve itibar açısından ciddi kayıplar yaşamasına neden olmuştur. Öte yandan, Türkiye’de de zaman içinde siyasi, ekonomik, savaş ve sağlık temelli çeşitli boykotlar gündeme gelmiştir. Bu kapsamda, bir dönem Fransa’ya yönelik olarak moda, lüks tüketim, enerji, gıda ve tarım gibi ürün gruplarını içeren boykot kampanyaları düzenlenerek sivil toplum örgütleri tarafından oldukça destek görmüştür (Balıkcıoğlu vd., 2007). Bir diğer örnek olarak, Doğadan markası reklam kampanyasında kullandığı sloganında cinsiyetçi ifadeler nedeniyle tüketicilerden sert tepkiler alarak boykota yol açmış ve işletme, artan tepkiler sonucunda sosyal medyada kamuoyundan özür dileyerek reklam kampanyasını geri çekmek zorunda kalmıştır (Demirbag-Kaplan, 2018). Dolayısıyla, tüketicilerin yapmış oldukları boykotun başarılı olacağına inanmaları durumunda, hedef firmanın rencide edici davranışlarını değiştirme olasılığı ve ürünlerini satın almaya yönelik isteksizlikleri, boykot kararlarında belirleyici olabilmektedir (Shin & Yoon, 2018). İşletmeler açısından ise, bu durum satışlarda azalma, imaj zedelenmesi veya hedef odaklı politikaların değişimiyle sonuçlanabilmektedir (Yu et al., 2020). Nitekim, Woodside vd. (2023), marka nefretine sahip tüketicilerin boykota katılım eğilimi gösterebildiklerini ve ayrıca sosyal sorumluluk yönü zayıf ve benimseme düzeyleri düşük markalara karşı da olumsuz duygular besleyebildiklerini belirtmişlerdir.

Boykotların ortaya çıkmasında marka ve işletmelerin uygun olmayan davranışlarına tepki göstermenin yanı sıra çeşitli dışsal faktörler de etkili olabilmektedir. Kimi boykotlar, tüketicilerin satın aldıkları bir ürünün kalitesi veya fiyatına yönelik tepkilerini göstermek amacıyla yapılırken, toplumsal ve politik konular da boykotların nedenleri arasına girmektedir. Bu anlamda, insan hakları, savaş ve toplumsal değişim gibi durumlar da boykota dahil olabilmektedir (Balıkcıoğlu vd., 2007). Bunun dışında tüketiciler, milliyetçi duygularının finansal kazançlar için manipüle edildiğini hissettikleri markaları da protesto edebilmektedirler (Sandıkci & Ekici, 2009). Literatürde boykota dair yapılan çalışmalar: sağlık (Arslan et al., 2018; Bayır et al., 2022), turizm (Shaheer et al., 2018; Shepherd, 2021; Yousaf et al., 2021; Yu et al., 2020), spor (Dart, 2021), ticari işbirliği anlaşmazlıkları (Ko, 2023; Song, 2020), dinsel (Ahmad, 2022; Salma & Aji, 2022), çevresel kaygılar ve sürdürülebilirlik (Hosseini et al., 2023; Özer et al., 2022), sağlık (Bayır et al., 2022) ve gıda güvenliği (Chiu, 2016) gibi pek çok konu ele alınmaktadır. Hizmet sektörüne yönelik boykotlarda da, hizmet sağlayıcıların müşterilere içten yaklaşımda bulunması ve algılanan hizmet kalitesini yükseltmeleri durumunda boykot katılımının zamanla azalacağına dair görüşler bulunmaktadır (Lasarov et al., 2023).

2.4. Tüketici Düşmanlığı (*Consumer Animosity*)

Tüketici düşmanlığı, uluslararası pazarlama ve tüketici davranışları literatüründe sıkça tartışılan bir konudur (Akhtar et al., 2023). Kavram olarak, “geçmiş veya devam

etmekte olan askeri, politik ve ekonomik olaylarla ilgili nefretin yansımaları” şeklinde tanımlanan tüketici düşmanlığı (Klein et al., 1998), ihracatçı ülkenin daha önce tüketiciler tarafından affedilmesi güç bulunan eylemleri sebebiyle tüketicilerin o ülke ürünlerini satın almaktan kaçınmasına yol açabilmektedir (Huang et al., 2010). Tüketiciler, bir ülkenin yürüttüğü politikaya dair tatminsizliklerini açıkça ifade etmek amacıyla ve kendi ülkelerine ya da işletmelerine nasıl davranıldığına dayanarak, o ülkeye karşı düşmanlık besleyebilmektedirler (Barutçu et al., 2016). Tüketicilerin işletmenin ev sahibi ülkesine yönelik duyduğu bu öfke duygusu, o işletmenin satışlarını ciddi şekilde tehlikeye atabilmektedir (Riefler & Diamantopoulos, 2007).

Tüketici düşmanlığının meydana gelmesinde sosyokültürel, politik, ekonomik ve etnik kültürler arası düşmanlık, savaş gibi faktörler etkili olabilmektedir (Atılğan-Özcan & Köken, 2022). Riefler & Diamantopoulos’a göre (2007) ekonomi ve savaş gibi durumlar düşmanlığı ciddi şekilde etkilerken, ideolojik farklılıklar ve din gibi algılar da önem arz etmektedir. Dolayısıyla, tüketicilerin düşmanlık duygusu, bireysel hislerin yanı sıra toplumsal düzeydeki öfke ve nefret gibi hislerden de kaynaklanabilmektedir (Erçin-Yurcu & Eryiğit, 2019). Tüketicilerde meydana gelen bu olumsuz duygular ise, o ülkeye ait marka veya ürüne yönelik olumsuz tutum, satın alma isteksizliği (Akhtar et al., 2023), markayı boykot etme (Hoffmann et al., 2011) ve yerel ürün satın alma isteği gibi sonuçlar doğurabilmektedir (Mandler et al., 2023).

Literatürde tüketici düşmanlığı farklı boyutlarda ele alınarak sınıflandırılmıştır. Nijssen & Douglas, (2004) tüketici düşmanlığını savaş düşmanlığı ve ekonomik düşmanlık olarak iki şekilde ele almıştır. Savaş düşmanlığı, bir ülkenin veya ulus-devletin saldırganlığı veya savaş niteliğindeki davranışlar sonucu ortaya çıkmaktadır. Ekonomik düşmanlık ise, bir ülkenin ekonomik hakimiyet veya saldırganlık duygularından kaynaklanmaktadır. Özellikle küçük ülkelerin veya ekonomilerin, nüfus oranı daha yüksek olan ekonomilerin gücünün hakimiyeti konusunda endişe duymaları sonucu ortaya çıkmaktadır (Nijssen & Douglas, 2004). Ekonomik düşmanlık, ev sahibi ülkenin yaptığı ticaret uygulamalarının adil olmaması, güvensiz olması veya yabancı ülkenin ekonomik gücünü kullanması gibi durumlardan dolayı meydana gelirken, savaş temelli düşmanlık ise daha çok ülke özelinde ortaya çıkmaktadır (Riefler & Diamantopoulos, 2007). Klein vd. (1998), ekonomik düşmanlığın, o ülkenin baskın ve ekonomik yaptırımları sonucu ortaya çıktığını savunmuştur. Tüketici düşmanlığı genel olarak etnosentrizm kavramı ile ilişkilendirilse de, birbirlerinden ayrıran yönleri bulunmaktadır. Etnosentrizm yönelimli tüketiciler herhangi bir yabancı ülkenin ürününü satın almaktan kaçınma eğilimi gösterirken, düşmanlık duygularına sahip tüketiciler ise, herhangi bir yabancı ülkenin ürününü satın almayı kabul etmekle birlikte, nefret duygularının hedefi olan belirli bir yabancı ülkenin veya ulusal dış grupların ürünlerini satın almayı reddetmektedirler (Leong et al., 2008; Riefler & Diamantopoulos, 2007).

Kimi tüketiciler tarafından yabancı menşeli ürünler olumlu tutum gösterdikleri bir statü aracı olarak değerlendirilebilmektedir. Öte yandan bazı tüketiciler ise yerli ürünleri tercih ederek yabancı ürünlere yönelik olumsuz tutum sergileyebilmektedir. Tüketicilerin bu

olumsuz tutumları gösterme sebebinde çeşitli politik ya da ekonomik sebepler etkili olabilmektedir (Balıkçioğlu vd., 2007). Örneğin, Türkiye’de yapılan bir çalışmada, kültürel ve tarihsel yakınlığın yanı sıra ticari ve siyasi ilişkilerin yakınlaşması, vize gibi engellerin kalkması gibi durumların Türk tüketicilerin Suriye’ye yönelik ekonomik düşmanlığı ve ürün tercihlerini olumsuz etkilediği tespit edilmiştir (Çeviker vd., 2011). Bunun yanı sıra, Jung vd. (2002), düşmanlığı durumsal ve kalıcı düşmanlık şeklinde sınıflandırmıştır. Araştırmacılar bu duygunun belirli bir olay sonucu anlık olarak tetiklenebileceği gibi zaman içinde gelişen ve uzun süreli kalıcı hale gelebileceğini belirtmişlerdir. Bu bağlamda, durumsal düşmanlık, belirli bir olaya özgü olumsuz olaylar veya kısırtmalar sonucu oluşmaktadır. Kalıcı düşmanlık ise, uzun süredir devam eden ve zaman içinde köklü hale gelen bir düşmanlık türüdür. Ancak, bazı düşüncelere göre, kalıcı düşmanlık bir kişilik özelliği veya içsel bir durum olmaktan çok, genellikle dışsal bir olayla başlayıp zamanla bu duyguyu körükleyerek kalıcı hale gelen bir durumdur (Jung et al., 2002). Örneğin, iki ülke arasında yaşanan savaşın etkileri, ilk başta durumsal düşmanlığı tetikliyor gibi görünse de, savaşın neden olduğu duygusal tahribatların nesiller boyunca hatırlanacak olması nedeniyle, bu duygu zamanla derinleşerek kalıcı hale gelebilmektedir (Leong et al., 2008). Yine, Türkiye’de yapılan bir çalışmada, bireylerin sosyokültürel ve savaş gibi faktörlerle ilişkilendirdiği ülkelere karşı kalıcı veya durumsal düşmanlık hissedebileceği ortaya çıkmıştır (Erçin-Yurcu & Eryiğit, 2019).

Literatürde tüketici düşmanlığının boykota katılım üzerindeki etkilerini inceleyen çalışmalar bulunmaktadır (Albayati et al., 2012; Huang et al., 2010; Palacios-Florencio et al., 2021; Salma & Aji, 2022; Smith & Li, 2010; Yu et al., 2020). Bu anlamda, tüketici düşmanlığı ile tüketicilerin boykot eğilimleri arasında olumlu bir ilişki söz konusu olabilmektedir (Xie et al., 2023). Örneğin, Rusya-Ukrayna savaşının pek çok ülke tarafından tepkiyle karşılanması, Rus menşeli işletmelere yönelik yaptırımların yanı sıra Rus vatandaşlarına yönelik ötekileştirme ve düşmanlık duygularını da tetiklemiştir. Bu tür duygusal tepkiler, yabancı tüketicilerde Rus markalarına yönelik boykot eğilimlerini artırmıştır (Akhtar et al., 2023). Bir diğer örnek olarak, Japonya’nın 2019 yılında Güney Kore’ye yönelik ekonomik yaptırımları, iki ülke arasında boykota neden olup, Güney Koreli tüketicilerin Japon hükümetine karşı düşmanlık hissetmesine yol açmıştır. Çalışmada, tüketicilerin Japonya’ya karşı duyduğu ekonomik düşmanlığın, boykota yönelik tutum ve katılım niyeti aracılığıyla tüketicilerin satın alma miktarına olumsuz etki yaptığı belirtilmiştir. Salma & Aji (2022), Endonezyalı tüketicilerin Fransız ürünlerine ilişkin boykot motivasyonlarını inceleyerek, tüketicilerin Fransız ürünlerine yönelik düşmanlığı ile boykota katılma niyetleri arasında olumlu bir ilişki olduğunu tespit etmişlerdir. Ettenson & Klein (2005), yaptıkları çalışmada, Avustralyalı tüketicilerin Fransa’da nükleer deneme girişimlerinden dolayı duyduğu düşmanlık hislerinin, ürün kalitesine ilişkin yargılardan bağımsız olarak satın alma isteğinde olumsuz bir etkisinin olduğunu ortaya koymuştur. Sánchez vd. (2018) ise, düşmanlık duygusunun yalnızca hedef ülkeden gelen ürünlerin tüketimi açısından değil, o ülkeye yönelik turistik ziyaretler bağlamında da etkili olacağını vurgulamıştır. Benzer şekilde, turizm boykotlarının destinasyon ülkenin ekonomisine ve ziyaret etme niyetine ciddi sonuçlar doğuracağını savunan Yu vd. (2020), bu etkinin tüketici

düşmanlığı türlerine göre farklılık gösterdiğini belirtmiştir. Buna göre, politik ve politik olmayan düşmanlığın boykotların tepki süresi, turistlerin ziyaret etme niyetleri, ziyaretçi sayısında azalma ve kalıcı etkileri üzerinde anlamlı farklılıklar oluşturduğu bulunmuştur. Ayrıca, politik olmayan düşmanlıkla ilişkili boykotlarda ziyaretçi sayısında düşüş görülürken, politik düşmanlıkla ilişkili boykotlarda uzun dönemli turist ziyaretlerinde daha kalıcı zararlar ortaya çıkmaktadır (Yu et al., 2020). Tüketici düşmanlığının ürünlerin satış başarısı üzerinde olumsuz etkisi olduğu düşünülmektedir (Atılğan-Özcan & Köken, 2022). Nitekim, belirli bir ülkeye karşı düşmanlık duymakta olan tüketicilerin, yabancı ürünlere yönelik yargılardan etkilenme olasılığı, bu tutuma sahip olmayan tüketicilere göre daha yüksektir (Huang et al., 2010). Bu açıdan bakıldığında, tüketicilerde oluşan kin, nefret, öfke gibi duygular, tüketicilerin ürün tercihlerine yansımakta ve ürünle ilgili kalite yargıları gibi çeşitli unsurları göz ardı etmelerine sebep olmaktadır. Çünkü, hedef ülke ile yaşanan askeri, politik veya ekonomik olaylar, tüketicinin o ülkeyi affetmemesine ve o ürünle ilgili satın alma davranışından kaçınmasına neden olmaktadır (Erçin-Yurcu & Eryiğit, 2019). Bu kapsamda, belirli bir ülkeye veya markaya yönelik düşmanlık duygusu besleyen tüketicilerin, boykota katılım olasılıklarının daha yüksek olması beklenmektedir. Bu kuramsal temel doğrultusunda önerilen hipotez aşağıdaki gibidir:

H1: Tüketici düşmanlığı, boykota katılım üzerinde anlamlı etki göstermektedir.

2.5. Kendini Geliştirme (Self-Enhancement)

Tüketicilerin boykota katılım sağlamasında kendini geliştirme faktörü bir motivasyon unsuru olabilmektedir. Kendini geliştirme, sosyal normatif etki unsurlarını bünyesinde bulunduran bir faktördür (Jae & Jeon, 2016). Tüketiciler, diğer bireyleri etkileyerek kendilerini geliştirmeyi arzuladıklarında, çevre veya toplum için olumlu şeyler yapmanın uygun bir yolu olarak boykota katılım niyeti gösterebileceklerdir (Özer et al., 2022). Kendini geliştirme değerine sahip tüketicilerde boykota katılım, tüketicinin boykotu başlatan sosyal grubun bir parçası gibi hissetmesini sağlayarak, özsaygısını artırmaktadır (Dalakas et al., 2023). Ayrıca, tüketicinin kendi değerleriyle çelişen bir markayı tüketmekten dolayı suçluluk hissetmemesine yol açmaktadır (Makarem & Jae, 2016). Lasarov vd.'ye (2023) göre, tüketicilerin boykota katılımı, kendini gerçekleştirme ve tercih edilen ürünü tüketmekten kaçınmanın maliyetine bağlıdır. Shin ve Yoon (2018) tarafından gerçekleştirilen bir çalışmada ise, mesajın güvenilirliği, beklenen genel katılım ve algılanan boykot etkinliği unsurlarından oluşan sosyal faktörlerin tüketici boykot kararlarında motivasyonel bir unsur olduğu tespit edilmiştir. Ayrıca, belirtilen bu faktörlerin tüketici boykotlarının başarılı olma ihtimalini de güçlendirdiği ortaya çıkmıştır.

Tüketicilerin kendini gerçekleştirme dürtüsüyle boykota katılım göstermesinde ahlaki değerlerin etkisinden bahsedebilmek mümkündür. Bu anlamda, etik bilinci yüksek olan tüketiciler, kendilerinden boykotu desteklemeleri veya katılmaları yönünde beklenti oluştuğunda, ahlaki değerlerine olan bağlılıklarından dolayı kolektif eylemlere katılma zorunluluğu hissedebilirler. Bu sebeple, ahlaki değerler konusunda hassas olan tüketiciler, bu eylemin doğruluğuna inanmakta ve eylemde bulunmadıklarında kendilerinde suçluluk

hissetmektedirler (Tuan et al., 2023). Nitekim Klein vd. (2004) yapmış oldukları çalışmada, tüketici boykotuna katılımda, kendini geliştirme güdüsünün yüksek olduğu tüketicilerde, boykota yönelik suçluluk duygularından kaçınma olasılığının düşük ve boykota katılma olasılıklarının daha yüksek olduğu sonucuna varmışlardır. Jae & Jeon (2016) tarafından Koreli ve Kanadalı öğrenciler üzerinde yaptıkları çalışmada, boykota katılım niyeti üzerinde etkili olan en etkili motivasyonel faktörün kendini geliştirme olduğu ortaya çıkmıştır. Benzer şekilde, Özer vd. (2022) çalışmalarında, kendini gerçekleştirme faktörünün bireylerin sahip oldukları iyi özellikleri diğer bireyleri etkileme çabası olduğunu ve boykota katılım üzerinde doğrudan etkisi olduğunu bulgulamışlardır. Bu nedenle, tüketicilerin kendilerinden boykotu desteklemeleri veya katılmaları yönünde oluşan bir toplumsal beklentiyle ahlaki bir sorumluluk duygusuyla davranış göstermeye motive olmaları beklenmektedir. Dolayısıyla, kendini geliştirme değeri yüksek olan tüketicilerin boykota katılım olasılıklarının daha yüksek olması öngörülmektedir. Bu kuramsal temel doğrultusunda önerilen hipotez aşağıdaki gibidir:

H2: Kendini geliştirme, tüketicilerin boykota katılımı üzerinde anlamlı etki göstermektedir.

2.6. Fark Yaratma Arzusu (Make a Difference)

Sankar vd.'ye (2001) göre, tüketiciler kolektif eylemlerin katkı sağlayacağına inandıklarında, boykot için işbirliği yapma eğiliminde olacaklardır. Bu anlamda, tüketicilerin etkili olacağına dair algıları, genel katılım düzeyine bağlı olup, boykotun başarılı olması ve katılım olasılığına da etki etmektedir. Aynı yazarlara göre, tüketicilerin her bireyin kendi sağlayacağı katkının az da olsa bir fark yaratacağını düşünmesi durumunda, genel katılım durumunu gözlemleyip, kendi katılım istekliliklerini buna göre belirleyeceklerdir. Bu anlamda, boykot katılımcılarının sayısı ne kadar artarsa, sosyal etki yaratmak daha güçlü olacaktır (Albayati et al., 2012). Klein vd. (2004) benzer bir düşünceyle, bu faktörü "fark yaratmak" olarak ele almış olup, tüketicilerin toplumsal bir değişim yaratma motivasyonu ile hareket edebileceklerini öne sürmüşlerdir. Tüketicilerin boykota katılımı yoluyla gösterdikleri fark yaratma arzusu (Sen et al., 2001) tarafından "algılanan etkinlik" olarak ifade edilerek, boykota katılım kararında belirleyici bir unsur olarak tanımlanmıştır. Böylelikle, tüketiciler, boykotun başarılı sonuçlanacağına inandıklarında, boykota katılımlarının olumlu katkılar getireceğini ve hedef işletmenin uygun olmayan davranışlarını değiştirebileceklerine dair güven duyabilmektedirler (Shin & Yoon, 2018). Literatürde yapılan çalışmalar (Ettenson & Klein, 2005; Salma & Aji, 2022; Keser & Söğütü, 2023), tüketicilerin boykota katılımında fark yaratma arzusunun anlamlı etkisi olduğu görüşünü desteklemektedir. Bahsedilen tartışmalar ışığında, fark yaratma arzusunun, tüketicilerin boykota katılım isteği göstermesinde güçlü bir psikolojik motivasyon faktörü olduğu söylenebilmektedir. Nitekim, tüketiciler, bireysel katkılarının kolektif bir çıkarı sağlayacağına inandıklarında, boykota katılım olasılıkları artabilmekte ve bu durum, tüketicinin bireysel olarak yaptığı eylemin, toplumsal değişime yol açabilecek bir güç yarattığına yönelik olumlu bir algı oluşturabilmektedir. Tüm bu tartışmalardan yola çıkarak, önerilen hipotez aşağıdaki gibidir:

H3: Fark yaratma arzusu, tüketicilerin boykota katılımı üzerinde anlamlı etki göstermektedir.

2.7. Menşei Ülke Etkisi (Country of Origin)

Menşei ülke etkisi (country of origin), tüketicilerin bir ürün kategorisine daha az aşına olmaları veya ürüne dair bilgi toplama konusunda daha az istekli davranmaları durumunda, ürün kalitesine ilişkin yargılarından ipucu sağlayan bir faktördür (Klein, 2002). Tüketiciler ürüne veya markaya dair satın alma tercihlerinde menşei ülke etkisini bir ipucu olarak kullanabilmektedirler (Cui et al., 2012). Menşei ülke etkisi, tüketicilerin bir marka veya ürüne yönelik yargılarından bağımsız olarak tutum ve satın alma niyetlerini olumsuz yönde etkileyebilmekte olup (Çeviker vd., 2011), ilgili ülkeye karşı hissedilen düşmanlık duygusu bu olumsuz etkiyi güçlendirebilmektedir (Erçin-Yurcu & Eryiğit, 2019). Bu bağlamda küresel yabancı markalar, menşei ülkeye yönelik gösterilen düşmanlık duygularından dolayı faaliyet gösterdikleri pazarlarda boykot kampanyalarından olumsuz etkilenebilmektedirler (Kim et al., 2022). Bu sebeple, kimi araştırmacılar, tüketici boykotlarının meydana gelmesinde menşei ülke etkisi gibi faktörlerin incelenmesi gerektiğine işaret etmektedirler (Suhud & Allan, 2021).

Menşei ülke etkisi, ürün değerlendirmelerinde bazı stereotipler oluşturarak ön yargılara da yol açabilmektedir. Örneğin, Almanya denildiğinde otomobil, Fransa denilince parfüm akıllara gelmektedir. Bu kalıplaşmış yargılardan bazılarıdır. Bununla ilişkili olarak, Türkiye’de COVID-19 pandemi döneminde yapılan bir çalışmada, aşilar konusunda bilim insanlarının ve sağlık çalışanlarının verdiği tavsiyelerin tüketici güvenini kazanma konusunda önemli bir rol oynadığı ve aşının hangi ülke menşesine ait olduğunun tüketiciler tarafından dikkate alınan bir kriter olduğu tespit edilmiştir (Bayır et al., 2022). Öte yandan, boykot edilen ürünün üretildiği yer ve menşei ülkenin aynı olması da boykot başarısında belirleyici olabilmektedir. Dolayısıyla, boykot edilecek ürünün menşei ile üretim yerleri farklı olduğunda, boykotun başarıya ulaşma ihtimali de azalacaktır (Balıkçıoğlu vd., 2007).

Literatürde, düşmanlık duygusu yüksek olan tüketicilerin ürünün kalitesinden bağımsız olarak o ülkeye ait markalara veya ürünlere yönelik beğeni hissini azaldığı ve olumsuz değerlendirmelerde bulunduklarına ilişkin tartışmalar bulunmaktadır (Klein et al., 1998; Klein, 2002; Leong et al., 2008; Erçin-Yurcu & Eryiğit, 2019). Tüketicilerin duygusal yargıları, belirli bir ülkenin marka ve ürünlerine yönelik beslemiş olduğu düşmanlık duygusunu etkilemektedir (Leong et al., 2008; Hoffmann, 2011). Nitekim, dış pazarlara açılacak olan işletmeler için o ülke pazarında bulunan tüketicilerin potansiyel düşmanlık duygularını ve ürünün menşesine yönelik olumsuz tutumlarını tespit etmeleri, menşei ülke imajı açısından gereklidir (Bahae & Pisani, 2009). Bu nedenle, düşmanlık hissini altında güçlü duygusal güdülerin yattığı ve bu güdülerden birinin menşei ülke etkisi olduğu söylenebilir (Huang et al., 2020; Mandler et al., 2023; Zhai & Luo, 2023). Dolayısıyla, tüketici düşmanlığının menşei ülkeye yönelik algıları daha duyarlı hale getirdiği ve hedef ülke ya da markaya yönelik tutumları şekillendirdiği söylenebilir (Klein et al., 1998; Riefler & Diamantopoulos, 2007).

Ancak, tüketicilerde meydana gelen düşmanlık duygularının genellikle hedef ülke ürünlerine karşı olumsuz bir tutuma ve satın alma isteğine yol açtığı tartışılmasına rağmen, bu tür olumsuz duygular ürün kalitesine ilişkin yargılardan bağımsız olarak meydana gelerek tam tersi yönde değerlendirmelere de yol açabilmektedir (Harmeling et al., 2015). Örneğin, 1937’de Japonlar tarafından gerçekleştirilen Nanjing katliamı, Çinli tüketicilerin Japon ürünlerine karşı satın alma isteğini olumsuz şekilde etkilemiştir. Buna rağmen, tüketiciler her ne kadar Japon ürünlerine karşı olumsuz tutum sergilese de, ürün yargıları açısından hedef ülkenin ürünlerinin kaliteli olduğunu kabul etmişlerdir. Tüketicilerin besledikleri bu duygusal öfke, ürün kalitesi üzerindeki objektif yargılarını etkilemese bile, tüketicilerin hedef ülkenin ürünlerini satın almaktan kaçınmaya devam etmesine neden olmuştur (Riefler & Diamantopoulos, 2007). Benzer bir görüş olarak, Ettenson & Klein (2005), tüketici düşmanlığının ürün kalitesine ilişkin yargılardan bağımsız olarak, hedef ülkeye yönelik düşmanlığa odaklandığını ifade etmişlerdir. Türkiye’de yapılan bir çalışmada ise, sosyal ve çevresel sürdürülebilirliğe aykırı, olumsuz faaliyetler gösteren işletmelere yönelik tutum ve öznel normların, yabancı menşeli işletmelere göre yerel işletmelere daha olumsuz tutumlar sergilemesine ve yabancı işletmelere yönelik boykot eğilimlerinin daha fazla olmasına yol açtığı ortaya çıkmıştır (Taşçıoğlu & Yener, 2017).

Tüketici düşmanlığının, hedef ülkeye yönelik veya o ülkenin temsil ettiği değerlere ilişkin gelişen duygusal tepkilere dayanması (Klein et al., 1998; Rose et al., 2009) ve menşei ülkenin bu duygusal tepkiyi yönlendiren bir unsur olması, bu iki değişken arasındaki etkileşimin incelenmesinde önemli görülmektedir. Nitekim, yüksek seviyede düşmanlık duygusuna sahip tüketiciler, düşük seviyedeki tüketicilere kıyasla yabancı ürünlere ilişkin olumsuz değerlendirmelerden daha fazla etkilenecek satın alma davranışlarında değişiklik gösterebilmektedirler (Huang et al., 2010). Dolayısıyla, düşmanlık duygusu, tüketicinin o marka veya ürüne yönelik satın alma isteğini azaltabilen bir etki göstermektedir (Leong et al., 2008). Literatürde bahsedilen tartışmalar, ürünün veya markanın ait olduğu ülkeye yönelik algıların, tüketicilerin düşmanlık duygularını güçlendirerek boykota katılım isteklerinde belirleyici olabildiğini vurgulamaktadır. Bu nedenle, menşei ülke etkisinin, tüketici düşmanlığının boykota katılım üzerindeki etkisinde düzenleyici rolünün incelenmesi önemli görülmektedir. Mevcut çalışma kapsamında, tüketici düşmanlığı düzeyi yüksek olan tüketicilerin, hedef ülke menşesine sahip ürün veya markaları, ürün kalitesinden bağımsız olarak olumsuz tutumlar geliştirerek o ülkenin marka veya ürünlerini satın almaktan kaçınması ve boykota katılım isteklerini artırması beklenmektedir. Tüm bu tartışmalardan yola çıkarak, önerilen hipotez aşağıdaki gibidir:

H4: Menşei ülke etkisi, tüketici düşmanlığı ve boykota katılım arasındaki ilişkide düzenleyici etki göstermektedir.

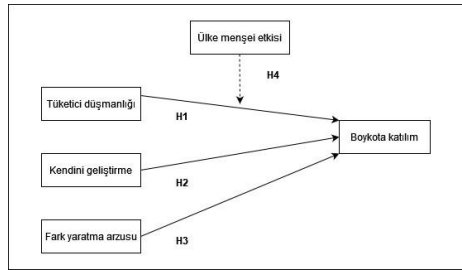
Kavramsal çerçevede ele alınan tüketici düşmanlığı, kendini geliştirme, fark yaratma arzusu ve menşei ülke etkisi değişkenlerine ilişkin literatürdeki tartışmalardan yola çıkarak ilgili hipotezler geliştirilmiştir. Bir sonraki bölümde, literatürdeki çalışmalar kapsamında oluşturulan araştırma modeli ve hipotezler, çalışmanın yöntemi kapsamında sınanarak elde edilen bulgulara yer verilmiştir.

3. Araştırmanın Yöntemi

3.1. Araştırma Modeli

Bu araştırma, tüketici düşmanlığı, fark yaratma arzusu ve kendini geliştirme faktörlerinin boykota katılım üzerindeki etkisini tespit etmeyi amaçlamaktadır. Ayrıca, tüketici düşmanlığı ile boykota katılım arasındaki ilişkide menşei ülke etkisinin düzenleyici rolü de incelenmiştir. Literatürde yer alan önceki çalışmalar kapsamında, mevcut çalışmada önerilen araştırma modeli Şekil 1’de gösterilmiştir.

Şekil: 1
Tüketici Boykot Katılımına İlişkin Araştırma Modeli



3.2. Araştırmanın Yöntemi ve Örneklem

Araştırmanın ana kütlesini 18 yaş ve üzeri bireysel tüketiciler oluşturmaktadır. Ancak zaman ve maliyet kısıtları nedeniyle Ankara ilinde bulunan 18 yaş ve üzeri bireysel tüketicilerden kolayda örnekleme yoluyla veri toplanmıştır. Bununla birlikte, olasılıklı olmayan örnekleme yöntemlerinden biri olan kolayda örnekleme, evren içindeki her bir bireyin araştırmaya dahil edilme olasılığının eşit olmadığı bir örnekleme yöntemidir. Bu durum, örneklemin ana kütleyi temsiliyet kısıtına ve araştırma bulgularının yalnızca çalışmaya katılan bireylerle sınırlı kalmasına neden olmaktadır (Andrade, 2021; Stratton, 2021). Öte yandan, Ankara ili farklı yaş, gelir ve eğitim düzeylerine sahip bireylerin bir arada yaşadığı, büyük ve heterojen yapıya sahip bir büyük şehirdir. Ayrıca, Türkiye’nin başkenti olması nedeniyle diplomatik süreçlerin yürütüldüğü ulusal ve uluslararası alanda önemli bir konumda olan Ankara ili, politik, ekonomik ve sosyokültürel alanlarda stratejik bir öneme ve değere sahiptir (Sezer, 2021). Şehrin sahip olduğu bu özellikler sayesinde, hem ulusal hem de uluslararası düzeyde tartışılan bir konu olan boykotların, farklı sosyodemografik tüketici kitlelerinin motivasyon ve eğilimlerini belirlemede katkı sağlayacağı düşünülmektedir. Araştırmada örneklem sayısının hesaplanmasında $n > 8m + 50$ formülü uygulanmıştır (Tabachnick & Fidell, 2013). Araştırmada veri toplama aracı olarak çevrimiçi anket yöntemi kullanılmıştır. Çalışma için uygulanan anket formunun etik kurallara uygunluğu, Hacettepe Üniversitesi Sosyal ve Beşerî Bilimler Araştırma Etik Kurulu tarafından 23/07/2024 tarihinde onaylanmıştır. Çevrimiçi anket formu Google Forms ile oluşturulmuş ve verilen bir link üzerinden toplam 213 katılımcıya ulaşılmıştır. Anket formuna toplam 205 kişi katılım sağlamıştır. Yapısal Eşitlik Modellemesi’nin uygulanacağı

çalışmalarda genel olarak örneklem sayısının 150'nin üzerinde olması uygun görülmektedir (Anderson & Gerbing, 1988; Bentler, 1990; Kline, 2005). Bu kapsamda, çalışmaya dahil olan katılımcı sayısı, istenilen örneklem koşulunu karşılamaktadır. Ayrıca, çalışmaya katılan 205 katılımcının %56,6'sını (n=116) erkek tüketiciler, %43,4'ünü (n=89) ise kadın tüketiciler oluşturmaktadır. Katılımcıların çoğunluğu 45 yaş ve üzerindedir (%42,9), lisans mezunu (%53,7) ve orta gelir düzeyine sahiptir (%75,1).

3.3. Veri Toplama Süreci ve Ön Analizler

Çalışma kapsamında oluşturulan anket formunun birinci bölümünde menşei ülke etkisi ölçeğinde yer alan 5 ifade, Camacho vd. (2022)'nin çalışmasından uyarlanmıştır. İkinci bölümde yer alan 5 ifadeli tüketici düşmanlığı ölçeği, Papadopoulos vd. (2017)'nin çalışmasından uyarlanmıştır. Üçüncü bölümde 4 ifadeli kendini geliştirme ölçeği ve 3 ifadeden oluşan fark yaratma arzusu ölçeği, Klein vd. (2004)'nin çalışmasından uyarlanmıştır. Buna ek olarak, 3 ifadeli boykota katılım ölçeği ise Salma & Aji'nin (2022) çalışmasından uyarlanarak kullanılmıştır. Anketin son bölümünde katılımcıların demografik özelliklerini belirlemeye yönelik ifadeler yer almaktadır. Anket formunda bulunan tüm maddeler, 5'li Likert tipi ölçek kullanılarak ölçülmüştür. Literatürde, araştırmacılar tarafından geliştirilen ölçekler, çeviri-geri çeviri yöntemiyle uyarlanmıştır. Bu kapsamda, ölçeklerde yer alan tüm ifadeler, öncelikle İngilizce'den Türkçe'ye çevrilmiş olup, tekrar İngilizce'ye çevrilerek yapısal ve anlamsal uyumu test edilmiştir (Geringer et al., 2010). Ölçeklerin dilsel uyumunun sağlanmasında uzman görüşünden faydalanılmıştır. Ardından, ölçeklerin farklı kültürlerdeki dilsel ve içeriksel uyumunun sağlanıp sağlanmadığının kontrolü için 30 kişilik pilot çalışma gerçekleştirilmiştir. Elde edilen sonuçlara göre, ölçek ifadeleri yeniden düzenlenerek anket formu uygulamaya konulmuştur. Araştırma kapsamında elde edilen verilerin analizi için SPSS 25 ve AMOS 23 paket programları kullanılmıştır. Araştırmanın modeli, Doğrulamalı Faktör Analizi ve Yapısal Eşitlik Modellemesi kullanılarak test edilmiştir. Modelde yer alan düzenleyici değişken ise SPSS PROCESS makrosu (Hayes, 2013) ile analiz edilmiştir.

3.3.1. Güvenilirlik Analizi

Çalışmada güvenilirlik analizi kapsamında ölçeklerin iç tutarlılık katsayısını belirlemeyi sağlayan Cronbach's Alfa değerleri hesaplanmıştır. Genel olarak, Cronbach's alfa değerinin 0,70 olması kabul edilebilir iç tutarlılık seviyesi olarak kabul edilir ve ölçeğin yeterli güvenilirliğe sahip olduğu anlamına gelir (Nunnally, 1978). Bu kapsamda, araştırma modelinde yer alan ölçeklere ilişkin yapılan güvenilirlik analizi sonucunda menşei ülke etkisi için Cronbach's alfa değeri 0,87; Tüketici düşmanlığı için 0,87; Kendini geliştirme için 0,91; Fark yaratma arzusu için 0,91 ve Boykota katılım için 0,97 olarak hesaplanmıştır.

3.3.2. Doğrulamalı Faktör Analizi

Çalışmada, ölçeklerin yapı geçerliliğini ve güvenilirliğini test etmek için AMOS 23 programı ile Doğrulamalı Faktör Analizi gerçekleştirilmiştir. Çalışmada birinci düzey

doğrulamalı faktör analizi uygulanmıştır. Analizde menşei ülke etkisi 5 madde, tüketici düşmanlığı 5 madde, kendini geliştirme 4 madde, fark yaratma arzusu 3 madde ve boykota katılım 3 madde ve tek boyuttan oluşan ölçeklerdir. Doğrulamalı Faktör Analizi sonucunda elde edilen bulgular Tablo 1’de gösterilmiştir.

Tablo: 1
Doğrulamalı Faktör Analizi Sonuçları

Örtük Değişkenler	Gözlenen Değişkenler	(b)	Standart Hata	β	p
Tüketici Düşmanlığı	DSM1*	-	-	0,923	-
	DSM2	0,83	0,057	0,791	***
	DSM3	0,49	0,070	0,474	***
	DSM4	0,63	0,058	0,664	***
	DSM5	0,69	0,053	0,740	***
Kendini Geliştirme	GLS1*	-	-	0,903	-
	GLS2	0,95	0,055	0,846	***
	GLS3	0,83	0,065	0,720	***
	GLS4	1,05	0,051	0,912	***
Fark Yaratma Arzusu	FRK1*	-	-	0,807	-
	FRK2	1,24	0,079	0,935	***
	FRK3	1,09	0,059	0,858	***
Boykota Katılım	CTL1*	-	-	0,980	-
	CTL2	1,01	0,024	0,969	***
	CTL3	0,99	0,029	0,942	***

* Regresyon katsayısı 1’e sabitlenmiş referans değişkendir.

*** $p < 0,01$

Doğrulamalı Faktör Analizi sonucunda ölçüm modeline ilişkin veriler incelendiğinde, ölçüm modelinin kabul edilebilir uyum aralığının dışında olduğu görülmüştür ($\chi^2/df= 3,11$, GFI= 0,86, AGFI= 0,80, CFI= 0,94). Uyum iyiliği değerlerinin kabul edilebilir sınırın altında olması durumunda, modelin daha iyi uyum değerlerine ulaşması için düzeltme indeksleri yaygın olarak kullanılan bir yöntemdir (Gürbüz, 2021). Yapısal Eşitlik Modellemesinde karşılaşılan bu tür durumlarda, öncelikli olarak ölçekten maddelerin elimin edilmesi yerine, benzer ifadeleri ölçtüğü tespit edilen maddeler arasındaki hata terimlerine kovaryans ataması işleminin gerçekleştirilmesi gerekir (Hair et al., 2019; Gürbüz, 2021). Yapısal Eşitlik Modellemesinde düzeltme indeksleri, modelin kuramsal yapısını bozmayacak şekilde modelin iyileştirilmesi amacıyla kullanılabilir. Genel olarak, düzeltme indeksleri, ölçüm maddelerine yönelik ifadelerin benzer olması veya maddeler arasında çapraz yükleme bulunduğu ortaya çıkabilir (Eaton & Willoughby, 2018). Bu kapsamda, mevcut çalışmada yer alan tüketici düşmanlığı ölçeğinde, tüketicilere hedef ülkeye yönelik duygularını belirlemeye yönelik sorulan iki ifadenin benzer anlamlar çağrıştırdığı söylenebilir. Ayrıca, çalışmada yer alan fark yaratma arzusu ölçeğinde, tüketicilerin boykot davranışlarıyla hedef firmanın eylemlerini değiştirebileceğine ilişkin motivasyonunu tespit etmeye yönelik sorulan iki ifadenin de benzer anlamlar çağrıştırdığı sonucuna varılabilir. Böylelikle, modelin teorik yapısı gözetilerek, benzer anlamlar çağrıştıran maddeler arasında hata kovaryansları tanımlanmış ve model uyum iyileştirilmiştir. Literatürde, düzeltme indekslerinin genel olarak 4.0 değerinde olması durumunda, model uyum indekslerinin önemli ölçüde iyileştirilebileceği kabul edilmektedir (Hair et al., 2014). Bu kapsamda, ölçüm modeline ilişkin düzeltme indeksleri incelenmiş ve modelin kuramsal yapısını bozmayacak şekilde iyileştirmeler yapılmıştır. Modelde, faktörlerin bağımsızlığı ilkesi esas alınarak, aynı boyutu ölçtüğü varsayılan maddelerin hata terimleri arasında kovaryans oluşturulmuştur

(Byrne, 2010). Yapılan düzenlemede, tüketici düşmanlığı ölçeğinde 2-3 ve 4-5 maddeleri ile fark yaratma arzusu ölçeğinde 13-15 maddeleri arasında yüksek düzeyde korelasyon bulunmuş ve hata kovaryansı eklenmiştir. Kovaryans bağlantısı sonucu, ölçüm modeli yeniden test edilmiştir. Analiz sonucunda, faktörlere ilişkin standart hata, standardize edilmemiş ve standardize edilmiş regresyon değerleri ile anlamlılık değerleri incelenmiştir. Bu bağlamda, standardize edilmiş faktör yüklerinin 0,30 ve üzeri olduğu tespit edilmiştir (Field, 2009). Ölçüm modelinin son halinde, model uyum indekslerinin kabul edilebilir uyum değerleri içinde olduğu görülmüştür. Elde edilen bulgular, Tablo 2’de gösterilmiştir.

Tablo: 2
DFA Uyum İyiliği İndeksleri

Uyum İndeksleri	Uyum İndeksi Değerleri	İyi Uyum	Kabul Edilebilir Uyum
χ^2/df	1,908	$0 \leq \chi^2/df \leq 2$	$2 < \chi^2/df \leq 3$
CFI	0,978	$0.97 \leq CFI \leq 1.00$	$0.95 \leq CFI < 0.97$
GFI	0,913	$0.95 \leq GFI \leq 1.00$	$0.90 \leq GFI < 0.95$
AGFI	0,871	$0.90 \leq AGFI \leq 1.00$	$0.85 \leq AGFI < 0.90$
NFI	0,955	$0.95 \leq NFI \leq 1.00$	$0.90 \leq NFI < 0.95$
RMSEA	0,067	$0 \leq RMSEA \leq 0.05$	$0.05 < RMSEA \leq 0.08$

* Schermelleh-Engel et al., 2003.

Revize edilmiş modelde yer alan nihai değerlerin gösterildiği Tablo 2 incelendiğinde, tüm değişkenlerin kabul edilebilir uyum aralığında yer aldıkları görülmüştür ($\chi^2/df=1,90$; GFI=0,91; AGFI=0,87; CFI=0,97) ve modelin kabul edilebilir ve iyi uyum değerlerine sahip olduğu tespit edilmiştir. Araştırmada güvenilirlik analizinin yanı sıra ölçüm modeline ilişkin yapı güvenilirliği ve yapı geçerliliği de hesaplanmıştır. Yakınsak geçerlilik; faktör yükleri, Ortalama Varyans (AVE) ve Bileşik Güvenilirlik (CR) incelenerek değerlendirilmiştir. Değişkenlere ilişkin güvenilirlik ve geçerlilik sonuçları Tablo 3’te gösterilmiştir.

Tablo: 3
Yapı Güvenilirliği, Ayrışım Geçerliliği ve Birleşme Geçerliliği

	CR	AVE	Kendini Geliştirme	Tüketici Düşmanlığı	Boykota Katılım	Fark Yaratma
Kendini Geliştirme	0,91	0,72	0,849			
Tüketici Düşmanlığı	0,84	0,53	0,836	0,734		
Boykota Katılım	0,97	0,92	0,925	0,813	0,964	
Fark Yaratma	0,90	0,75	0,884	0,803	0,886	0,868

* Koyu olarak gösterilen değerler $\sqrt{AVE}$ değeridir.

Tablo 3 incelendiğinde, AVE değerlerinin 0,53-0,92 aralığında, CR değerlerinin ise 0,84-0,97 arasında değiştiği görülmektedir. Elde edilen bulgular, ölçüm modelinin iç tutarlılığını belirten yakınsak geçerliliği sağladığını ortaya koymaktadır. Her bir yapı için hesaplanan AVE değerlerinin tümünün 0,50’nin üzerinde olması şartını karşıladığı görülmektedir (Hair et al., 2014). Ayrıca, her bir yapı için bileşik güvenilirlik hesaplanmış ve tüm değerlerin 0,70 ve üzerinde olduğu görülerek yapı güvenilirliği sağlanmıştır (Hair et al., 2014). Ayrışım geçerliliğini hesaplamada, Fornell & Larcker (1981) yöntemi kullanılarak, her bir değişkenin AVE değerinin karekökünün diğer değişkenlerin korelasyonlarından büyük olması şartı göz önüne alınmıştır. Ancak, Tablo 3’e göre, kendini geliştirme ve tüketici düşmanlığı değişkenlerinin bu kriteri sağlayamadığı tespit edilmiştir.

Bu nedenle, ayrışım geçerliliğinde Henseler vd. (2015) tarafından önerilen başka bir yöntem olan HTMT (Heterotrait-Monotrait Ratio) oranı hesaplanmıştır.

Tablo: 4
Heterotrait-Monotrait Oranı (HTMT)

	MENS	GLS	FRK	DSM	KTL
MENS					
GLS	0,345				
FRK	0,423	0,768			
DSM	0,417	0,717	0,641		
KTL	0,377	0,869	0,821	0,701	

* MENS (menşei ülke etkisi), GLS (kendini geliştirme), FRK (fark yaratma arzusu), DSM (tüketici düşmanlığı), KTL (boykota katılım).

Tablo 4’te görüldüğü üzere, tüm değişkenlere ilişkin ayrışım geçerliliğini sağlamak amacıyla HTMT oranı hesaplanmıştır. Bu yöntemle göre, tüm değişkenlere ilişkin hesaplanan değerin 0,90’dan küçük olması gerekmektedir (Henseler et al., 2015). Elde edilen sonuçlara göre, tüm değerlerin 0,90’ın altında olduğu görülerek (Gold et al., 2001) ölçüm modelinin ayrışım geçerliliğini sağladığı tespit edilmiştir.

3.3.3. Hipotez Testleri

Ölçüm modeline ilişkin hipotezlerin test edilmesi için AMOS 23 programında Yapısal Eşitlik Modellemesi kapsamında Yol Analizi gerçekleştirilmiştir. Gözlenen değişkenlerle yapılan yol analizinde Maximum Likelihood yöntemi kullanılmıştır. Elde edilen Yapısal Eşitlik Modeline ait sonuçlar Tablo 5’te gösterilmiştir.

Tablo: 5
Yol Analizi Sonuçları

	Standardize Edilmiş Katsayılar (β)	Standart Hata	t-değeri	p değeri	Sonuçlar
H1 Boykota Katılım $\leftarrow$ Tüketici Düşmanlığı	0,072	0,074	1,029	0,304	Ret
H2 Boykota Katılım $\leftarrow$ Kendini Geliştirme	0,606	0,107	6,127	***	Kabul
H3 Boykota Katılım $\leftarrow$ Fark Yaratma Arzusu	0,292	0,121	3,292	***	Kabul

* $p < 0,05$ ($t > 1,96$); *** $p < 0,01$ ($t > 2,576$).

Araştırma modeli kapsamında gerçekleştirilen yol analizi sonuçları incelendiğinde (Tablo 5), tüketici düşmanlığının boykota katılım üzerindeki etkisinin istatistiksel olarak anlamlı olmadığı belirlenmiştir ($\beta=0,07$; $p < 0,05$). Bu durumda H1 hipotezi desteklenmemiştir. Kendini geliştirme değişkeninin boykota katılım üzerinde istatistiksel olarak anlamlı ve olumlu bir etkiye sahip olduğu görülmüştür ($\beta=0,60$; $p < 0,01$). Bu sonuca göre H2 hipotezi desteklenmiştir. Ayrıca, fark yaratma arzusunun boykota katılım üzerinde istatistiksel olarak anlamlı ve olumlu bir etkiye sahip olduğu görülmüştür ($\beta=0,29$; $p < 0,01$). Dolayısıyla H3 hipotezi de desteklenmiştir. Modele ilişkin R2 değerleri incelendiğinde, boykota katılımın %87,8’inin ilgili bağımsız değişkenler tarafından açıklandığı görülmektedir.

3.3.4. Düzenleyicilik Testleri

Tüketici düşmanlığının boykota katılım üzerindeki etkisinde menşei ülke etkisinin düzenleyici rolünü test etmek amacıyla SPSS PROCESS makrosu ile düzenleyici etki analizi gerçekleştirilmiştir. Analizden önce tahmin ve düzenleyici değişkene ilişkin değerler standartlaştırılmıştır. Düzenleyici etkiye ilişkin analiz sonuçları Tablo 6’da gösterilmiştir.

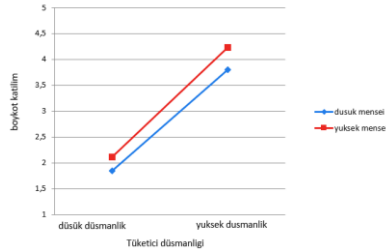
Tablo: 6
Düzenleyici Etki Analizi Sonuçları

Değişkenler	β	Standart Hata	t	p
Tüketici Düşmanlığı	0,660	0,084	12,093	***
Menşei Ülke Etkisi	0,114	0,089	1,965	**
<i>Tüketici Düşmanlığı* Menşei Ülke Etkisi</i>	0,031	0,072	0,568	0,570

** $p < 0,05$ ($t > 1,96$); *** $p < 0,01$ ($t > 2,576$).

Yapılan analiz sonucunda menşei ülke etkisi değişkeninin, boykota katılım üzerindeki düzenleyici etkisinin istatistiksel olarak anlamlı olmadığı saptanmıştır ($\beta=0,031$, $p < 0,05$). Sonuç olarak H4 hipotezi desteklenmemiştir.

Şekil: 2
Düzenleyici Etkiyi Gösteren Eğim Grafiği



Şekil 2’de verilen sonuçlar incelendiğinde, menşei ülke etkisinin düşük olduğu durumda tüketici düşmanlığının boykota katılım üzerindeki etkisi azalmaktadır. Öte yandan, ülke menşeinin yüksek olduğu durumda ise tüketici düşmanlığının boykota katılım üzerindeki etkisi güçlenmektedir. Ancak, menşei ülke etkisi düşük ve yüksek düzeylerde istatistiksel olarak anlamlı sonuç vermemektedir.

4. Sonuç ve Tartışma

Tüketici boykotları günümüzde işletmeler, markalar ve ülkeler düzeyinde etkili kolektif davranışlar haline gelerek pazarlama literatüründe sıklıkla ele alınan bir konu haline gelmiştir. Bununla birlikte, tüketicilerin boykot kararlarını etkileyen faktörlere ilişkin literatürde çeşitli yaklaşımlar ele alınmıştır. Dolayısıyla, mevcut çalışmada tüketici düşmanlığı ve Klein vd. (2004) tarafından ortaya konulan bireysel motivasyon faktörlerinin, tüketicilerin boykota katılımları üzerindeki etkisinin incelenmesi amaçlanmıştır. Ayrıca, çalışma kapsamında menşei ülke etkisinin, tüketici düşmanlığı ile boykota katılım arasındaki

ilişkide düzenleyici rolü incelenmiştir. Elde edilen bulgularla, tüketici boykot davranışlarını etkileyen faktörler konusunda pazarlama literatürüne katkılar sunulacaktır.

Tüketici düşmanlığının boykota katılım ile olumlu ilişkisinin bulunduğu çalışmaların aksine (Hoffmann et al., 2011; Khan et al., 2018; Smith & Li, 2010; Suhud & Allan, 2021) bu çalışmada anlamlı etki göstermemiştir. Bu sonuç, Albayati vd. (2012) ve Cui vd. (2012) ile benzerlik göstermektedir. Tüketici düşmanlığı, hedef gösterilen ülke, marka veya ürünün şiddetli olumsuz duygular ve tutumlar oluşturmalarına rağmen bu çalışmada tüketicilerin boykota katılımında motive edici bir unsur olmadığı tespit edilmiştir. Tüketicilerin düşmanlık duygusuna sahip olmalarına rağmen boykota katılım konusunda motive olamamalarının önünde bazı engellerin olduğu düşünülmektedir. Bu engellerin nedeni olarak, ülkelerin sahip olduğu gelişmişlik düzeyi ve ürün kalitesine yönelik algıların, tüketicilerin ilgili yabancı marka veya ürüne yönelik boykot kararında belirleyici olabileceği yönündedir (Hoang et al., 2022). Bu kapsamda, gelişmiş ülkelerin sahip olduğu teknoloji ile birlikte sunmuş olduğu yüksek kaliteli ürünler, ilgili ülkeye karşı öfke ve nefret duyguları oluştursa da, tüketicilerin düşmanlık duygusunu hafifletebilmektedir (Papadopoulos & Heslop, 1991). Bu durum, tüketicilerin fonksiyonel faydalar söz konusu olduğunda duygusal hassasiyetlerinin yerini rasyonel değerlendirmelere bıraktığı çıkarımına yol açmaktadır. Ayrıca, tüketicilerin markalar ile kurdukları duygusal bağlar, düşmanlık duygusunun önüne geçebilmektedir. Hedef markanın yaptığı hata veya kötü eylemler, kendileri ile güçlü bağlar kurmuş olan tüketicilerde içsel bir çatışma uyandırabilmektedir. Genel olarak, tüketiciler kendi etik değerlerine aykırı düşecek ve zedeleyecek türden bir davranış gördüklerinde bundan kaçınma davranışı sergileyebilmektedir. Ancak, tüketicilerin marka ile güçlü duygusal bağlarının olması durumunda, o markanın olumlu yönlerini savunmaya yönelerek hatalarını göz ardı edebilmektedirler (Haupt et al., 2023). Bu nedenle, mevcut çalışmada, tüketicilerin boykota katılımında, tüketici düşmanlığının anlamlı etki göstermemesinin bir diğer nedeni olarak, tüketicilerin marka bağlılığının, düşmanlık temelli duyguları bastırarak boykot davranışlarını engelleyebileceği düşünülmektedir.

Tüketici düşmanlığının boykota katılım üzerinde olumlu etki göstermemesinin bir diğer nedeni olarak, literatürde tartışılan durumsal düşmanlık kavramı ile açıklanabilmektedir. Bu düzeyde bir düşmanlık duygusu, tüketicilerin belirli bir dönemde, o anki koşullar gereği hissettiği geçici duygulardan kaynaklanabilmektedir (Feng & Yu, 2016). Bu anlamda durumsal düşmanlık düzeyi, her ne kadar belirli bir ülkeye veya markaya karşı güçlü duygusal tepkilere dayanmasa da, kısa süreli, belirli bir olay veya krize bağlı olarak ortaya çıktığı için davranışsal bir eyleme dönüşme olasılığı düşüktür. Bu nedenle, mevcut çalışmada, tüketicilerin belirli bir ülke veya markaya yönelik geçici olumsuz tutumlarının, kısa dönemli ekonomik, siyasi veya medya gündemine bağlı olarak gerçekleştiği düşünülmektedir. Bunun yanı sıra, ülkelerin sahip olduğu kültürel yapının da boykot gibi protesto niteliğindeki davranışların gerçekleşmesinde etkili olabileceği düşünülmektedir. Çalışma örnekleme kapsamında ele alınan Türkiye gibi kolektivist özellikli toplumlarda, bireyler karar alma süreçlerinde kişisel değerler ve duygulardan ziyade, toplumsal kabul ve normlar gibi dışsal faktörlere daha fazla önem gösterebilmektedirler (Triandis, 2018). Kolektivist toplumlarda, bireylerin bireysel kimlik

oluşumu, grup normları ile şekillenmekte ve bireysel çıkarlarını toplumsal çıkarları için feda etme eğiliminde olmaktadır (Gürhan-Canlı & Maheswaran, 2000). Mevcut çalışma kapsamında, tüketicilerin bireysel motivasyon faktörlerinin boykota katılım konusunda yeterli güdüsel etkiyi göstermemesinin altında, kolektivist değerlerin yattığı düşünülmektedir. Böylelikle, tüketicilerin belirli bir ülke veya markaya yönelik olumsuz tepkilerinin davranışa dönüşebilmesinde, toplumsal dayanışma bilinci ve destekleyici sosyal normların varlığının itici bir güç olabileceği düşünülmektedir. Dolayısıyla, bu tür kültüre sahip toplumlarda, grup ilişkileri ve sosyal onay görme isteği, tüketiciler düşmanlık duymalarına rağmen, grup uyumunu koruma yönünde davranış göstermeyi tercih edebilmektedirler.

Bununla ilişkili olarak mevcut çalışmada ayrıca menşei ülke etkisinin tüketici düşmanlığı ve boykota katılım arasındaki ilişkide düzenleyici rolü incelenmiştir. Ancak menşei ülke etkisinin düzenleyici rolü anlamlı etki göstermemiştir. Elde edilen bu sonuç literatürdeki bazı çalışma sonuçları ile çelişmektedir (Bayır et al., 2022). Tüketicilerin belirli bir ülkeye yönelik hissettikleri düşmanca duygular, ürünün düşmanlık hissi duyulan ülke kökenine ait olması durumunda boykota katılımlarında güçlendirici bir etki göstermemektedir. Söz konusu etkinin itici bir güç oluşturmamasında, tüketicilerin bulunduğu ülkelerin gelişmişlik düzeyinin ve öz-imaj algısının belirleyici olabileceği düşünülmektedir. Nitekim, kimi düşünceye göre, tüketicilerin bulundukları ülkenin gelişmişlik düzeyinin etnosentrik eğilim seviyelerinde etkili olabileceği ve yerli ürünleri tercih etme olasılıklarının buna bağlı olarak şekilleneceği yönündedir (Camacho et al., 2022). Buna göre, gelişmekte olan ülke pazarındaki tüketicilerin, etnosentrik davranışlarının azaldığı ve buna bağlı olarak yerli ürün tercih etme olasılıklarının da azalabileceği söylenebilmektedir. Dolayısıyla, farklı ekonomik ve kültürel bağlamlarda bu etkinin farklı sonuçlara yol açabileceği düşünülmektedir. Ayrıca, tüketiciler her ne kadar ilgili ülkeye karşı olumsuz duygular besleseler dahi, gelişmiş ülkelere ait ithal ürünler kalite ve prestij açısından tüketicileri daha fazla cezbedebilmektedir. Bu nedenle, Türk tüketicilerde menşei ülke etkisinin boykota katılımı itici bir faktör olmamasının nedeni olarak, gelişmiş ülke ürünlerinin oluşturduğu yüksek kalite ve prestij algısının daha ön planda olduğu düşünülmektedir. Bir diğer neden olarak ise, tüketicilerin alternatif ürünlerden yoksun kalmaları durumunda menşei ülke etkisinin, tüketicilerin boykot kararlarındaki gücünü azaltabilmesi mümkündür. Bu durumla karşılaşan tüketiciler, kimi nedenlerden dolayı belirli bir ülkenin ürününe karşı olumsuz tutum gösterse de, belirli ürün kategorilerinde (örn; otomotiv, bilgisayar vb.) alternatif veya yerli bir ürün ya da marka bulamadıkları zaman, yabancı menşei markalara yönelik olumlu değerlendirmelerde bulunabilmekte ve satın alma isteği gösterebilmektedirler. Özellikle yabancı ürün ithalat hacmi yüksek olan ülkelerdeki tüketiciler, yabancı marka ve ürünlerle daha sık karşılaşmakta ve bu nedenle büyük iç pazara sahip ülke ekonomilerinde bulunan tüketicilere kıyasla, yabancı menşei ürünlere daha açık olabilmektedirler. Dolayısıyla, yabancı ürünlere karşı düşmanlık besleyen tüketicilerin, alternatif ürünlerden yoksun olmaları, satın alma seçeneklerini ortadan kaldırılabilmektedir (Nijssen & Douglas, 2004).

Çalışmada ele alınan kendini geliştirme değişkeninin ise tüketicilerin boykota katılımı üzerinde anlamlı etkisinin bulunduğu tespit edilmiştir. Bu sonuçlar (Muhamad et al., 2019; Seyfi et al., 2021) ile benzerlik göstermektedir. Elde edilen bu sonuca göre, tüketiciler diğer bireylerin gerçekten boykot ettiğine inandıklarında boykota katılım niyetleri artmaktadır (Klein et al., 2004). Dolayısıyla, kendini geliştirme motivasyonuna sahip olan tüketiciler, boykota katılmadıklarında kendilerini suçlu hissetmekte ve işletmelerin etik dışı uygulamalarına ortak olmanın verdiği rahatsızlık duygusundan kaçınabilmektedirler. Ayrıca, bu motivasyonu gösteren tüketicilerin bireysel imajlarını daha iyi hale getirmek için boykota katılım gösterebildiği de söylenebilmektedir (Nguyen et al., 2018). Sonuç olarak, tüketiciler, boykota katılım gösterdiklerinde içsel olarak kendilerini daha iyi hissederek, yapmış oldukları karşıt eylemlerin bir fark yaratabileceğine inanmaktadırlar.

Çalışmada ele alınan bir diğer motivasyonel faktör olan fark yaratma arzusunun boykota katılım üzerindeki etkisinin anlamlı olduğu görülmüştür. Elde edilen bu sonuç, (Klein et al., 2004; Tuan et al., 2023) ile benzerlik göstermektedir. Bu durum, Sen vd.'nin (2001) tüketicilerin bireysel katkılarının etkili bir sonuç göstereceğine inandıklarında boykota katılım olasılıklarının artacağı görüşünü desteklemektedir. Bu durumda, tüketicilerin yalnızca kişisel veya ahlaki tatminden değil, aynı zamanda kolektif bir değişim yaratabilecekleri algısına sahip olmaları durumunda boykota katılım gösterdikleri söylenebilir. Dolayısıyla bu sonuç, tüketicilerin yalnızca bireysel fayda güdümlü değil, aynı zamanda toplumsal fayda sağlama amacıyla davranış sergilediklerine işaret etmektedir.

5. Çalışmanın Kısıtları ve Gelecek Çalışmalar İçin Öneriler

Bu çalışma, tüketicilerin boykot motivasyonlarını tespit etmek amacıyla tüketici düşmanlığı, fark yaratma arzusu ve kendini geliştirme değişkenlerinin, tüketicilerin boykota katılımı üzerindeki etkisini incelemiştir. Ayrıca çalışmada, menşei ülke etkisinin, tüketici düşmanlığı ve boykota katılım arasındaki ilişki üzerinde düzenleyici rolü analiz edilmiştir. Bununla birlikte, çalışmanın bazı kısıtlamaları bulunmaktadır. Öncelikle, çalışmanın verileri Ankara ilinde yaşayan 18 yaş ve üzeri bireysel tüketicilerden elde edilmiştir. Verilerin toplanmasında kolayda örnekleme yöntemi kullanılmıştır. Bu durum, örneklemin temsiliyetini ve verilerin genellenebilirliğini sınırlamaktadır. Ayrıca, mevcut çalışmada, tüketicilerin boykota katılım motivasyonlarında demografik değişkenler bağlamında yaş, cinsiyet, eğitim seviyesi gibi faktörlerin etkisi incelenmemiştir. Gelecekteki çalışmaların, daha büyük örneklem ve farklı sosyodemografik gruplar üzerinden veri toplanmasının katkı sağlayacağı düşünülmektedir. Ayrıca, bu çalışmada, tüketicilerin boykota katılım göstermesinde yalnızca bireysel motivasyon faktörleri ele alınmıştır (Klein et al., 2004). Gelecekteki araştırmalarda, tüketicilerin boykota katılım motivasyonlarında, bireysel faktörlerin yanı sıra sosyal baskı, etik kaygılar, grup aidiyeti ve sosyal kimlik gibi dışsal motivasyon unsurlarının da dikkate alınmasının daha kapsamlı sonuçlar sağlayacağı öngörülmektedir. Bunun yanı sıra, dijital medya ve teknolojilerin giderek gelişmesi ve yaygınlığının artmasıyla, tüketicilerin boykot kararlarında belirleyici unsurlar olabilmektedir. Sosyal medya içerik üreticilerinin ve uzman kişilerin görüşleri, tüketicilerin satın alma tercihlerini önemli ölçüde etkilemektedir. Ayrıca, bilgiye erişim imkanının

artmasıyla, tüketiciler işletmeleri daha yakından takip edebilmekte ve tepkilerini daha kolay dile getirebilmektedirler. Bu bağlamda, medya etkisi ve dijital aktivizm gibi faktörlerin incelenmesi, gelecek çalışmalar açısından faydalı olacaktır.

Öte yandan, bu çalışmanın literatüre sağladığı birtakım katkılar bulunmaktadır. Literatürde, tüketicilerin boykota katılım davranışlarını inceleyen çalışmalar olmasına rağmen, menşei ülke etkisinin düzenleyici rolünün incelendiği çalışmalar sınırlıdır. Bu çalışmada, menşei ülke etkisine yönelik algılar yalnızca tüketicilerin ürün tercihleri açısından değil, aynı zamanda tüketici düşmanlığının boykota katılım üzerindeki etkisini yönlendiren bir değişken olarak incelenerek özgün bir katkı sunmaktadır. Ayrıca, tüketici davranışlarında önemli bir konu olan boykotlara dair çalışmaların literatürde genellikle Asya (Salma & Aji, 2022; Shin & Yoon, 2018), Amerika ve Avrupa (Hoffmann et al., 2011; Palacios-Florencio et al., 2021) gibi bölgelerdeki örneklemeler üzerinde incelenmesi nedeniyle, mevcut çalışmanın Türkiye örnekleminde ele alınmasının ulusal alanda literatüre katkı sağlayacağı düşünülmektedir. Bununla birlikte, tüketici boykotlarına ilişkin kültürler arası karşılaştırmalara yönelik çalışmaların önemli bir perspektif sunması beklenmektedir.

Mevcut çalışmadan elde edilen bulguların literatüre sağlayacağı katkının yanı sıra pazarlama sektörüne, politika yapıcılar ve markalara sağlayacağı birtakım katkılar da bulunmaktadır. Sosyal ve siyasi duyarlılığın giderek artması sonucu, özellikle marka ve ülke menşei bağının güçlü olduğu markaların olabildiğince saldırıdan kurtulabilmesi adına, küresel marka pazarlamacılarının tüketicilerde meydana gelen bu duyguları iyi anlaması ve stratejilerini buna göre uyarlaması önerilmektedir (Leong et al., 2008). Bununla birlikte, dış pazarlara açılacak olan bir marka veya işletme için, o ülke pazarında bulunan tüketicilerin düşmanlık algılarını dikkate alması önemli görülmektedir (Çeviker vd., 2011). Tüketici düşmanlığının olumsuz sonuçlarının belirli bir ülkeye ait olan marka veya ürünlerle ilişkisi bulunmaktadır. Bu anlamda, tüketici düşmanlığının olumsuz etkilerini azaltmak konusunda, işletmelerin markanın menşei ülkesine daha az dikkat çeken konumlandırma stratejileri uygulaması faydalı olacaktır (Mandler et al., 2023).

Ayrıca hedef gösterilen markanın veya ürünün imajını olumlu etkileyecek tutundurma kampanyalarının yürütülmesi, tüketicilerin markalara yönelik güvenini artırmada etkili olacaktır. Örneğin, ürünün veya markanın ait olduğu ülkenin toplumsal, ekonomik veya siyasi sebeplerle ortaya çıkan olaylarda aldığı aksiyonlar ve destek verdiği faaliyetler, tüketicilerin boykot kararlarında belirleyici olabilmektedir. Tüketicilerin belirli bir işletme veya markaya tarihi, ekonomik, politik veya toplumsal nedenlerden dolayı düşmanlık duyması durumunda işletmelerin etkili bir kriz yönetimi stratejisi geliştirmesi önerilmektedir. Bu anlamda, işletmelerin kurumsal sosyal sorumluluk kampanyalarına ağırlık vermesi, tüketici boykotlarını önlemede etkili olabilecektir. Ayrıca, işletmelerin çeşitli eğitim programları düzenleyerek hizmet sağlayıcılarının, tüketicilerin olası boykot davranışlarını saptaması ve kriz durumlarında işletmelerin proaktif bir yaklaşım gösterebilmesi açısından faydalı olacağı düşünülmektedir.

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OECD Ülkelerinin Makroekonomik Performansının VZA ve Kümeleme Analizine Göre Değerlendirilmesi

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Assessment of Macroeconomic Performance of OECD Countries Using DEA and Cluster Analysis

Abstract

This study aims to evaluate and classify the macroeconomic performance of Organisation for Economic Co-operation and Development (OECD) member countries based on macroeconomic indicators. Data Envelopment Analysis (DEA) was used to determine the relative efficiencies of countries within this framework. Input-oriented CCR and BCC models were applied in DEA. Cluster Analysis (CA) was employed to classify countries. The study seeks to make a unique contribution to the literature by combining DEA and CA to classify macroeconomic indicators. According to assessments of the CCR and BCC models in DEA and the CA method, the USA, Luxembourg, Norway, Ireland, and Switzerland were identified as efficient countries. These countries are classified as developed economies, with indicator values at a satisfactory level. It is suggested that the USA, Luxembourg, Norway, Ireland, and Switzerland can serve as reference countries for other OECD nations seeking to improve their macroeconomic performance.

Keywords : Macroeconomic Performance, Macroeconomic Indicators, Data Envelopment Analysis, Cluster Analysis.

JEL Classification Codes : C10, E0, E6, O5.

Öz

Bu çalışmada Ekonomik İşbirliği ve Kalkınma Örgütü (OECD) üyesi ülkelerinin makroekonomik göstergelere göre makroekonomik performansının değerlendirmesi ve sınıflamalarının yapılması amaçlanmaktadır. Makroekonomik göstergeler çerçevesinde ülkelerin göreceli etkinliklerinde Veri Zarflama Analizi (VZA) uygulanmıştır. VZA’da girdi odaklı CCR ve BCC modelleri kullanılmıştır. Ülke sınıflamalarında Kümeleme Analizi (KA) yöntemine başvurulmuştur. Makroekonomik göstergelerde VZA ve KA yöntemlerinin birlikte sınıflama olarak kullanımıyla literatüre özgün katkı sağlanması amaçlanmıştır. VZA’da CCR ve BCC modelleri ile KA yönteminin birlikte değerlendirilmelerine göre ABD, Lüksemburg, Norveç, İrlanda, İsviçre aynı grupta sınıflanan etkin ülkeler olarak belirlenmiştir. Bu ülkeler gelişmiş ekonomiler grubunda sınıflanmakta olup gösterge değerleri iyi düzeyde tespit edilmiştir. ABD, Lüksemburg, Norveç, İrlanda ve İsviçre diğer OECD ülkeleri tarafından makroekonomik performanslarının artırılması bakımından referans alınabilecek ülkeler olarak görülebileceği yönünde değerlendirme yapılmıştır.

Anahtar Sözcükler : Makroekonomik Performans, Makroekonomik Göstergeler, Veri Zarflama Analizi, Kümeleme Analizi.

1. Giriş

Ülke ekonomisi ekonomik büyümeyi, kalkınmayı ve refahı doğrudan etkilemektedir ve ekonomi alanındaki ilerlemeler ülke vatandaşları üzerine olumlu etki etmektedir. Ülkeler ekonomik açıdan en iyi seviyedeki ülkeler grubunda yer almayı hedeflemektedir. Ülkelerin ekonomi alanındaki faaliyetlerindeki performans incelemeleri yapılarak ülkeler değerlendirilebilmektedir. Ülke ekonomilerinin performans incelemeleri çalışmalara konu olmaktadır. Ülkelerin ekonomi alanındaki performans ölçümlerinin yapılmasıyla ulusal ekonominin genel profili değerlendirilebilmekte, ekonomi alanında ülkeler arası kıyaslamalar yapılabilenmekte, ülkeler gruplanabilmekte ve hangi ülkelerin ekonomi alanında daha iyi seviyede olduğu belirlenebilmektedir. Ekonomi alanında elde edilen başarılar ülkenin ekonomik performansının üst seviyelerde olmasını sağlamaktadır. Ekonomi alanında performans ölçümlerinde makroekonomik göstergeler kullanılmaktadır. Makroekonomik göstergeler, ülkelerin ekonomik gelişimiyle ilgili konuların en önemli belirleyici kaynağıdır. Güçlü ekonomik yapının oluşturulmasıyla ülkenin diğer ülkelerle rekabet etme gücü yüksek seviyede olacaktır. Bu nedenle, ekonomi alanında politika hedefleri belirlenerek makroekonomik göstergeler iyi seviyelere getirilmeye çalışılır.

Ekonomik performans, ülke veya ülkelerin mali, fiziki ve beşeri kaynaklarını ne kadar etkin kullanarak belirlenen hedeflere ulaşabildiğini tespit eden bir kavramdır (Logossah, 1994; Aktaran: Doumbia, 2023: 1). Ekonomik performansın değerlendirilmesinde göstergelerin kullanılmasının temel amacı hükümetlerin ekonomik hedeflerine ve başarılarına hem politikalar hem de performans alanında sayısal ölçüde bilgi sağlamaktır. Göstergeler, bir ülke ekonomisinin geçmiş bir dönemde gösterdiği performansı ve politikaların nasıl bir seyir gösterdiğini tanımlayabilmektedir. Göstergeler, geriye dönük veya izleme açısından kullanılabiliriyorken ileriye dönük kararlar alınmasında da yararlanılacak bilgiler olabilmektedir. Bir ülkenin makroekonomik performansının ölçümü, makroekonomik politika hedeflerinin ne ölçüde gerçekleştirildiğiyle belirlenir (Crockett & Goldstein, 1987: 34-35).

Ülke içindeki yatırımcılar bir ülkenin makroekonomik verilerine dayalı olarak ekonomik yapıyı daha iyi anlayabilmektedirler. Yabancı yatırımcılar ise ülkenin ekonomik yapısı ve ülkenin kaynaklarının etkin kullanılıp kullanmadığı hakkında ve ülkedeki çeşitli yatırım olanaklarının değerlendirilmesi gibi birçok konuda bilgi edinebilmektedirler (Demireli & Özdemir, 2013: 303). Makroekonomik göstergeler birçok finansal ve ekonomik faktörün geleceğini tayin etmekte ve ülkelerin dünya genelindeki makroekonomik konumları hakkında bilgi sağlamaktadır. Bir ülkenin makroekonomik göstergeleri iyi olduğunda ekonomik performansı da iyi olacak demektir, bu da ülkenin birçok ekonomik aktivitesinin örneğin ülkenin kredibilite notundan özel sektör performansına kadar iyi düzeyde olacağının işaretidir (Aglietta, 1997; Aktaran: Doumbia, 2023: 1).

Ülke ekonomilerinin kıyaslamalar yoluyla değerlendirmeye alınmasıyla ülkelerin ekonomi politikalarının başarısı ölçülebilmekte ve ülkelerin ekonomik refahı hakkında fikir

edinilebilmektedir. Makroekonomik göstergeler, ekonominin durumunu ve potansiyelini gösteren, gelecekte alınacak kararlara referans olan ölçütlerdir.

Ülkelerin ekonomik performans çerçevesinde değerlendirilerek sıralanmasında ekonomik göstergelerin tek tek ele alınması faydalı bilgiler sağlamasına karşın ülkelerin sıralamalarının yapılmasında zorluklar yaşanmaktadır. Örneğin dört ekonomik göstergeye göre değerlendirmede çoğu zaman bir ülke diğer ülkeye dört göstergenin tümünde hâkim olmamaktadır. Birden fazla göstergeyi tek bir istatistiğe birleştiren sentetik ölçülere ihtiyaç duyulmaktadır. Veri Zarflama Analizi (VZA) bu tür sentetik göstergeleri elde etmek için uygun bir yöntem olarak görülmektedir (Cherchye, 2001: 407-408).

VZA, ülkelerin ekonomik göstergeler açısından etkinlik kıyaslamalarının yapılmasında başvuru yöntemlerinden biridir. VZA birden fazla sayıda göstergeye göre ülkelerin görece performans sıralamalarının yapılmasına olanak sağlamaktadır. Çalışmada ülkelerin makroekonomik performansını ölçmek için VZA uygulaması yapılmıştır. Ülke sınıflamalarında çok değişkenli istatistiksel analiz tekniklerinden kümeleme analizi (KA) uygulanmıştır. Literatür incelemelerinden ülkelerin makroekonomik performansının ölçümünde gösterge olarak Gayri Safi Yurtiçi Hasıla (GSYİH) yaygın olarak kullanıldığı görülmekle birlikte başka ölçülere de başvurulması gerekliliğine değinilmektedir. Çalışma kapsamında literatür incelemelerinden (örneğin, Charnes et al., 1989; Lovell et al., 1995; Rabar, 2013; Demir & Bakırcı, 2014; Aksaraylı & Pala, 2017 çalışmalarından) kişi başına düşen GSYİH, işgücüne katılım oranı, çalışma süresi, vergi geliri, mal ve hizmet ithalatı ve ihracatı KA ve VZA uygulamasında kullanılacak makroekonomik göstergeler olarak alınmıştır.

Çalışmada OECD üyesi ülkelerin makroekonomik göstergelere göre ekonomik etkinlik (makroekonomik performansının) değerlendirmesi ve sınıflamalarının yapılması amaçlanmaktadır. OECD, dünyadaki ekonominin yaklaşık 3/4'ünü üreten ülkelerin formunu oluşturan, yoksullukla mücadele ve refahın sağlanması konularında hükümetlere destek olmayı temel amaçlardan biri edinmiş olan uluslararası bir kuruluştur (TCDİB, 2025). Makroekonomik göstergeler çerçevesinde ülkelerin görece etkinliklerinde VZA uygulanmıştır ve ülke sınıflamalarında KA yöntemine başvurulmuştur.

Ülkelerin ekonomi alanında iyi ya da kötü seviyede olduğu performans ölçümleriyle ve sınıflamalar yoluyla belirlenebilmektedir. Ülkeler adına ekonomi çerçevesinde önemli kararlar almada ve ekonomi politikaları oluşturmada ülkeler arası kıyaslamalar ön plana çıkmaktadır. Dünya ekonomisinin değerlendirilmesinde ve ülke kıyaslamalarında makroekonomik göstergeler önemli bilimsel ölçütler olarak kullanılmaktadır. Literatür incelemelerinden ülkelerin performans ölçümlerinde VZA ve sınıflamalarında KA yöntemine başvurulduğu görülebilmektedir (örneğin, Aksaraylı & Pala, 2017). Buna karşın, makroekonomik göstergeler üzerine VZA ve KA yönteminin birlikte sınıflamasının yapıldığı bir çalışma literatürde yer almamıştır. Çalışmada VZA ve KA yöntemin birlikte kullanılarak her iki yöntemin bulgularına dayalı değerlendirme yapılmasıyla literatüre katkı sağlanması amaçlanmıştır. En güncel verilerle yöntemlerin sınıflama uyumu araştırılmış ve

gelişmiş ve gelişmekte olan ülkelerin sınıflama ve göreceli etkinlikleri içindeki yeri araştırılmasıyla ülkelerin konumları incelenmiştir.

Çalışmanın ikinci bölümünde ülke gruplarının ekonomik performanslarının incelemeye alındığı literatürdeki çalışmalara yer verilmiştir. Üçüncü bölüm çalışmanın yöntem bölümünü oluşturmuş olup VZA ve KA yöntemlerine yer verilmiştir. VZA analizinde girdi odaklı CCR (Charnes et al., 1978) ve girdi odaklı BCC (Banker et al., 1984) modellerine başvurulmuştur. Uygulamada KA yöntemlerinden K-ortalamlar kullanıldığı için yöntem bölümünde K-ortalamlar yöntemi hakkında bilgi aktarılmıştır. Ayrıca VZA ile KA yöntemlerin sınıflama kıyaslamalarının yapılabilmesi için Kappa Katsayısı kullanımına karar verildiği için yöntem bölümünde Kappa katsayısına da yer verilmiştir. Dördüncü bölümde veri seti hakkında bilgi aktarılmıştır. Beşinci bölümde analizlerden elde edilen bulgular yer almıştır. Tartışma ve sonuç bölümüyle çalışma tamamlanmıştır.

2. Literatür

Ülkelerin makroekonomik performansını araştırmaya yönelik artan bir araştırma ilgisi söz konusudur. VZA'da performans ölçümleri yardımıyla incelemeye alınan karar verme birimlerinden (ülkeler, şehirler vb.) hangilerinin etkin olduğu belirlenebilmektedir. Literatürde VZA'nın, ülkelerin performansındaki etkinlik miktarını tahmin etmede kullanıldığı görülmektedir. Literatür bölümünde ülkelerin makroekonomik etkinliklerinin araştırıldığı çalışmalara yer vermeye çalışılmıştır. İncelenen çalışmaların ortak amacı performans ölçümleriyle araştırmacılara, ekonomi çerçevesinde ülkeler arası ve ülke içi karşılaştırmaları için en uygun araçları seçmelerinde yardımcı olmalarıdır. Tablo 1'de makroekonomik göstergelere dayalı ülkeler arası ve ülke içi performans karşılaştırmalarının yapılması konusunda yürütülen literatürdeki çalışmaların temel bulgularının kısa bir kronolojik incelemesi sunulmaktadır.

Performans ölçümleri makroekonomik göstergelerle OECD ülkeleri üzerine araştırmalara konu olmuştur (Örneğin, Färe et al., 1994; Brockett et al., 1998; Cherchye, 2001; Afonso & Aubyn, 2013; Demir & Bakırcı, 2014; Skare & Rabar, 2017; Maruf, 2021). Makroekonomik göstergelerde performans ölçümü uygulamaları 1980'li yıllara kadar dayanmaktadır. Makroekonomik inceleme amacıyla, VZA ilk olarak Charnes vd. (1989) tarafından Çin şehirlerinin performans değerlendirmesi üzerine kullanılmıştır. OECD ülkeleri üzerine VZA ile ilk makroekonomik inceleme Färe vd. (1994) çalışmasıyla gerçekleştirilmiştir. Büyük ölçüde VZA'nın ekonomi alanındaki planlamaların yapılmasında etkin bir yöntem olarak kullanıldığı belirlenebilmektedir.

Tablo 1'de sunulan literatürdeki çalışmalar incelendiğinde çeşitli göstergelerle göreceli performans ölçümleri yapıldığı belirlenebilmektedir. Bununla birlikte, sıklıkla GSYİH'nın temel değişken olarak kullanıldığı görülmektedir. GSYİH, üzerinde önemle durulan bir gösterge olarak ekonomik büyüklüğün ölçütleri arasında yer almaktadır. Ülkeler arası performans değerlendirmeleri yapıldığı ve OECD ülkeleri üzerinde performans ölçümlerinin yaygın olarak uygulandığı görülebilmektedir.

Tablo: 1
Makroekonomik Performans İncelemeleri Üzere Yürütülen Ampirik Literatüre Genel Bakış

Kaynak	Örneklem-Dönem-Yöntem	Değişkenler	Temel Bulgular
Charnes et al. (1989)	Çin şehirleri 1983-1984 VZA	İşgücü, çalışma fonu, yatırım, brüt endüstriyel çıktı değeri, kâr ve vergiler, perakende satışlar	1983 yılında 9 şehrin ve 1984 yılında 8 şehrin göreceli olarak etkin olduğu ve 6 şehrin her iki yılda da etkin olduğu belirlenmiştir. Gelişmiş sanayi kentlerinin tümünün beklenilen aksine yüksek etkinlik oranına sahip olmadığı ve stratejik öneme sahip bazı önemli şehirlerin etkinlik oranlarında çarpıcı düşüşler yaşandığı tespit edilmiştir.
Färe et al. (1994)	OECD ülkeleri 1979-1988 Malmquist endeksi	Sermaye stoku, istihdam, GSYİH	En yüksek üretkenlik büyümesi Japonya'ya aittir. Amerika Birleşik Devletleri'nin (ABD'nin) üretkenlik büyümesi ortalamadan yüksek bulunmuştur.
Lovell (1995)	10 Asya ülkesi 1970-1988 Makroekonomik performansın skalor ölçüsü	Büyüme, ticaret dengesi, fiyat istikrarı, istihdam	Ülkeler arası genel bir performans sıralaması yapmak mümkün olmamıştır. Tayvan ve Japonya'nın üstün performans gösterirken Filipinler ve Avustralya'nın geride performans gösterdiği belirlenmiştir.
Lovell et al. (1995)	OECD ülkeleri 1970-1990 Global Etkinlik Ölçümü	Kişi başına düşen reel GSYİH, enflasyon oranı, işsizlik oranı, ticaret dengesi, ihracat/ithalat	İsviçre en iyi makroekonomik hizmet sağlamıştır. İkinci sırada ülkeler arasında İsveç, Almanya, Norveç, ABD, Yeni Zelanda, Danimarka ve Japonya yer almıştır. Değişkenlere çevresel olumsuzluk incelemesi de yapılabilmesi için kişi başına düşen karbon emisyonları ve azot emisyonları değişkenleri de eklendiğinde performans sıralamalarının değiştiği ve Avrupa ülkelerinin göreceli performansının düştüğü görülmüştür.
Golany & Thore (1997a)	Gelişmekte olan ve gelişmiş 76 ülke 1970-1985 VZA	Reel iç yatırımın reel GSYİH'ya oranı, reel hükümet tüketim harcamalarının savunma ve eğitim harcamaları düşüldükten sonraki oranı, hükümet eğitim harcamalarının nominal GSYİH'ya oranı, GSYİH'de kişi başına büyüme oranı, hayatta kalma oranı, 1985'te ortaöğretime kayıt oranı, nominal sosyal güvenlik ve refah ödemelerinin nominal GSYİH'ya oranı	Klasik CCR modeli sonucu Sahra altı ülkelerinin iyi bir performans göstermediği, Zambiya'nın en düşük etkinlik puanını elde ettiği ve Tayvan, Malta, Hollanda'nın etkin ülke olduğu belirlenmiştir.
Golany & Thore (1997b)	Gelişmekte olan ve gelişmiş 76 ülke 1970-1985 VZA	Reel iç yatırımın reel GSYİH'ya oranı, reel hükümet tüketim harcamalarının savunma ve eğitim harcamaları düşüldükten sonraki oranı, hükümet eğitim harcamalarının nominal GSYİH'ya oranı	Ölçeğe göre getiri hesaplamaları sonucu Gana, Fas, Tunus, Zaire, Japonya, Kore, Pakistan, Singapur, Tayvan, Belçika, Fransa, Lüksemburg, Malta, Hollanda, İspanya, İsviçre, El Salvador, Guatemala, ABD, Paraguay, Peru ve Uruguay etkin ülkeler olarak belirlenmiştir.
Brockett et al. (1998)	OECD ülkeleri 1979-1988 VZA	GSYİH, sermaye stoku, istihdam	170 doğrusal programlama problemi çalıştırılarak çeşitli VZA modelleriyle üretkenlik ölçümleri kullanılarak etkinlik performansı belirlenmiştir. 1979-1988 dönemi için genel olarak Yunanistan'ın en kötü performansı ve Danimarka'nın en iyi performansı sergilediğini görülmüştür. Japonya ve Finlandiya'nın üretkenlik büyümesinde istikrarlı bir artış gözlenmiştir.
Moesen & Cherhye (1998)	OECD ülkeleri 1987-1991 1992-1996 Leuven Makroekonomik Performans Endeksi	Reel büyüme, enflasyon, işsizlik, cari denge	1987-1991 dönemi için en iyi küresel performanslar sırasıyla Japonya, İsviçre ve Hollanda'ya ve en düşük küresel performans Yeni Zelanda'ya ait bulunmuştur. 1992-1996 dönemi için en iyi küresel performanslar sırasıyla İsviçre, Japonya ve İrlanda'ya ve en düşük küresel performans İspanya'ya ait belirlenmiştir.
Zhu (1998)	Çin şehirleri 1983-1984 VZA Temel bileşenler analizi	Devlete ait işletmelerin sabit varlıklara yatırımı, yabancı fonlar, toplam endüstriyel çıktı değeri, perakende satışların toplam değeri, kıyı limanlarının kapasitesi	Çin'in şehirlerinin performans değerlendirilmesi yapılmıştır. Spearman hem de Kendall'in Tau korelasyon testleri, VZA ve temel bileşenler analizi sıralamaları arasındaki korelasyonun her veri kümesi için çok yüksek görülmüştür. Her iki yöntemle de tutarlı ve birbirini tamamlayıcı sonuçlar elde edilmiştir.
Maudos et al. (1999)	OECD ülkeleri 1975-1990 Malmquist verimlilik endeksi	Reel GSYİH, toplam istihdam, işçi başına düşen konut dışı sermayeden hesaplanan toplam sermaye stoku, 25 yaş üstü nüfusun ortalama okul yılı	OECD ülkelerindeki toplam faktör üretkenliği verimini, üretkenlik kazanımlarını teknik değişim ve verimlilik değişimine ayrılarak analiz edilmiştir. ABD, tüm dönem boyunca tutarlı olarak etkin belirlenmiştir.

Arcelus & Arocena (2000)	OECD ülkeleri 1970-1990 VZA	Çalışan sayısı, brüt sermaye stoku, GSYİH	Ülkeler arasında çok faktörlü üretkenlik analiz edilmiştir. Toplam endüstri için incelenen dört dönem tümünde Japonya'nın optimum ölçekte faaliyet gösterdiği belirlenmiştir. Üretim alanında sadece ABD'nin 1970-1975 ve 1985-1990 yılları için etkin ülke olmuştur. Hizmet sektöründe İtalya tüm dönemlerde, Fransa üç dönemde, Büyük Britanya, Avustralya, Almanya ve ABD bir dönemde etkin ülke olmuştur.
Cherchye (2001)	OECD ülkeleri 1992-1996 VZA	GSYİH, sermaye stoku, istihdam	VZA tabanlı üç performans göstergesi üzerinden etkinlik ölçülmüştür. Göstergeler GEM (Global Etkinlik Ölçümü), Leuven Makroekonomik Performans Endeksi ve GEM-flex modelleridir. Tüm ölçümlere göre 6 OECD ülkesinden 1992 yılı için Japonya en iyi performansla sahip ülke olmuştur. Tüm yıllara ait GEM-flex sonuçları Japonya'nın tüm dönem boyunca etkin olduğunu göstermiştir.
Thore & Tarverdyan (2009)	Eksik verisi olmayan ve kabul edilebilir kalitede verisi olan 61 ülke 1998-2003 VZA	İstihdam oranı, yoksulluk dışı oran, çalışan nüfusun kadınlardan oluşan oranı, doğrudan yabancı yatırımlar, ihracat, sübvansiyonlar, ihracat ve ithalat vergileri	VZA ile tüm kütalardan 61 ülke için gözlemlere parça olarak doğrusal bir sınır uyudurulmuştur. İnsana yakışır iş girdileri (malların, emeğin, sermayenin ve fikirlerin hareketi) insana yakışır iş çıktıları (istihdam, işyerinde haklar, sosyal koruma, sosyal diyalog) olarak alınmıştır. 61 ülkeden 27 ülkenin etkinlik sınırında yer aldığı belirlenmiştir.
Adler et al. (2010)	61 ülke 2000 VZA	GSYİH, doğrudan yabancı yatırım, para transferi girişi, yardım, 5 yaş altı çocuklar düşük kilolu (%), diyet enerjisi tüketiminin asgari düzeyinin altında olan nüfus (%), ilköğretimde net kayıt oranı, ilköğretimi tamamlama oranı, 15-24 yaş arası okuryazarlık oranı, ilköğretim ve ortaöğretimde kız çocuklarının erkek çocuklarına oranı, Parlamento koltuklarındaki kadınlar (%), 1000 canlı doğum başına bebek ölüm oranı ve beş yaş altı çocuk ölüm oranı, 100.000 canlı doğum başına anne ölüm oranı	61 ülkenin Binyıl Kalkınma Hedeflerine ulaşmak için hem iç hem de dış kaynaklarını kullanmadaki göreceli etkinliği araştırılmıştır. Etkin ülke oranı temel VZA'da %72 ve kısıtlı VZA'da %47 olarak belirlenirken kısıtlı TBA-VZA'da %9 olarak belirlenmiştir. Etkin ülkeler arasında Arjantin, Hırvatistan, Ürdün, Malavi, Moldova, Moğolistan ve Tanzanya yer almıştır.
Afonso & Aubyn (2013)	OECD ülkeleri 1970, 1980, 1990, 2000 VZA	Çalışan başına GSYİH, kamu sermayesi, özel sermaye, insan sermayesi	Uygulanan VZA analizi sonucu Belçika, Kanada, İtalya, Portekiz ve ABD ülkeleri yılların tümünde göreceli olarak etkin olarak belirlenmiştir. Ülkelerin daha iyi yönetişimi daha iyi performans gösterilmesine yardımcı olduğu fikri desteklenmiştir.
Rabar (2013)	Hırvatistan ilçeleri 2005-2007 VZA	İşsizlik oranı, destek ödeneği kullanıcılarının sayısı, brüt katma değerde ikincil sektörün payı, sabit varlıklarda brüt sabit sermaye oluşumu, ihracata göre ithalat karşılama düzeyi, mezun öğrenci sayısı, GSYİH	Analiz, değişken ölçek getirisi varsayımına sahip modeller kullanılarak gerçekleştirilmiştir. Girdi ve çıktı odaklı BCC modeli uygulanmıştır. Hem girdi odaklı hem de çıktı odaklı BCC modelinde etkin ilçe sayıları en fazla 2007 yılı için gerçekleşmiştir.
Demir & Bakırcı (2014)	OECD ülkeleri 2006-2010 VZA	Gıda üretim indeksi, yıllık ortalama çalışma süresi, işsizlik oranı, doğrudan yabancı yatırımlar, toplam ithalat, vergi geliri, satın alma gücü paritesi, Gayri Safi Milli Hâsıla, gelir indeksi, kıyaslanabilir fiyat indeksi, toplam ihracat, kişi başı CO ₂ emisyonu	VZA'da CCR modeline göre Avustralya, ABD, Almanya, Estonya, Danimarka, Hollanda, İzlanda, İsviçre, Kore, İrlanda, Japonya, Norveç, Lüksemburg, Meksika, Şili ve Slovenya etkin ülkeler olarak belirlenirken BCC modeliyle bu ülkelere ilave olarak Yeni Zelanda ve Yunanistan da etkin ülkeler olarak belirlenmiştir.
Aksaraylı & Pala (2017)	OECD ülkeleri 2013-2015 VZA	Çalışma süresi, işgücü oranı, ithalat ve vergi geliri, GSYİH, ihracat	Girdi odaklı CCR modeli sonucu 2013 yılında etkin ülkeler ABD, İrlanda, İsviçre, Lüksemburg, Norveç iken 2014 yılında etkin ülkeler ABD, İsviçre, Lüksemburg, Norveç iken 2015 yılında etkin ülkeler 2013 yılında olduğu gibi ABD, İrlanda, İsviçre, Lüksemburg, Norveç olmuştur.
Skare & Rabar (2017)	OECD ülkeleri 2002-2011 VZA modeli uzantısı pencere analizi	Enflasyon oranı, GSYİH, işsizlik oranı, ihracat/ithalat karşılama oranı, CO ₂ emisyonu, ulusal parlamentolarda kadınların sahip olduğu koltuk sayısı, bilimsel ve teknik dergi makaleleri, kamu sağlık harcamaları	Etkinlik puanları üzerinden incelendiğinde tüm yıllarda Danimarka, Lüksemburg, Meksika, Hollanda, Norveç, İsviçre, İsviçre, Türkiye'nin etkin ülkeler olduğu belirlenmiştir.
Zhaao et al. (2019)	Çin şehirleri 2011-2013 VZA	Sermaye, işgücü, enerji, temel kamu hizmeti, atık su, atık gaz, katı atık, sağlık hizmeti, temel eğitim ile sosyal güvenlik ve istihdamın memnuniyet dereceleri	10 şehrin göreceli olarak etkin olduğu belirlenmiştir. Sonuçlardan şehirler arasında sistem performanslarının büyük ölçüde farklılaştığı belirlenmiştir.

Ünsal & Nazman (2020)	Türkiye şehirler 2012 VZA Diskriminant Analizi	Kentleşmiş nüfus, tarım sektöründe çalışan kişi sayısı, sanayi sektöründe çalışan kişi sayısı, ticaret sektöründe çalışan kişi sayısı, ücretli çalışan sayısı, işveren sayısı, okuryazar nüfus, hastanelerdeki yatak sayısı, GSYİH paylaşılan miktarı, GSYİH, banka şubesi sayısı, özel araç sayısı, toplam elektrik tüketim miktarı, bebek ölüm oranı nüfusu, belediye harcamaları, kamu yatırım miktarı	CCR modeli sonucu 53 şehrin etkin olduğu belirlenmiştir. VZA ve doğrusal ayırıcı analiz kullanılarak şehirlerin sosyoekonomik sıralaması araştırılmıştır. Araştırma sonuçları en etkin şehirlerin sırasıyla İstanbul, Ankara, İzmir, Kocaeli ve Bursa olduğunu göstermiştir.
Maruf (2021)	OECD ülkeleri 2019 VZA	Enflasyon oranları, işsizlik oranları, dolar kurları, cari işlemler dengesi, tüketici güven endeksi, büyüme verisi	Girdi odaklı CCR model çözümlemesinden Japonya, Danimarka, Yunanistan, İrlanda, Hollanda, Estonya ve İsviçre etkin ülkeler olarak belirlenmiştir. Süper etkinlik analizi sonucunda en etkin ülke Japonya olmuştur. Ağırlık kısıtlı model ile yapılan analizden Danimarka ve Yunanistan'ın etkin ülkeler olduğu görülmüştür.
Stanković et al. (2021)	Avrupa ülkeleri 2018 VZA	İstihdam oranı, ortalama eşdeğer net gelir, GSYİH, yoksulluk ve sosyal dışlanma riski altında olan kişilerin yüzdesi	Analizler çıktı odaklı BCC modeline dayalı gerçekleştirilmiştir. Sosyoekonomik etkinliğe sahip ülkeler Çek Cumhuriyeti, Lüksemburg, İsviçre ve Norveç olmuş, diğer ülkeler ise etkinliği sağlayamayan ülkeler olmuştur. Kuzey ve Batı Avrupa ülkelerin, Güney Avrupa ülkelerine kıyasla daha yüksek sosyoekonomik etkinliğe ulaştığı belirlenmiştir.
Silva et al. (2022)	Avrupa ülkesi alt bölgeleri 2008-2018 VZA	Toplam erken aşama girişimcilik faaliyeti, uzun dönem işsizlik oranı ne istihdamda ne de eğitimde olan gençler, yeni mezunların istihdam oranı, hanehalkı harcanabilir gelir oranı, brüt sabit sermaye oluşumu	VZA-ölçeğe göre sabit getiriler kapsamında Avrupa ülkelerinde Toplam Erken Aşama Girişimcilik Faaliyeti teknik verimlilik puanları belirlenmiştir. Doğu Avrupa bölgesi için en fazla etkin ülke 2018 yılında belirlenmiştir. Kuzey Avrupa bölgesi için sadece 2017 ve 2018 yılları için bir ülke etkin olmuştur. Batı Avrupa bölgesi ülkeleri etkin olmamıştır. Güney Avrupa bölgesi ülkeleri için 2008, 2014, 2016-2018 yılları için etkin ülkeler belirlenmiştir.

3. Yöntem

3.1. Veri Zarflama Analizi

Veri zarflama analizi (VZA), karar verme birimleri (KVB'leri) olarak adlandırılan değerlendirmeye alınan birimlerin göreceli etkinliklerini veya performansını ölçmek için kullanılan doğrusal programlama tabanlı bir yaklaşımdır (Cook & Zhu, 2014: vii). Performans ölçütleri VZA çıktıları ve girdileri olarak sınıflandırılır (Zhu, 2015: 291). VZA'da amaç çoklu girdi ve çoklu çıktıya sahip homojen yapıdaki KVB'lerinin göreceli etkinliklerinin analizinin yapılmasıdır.

Etkinlik ölçümü, kuruluşların üretkenliğinin artırılmasının sağlanmasında büyük ilgi konusunu oluşturmuştur. Etkinlik ölçümüne olan ilginin nedenleri Farrell (1957) tarafından üretken etkinliğin ölçümü hakkındaki makalesinde yer verilmiştir. Farrell'in (1957) fikirler üzerine yazılan Charnes vd. (1978) çalışmasında, çoklu girdi çoklu çıktı üretim birimlerinin göreceli etkinliğini ele almak amacıyla VZA metodolojisi tanıtılmıştır. VZA'da karşılaştırılabilir KVB'leri kümesi içinde en iyi etkinliği gösterenlerin tanımlanması ve etkin bir sınır oluşturulacağı bir metodoloji sağlamak olmuştur (Cook & Seiford, 2009: 1). VZA gelişiminde temellerinin oluşumunda çeşitli öncül çalışmalar olmuştur. Öncül çalışmalar arasında Koopmans'ın (1951) ve Pareto'nun (1927) kavramsal tanımları, Debreu (1951), Farrell (1957), Aigner ve Chu (1968), Shephard (1970), Afriat (1972) ve Charnes ve Cooper'ın (1962) doğrusal kesirli dönüşümü yer almıştır (Seiford, 1996: 100).

VZA, Farrell'in (1957) öncü çalışmasına dayanan Charnes vd. (1978) makalesinden bu yana KVB'lerinin göreceli etkinliklerini değerlendirmek amacıyla başvuru bir yöntemdir. Bir KVB'nin etkinliği KVB'nin çıktılarının (ürünler veya sonuçlar) girdilere

(kullanılan veya tüketilen kaynaklar) göre ağırlıklandırılmış oranı olarak tanımlanır. KVB'lerinin aynı yapıda girdileri ve çıktıları vardır ve bağımsızdırlar, hiçbir kısıt bir KVB'nin girdi ve çıktılarını diğer KVB'lerinin girdi ve çıktılarıyla bağlı yapmaz (Castelli & Pesenti, 2014: 329-330).

Etkinlik analizi, en iyi performans gösteren KVB'lerinin hangileri olduğu ve bu KVB'lerinin davranışlarından bir şeyler öğrenilebileceği; KVB'lerinin etkinlikleri arasındaki farklılıkların kaynaklarının ve etkinliğin hükümet politikası veya daha iyi yönetim uygulamalarıyla iyileştirilebilirliğinin şeklindeki incelenmelerin yapılmasını içermektedir (Kuosmanen et al., 2015: 192).

Etkinlik analizi yöntemleri, ekonomi, tarım, bankacılık, eğitim, ulaşım ve kamu hizmetleri gibi birçok uygulama alanında kullanılmaktadır. Mikro düzeydeki uygulamalar, bireysel kişilerden, şirket düzeyinde ve endüstri düzeyinde etkinlik değerlendirmelerine kadar uzanmaktadır. Makro düzeydeki uygulamalar, ülkeler genelindeki üretim sistemlerinin veya endüstrilerin karşılaştırmalı etkinlik değerlendirmelerinden ulusal ekonomilerin etkinlik değerlendirmesine kadar uzanmaktadır (Kuosmanen et al., 2015: 192).

VZA'da genel çerçevede girdiler en aza indirilirken çıktıları en üst düzeye çıkarılır. Kullanılan veya gereken kaynaklar genellikle girdilerdir ve sonuçlar çıktılarıdır. Girdilerin daha düşük seviyeleri ve çıktıların daha yüksek seviyeleri daha iyi performans veya etkinliği temsil eder. VZA'da kıyaslama esas olduğunda genellikle girdiler için daha azı daha iyi ve çıktılar için daha fazlası daha iyi olması performans ölçütleridir (Cook et al., 2014: 2).

VZA, birden fazla girdi ve çıktı bilgisinin olduğu KVB'lerinin etkinliğini değerlendirmede kullanılan önde gelen bir tekniktir. Etkinlik, çıktıların ağırlıklı toplamının girdilerin ağırlıklı toplamına oranlanmasıyla bir oran ölçeğinde ölçülür. Performans ölçümü literatüründe iki önemli VZA modeli olan CCR (Charnes et al., 1978) ve BCC (Banker et al., 1984) modelleri standart haline gelmiştir (Sotiros & Despotis, 2012: 68-69). VZA, KVB'lerini amprik bir etkinlik sınırına göre "etkin" veya "etkin olmayan" olarak gruplandırır.

VZA, KVB'lerinin performans etkinliğini ölçmeyi amaçlayan doğrusal programlama tabanlı bir tekniktir. Bu teknik, bir KVB'nin bir dizi çıktıyı üretmek için mevcut kaynakları ne kadar etkin kullandığını ölçmeyi amaçlamaktadır (Charnes et al., 1978; Aktaran: Ramanathan, 2003: 25). VZA'da birden fazla girdi ve çıktı için ağırlıklar kullanılarak etkinlik belirlenmeye çalışılır (Ramanathan, 2003: 38). VZA'da kullanılan temel etkinlik ölçüsü toplam girdiler içinde toplam çıktıların payıdır.

$$Etkinlik = \frac{\text{Çıktı}}{\text{Girdi}} \quad (1)$$

VZA, çıktıların ağırlıklı toplamının girdilerin ağırlıklı toplamına oranını hesaplayarak etkinlik ölçümü sağlayan bir doğrusal programlama modelidir (Charnes et al., 1978). Girdiler ve çıktılar sırasıyla x ve y ile temsil ediliyorken x_i , i 'inci KVB'nin girdisini

ve y_j , j'inci KVB'nin çıktısını temsil ediliyorken, toplam girdi ve çıktı sayısı sırasıyla m ve s ile temsil edilsin. VZA'da, birden fazla girdi ve çıktı, ağırlıklar kullanılmasıyla doğrusal olarak toplanır. Böylece, bir KVB'nin sanal girdisi, tüm girdilerinin doğrusal ağırlıklı toplamı ve bir KVB'nin sanal çıktısı, tüm çıktıların doğrusal ağırlıklı toplamı olarak belirlenir. Etkinlik aşağıda yer alan formülle tanımlanır (Ramanathan, 2003: 39).

$$Etkinlik = \frac{\sum_{r=1}^s u_r y_r}{\sum_{i=1}^m v_i x_i} \quad (2)$$

v_i , toplama sırasında girdi x_i 'ye atanan ağırlık ve u_r , toplama sırasında y_r çıktısına atanan ağırlıktır.

VZA'da girdi odaklı modeller çıktıları değiştirmeden girdileri en aza indirmeyi amaçlarken, çıktı odaklı modeller girdileri artırmadan çıktıları en üst düzeye çıkarmayı amaçlar (Cooper et al., 2000). Literatürde ülkelerin ekonomik etkinliklerin analizlerinde girdi değerlerini daha çok kontrol edebilecekleri için girdi odaklı VZA modelleri kullanımı önerilmektedir (Aksaraylı & Pala, 2017: 73). Bu nedenle çalışmada girdi odaklı CCR ve BCC modellerine yer verilmiştir.

VZA, incelenen KVB'leri için gerçek verileri kullanarak, etkinlik veya en iyi uygulama sınırını oluşturmak için doğrusal programlama tekniğini kullanır (Kumar & Gulati, 2014: 51). Girdi odaklı CCR modelini tanımlamak için n KVB'den oluşan bir küme alınsın ($j = 1, \dots, n$). KVB j tarafından kullanılan i'inci girdinin miktarını x_{ij} ($i = 1, \dots, m$) ve üretilen r'inci çıktı miktarı y_{rj} ($r = 1, \dots, s$) olarak gösterilsin. o KVB için girdi odaklı teknik etkinlik puanı aşağıdaki kesirli programlama modelini çözerek elde edilebilir (Kumar & Gulati, 2014: 55-56):

$$\max_{u,v} h_o(u,v) = \frac{\sum_{r=1}^s u_r y_{ro}}{\sum_{i=1}^m v_i x_{io}} \quad (3)$$

$$\frac{\sum_{r=1}^s u_r y_{rj}}{\sum_{i=1}^m v_i x_{ij}} \leq 1 \quad j = 1, \dots, n$$

$$u_r \geq \varepsilon \quad r = 1, \dots, s$$

$$v_i \geq \varepsilon \quad i = 1, \dots, m$$

Burada y_{ro} = 'o' KVB tarafından üretilen r'inci çıktı miktarı, x_{io} = 'o' KVB tarafından kullanılan i'inci girdi miktarı, ε = Archimedean olmayan (sonsuz küçük) bir sabittir.

CCR kesirli programlama modeli çarpan yapısında tanımlanabilmektedir (Kumar & Gulati, 2014: 55-56):

$$\max_{\mu, \nu} f_o(\mu) = \sum_{r=1}^s \mu_r y_{ro} \quad (4)$$

$$\sum_{i=1}^m \nu_i x_{io} = 1$$

$$\sum_{r=1}^s \mu_r y_{rj} - \sum_{i=1}^m \nu_i x_{ij} \leq 0, \quad j = 1, \dots, n$$

$$\mu_r \geq \varepsilon, \quad r = 1, \dots, s$$

$$\nu_i \geq \varepsilon, \quad i = 1, \dots, m$$

Burada $\mu_r = t\mu_r$, $\nu_i = t\nu_i$ ve $t = 1 / \sum_{i=1}^m \nu_i x_{io}$, Charnes ve Cooper (1962) kesirli programlama probleminden eşdeğer doğrusal programlama problemine dönüşümü uygulanmıştır.

Girdi odaklı BCC modelini tanımlamak için n KVB'den oluşan bir küme alınsın ($j = 1, \dots, n$). Girdi odaklı BCC modeli, aşağıdaki birincil (çarpan form) doğrusal programlama modelini çözerek o uncu KVB için teknik verimliliği ölçmektedir. Girdi odaklı BCC modelinin matematiksel biçimi aşağıdaki yapıda tanımlanmaktadır (Kumar & Gulati, 2014: 60):

$$\max_{\mu, \nu} f_o(\mu, \mu_o) = \sum_{r=1}^s \mu_r y_{ro} - \mu_o \quad (5)$$

$$\sum_{i=1}^m \nu_i x_{io} = 1$$

$$\sum_{r=1}^s \mu_r y_{rj} - \sum_{i=1}^m \nu_i x_{ij} - \mu_o \leq 0, \quad j = 1, \dots, n$$

$$\mu_r \geq \varepsilon, \quad r = 1, \dots, s$$

$$\nu_i \geq \varepsilon, \quad i = 1, \dots, m$$

μ_o için işaret kısıtı yoktur.

BCC modeli CCR modeline ek bir kısıtlama getirdiğinden, $\sum_{j=1}^n \lambda_j = 1$, BCC modelinin uygulanabilir bölgesi CCR modelinin uygulanabilir bölgesinin bir alt kümesidir. CCR ve BCC modellerinin optimum amaç değerleri arasındaki ilişki $\theta_o^{*BCC} \geq \theta_o^{*CCR}$ şeklindedir. Bu bağtıdan CCR modeliyle etkin bulunan bir KVB, ilgili BCC modeliyle de etkin olacaktır (Kumar & Gulati, 2014: 60-61). Etkinlik puanı genellikle 0 ile 1 arasında bir sayı olarak (veya yüzde olarak) ifade edilir. Etkinlik puanı 1 değerine sahip KVB'nin etkin olduğu ve 1'den düşük değere sahip KVB'nin etkin olmadığı kabul edilir.

VZA'da KVB'lerinin sayısının ne olacağı önemli bir husustur. VZA'da seçilen girdi sayısı m ve üretilen çıktı sayısı s olduğunda araştırmanın güvenilirliği bakımından en az $m+s+1$ tane KVB'nin alınması önemli bir ölçüttür. Diğer taraftan, KVB'lerinin sayısının girdi ve çıktıların sayılarının toplamının en az iki katı olması kısıtı da literatürde yer almaktadır (Boussofianee et al., 1991; Aktaran: Ersoy, 2018: 481). VZA küçük bir örneklem büyüklüğüyle iyi çalışabilmektedir. Literatürde, VZA için gereken en küçük örneklem büyüklüğünün, girdi ve çıktıların toplamından üç kat daha büyük olması (Nunamaker, 1985; Raab & Lichty, 2002; Aktaran: Charles & Kumar, 2012: 2) bilgisi de mevcuttur. VZA'da aykırı değerler ölçüm hatalarına neden olabilmektedir. VZA, her bir KVB'nin diğer KVB'leriyle kıyaslanmasıyla ne kadar iyi performans gösterdiğini belirtebilmekte ancak mutlak etkinlik hakkında bilgi vermemektedir, teorik bir maksimum ile karşılaştırma yapmamaktadır (Pestana & Peypoch, 2010: 296).

Parametrik olmayan analiz tekniklerinden VZA az sayıda varsayıma dayandığı için pek çok alanda etkinlik incelemelerinde yaygın olarak kullanılmaya başlanmıştır. VZA, sahip olduğu güçlü özellikler ve çeşitli pratik kullanımlar nedeniyle makroekonomide hak ettiği kapsamlı ilgiyi görmüş ve akademik olarak kabul gören bir disiplin haline gelmiştir (Rabar, 2017: 1781).

3.2. Kümeleme Analizi

Kümeleme analizinde, çok değişkenli ölçümlere sahip çok sayıda birimleri içeren bir veri matrisi verildiğinde birimlerin bazı doğal alt grupları veya birim kümeleri oluşturulmaya çalışılır. Belirlenen bir ölçüte göre benzer olan birimler aynı grupta olacak şekilde kümelere ayırma gerçekleştirilir. Amaç, heterojen büyük örneklerden homojen özelliklere sahip daha az sayıda olacak gruplar oluşturmaktır. (Härdle & Simar, 2012: 331-332). Kümeleme analizi (KA), görüntü tanıma, desen belirleme ve bilgi alma gibi birçok alanda yaygın olarak kullanılan bir yöntemdir (Dai & Kuosmanen, 2014). KA, benzer birimleri bir arada sınıflandırmak amacıyla uygulanan bir veri madenciliği yöntemi olup KA'da, küme içi birimler arası benzerlik yüksek iken kümeler arası benzerlik düşük olacak şekilde gruplandırma yapılması amaçlanır.

Kümeleme analizindeki temel amaç, birimlerin (veya değişkenlerin) doğal gruplamalarını keşfetmektir. Karmaşık bir veri kümesinden oldukça basit bir gruplama

yapısı oluşturulması yakınlık veya benzerlik ölçüsü gerektirmektedir (Johnson & Wichern, 1998: 727-728). Benzerlik (ya da farklılığın) ölçülmesinde uzaklık ölçülerinden yararlanılmaktadır. Euclidean uzaklığı, farklılığın en yaygın ölçülerinden biridir (Chatfield et al., 2017: 214). p değişkenleri için Euclidean uzaklığı, iki gözlem için her değişkenin koordinatları arasındaki kare farklarının toplamının kareköküdür (Afifi et al., 2020: 324).

KA, araştırmaya konu olan X veri matrisinde yer alan değişkenleri, birimleri ya da değişken ve birimleri benzer alt gruplara (kümelere) ayırmaya yardımcı olan bir yöntemler topluluğuna karşılık gelmektedir. KA'da birimlerin ya da değişkenlerin doğal gruplamaları analiz öncesi bilinmemektedir (Özdamar, 2018: 257).

$n \times p$ boyutlu veri matrisi X , p sayıda değişkeni ve n sayıda birimden oluşmaktadır.

$$X = \begin{pmatrix} x_{11} & x_{12} & \dots & x_{1p} \\ x_{21} & x_{22} & \dots & x_{2p} \\ \cdot & \cdot & & \cdot \\ \cdot & \cdot & & \cdot \\ & \cdot & & \cdot \\ x_{n1} & x_{n2} & \dots & x_{np} \end{pmatrix}$$

KA dört temel amaçla uygulanmaktadır (Özdamar, 2018: 257-258).

- n sayıda birim, birey, nesne, durum, olay; araştırma değişkenlerine göre olabildiğince kendi içinde homojen ve kendi aralarında heterojen olacak şekilde kümelere (alt gruplara) ayrılır.
- p sayıda değişken, n sayıda birim üzerinden derlenen bilgilere dayalı ortak özellikleri açıkladığı varsayılan kendi içinde homojen ve kendi aralarında heterojen olacak şekilde kümelere (alt gruplara) ayrılır.
- Birimler ve değişkenler aynı anda ele alınarak ortak p değişken ve n birime göre ortak özelliğe sahip alt kümelere ayrılır.
- p değişkene göre birimlerin izledikleri tipolojik ve biyolojik sınıflama ortaya çıkarılmaya çalışılır.

KA'da birimlerin ölçülen değişken bilgileri üzerinden değerleri hesaplanarak ortaya çıkacak gruplara veya kümelere odaklanmaktadır. Birimler arasındaki benzerlik tespit etmek amacıyla uzaklık ölçüleri, korelasyon ölçüleri kullanılabilir (Kalaycı, 2010: 352). Literatürde nicel veriler için uzaklık ölçülerinden en sıklıkla kullanılan Euclidean uzaklık ölçüsüdür.

Euclidean uzaklığı (Everitt & Dunn, 2001):

$$d_{ij} = \left[\sum_{k=1}^p (x_{ik} - x_{jk})^2 \right]^{1/2} \quad (6)$$

Uzaklıklar matrisi

$$D = \begin{pmatrix} 0 & d_{12} & d_{13} & \dots & d_{1n} \\ & 0 & d_{23} & \dots & d_{2p} \\ & & 0 & \dots & . \\ & & & \dots & . \\ \text{Simetrik} & & & & d_{n-1,n} \end{pmatrix}$$

Veri kümeleme yöntemleri iki temel kategoriye ayrılır. Bunlar, hiyerarşik kümeleme yöntemleri ve bölümlleme (hiyerarşik olmayan) kümeleme yöntemleridir. Hiyerarşik kümeleme yöntemleri, veri nesnelerini hiyerarşik bir biçimde kümelerle ayırır, ya aşağıdan yukarıya bir yaklaşımla (toplayıcı yöntem) ya da yukarıdan aşağıya bir yaklaşımla (bölücü yöntem) ayırma işlemi gerçekleştirir ve bir dendogram oluşturarak verileri grafik üzerinde görselleştirir. Bölümlleme kümeleme yönteminde aşamalı bir yapıya sahip dendogram oluşturulması yerine başlangıç veri kümesinin tek bir bölümü oluşturulur (Ikotun et al., 2023: 179). Hiyerarşik olmayan kümeleme yöntemleri, değişkenleri gruplama yapmaktan ziyade birimleri k kümeye gruplandırmak amacıyla tasarlanmıştır. Uzaklıkların (benzerliklerin) bir matrisi oluşturulmadığından ve verilerin bilgisayar uygulaması esnasında depolanması gerekmediğinden hiyerarşik kümeleme tekniklerine kıyasla büyük veri kümelerine uygulanabilmektedir (Johnson & Wichern, 2014: 696). Hiyerarşik olmayan yöntemlerde belirlenen küme sayısı kadar birimlerin gruplara ayrılmasıyla kümelerin çekirdeklerini oluşturacak olan rasgele seçilecek olan başlangıç noktası kümesiyle başlanır. Birimler başlangıç gruplarına rastgele bölünür (Johnson & Wichern, 1998: 755).

Bölümlleme kümeleme yöntemlerinden biri olan K-ortalamar kümeleme yöntemi, 1950'ler ve 1960'larda farklı disiplinlerden Steinhaus (1956), MacQueen (1967) ve Jancey (1966) dahil olmak üzere farklı araştırmacılar tarafından bağımsız olarak önerilmiştir (Ikotun et al., 2023: 179). K-ortalamar kümeleme algoritması, araştırma verisini kümelerle ayırmak, veri kümesindeki çeşitli veri noktaları ile bir kümenin ortalaması arasındaki minimum karesel hatayı bulmayı ve ardından her veri noktasını kendisine en yakın küme merkezine atamayı içerir (Ikotun et al., 2023: 185). K-ortalamar her bir birimin en yakın grubuna ait olduğu ilkesine dayanır ve küme grubu birimlerin ortalamasıyla temsil edilir (Dai & Kuosmanen, 2014: 182). K-ortalamar KA, n sayıdaki birimleri, birim ile küme merkezi noktası arasındaki benzerliği dikkate alarak k sayıda birbiriyle örtüşmeyen kümeye bölen bir gözetimsiz öğrenme tekniğidir (James et al., 2013). K-ortalamar kümeleme algoritması, çeşitli veri noktaları arasındaki benzerlikleri hesaplamak için Euclidean uzaklığını kullanır (Swenson et al., 2016) ve küme içi değişkenliğin mümkün olduğunca küçük olduğu kümeleri bulur (Cinaroglu, 2020: 327).

K-ortalamlar kümeleme yöntemi, kümeler içi kareler toplamları minimum olacak şekilde k kümeye ayırma işlemi yapar. $x_1, x_2, \dots, x_n$ p değişkenli gözlem vektörleri olduğunda, X uzayındaki birer nokta kabul edildiğinde aynı uzayda $a_{1n}, a_{2n}, \dots, a_{kn}$ her grup için küme merkezleri olarak alındığında,

$$W_n = \frac{1}{n} \sum_{i=1}^n \min_{1 \leq j \leq k} \|x_i - a_{jn}\|^2 \quad (7)$$

yapısına bağlı olarak birimlerin en yakın kümeye sınıflaması yapılır (Tatlıldil, 1996: 338).

MacQueen (1967), her öğeyi en yakın merkeze (ortalama) sahip kümeye atayan bir algoritmasını tanımlamak için K-ortalamları önermiştir (Johnson & Wichern, 1998: 755). K-ortalamlar kümeleme algoritması k küme için aşağıdaki adımları içerir (Afifi et al., 2020: 326-327):

- Veriler k sayıdaki başlangıç kümesine bölünür. Küme üyeleri araştırmacı tarafından ya da bilgisayar programı aracılığıyla rasgele belirlenebilir.
- k kümesinin ortalama veya merkez noktaları hesaplanır.
- Hesaplanan merkez noktalarına birimlerin uzaklık hesaplamaları yapılır. Birim kendi kümesinin merkez noktasına en yakın bulunduyorsa birim o kümede bırakılır. Aksi durumda küme merkezlerinden hangisine en yakınsa birim o yakın olduğu kümeye yeniden atanması yapılır.
- Her birim için 3. Adım tekrarlanır.
- Tüm birimler için uzaklıkların hesaplamalarıyla hiçbir birimin yeniden atanması yapılmıyuncaya kadar 2, 3 ve 4. adımları tekrarlanır. Son aşamada nihai kümeler oluşturulur.

Literatürde VZA ile KA'nın analizlerde birlikte ele alındığı farklı yapılarda yöntemler bulunmaktadır. (1) KA, VZA uygulaması öncesi KVB'lerinin homojenliğini sağlamak amacıyla kullanılır (Tone, 2010; Shuang et al., 2014; Carboni & Russu, 2015; Rezaee et al., 2018). (2) KA, VZA'da performans değerlendirmesi öncesi eksik verileri tahmin etmek ve işlemek için bir araç olarak kullanılır (Ben-Arieh & Gullipalli 2012). (3) KA, VZA uygulandıktan sonra etkin olmayan bir KVB için uygun bir kıyaslama noktası bulmak amacıyla bir araç olarak kullanılır (Po et al., 2009; Saati et al., 2013; Balavand et al., 2018; Kim et al., 2024). (4) KA, VZA sonrası sınıflama yapmak amacıyla kullanılır. VZA ile belirlenen önem sıralamalarının yapıldıktan sonra KA ile sınıflanma yoluna gidilmesi araştırmalara konu olmuştur. Kümeleme analizi VZA çalışmalarını tamamlamak için kullanmıştır (Örkcü & Kardiye, 2006; Amin et al., 2011; Dai & Kuosmanen, 2014; Li, 2020; Chen & Chang, 2021).

3.3. Kappa Katsayısı

Kappa katsayısı, ilk olarak 1960 yılında Jacob Cohen tarafından ortaya atılmış olup iki veya daha fazla sayıda araştırma değerlendiricileri arasındaki uyumun değerlendirmesini yapmak amacıyla oluşturulmuştur (Li, 2010: 1). Kappa katsayısı kategorik maddeler arasında değerlendirme yapılmasında iki karşılaştırma arasındaki uyumu ölçen istatistiktir (Kılıç, 2015: 142). İki farklı değerlendirici veya analiz tekniği arasındaki uyumu etkili bir şekilde karşılaştırmak için kullanılan yöntemlerden biri Cohen Kappa (Cohen 1960, 1968) katsayısıdır (Craig, 1981).

İki yöntem arasındaki kategorik uyumu değerlendirmek (Li, 2010) ve değerlendiriciler arası güvenilirliği test etmek için en yaygın kullanılan istatistiklerden biridir (McHugh, 2012). Kappa katsayısı (K), kategori yargıları yapan bir grup kodlayıcı arasındaki çiftler arası uyumu ölçerken beklenen tesadüfi uyumu belirtir ve aşağıdaki gibi hesaplanır (Carletta, 1996: 252).

$$K = \frac{P(A) - P(E)}{1 - P(E)} \quad (8)$$

$P(A)$ kodlayıcıların aynı olduğu durumları (gözlenen uyum) (Carletta, 1996: 252) ve $P(E)$ gözlemci kararları arasında tablo verisine dayalı olarak beklenen uyumu belirtir (Örkcü & Kardiye, 2006: 134).

$$P(E) = \frac{\sum_{i=1}^I (\text{satır toplamı})_i * (\text{sütun toplamı})_i}{N^2}, \quad I : \text{Satır sayısı} = \text{Sütun sayısı} \quad (9)$$

Cohen, Kappa katsayısı (K) yorumunda 0,01-0,20 hiç veya hafif, 0,21-0,40 orta, 0,41-0,60 orta, 0,61-0,80 önemli ve 0,81-1,00 neredeyse mükemmel uyuma olduğunu belirtmiştir (McHugh, 2012). Kappa katsayısı, -1 ile +1 arasında değer alır ve 1'e yakın değerli olması tam bir uyumun, 0 olması tam uyumsuzluğun ve -1 olması ters uyum olduğunun göstergesidir. 0,70 ve üzeri yargılar arasında uyum olduğu şeklinde değerlendirilebilir (Örkcü & Kardiye, 2006: 135).

4. Veri Seti

Çalışmanın veri setini OECD üyesi ülkelerin seçilmiş makroekonomik göstergeleri oluşturmuştur. Girdi ve çıktı değişkenleri verisi OECD ve Dünya Bankası veri tabanlarından derlenmiştir ve veriler en güncel veri tabanlarında mevcut olan 2023 yılını kapsamıştır. 38 OECD üyesi ülke olmasına karşın Japonya için eksik veri olması nedeniyle Japonya analizlere dâhil edilememiştir. OECD üyesi 37 ülke değerlendirmelere alınmıştır. Çalışmanın girdi ve çıktı değişkenleri Tablo 2'deki gibidir.

Tablo: 2
Çalışma Değişkenleri

Çıktı Değişkenleri	Kısa adı	Veri Kaynağı
Mal ve hizmet ihracatı (% GSYİH)	Ç1	OECD
Kişi başına düşen GSYİH (cari ABD\$)	Ç2	Dünya Bankası
Girdi Değişkenleri		
Yıllık Ortalama Çalışma Süresi (saat)	G1	OECD
Vergi geliri (% GSYİH)	G2	Dünya Bankası
Mal ve hizmet ithalatı (% GSYİH)	G3	OECD
İşgücüne katılım oranı	G4	OECD

Literatürde yer alan çalışmalardan girdi ve çıktı değişkenleri belirlenmiştir. Vergi geliri ekonomik gösterge olarak Charnes vd. (1989), Demir ve Bakırcı (2014), Aksaraylı ve Pala (2017) çalışmalarında performans ölçümlerinde kullanılmıştır. Charnes vd. (1989) çalışmasında, girdi değişkenleri arasında işgücü, çıktı değişkenleri arasında vergiler yer almıştır. Färe vd. (1994) çalışmasında girdi ölçülerinden biri olarak istihdam ile çıktı ölçüsü olarak GSYİH kullanılmıştır. Lovell vd. (1995) çalışmasında GSYİH, ihracat/ithalat değişkenleri kullanılmıştır. Golany ve Thore (1997a) çıktı değişkenleri arasında GSYİH'de kişi başına büyüme oranı yer almıştır. Brockett vd. (1998), Maudos vd. (1999), Cherchye (2001), Stanković vd. (2021) GSYİH ve istihdam analizlerde kullanılan değişkenler arasında yer almıştır. Thore ve Tarverdyan (2009) çalışmasında çıktı değişkenleri arasında istihdam oranı ve girdi değişkenleri arasında ihracat, ihracat ve ithalat vergileri kullanılmıştır. Afonso ve Aubyn (2013) çalışmasında çalışan başına GSYİH çıktı değişkeni yer almıştır. Rabar (2013) çalışmasında GSYİH çıktı değişkeni olarak alınmıştır. Demir ve Bakırcı (2014) çalışmasında toplam ithalat, vergi geliri girdi değişkenleri ve Gayri Safi Milli Hâsıla, ihracat çıktı değişkenleri arasında yer almıştır. Aksaraylı ve Pala (2017), girdi değişkenleri çalışma süresi, işgücü oranı, ithalat, vergi geliri ve çıktı değişkenleri GSYİH ve ihracat olarak alınmıştır.

Çalışmanın analizlerinde kullanılan GSYİH, işgücü katılım oranı, çalışma süresi, vergiler, ithalat ve ihracatı kapsayan dış ticaret hakkında bilgi aktarılmıştır. Makroekonomik göstergelerden biri olan, ekonomik büyüklüğün ölçütleri arasında yer alan ve bir ülkenin ekonomik gücünü yansıtan GSYİH ülke sınırları kapsamında belirli bir zaman aralığında üretilen malların ve hizmetlerin parasal değerini tanımlamaktadır. Kişi başına düşen GSYİH, bir ülkenin vatandaşlarının gelir düzeyi hakkında bilgi veren bir göstergedir (Akgün, 2014: 166). Ülkeler, ekonomi bakımından öncelikli olarak yüksek reel GSYİH büyüme oranı elde etmek istemektedir. GSYİH gibi tek bir performans ölçüsü ülkelerin makroekonomik açısından değerlendirmelerinde yeterli olamamaktadır. Daha başka boyutların da dikkate alınması gereklidir (Moesen & Cherchythe, 1998: 3-5).

İşgücüne katılım oranı temel makroekonomik göstergelerden biridir. Ülke ekonomisinin istikrarlı bir biçimde büyüme trendi yakalayabilmesinde işgücünün üretim sürecine etkin katılması ve yüksek katma değer sağlaması en önemli unsurlardan biridir. İşgücü piyasaları bir ekonominin işleyişi ve ileriye yönelik konumu bakımından önemli bilgiler aktarır. İşgücü piyasası göstergeleri ekonomilerin potansiyelinin analiz edilmesi ve değerlendirilmesi bakımından öncelik taşır (Keskin & Aksoy, 2019: 2). İşgücü, çalışma

gücüne sahip olan ve çalışmaya istekli nüfusu tanımlamaktadır. İşgücüne katılım oranı (İGKO), çalışan yaştaki (16 yaş ve üzeri) nüfusun çalışanların veya çalışmayan ancak aktif olarak iş arayanların yüzdesi olarak tanımlanır (Juhn & Potter, 2006: 28). İGKO'nda gözlenen artış, ekonomik büyümede canlanmaya ve işgücü arzının yükselmesine neden olmaktadır (Er, 2014: 35).

Makroekonomik göstergelerden biri olan çalışma süresi, işyerindeki çalışanın hayatından işveren lehine ayırmış olduğu zamandır (Köseoğlu & Kabul, 2014: 233). Sağlıklı çalışma hayatının bileşenlerinden biri çalışma sürelerinin düzenlenmesidir. Güvenli çalışma hayatı, gelir dağılımının dengeli ve istihdamın yeterli olması demek olup sağlıklı sosyal yaşamın gerekliliklerindendir. Çalışma sürelerinin uygun bir şekilde düzenlenmesi sağlıklı ve güvenli çalışma ortamının sağlanmasının önemli bir parçasıdır. Uzun çalışma sürelerinin iş yaşam dengesini bozması, ruhsal ve fiziksel sağlık sorunlarına yol açması, sosyal yaşamı etkilemesi, iş tatminini ve iş verimini düşürmesi durumları dikkat çekmektedir (Uğurlu & Yıldız, 2024).

Çalışma kapsamına alınan makroekonomik göstergelerden biri vergilerdir. Vergilendirme, devletin gelir elde etmesindeki temel kanallardan biridir ve yasalara uyan ve devlet tarafından her bir vatandaştan kamu harcamalarını karşılamak üzere vatandaşların ekonomik güçlerine göre karşılıksız ve zora dayalı olarak alınan gelir yöntemini tanımlamaktadır (Keyifli, 2021: 490). Vergilendirmenin amacı gelişmiş ve gelişmekte olan ülkelerin tümünde kamu harcamalarını finanse etmek için kaynak yaratmaktır (Açıkgöz, 2008: 93). Devletler kendilerinden beklenen faaliyetleri yürütebilmek ve toplumun ihtiyaçlarını karşılayabilmek için mali kaynağa gereksinim duyarlar. Vergiler de ihtiyaç duyulan mali kaynakların en önemlisini oluşturmaktadır (Şentürk, 2017: 1). Vergilerin tarihsel süreçte toplanma amaçlarında bazı değişimler olduğu görülmektedir. Tarihsel süreçte en başlarda kamu harcamalarını finanse etme amacıyla toplanan vergiler günümüzde pek çok amaçla toplanmaktadır. Vergilerin, kamu harcamalarının finanse edilmesi vasıflarının yanı sıra fiskal amaç olarak gelişmişliği ve sosyal adaleti sağlama, gelir dağılımını düzeltme gibi vasıfları da vardır (Sandalcı ve Sandalcı, 2017: 52). Gelişmiş düzeydeki ülkelerin vergi gelirinin GSYİH içindeki payının gelişmekte olan ülkelere kıyasla daha yüksek seviyede olduğu görülmektedir. Bunun gerekçesi, vergilerin harcandığı kalemlere bakıldığında gelişmiş ülkelerde devletin finanse etmesi gerekli ihtiyaçların fazla olmasından kaynaklanıyor olabileceği gibi vergilerin toplanması gelişmelerinden veya vergi tabanının durumundan kaynaklanıyor olabilir. Bununla birlikte, gelişmekte olan ülkelere kayıt dışı ekonominin ve yasa dışı faaliyetlerin boyutu gelişmiş ülkelerle olan verginin boyutu arasındaki farkın önemli gerekçesi olabilir (Topuz, 2021: 7). Etkili vergilendirme araçları, hükümetlerin gelir durumlarını iyileştirmeye, başka ülkelerin yardımına bağımlılığı ve kamu borçlanmasını azaltmaya, ülkelerin kalkınma durumlarına sahip çıkmalarında artışa yardımcı olabilmektedir (AEO, 2013; Aktaran: Ade et al., 2018: 3). İyi bir vergi yönetimi özel sektör ve sivil toplum da dahil devlet-vatandaş arasındaki ilişkiyi güçlendirebilmektedir (Ade et al., 2018: 3).

Çalışma kapsamına alınan makroekonomik göstergelerden bir diğeri dış ticaret olarak belirlenmiştir. Dış ticaret, ithalat ve ihracat işlemlerinin toplamı olup bağımsız ülkeler arasında gerçekleştirilen mal ve hizmet ticaretinin tamamını tanımlamaktadır (Gürsoy, 2008; Aktaran: Eraldemir, 2023: 127). Küreselleşme çerçevesinde dış ticaretteki gelişmeler iktisadi gelişmişlik ve ekonomik dengeler bakımından iç ve dış piyasalar hakkında bilgi sağlamaktadır (Eraldemir, 2023: 126). Ülkeler bakımından dış ticaret, gelişmenin en önemli kaynaklarının başında gelmektedir. Ülkeler kendi ihtiyaçlarından fazla olanı ihraç ederken başka ülkelerden ihtiyaçları olan mal ve hizmetleri satın almak suretiyle ülkenin gelişimini sağlamaktadırlar (Gedik, 2020: 324). Uluslararası ticaret ülkeye olan döviz girişi ve çıkışıyla sonuçlanan hizmet ve malların içe ve dışa yönelik hareketinden meydana gelir. Uluslararası ticaret faaliyetleri yoksulluğun azaltılması, istihdam yaratma ve ekonomik büyüme için etkin rol oynar (Cura, 2022: 7). Ülkeler ihracatı artırmak ve mümkün olduğu kadar ithalatı kırmak amacıyla dış ticaret araçlarına başvururlar (Çatalbaş, 2021: 50).

OECD ülkelerinin 2023 yılına ait çalışma değişkenleri verisi Tablo 3’de yer almıştır. Tablo 3’den yıllık ortalama çalışma süreleri incelendiğinde en düşük çalışma süresinde ilk beşte Almanya, Danimarka, Hollanda, Norveç ve Avusturya olduğu belirlenebilmektedir. En yüksek çalışma süresi için son beşte yer alan Yunanistan, Şili, Kosta Rika, Meksika ve Kolombiya olmuştur. En düşük vergi geliri sıralamasında ilk beşte sırasıyla İsviçre, Almanya, ABD, Kanada ve Çekya varken vergi geliri sıralamasında son beşte İsveç, Yunanistan, Danimarka, Yeni Zelanda ve Norveç bulunmaktadır. En düşük ithalat düzeyi sıralamasında ilk beşte sırasıyla ABD, Avustralya, Kolombiya, İsrail ve Yeni Zelanda yer alıyorken en yüksek ithalat düzeyi sıralamasında Lüksemburg, İrlanda, Slovakya, Belçika ve Hollanda yer almaktadır. İşgücüne katılım oranında en iyi seviyede olan ülke İsveç’tir ve İsveç’i sırasıyla Estonya, İzlanda, Yeni Zelanda ve İsviçre izlemektedir. İşgücüne katılım oranında en düşük seviyeler sırasıyla Türkiye, Kosta Rika, Meksika, İtalya ve Yunanistan’a aittir. Mal ve hizmet ihracatının GSYİH içindeki payı bakımından en yüksek seviyede olan ilk beş ülke Lüksemburg, İrlanda, Slovakya, Hollanda ve Belçika iken en düşük seviyelerde ABD, Kolombiya, Yeni Zelanda, Avustralya ve Şili yer almıştır. Kişi başına düşen GSYİH için en yüksek seviyeler sırasıyla Lüksemburg, İrlanda, İsviçre, Norveç ve ABD ve en düşük seviyeler sırasıyla Kolombiya, Türkiye, Meksika, Kosta Rika ve Şili ülkelerine aittir.

OECD üye ülkeleri içinde Türkiye verisi için değerlendirme yapılabilir. Türkiye G1: Yıllık Ortalama Çalışma Süresi için baştan 14. sırada olumsuz düzeyde, G2: Vergi geliri için sondan 10. sırada iyi düzeyde, G3: Mal ve hizmet ithalatı için 10. sırada iyi düzeyde, G4: İşgücü katılım oranı için en düşük seviyededir. Ç1: Mal ve hizmet ihracatı için sondan 7. sırada olumsuz düzeyde ve Ç2: Kişi başına düşen GSYİH için sondan ikinci sırada olumsuz düzeyde yer alan ülke olmuştur. Genel çerçevede Türkiye’nin araştırma değişkenleri verisinin orta düzeyde olduğu G4 ve Ç2 için tüm ülkeler içinde oldukça olumsuz seviyede olduğu belirtilebilir.

Tablo: 3
Girdi ve Çıktı Değişken Verisi

Ülke	G1: Yıllık Ortalama Çalışma Süresi	G2: Vergi Geliri	G3: Mal ve Hizmet İthalatı	G4: İlgücü Katılım Oranı	C1: Mal ve Hizmet İhracatı	C2: Kişi Başına Düşen GSYİH
Lüksemburg	1462	26	182	81	213	128678
İrlanda	1633	17	102	83	135	103888
İsviçre	1531	9	63	87	75	99565
Norveç	1418	31	32	84	47	87925
ABD	1799	12	14	79	11	82769
İzlanda	1448	22	43	88	44	79637
Danimarka	1380	30	60	85	68	68454
Avustralya	1651	24	22	83	27	64821
Hollanda	1413	23	77	86	89	64572
Avusturya	1435	26	57	82	59	56034
İsveç	1437	28	51	90	55	55517
Belçika	1530	23	85	79	84	54701
Almanya	1343	11	39	85	43	54343
Kanada	1685	13	34	84	33	53431
Finlandiya	1499	21	43	85	43	52926
İsrail	1880	25	27	81	31	52642
Birleşik Krallık	1524	27	32	82	32	49464
Yeni Zelanda	1751	30	27	87	24	48281
Fransa	1500	24	36	81	34	44691
İtalya	1734	24	33	74	34	39003
İspanya	1632	16	34	82	38	33509
Kore	1872	18	44	78	44	33121
Slovenya	1616	18	77	82	83	32610
Çekya	1766	13	64	87	69	31591
Estonya	1742	21	77	89	78	30133
Litvanya	1641	21	73	86	76	27786
Portekiz	1631	23	46	86	47	27331
Slovakya	1631	19	90	85	92	24491
Yunanistan	1897	28	48	78	44	23401
Letonya	1548	24	71	84	67	22503
Macaristan	1679	23	76	87	81	22142
Polonya	1803	17	52	82	58	22057
Şili	1953	21	30	78	31	17068
Kosta Rika	2171	14	34	72	39	16942
Meksika	2207	13	37	73	36	13790
Türkiye	1732	16	34	63	32	13106
Kolombiya	2307	15	23	78	18	6947

5. Bulgular

Bu bölümde VZA ve KA sonucu elde edilen bulgulara yer verilmiştir. VZA analizi uygulaması öncesi aykırı değer incelemesi yapılması gerekmektedir. Bu nedenle öncelikli olarak aykırı değer bulgularına yer verilmiştir. Bölümde ikinci olarak K-ortalama kümeleme analizi ve VZA yöntemi uygulaması sonucu elde edilen bulgular yer almıştır. Üçüncü olarak K-ortalama kümeleme analizi ile VZA arası uyum incelemesi Kappa istatistiğiyle incelenmiştir. KA küme merkezi bilgileri yorumlanmıştır. VZA’da referans ülkeler bilgisi aktarılmıştır.

5.1. Aykırı Değer İncelemesi

VZA için veride aykırı değer olup olmadığının incelenmesi yapılmıştır. Aykırı değer incelemelerinde Mahalanobis uzaklığı ölçüsünden yararlanılabilmektedir. Mahalanobis uzaklık, veri matrisindeki gözlemlerin verinin merkezine olan uzaklığının ölçüsü olarak kabul edilmektedir (Alpar, 2013: 185). Mahalanobis uzaklığı (m_i^2) verideki değişken

sayısına (ds) oranlandığında bu oranın küçük örneklerde 2,5 değerinden büyük olması ve büyük örneklerde 3 veya 4 değerinden büyük olması incelenen birimin aykırı değer olarak kabul edilmesini gerektirmektedir (Hair et al., 2014: 64-65). Veride 37 ülke vardır. En yakın serbestlik derecesi olarak 40 alındığında 0,05 anlamlılık düzeyinde student t değerleri 2,021 olarak belirlenmektedir. Tablo 4'te ülkeler için Mahalanobis uzaklık ölçüleri bilgisi yer almaktadır. m_i^2/ds değerleri incelendiğinde 2,021 değerinden büyük bir değer olmadığı görülmekte, dolayısıyla veride aykırı değer olmadığı söylenebilmektedir.

Tablo: 4
Ülkelerin Mahalanobis Uzaklık Bilgileri

Ülke	m_i^2	m_i^2/ds	Ülke	m_i^2	m_i^2/ds
ABD	13,25596	0,358269	Kanada	3,56307	0,096299
Almanya	9,54707	0,258029	Kolombiya	8,72918	0,235924
Avustralya	2,79697	0,075594	Kore	1,09644	0,029634
Avusturya	2,37239	0,064119	Kosta Rika	7,05002	0,190541
Belçika	6,91954	0,187015	Letonya	4,20204	0,113569
Birleşik Krallık	2,306	0,062324	Litvanya	2,40754	0,065069
Çekya	4,52625	0,122331	Lüksemburg	23,92355	0,646582
Danimarka	3,64738	0,098578	Macaristan	4,0894	0,110524
Estonya	4,66857	0,126178	Meksika	6,2014	0,167605
Finlandiya	1,34551	0,036365	Norveç	10,76994	0,291079
Fransa	2,13529	0,057711	Polonya	2,76424	0,074709
Hollanda	1,92442	0,052011	Portekiz	1,92184	0,051942
İrlanda	14,91386	0,403077	Slovakya	4,5818	0,123832
İspanya	3,30288	0,089267	Slovenya	2,32417	0,062815
İsrail	4,08683	0,110455	Sili	2,87052	0,077582
İsveç	3,26303	0,08819	Türkiye	18,30892	0,494836
İsviçre	9,87226	0,266818	Yeni Zelanda	6,59882	0,178346
İtalya	3,62046	0,09785	Yunanistan	5,15834	0,139415
İzlanda	4,93409	0,133354			

5.2. Ülkelerin K-ortalama Kümeleme Analizi, VZA Yöntemlerinden Girdi Odaklı CCR ve Girdi Odaklı BCC Modellerine Göre Sınıflaması

VZA'da birimlerin etkin ve etkin olmayan olarak iki grupta sınıflaması yapıldığı üzere kümeleme analizinde de iki küme sınıflaması yapılması yoluna gidilmiştir. Küme sayısının biliniyor olması durumunda K-ortalama tekniği kullanılabilir. Çalışma verisine K-ortalama tekniği uygulaması sonucu sınıflamalarının belirlendiği ülkelerin küme üyelikleri Tablo 5'te sunulmuştur. Tablo 5'te K-ortalama, girdi odaklı CCR ve girdi odaklı BCC modellerinin bulgularına yer verilmiştir. K-ortalama tekniğiyle iki küme sınıflamasında ABD, Avustralya, Lüksemburg, Danimarka, Norveç, Hollanda, İrlanda, İsviçre ve İzlanda aynı kümede sınıflanmıştır. Geri kalan OECD üye ülkeleri diğer kümede sınıflanmıştır. CCR modeline göre ABD, Lüksemburg, Norveç, İrlanda ve İsviçre için etkinlik skoru 1 olduğundan etkin, diğer OECD üye ülkeleri etkinlik skoru 1'in altında olduğu için etkin olmayan ülkeler olarak belirlenmiştir. BCC modeline göre ABD, Almanya, Avustralya, İsviçre, Kosta Rika, Lüksemburg, Meksika, Norveç, İrlanda ve Türkiye etkin diğer OECD üye ülkeleri etkin olmayan ülkeler olarak belirlenmiştir. CCR modelinde etkin olarak belirlenen ülkelerin tümü gelişmiş ekonomiler grubunda yer almaktadır. BCC modelinde etkin olarak belirlenen ülkelerden ABD, Almanya, İrlanda, İsviçre, Lüksemburg ve Norveç gelişmiş ekonomiler grubunda yer alırken Kosta Rika, Meksika ve Türkiye gelişmekte olan ekonomiler grubunda yer almaktadır.

Tablo: 5
Ülkelerin K-ortalama Kümeleme Analizi, Girdi Odaklı CCR ve BCC Modellerine Göre Sınıflaması

Ülke	Küme	CCR Etkinlik Skoru	BCC Etkinlik Skoru	Ülke	Küme	CCR Etkinlik Skoru	BCC Etkinlik Skoru
ABD	1	1	1	Kanada	0	0,773	0,938
Almanya	0	0,863	1	Kolombiya	0	0,554	0,936
Avustralya	1	0,904	1	Kore	0	0,731	0,907
Avusturya	0	0,755	0,988	Kosta Rika	0	0,839	1
Belçika	0	0,741	0,977	Letonya	0	0,697	0,941
Birleşik Krallık	0	0,692	0,979	Litvanya	0	0,774	0,906
Çekya	0	0,811	0,916	Lüksemburg	1	1	1
Danimarka	1	0,834	0,992	Macaristan	0	0,791	0,898
Estonya	0	0,754	0,87	Meksika	0	0,717	1
Finlandiya	0	0,724	0,951	Norveç	1	1	1
Fransa	0	0,668	0,978	Polonya	0	0,825	0,931
Hollanda	1	0,865	0,983	Portekiz	0	0,738	0,907
İrlanda	1	1	1	Slovakya	0	0,768	0,913
İspanya	0	0,811	0,975	Slovenya	0	0,807	0,94
İsrail	0	0,786	0,961	Şili	0	0,728	0,941
İsviçre	0	0,778	0,945	Türkiye	0	0,683	1
İsviçre	1	1	1	Yeni Zelanda	0	0,618	0,918
İtalya	0	0,723	0,952	Yunanistan	0	0,66	0,872
İzlanda	1	0,874	0,974				

5.3. VZA ve KA İçin Kappa İstatistiği Hesaplamaları

KA ile VZA sınıflamalarının ne kadar benzer olduğu araştırma konusu olarak belirlenmiştir. VZA ile etkin bulunan ülkelerin KA'da da diğer ülkelerden ayrı olarak mı sınıflanmakta olduğu araştırılmak istenmiştir. Bu amaçla KA için iki sınıflama yapılmasına karar verilmiştir.

K-ortalamlar kümeleme analizi ile girdi odaklı CCR ve girdi odaklı BCC modellerinin ülkeleri sınıflaması bakımından uyumluluğunun tespitinde Kappa istatistiği kullanılabilir (Örkcü & Kardiye, 2006: 138). K-ortalamlar kümeleme analizi ile girdi odaklı CCR uyumu sınıflamaları Tablo 6'da yer almaktadır.

Tablo: 6
K-ortalamlar Kümeleme Analizi ile Girdi Odaklı CCR Uyumu İncelemesi

		K-ortalamlar Sınıflama		
		0	1	Toplam
CCR sınıflama	0: Etkin değil	28	4	32
	1: Etkin	0	5	5
	Toplam	28	9	37

Tablo 4'e dayalı olarak analizlerin sınıflandırmalarında gözlenen uyum $P(A)$ ve beklenen uyum $P(E)$ hesaplamaları aşağıdaki gibi belirlenir:

$$P(A) = \frac{28+5}{37} = 0,89, \quad P(E) = \frac{(32*28)}{37^2} + \frac{(9*5)}{37^2} = 0,79$$

Buradan K Kappa katsayısı aşağıdaki gibi hesaplanır:

$$K = \frac{P(A) - P(E)}{1 - P(E)} = \frac{0,89 - 0,79}{1 - 0,79} = 0,476$$

Kappa katsayısı 0.7'den küçük değerli olduğu için K-ortalamalar kümeleme analizi ile girdi odaklı CCR değerlendirmeleri arasında uyum olmadığı, bununla birlikte P(A) değeri 0,89 olup iki yöntemin aynı sınıflandırmalarının oldukça iyi olduğu (Örkcü & Kardiye, 2006: 139) belirtilebilir.

K-ortalamalar kümeleme analizi ile girdi odaklı BCC uyumu sınıflamaları Tablo 7'de sunulmuştur.

Tablo: 7
K-ortalamalar Kümeleme Analizi İle Girdi Odaklı BCC Uyumu İncelemesi

		K-ortalamalar Sınıflama		Toplam
		0	1	
BCC sınıflama	0: Etkin değil	24	3	27
	1: Etkin	4	6	10
	Toplam	28	9	37

Tablo 7'ye dayalı olarak analizlerin sınıflandırmalarında gözlenen uyum P(A) ve beklenen uyumu P(E) hesaplamaları aşağıdaki gibi belirlenir:

$$P(A) = \frac{24+6}{37} = 0,81, \quad P(E) = \frac{(27*28)}{37^2} + \frac{(9*10)}{37^2} = 0,618$$

Buradan K Kappa katsayısı aşağıdaki gibi hesaplanır:

$$K = \frac{P(A) - P(E)}{1 - P(E)} = \frac{0,81 - 0,618}{1 - 0,618} = 0,5$$

Kappa katsayısı değerinden K-ortalamalar kümeleme analizi ile girdi odaklı BCC değerlendirmeleri arasında uyum olmadığı, bununla birlikte P(A) değeri 0,81 olup iki yöntemin aynı sınıflandırmalarının iyi olduğu yorumu yapılabilir.

Kappa katsayısı hesaplamaları sonucu KA ile CCR aynı sınıflandırmalarının KA ile BCC aynı sınıflandırmalarından daha iyi olduğu bulgusuna ulaşılmıştır. KA ile VZA yöntemlerinin her ikisinin bulgularıyla karar verilmek istenildiğinde KA ve CCR bulgularının referans alınabileceği önerisinde bulunulabilir.

5.4. KA Küme Merkezi

K-ortalama kümeleme analizi sonucu ABD, Avustralya, Lüksemburg, Danimarka, Hollanda, İrlanda, İsviçre ve İzlanda aynı kümede 1 koduyla gösterilmiş kümede sınıflanmıştır. K-ortalama kümeleme analizi sonucu belirlenen küme merkezi bilgilerine Tablo 8'de yer verilmiştir. Tablo 8'den küme merkezi bilgileri incelendiğinde 1 kodlu kümenin değişken değerlerinin 0 kodlu küme gösterge değerlerinden daha iyi değerlere sahip olduğu değerlendirilmesi yapılabilmektedir. 1 kodlu küme VZA sonucu etkin olarak belirlenen ülkeler grubudur.

Tablo: 8
Küme Merkezi Bilgileri

	Küme	
	1	0
G1	1526,13	1719,48
G2	21,66	20,52
G3	66,21	49,08
G4	84,01	81,45
C1	78,67	50,23
Ç2	86701,00	34270,05

Tablo: 9
Girdi Odaklı CCR ve Girdi Odaklı BCC Çözümlerine Dayalı Referans Ülke Bilgileri

	CCR Modeli Çözümü		BCC Modeli Çözümü	
KVB	Referans Ülke(ler)	Referans Sayıları	Referans Ülke(ler)	Referans Sayıları
ABD	ABD	6	ABD	12
Almanya	İrlanda, Norveç, ABD	0	Almanya	23
Avustralya	Norveç, ABD	0	Norveç, ABD	0
Avusturya	İrlanda, Norveç	0	Almanya, Lüksemburg, Türkiye	0
Belçika	İrlanda, Norveç	0	Almanya, Lüksemburg, Türkiye	0
Birleşik Krallık	İrlanda, Norveç	0	Almanya, Norveç, Türkiye, ABD	0
Çekya	İrlanda, Norveç	0	Kosta Rika, Almanya, İrlanda, İsviçre, Türkiye	0
Danimarka	İrlanda, Norveç	0	Almanya, Lüksemburg, Norveç, Türkiye	0
Estonya	İrlanda, Norveç	0	Almanya, İrlanda, Lüksemburg, Norveç, Türkiye	0
Finlandiya	İrlanda, Norveç	0	Almanya, Lüksemburg, Norveç, Türkiye	0
Fransa	İrlanda, Norveç	0	Almanya, Norveç, Türkiye	0
Hollanda	İrlanda, Norveç	0	Almanya, Lüksemburg, Norveç	0
İrlanda	İrlanda	30	İrlanda	8
İspanya	İrlanda, Norveç	0	Almanya, İrlanda, Norveç, Türkiye, ABD	0
İsrail	İrlanda, Norveç	0	Norveç, Türkiye, ABD	0
İsveç	İrlanda, Norveç	0	Almanya, Lüksemburg, Norveç	0
İsviçre	İsviçre	2	İsviçre	4
İtalya	İrlanda, Norveç	0	Norveç, Türkiye, ABD	0
İzlanda	Norveç, İsviçre, ABD	0	Almanya, Lüksemburg, Norveç, İsviçre	0
Kanada	İrlanda, Norveç, ABD	0	Almanya, İsviçre, Türkiye, ABD	0
Kolombiya	İrlanda, Norveç	0	Türkiye, ABD	0
Kore	İrlanda, Norveç	0	Almanya, İrlanda, Norveç, Türkiye, ABD	0
Kosta Rika	İrlanda, Norveç	0	Kosta Rika	2
Letonya	İrlanda, Norveç	0	Almanya, Lüksemburg, Türkiye	0
Litvanya	İrlanda, Norveç	0	Almanya, Lüksemburg, Norveç, Türkiye	0
Lüksemburg	Lüksemburg	1	Lüksemburg	16
Macaristan	İrlanda, Norveç	0	Almanya, İrlanda, Lüksemburg, Norveç, Türkiye	0
Meksika	İrlanda, Norveç	0	Meksika	1
Norveç	Norveç	33	Norveç	22
Polonya	İrlanda, Norveç	0	Almanya, İrlanda, Norveç, Türkiye, ABD	0
Portekiz	İrlanda, Norveç	0	Almanya, Lüksemburg, Norveç, Türkiye	0
Slovakya	İrlanda, Norveç	0	Almanya, Lüksemburg, Türkiye	0
Slovenya	İrlanda, Norveç	0	Almanya, İrlanda, Lüksemburg, Norveç, Türkiye	0
Şili	İrlanda, Norveç	0	Norveç, Türkiye, ABD	0
Türkiye	İrlanda, Norveç	0	Türkiye	25
Yeni Zelanda	Norveç, ABD	0	Norveç, Türkiye, ABD	0
Yunanistan	İrlanda, Norveç	0	Almanya, Lüksemburg, Norveç, Türkiye	0

5.5. VZA’da Referans Kümeleri

VZA’nın amaçlarından biri KVB’lerinin etkin olabilmesi için hangi KVB’lerini kendilerine referans almaları gerektiğinin belirlenmesidir. VZA’da her bir etkin olmayan KVB için referans kümeleri belirlenebilmektedir. Dolayısıyla, VZA ile etkin bulunan ülkelerden hangilerinin etkin olmayan ülkeler için referans oluşturduğu saptanabilmektedir. Tablo 9’da CCR ve BCC model çözümleri için referans ülkeler ve referans olma sayıları bilgilerine yer verilmiştir. CCR modelinde etkin olarak belirlenen ülkelerden ABD 6, İrlanda

30, Lüksemburg 1 ve Norveç 33 ülke için referans olmuştur. CCR model çözümünde Lüksemburg etkin ülkeler kategorisinde yer almasına karşın etkin olmayan ülkeler tarafından referans alınan bir ülke olmamıştır. CCR modeline göre Türkiye'nin etkin olabilmesi için İrlanda ve Norveç ülkelerini referans alması gerekmektedir. BCC modeli çözümü incelendiğinde referans olan ülke sayısının arttığı belirlenebilmektedir. BCC modelinde etkin olarak belirlenen ülkelerden ABD 12, Almanya 23, İrlanda 8, İsviçre 4, Kosta Rika 2, Lüksemburg 16, Meksika 1, Norveç 22 ve Türkiye 25 ülke için referans olmuştur. Türkiye, BCC model çözümünde referans alınan ülke konumunda olarak belirlenmiş ve en fazla referans alan ülke olmuştur. Meksika etkin kategorisinde yer alan bir ülke olmasına karşın etkin olmayan ülkeler tarafından referans alınan bir ülke olmamıştır.

6. Tartışma

Çalışma kapsamında OECD üye ülkelerinin göreceli etkinliklerinin (makroekonomik performansının) araştırılmasında VZA ve sınıflamalarında KA uygulanmıştır. VZA modellerinden girdi odaklı CCR model ve girdi odaklı BCC model uygulaması yapılmıştır. CCR modeline göre beş ülke olarak ABD, Lüksemburg, Norveç, İrlanda ve İsviçre etkin olarak belirlenmiştir. BCC modeline göre dokuz ülke olarak ABD, Almanya, Avustralya, İsviçre, Kosta Rika, Lüksemburg, Meksika, Norveç, İrlanda ve Türkiye etkin diğer OECD üye ülkeleri etkin olmayan ülkeler olarak belirlenmiştir. BCC modeli CCR modeline kıyasla daha fazla sayıda KVB'nin etkin olarak bulunduğu bir yöntem olarak karşımıza çıkmaktadır.

Etkin bulunan ülkelerin hangi ülkeler için referans oldukları belirlenebilmektedir. CCR modelinde ABD 6, İrlanda 30, Lüksemburg 1 ve Norveç 33 ülke için referans olmuştur. Bununla birlikte İsviçre etkin ülke olarak belirlenmesine karşın diğer ülkeler için referans alınan ülke konumunda olmamıştır. BCC modelinde referans alınan ülkeler ABD 12, Almanya 23, İrlanda 8, İsviçre 4, Kosta Rika 2, Lüksemburg 16, Meksika 1, Norveç 22 ve Türkiye 25 ülke için referans olmuştur. Ancak, Avustralya etkin ülke konumunda olmasına karşın herhangi bir ülke için referans olmamıştır.

BCC model sonucuna göre gelişmekte olan ülkeler grubunda yer alan Türkiye'nin referans alınan ülkeler grubunda sınıflanması ve gelişmiş ülkeler tarafından da referans alınan ülke olması (örneğin, Belçika, Birleşik Krallık, Danimarka, Fransa, İtalya) önemli bir bilgi olarak görülmektedir. Buna karşın, Türkiye'nin araştırma değişkenleri verisinin orta düzeyde sıralamada yer aldığı, G4: İşgücü katılım oranı ve), Ç2: Kişi başına düşen GSYİH (cari ABD\$) için ise tüm ülkeler arasında oldukça olumsuz düzeyde olduğu belirlenmiştir. Bu bilgiler çerçevesinde, çalışma verisinde BCC model sonucuna dayalı yorumlama yapılmasından ziyade CCR model sonuçlarına dayalı değerlendirmesinin yapılmasının daha uygun olabileceği yorumu yapılabilir.

KA, makroekonomik göstergelere göre ülkelerin sınıflamalarının yapılmasında kullanılmıştır. Yöntemle hangi ülkelerin benzer yapıda olduğu belirlenmesi amaçlanmıştır. K-ortalama tekniği sonucu gelişmiş ekonomiler grubunda yer alan ABD, Avustralya, Lüksemburg, Danimarka, Norveç, Hollanda, İrlanda, İsviçre ve İzlanda aynı kümede

sınıflanmıştır. Geri kalan OECD üye ülkeleri diğer kümede sınıflanmış olup bu kümedeki ülkeler gelişmiş ve gelişmekte olan ekonomiler grubunda yer almaktadır.

Kappa katsayısında $P(A)$ değeri 0,89 olup CCR ve KA yöntemlerinin aynı sınıflandırmalarının oldukça iyi olduğu yorumu yapılmıştır. Buna karşın, Kappa katsayısı 0.7'den küçük değerli olduğu için iki yöntem arasında uyum olmadığı değerlendirilmiştir. KA ile BCC modelinde $P(A)$ değeri 0,81 olup iki yöntemin aynı sınıflandırmalarının iyi olduğu yorumu yapılmıştır. Ancak, Kappa katsayısı 0.7'den küçük değerli olduğu için iki yöntem arasında uyum olmadığı belirtilmiştir. $P(A)$ değerine göre CCR model çözümlemesinin BCC model çözümlemesine kıyasla K-ortalamalar kümeleme analiziyle daha uyumlu bir sonuca sahip olduğu değerlendirilmiştir.

KA sonucu küme merkezleri bilgisinden aynı kümedeki ABD, Avustralya, Lüksemburg, Danimarka, Hollanda, İrlanda, İsviçre ve İzlanda'nın gösterge değerleri diğer küme gösterge değerlerinden daha iyi düzeydedir. KA ile CCR modeline göre ABD, Lüksemburg, Norveç, İrlanda, İsviçre aynı grupta görülmüştür. Bu ülkeler gelişmiş ekonomiler grubunda sınıflanmakta olup gösterge değerleri de iyi düzeyde tespit edilmiştir.

OECD üye ülkelerinin performansı ile karşılaştırılması üzerine literatürdeki çalışmalar incelendiğinde farklı sayılardaki ülkelerin analizlere dâhil edildiği görülmektedir. Bu çalışmanın CCR modeliyle elde edilen bulguları Aksaraylı ve Pala (2017) çalışmasının farklı yılları içinden 2015 yılı bulgularıyla örtüşmüştür. Lüksemburg, ABD, İsviçre, Norveç, İrlanda etkin ülkeler olmuştur. Färe vd. (1994) çalışmasında ABD'nin üretkenlik büyümesi ortalama olarak yüksek belirlenmiştir. Lovell vd. (1995), İsviçre'nin en iyi makroekonomik hizmet sağladığını belirlemiştir. Yapılan bu çalışmada da ABD ve İsviçre etkin ülke olmuş ve gösterge değerleri iyi olan grupta yer almıştır. Brockett vd. (1998), 1979-1988 dönemi için Yunanistan'ın en kötü performansı ve Danimarka'nın en iyi performansı sergilediğini belirlemiştir. Bu çalışmada da Yunanistan, CCR modeline ve BCC modeline göre sondan ikinci sırada en düşük etkinlik skoruna sahip ülke olmuştur. Moesen ve Cherchye (1998) çalışmasında en iyi küresel performanslar sırasıyla Japonya, İsviçre ve Hollanda'ya ve en düşük küresel performans Yeni Zelanda'ya ait bulunmuştur. Bu çalışmada, CCR modeline göre etkinlik skoru en düşük ve BCC modeline göre sondan ikinci sırada en düşük olan ülke Yeni Zelanda iken her iki modele göre İsviçre etkin ülke olmuştur. Maudos vd. (1999) çalışmasında ABD, tüm 1975-90 dönemi boyunca tutarlı bir şekilde etkin olarak belirlenmiştir. Bu çalışmada da ABD etkin ülke grubunda olmuştur. Arcelus ve Arocena (2000) çalışmasında incelenen 1970-1975 ve 1985-1990 yılları için sadece ABD'nin etkin ülke olduğu görülmüştür. Afonso ve Aubyn (2013), 1970, 1980, 1990 ve 2000 yıllarının tümünde Belçika, Kanada, İtalya, Portekiz ve ABD etkin ülkeler olarak belirlenmiştir.

7. Sonuç

Ülkelerin ekonomik performansını etkileyen birçok ulusal ve uluslararası ekonomik faktör bulunmaktadır. İstikrarlı büyümeye yönelik faaliyetler yürütülürken ekonomik sorunların tespit edilmesinde ülkeler arası değerlendirmeler önem kazanmaktadır. Ülkelerin

refah, kalkınma ve güç bakımından değerlendirmelerinde makroekonomik faktörler belirleyici olmaktadır. Gelişmekte olan ülkelerin gelişmiş ülkelere ekonomik performans bakımından anlamlı ölçüde ayrılmakta olduğu belirlenebilmektedir. Yüksek düzeyde ekonomik gelişime ve yaşam standardına sahip olan gelişmiş ülkelerin genel özelliklerine bakıldığında kişi başına düşen yüksek GSYİH ve tutarlı ekonomik büyüme oranları göze çarpmaktadır. Gelişmekte olan ülkeler gelişmiş ülkelerle kıyasla daha düşük GSYİH, kişi başına düşen gelir ve yaşam standardına sahip ülkelerdir.

Gelişmiş ve gelişmekte olan ülkeleri bünyesinde barındıran bir kuruluş olarak OECD için ülkeler arası makroekonomik performans ölçümlerinin yapılması üzerinde önemle durulması gereken bir konudur. Ülke ekonomilerinin kıyaslamalar yoluyla değerlendirmeye alınmasıyla ülkelerin ekonomi politikalarının başarısının ölçülmesi önem arz etmektedir. Ülkelerin ekonomi alanındaki performanslarının tespit edilmesinde makroekonomik göstergeler kullanılmaktadır. Makroekonomik göstergelerle ülkeler arası kıyaslamalarda ülkelerin ekonomi alanında göstermiş olduğu etkinlik düzeyi belirlenebilmekte, ülkeler arası sınıflamalar yapılabilmektedir.

Çalışma kapsamında OECD üye ülkeleri için performans ölçümlerinde kullanılan CCR ve BCC model bulguları ile KA bulguları birlikte değerlendirmeye alınmıştır. Kappa katsayısı hesaplamaları sonucu KA ile CCR aynı sınıflandırmalarının KA ile BCC aynı sınıflandırmalarından daha iyi olduğu bulgusuna ulaşılmıştır. Bu doğrultuda KA ile VZA yöntemlerinin her ikisinin birlikte kullanımıyla karar verilmek istenildiğinde KA ve CCR bulgularının referans alınabileceği önerisinde bulunulabilir. CCR modeline göre etkin belirlenen ve KA sonucu gösterge değerleri daha iyi bulunan kümede yer alan ABD, Lüksemburg, Norveç, İrlanda, İsviçre ülkeleri diğer ülkeler tarafından makroekonomik performanslarının artırılması bakımından örnek alınabilecek ülkeler olarak görülebilir. Ekonomi alanında olumlu gelişmelerin sürdürülebilmesinde politikalar geliştirilirken makroekonomik göstergelerin iyi seviyeye getirilmesi esas olmalıdır değerlendirme yapılabilir. Ülkelerde izlenecek makroekonomik politikalarda en iyi makroekonomik gösterge değerlerine sahip olunması ve görece olarak etkin olan ülke veya ülkelerdeki uygulamaların takip edilmesi ilerleme sağlanması açısından önemli görülmektedir. Olumlu ekonomik göstergeler seviyesi yüksek ekonomi piyasalarına karşılık gelmekte bu da ülkeye olan yatırımların artmasına referans oluşturmaktadır.

Türkiye özelinde değerlendirmelerinden Türkiye'nin çıktı değişkenleri olan mal ve hizmet ihracatı ve kişi başına düşen GSYİH için düşük değerlere sahip olduğu belirlenebilmektedir. Türkiye'nin işgücü katılım oranı tüm ülkeler içinde en düşük değerlidir. Mal ve hizmet ihracatında düşük seviyede kaldığı, yıllık ortalama çalışma süresinde olumsuz seviyede olduğu görülmektedir. KA ve CCR bulguları referans alındığında Türkiye etkin olmayan ülke olarak belirlenmektedir. Türkiye için referans alınacak ülkeler İrlanda ve Norveç'tir. İrlanda ve Norveç, Türkiye'den üst düzeyde olumlu gösterge değerlerine sahiptir. Her iki ülke de gelişmiş ekonomiler grubunda yer almakta iken Türkiye gelişmekte olan ekonomiler grubunda yer almaktadır.

Tüm ülkeler için gelişmiş ekonomiler grubunda olmak bir hedeftir. Gelişmekte olan ülkelerin büyüyen ekonomiler arasında yer alması ve küresel büyümeyi yakalayabilmesi için GSYİH'nın yükseltilmesi, işgücüne katılımın artırılması, dış ticaret dengesinin sağlanması başta olmak üzere ekonomi alanında gelişme kaydedilecek adımların atılması gerekmektedir.

Ülke politikaları ekonomik büyüme üzerine kuruludur. Ekonomik kalkınma ve büyümenin en iyi seviyeye getirilmesi makroekonomik göstergelerin iyileştirilmesi yoluyla ancak elde edilebilir. Gelişmiş ülkelerin politikalarının ve uygulamalarının takip edilmesiyle birlikte ülke özelinde yaşanan sorunların ve gelişmelerin de dikkate alınması gereklilik arz etmektedir. Hükümetlerin performansı ekonomi alanında kaydedilen gelişmelere paralel olarak artış gösterecektir. Etkin ekonomi politikalarının oluşturmasıyla iktisadi büyümenin sağlanabileceği iktisadi büyümenin de refahın artışına katkı sağlayacağı söylenebilir.

Çalışmada belirli makroekonomik göstergelerle analizler gerçekleştirilerek bulgular elde edilmiştir ancak gelecekte yapılabilecek farklı araştırmalarla farklı göstergeleri eklemek, silmek veya yeniden tanımlamak mümkündür. Farklı göstergelerle farklı veya benzer sonuçlar elde edilebilir. Bu durumun ülkelerin makroekonomik performanslarının değerlendirilmesine farklı bir boyut kazandıracağı söylenebilir. Araştırma OECD üye ülkeleriyle sınırlandırılmıştır ancak bazı verilerinin bulunmaması nedeniyle OECD üyesi olan Japonya analizlere dahil edilememiştir. OECD üye ülkeleri üzerine incelemeler yapılmış ancak gelecekte yapılacak farklı araştırmalarda başka ekonomiler üzerine incelemeler yapılmasıyla ülke sınıflamaları çalışma konusu yapılabilir.

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İleri Yetişkinlikte Finansal Okuryazarlığın Tüketim Harcamaları ve Finansal Refaha Etkisi

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The Impact of Financial Literacy on Consumption Expenditures and Financial Well-being in Late Adulthood

Abstract

This study aims to examine the levels of financial literacy (including financial competency and behaviour), spending self-control, and financial well-being among advanced adults in Türkiye, and to identify the relationships among these variables. For this purpose, data collected from 426 participants via convenience sampling were analysed. According to the findings, participants exhibit low-to-moderate levels of financial literacy, spending control, and well-being. It was found that women and participants in low-education and low-income groups exhibited lower levels of these variables. Relational analyses showed that the effect of financial competency on self-control spending was not significant, whereas the impact of financial behaviour was significant. Both financial competency and financial behaviour were found to contribute significantly to financial well-being.

Keywords : Financial Gerontology, Financial Literacy, Financial Well-being, Late Adulthood, Consumer Expenditure.

JEL Classification Codes : E21, G51, G53.

Öz

Bu çalışmanın amacı Türkiye’de ileri yetişkin bireylerin finansal okuryazarlık (finansal yeterlilik ve davranış), harcama öz kontrol ve finansal refah düzeylerini ortaya koymak; bu değişkenler arasındaki ilişkileri tespit etmektir. Bu amaçla uygun örnekleme yöntemi kapsamında erişilen 426 katılımcıdan toplanan veriler analiz edilmiştir. Bulgulara göre katılımcılar finansal okuryazarlık, harcama kontrolü ve refah açısından düşük-orta düzeydedir. Kadınlar, düşük eğitim ve düşük gelir grubundaki katılımcıların değişkenler bakımından daha düşük düzeyde oldukları bulunmuştur. İlişkisel analizler, finansal yeterliliğin harcama öz kontrol üzerindeki etkisinin anlamlı olmadığını, ancak finansal davranışın etkisinin anlamlı olduğunu göstermiştir. Hem finansal yeterliliğin hem de finansal davranışın finansal refaha anlamlı ölçüde katkıda bulunduğu anlaşılmıştır.

Anahtar Sözcükler : Finansal Gerontoloji, Finansal Okuryazarlık, Finansal Refah, İleri Yetişkinlik, Tüketim Harcamaları.

1. Giriş

İleri yaştaki bireyler, toplam nüfusun büyük bir bölümünü oluşturmaktadır. Meydana gelen değişimler ve gelişmelerde de bu yaş grubunun ortalama ömrü uzamaktadır (Köroğlu, 2019: 68). Tüm dünya genelinde yaşlı yetişkinlerin sayısındaki benzeri görülmemiş büyüme, teknolojik ilerlemeler, tıbbi gelişmelerle ve bunun sonucunda yaşam beklentilerindeki artışla birlikte, önemli ekonomik ve sosyal etkileri olan küresel bir demografik değişime yol açmaktadır. Yeni şartlarda bireyler önceki nesillere göre daha uzun yaşayacak ve ileri yetişkinlik döneminde daha fazla yıl geçirecektir (Panis, 2004). Bu yalnızca demografik bir dönüşüm değildir, aynı zamanda bireylerin yaşamları boyunca finansal planlama ve refah açısından karşılaşacakları dinamiklerin de değişmesi anlamına gelmektedir. Daha uzun bir yaşam süresi, yalnızca temel ihtiyaçların karşılanması değil, aynı zamanda yaşlılıkta refahı artıracak yatırımlara, sağlık giderlerine ve potansiyel bakım maliyetlerine hazırlıklı olmayı gerektirmektedir. Bu da finansal gerontolojinin alanına giren bir durumdur.

Yaşlanmanın ve yaşlılığın bilimi olarak multidisipliner bir alan olan finansal gerontoloji biyoloji, psikoloji, sosyoloji, finans, ekonomi ve pazarlama alanlarının bileşiminden oluşmakta ve yaşlı bireyler ile ailelerinin yaşam süreleri boyunca varlıkların korunması, yönetilmesi ve sorunların çözülmesine odaklanan bir alandır (Mauk, 2006: 58). Finansal gerontoloji, finansal planlamanın alt alanı olarak gelişmiş ve uygulamayla teorinin keşimi olan finans ve gerontoloji disiplinlerinin ortak noktası olarak ortaya çıkmıştır. Jozef Boettner ve Davis Gregg’in finansal eğitimin nüfus yaşlanması üzerindeki etkileriyle ilgilenmeye başladığı 1980’lere dayanmaktadır (Vitt & Siegenthaler, 1996; Cutler, 2016). Yaşlı nesilleri finans ve finansal hizmetler konusunda profesyonel bir şekilde eğitime ihtiyacı sonucunda belirginleşmiştir (Selecky & Klimczuk, 2022). Bu alanın en temel amacını, yaşlı bireylerin yaşamlarını daha kaliteli ve verimli geçirmesinde ihtiyaç duydukları mali planlama ve varlık yönetimi konularında uzmanlık sağlamaya yönelik bilgi ve yetenek arasında bağlantı kurulması oluşturmaktadır (Mauk, 2006: 822; Köroğlu, 2019: 66-67).

Finansal gerontoloji alanında önde gelen araştırmacılar, finansal okuryazarlığın finans konusuyla ilgili endişelerle yaşlanmanın bir etkileşimi olduğunu ve bunun uzun ömürlülük ve yaşlanmanın ülke ekonomileri veya yaşlı bireylerin kişisel finansal dayanıklılığı ve refahı üzerindeki etkisi olduğunu belirtmektedir (Selecky & Klimczuk, 2022). Daha uzun yaşayacak ve emeklilikte daha fazla yıl geçirecek ileri yetişkinlik çağındaki bireyler (Panis, 2004), ihtiyaç duyulacak süre boyunca gelir sağlamak üzere tasarlanmamış bir emeklilik geliri sistemine güvenecektir. Bireysel çalışanların kendi emeklilikleri için tasarruf etmeleri ve yatırım yapmaları gerekirken (Burtless, 2006), devlet ve işverenler emeklilik geliri konusunda daha az hesap verebilir hale gelmektedir. Sonuç olarak, yetişkinlerin kendi mali durumları üzerinde daha fazla sorumluluk ve kontrol almaları beklenmektedir, ancak genellikle bu sorumluluğu üstlenmeye donanımlı değildirler. Bu kişiler genellikle yaşamın bu döneminde ve öncesinde hesaplarını etkili bir şekilde yönetmek için gerekli eğitime veya deneyime sahip olmadığında finansal bağlamda refah kaybı yaşayabilmektedir (Lusardi & Mitchell, 2007a; 2007b). Özellikle ileri yetişkinlik dönemi için yapılan birikimler, örneğin sağlık hizmetiyle ilişkili olarak yapılan

harcamalardaki öngörülemeyen artış nedeniyle yetersiz gelebilmekte veya belirli yönde yapılan fazla harcamalar yaşamın diğer alanlarının payından aldığı için, bu yönleri olumsuz etkileyebilmekte, eksik bırakabilmektedir. Kişinin finansal okuryazarlık konusundaki eksikliklerine ek olarak (ve bununla ilişkili olarak) mali durumu ve harcamaları üzerinde kontrol eksikliği, bireyleri ileri yetişkinlik döneminde olumsuz uzun vadeli sonuçlara yol açabilecek olan mali risklerle, finansal refahın bozulması ile karşı karşıya bırakabilecektir (Zurlo, 2009).

Literatürde bireylerin ve bilhassa ileri yetişkinlik aşamasındaki bireylerin finansal okuryazarlık konusunda önemli bir eksikliği bulunduğuna dikkat çeken araştırmalar mevcuttur (Banks, 2010; Lusardi & Mitchell, 2011a,b; Klapper et al., 2015; Finke et al., 2017; Bialowolski et al., 2022). Bu durum özellikle gelişmekte olan ülkeler bağlamında önemli bir güncel toplumsal sorunu oluşturmaktadır. Zira yaşlı bireyler arasındaki finansal sorunlar, düşük finansal refah ve yoksulluk, özellikle gelişmekte olan ülkelerde çeşitli sosyal sonuçlara katkıda bulunan çokça bildirilen bir ikilemdir (Kwan & Walsh, 2018; Choi et al., 2019; Foong et al., 2021). Yaşlanma hızı da gelişmekte olan ekonomilerde nispeten daha hızlıdır. Daha az servete sahip olan gelişmekte olan ülkeler, ekonomilerini geliştirmek, yoksulluğu ortadan kaldırmak ve hızla yaşlanan nüfuslarının sonuçlarını aynı anda ele almak için sürekli bir çaba göstermek zorunda kalmaktadır. Bu durum, nüfus yaşlanmadan önce yüksek gelir statüsüne ulaşan gelişmiş ülkelerinkinden farklıdır. Gelişmekte olan ülkelerde nüfus yaşlandıkça, yaşlıların sosyal ve finansal refahıyla ilgili sorunların daha belirgin hale gelmesi beklenmektedir (Foong et al., 2021: 1). Ancak finansal okuryazarlık, gelişmiş finansal piyasalara sahip gelişmiş ekonomilerde bile düşüktür (Lusardi, 2019). Ancak Amerika Birleşik Devletleri, Japonya gibi gelişmiş ülkelerde dahi finansal okuryazarlık üzerine yapılan araştırmalar, ileri yetişkinlik düzeyinde bireylere ilişkin çalışmalar nispeten az sayıdadır ve bu bağlamda bir sınırlılık arz etmektedir (Shimizutani & Yamada, 2020).

İleri yetişkinlik döneminde bulunan bireylerin varlıklarını ne kadar iyi yönettikleri, emeklilik sırasındaki finansal güvenliklerinin ve refahlarının önemli bir belirleyicisi olarak kabul edilmektedir (Fong et al., 2021). Toplumun bu kesimi için finansal okuryazarlık konusunun problemli bir alan olarak kabul edildiği düşünüldüğünde (James et al., 2012) ve ileri yaşlarda harcamaya alışkanlıkları, finansal dayanıklılık, finansal refah gibi konular açısından önemli olduğu (Bialowolski et al., 2022) göz önüne alındığında, finansal karar alma süreçleri ve bunun finansal okuryazarlıklarıyla nasıl bağlantılı olduğu hakkında literatürdeki bilgi birikiminin sınırlılık arz etmesi (Fong et al., 2021), bir taraftan konuya ilişkin içgörüler sağlamayı kısıtlarken, diğer taraftan araştırmalara ve araştırmacılara ilham verici yöndedir. Literatürde bu konuda, özellikle ele alınan değişkenlerin ilişkilendirilmesi açısından ve Türkiye’deki mevcut durum hakkında içgörüler sağlamak noktasında sınırlılık bulunduğu dikkat çekmektedir.

Bireylerin yaşlandıkça finansal bilgileri, kişisel mali durumları, harcamaya kontrolleri ve refahları üzerinde daha fazla bilgi ve kontrol sahibi olmaları gerekliliği göz önüne alındığında, bu konuya ilişkin olarak yapılan araştırmaların, elde edilen bulguların,

kazanılan içgörülerin ve yapılan değerlendirmelerin büyük bir önemi olduğunu söylemek mümkün görülmektedir.

Bu çalışma, literatürde yer alan bu boşluğu ele almayı ve alana ilişkin katkı sağlamayı amaçlamaktadır. Bu amaçla yola çıkan bu çalışmanın temel amacı, ileri yetişkinlik aşamasında bulunan bireylerin finansal okuryazarlık, finansal refah ve harcama öz kontrol düzeylerini ortaya koymak ve bu değişkenler arasındaki ilişkileri istatistiksel olarak tespit etmektir. Bu amaçlara yönelik olarak, nicel araştırma yöntemi kapsamında Türkiye’de ikamet eden, ileri yetişkinlik döneminde bulunan bireylerden elde edilen birincil veriler ışığında istatistiksel analizler gerçekleştirilmiştir. Analizler neticesinde erişilen bulgulardan hareketle birtakım çıkarımlarda bulunulmuş ve öneriler sunulmuştur.

2. Teorik Arka Plan

2.1. Finansal Okuryazarlık

Günümüzde bireyler kişisel mali durumlarından her zamankinden daha fazla sorumlu hale gelmiştir. Ortalama yaşam beklentisi arttıkça emeklilik ve sosyal refah sistemleri zorlanmaktadır. Pek çok ülkede, işveren destekli tanımlanmış emeklilik planları hızla yerini özel tanımlı katkı planlarına bırakmaktadır. Emeklilik tasarrufu ve yatırım sorumluluğunu hane halkının kendisine yüklenmektedir. Eş zamanlı olarak, teknolojideki gelişmeler ve yeni ve daha karmaşık finansal ürünlerle birlikte finansal piyasalar da hızla değişmektedir. Son yıllarda finansal piyasaların daha fazla serbestleştirilmesiyle birlikte tüketicilerin kullanımına çok çeşitli finansal ürünler ve hizmetler sunulmuştur. Kredilerden kredi kartlarına, yatırım fonlarından vadeli mevduatlara, hisse senetlerinden kripto piyasalara kadar insanların seçmek zorunda olduğu çok çeşitli finansal ürün ve hizmet yelpazesi vardır. İnsanlar hem zorluklarla hem de fırsatlarla karşı karşıyadır. Finansal serbestleşmenin sürekli ilerlemesi, finansal alandaki bilgi ve iletişim teknolojilerinin gelişmesi, finansal seçeneklerin çoğalması, finansal bilgilerin fazlalaşması, insanların finansal bilgi ve finansal becerilerle iyi bir şekilde donatılmasını gerektirerek toplum için önemli bir konu haline gelmiştir (Lusardi & Mitchell, 2011a). Ayrıca tüm bunlar, bu finansal ürünlerle ilgili kararların bireysel refahın üzerinde etkiler göstermesini beraberinde getirmektedir. Daha fazla çeşitlendirilmiş ve karmaşıklaşmış bir finansal piyasada finansal kararları kendi başlarına vermek zorunda kaldıkları için bireyler daha fazla finansal riske maruz kalmaktadır (Lusardi & Mitchell, 2011b). Dahası, finansal teknolojideki (Fintech) hızlı büyüme, insanların ödeme yapma, finansal yatırımlarına karar verme ve finansal tavsiye alma biçimlerinde devrim yaratmaktadır. Bu bağlamda insanların finansal açıdan ne kadar bilgili olduklarını ve finans konusundaki bilgilerinin, “finansal okuryazarlık” düzeylerini belirlemek; bunların finansal kararlar ve finansal davranışlar üzerinde ne ölçüde etkili olduğunu anlamak önemlidir (Lusardi, 2019).

Ekonomik İşbirliği ve Kalkınma Örgütü (OECD) finansal okuryazarlık kavramını “doğru finansal kararlar almak ve sonuçta bireysel finansal refaha ulaşmak için gerekli olan farkındalık, bilgi, beceri, tutum ve davranışın birleşimi” olarak tanımlamaktadır. Diğer bir

ifade ile yalnızca finansal kavram ve risklere ilişkin bilgi ve anlayış değil, aynı zamanda bu bilgi ve anlayışı finansal bağlamda etkili kararlar almak amacıyla uygulama becerisi, motivasyonu ve güveni olarak ele almaktadır. Dolayısıyla finansal okuryazarlık hem bilgiyi hem de finansal davranışı ifade etmektedir (OECD International Network of Financial Education, 2011: 3). Finansal okuryazarlık, bilimsel literatürde bilinçli kararlar vermek için finansal bilgileri anlama yeteneği (Lusardi & Mithcell, 2007a), basit hesaplamalar yapmak ve etkili finansal kararlar almak için gereken temel finansal kavramları bilmek (Flint et al., 2012), parayı ve finansmanı kişinin kişisel çıkarlarıyla tutarlı bir şekilde yönetmek (Lichtenberg et al., 2015; Lusardi & Mitchell, 2011b) ve optimum finansal işleyiş için çeşitli kaynaklardan gelen bilgileri anlamak ve bunlara göre hareket etmek (James et al., 2012) şeklinde ele alınmıştır. Spesifik finansal kararlar arasında tasarruf hesaplaması, emeklilik planlaması, borçlanma, sosyal güvenlik seçenekleri, finansal planlama, yaşam düzenlemeleri, servet dağıtımı, yatırım seçenekleri ve hayat sigortası gibi konular yer almaktadır (MacLeod et al., 2017). Tüm bunları kapsayacak daha kısa bir tanımla finansal okuryazarlık, parasal kavramlar ve kurumlarla ilgili bilgileri daha iyi finansal sonuçlara katkıda bulunacak şekilde anlama, erişme ve kullanma yeteneğidir (Braunstein & Welch, 2002; Hilgert et al., 2003; Han et al., 2016).

Finansal okuryazarlık günlük yaşamın pek çok mali alanına sirayet etmekte, kredi kartlarının kullanılması ve aylık aile bütçesinin yönetilmesi gibi çok çeşitli günlük yaşam deneyimlerinin yanı sıra borsa yönelimi veya emeklilik planlaması, mali dolandırıcılıklara karşı savunmasızlık ve mali istismar gibi daha karmaşık konuları da yakından ilgilendirmekte ve etkilemektedir (Vidovičová, 2022: 1865). Genel olarak finansal okuryazarlık, günlük hayattan uzun vadeli finansal kararlara kadar her şeyi etkilemektedir ve bunun hem bireyler hem de toplum için sonuçları vardır. Bu anlamda düşük finansal okuryazarlık seviyeleri, etkisiz harcama ve finansal planlama, pahalı borçlanma ve borç yönetimi ile yakından ilişkili olarak kabul edilmektedir. Düşük finansal okuryazarlık seviyeleri ve bunların yaygın sonuçları, gelişmekte olan ülkeler başta olmak üzere tüm ülkelerde acil çaba gerektiren bir konuyu oluşturmaktadır (Lusardi, 2019).

2.2. Dünyada Finansal Okuryazarlık

Artık herhangi bir ekonominin uzun vadeli sürdürülebilirliğini korumak noktasında, tüketicilerin bilinçli kararlar alabilmesi için gerekli finansal bilgi ve becerilerle donatılmasının önemli bir husus olduğuna inanılmaktadır. Bu nedenle “finansal eğitim” ve “finansal okuryazarlık” kavramlarının önem kazanması şaşırtıcı değildir. OECD, “Finansal Okuryazarlığın Geliştirilmesi” adlı raporunda, bireysel refah için iyi bir düzeyde finansal okuryazarlığın bulunmasının önemini vurgulamış ve bunu finansal risklerin önlenmesinde ve finansal refahın iyileştirilmesinde temel bir faktör olarak tanımlamıştır. O zamandan bugüne OECD, uluslararası alanda bu konuya öncülük etmekte, küresel eğilimleri izlemekte ve en iyi uygulamaları paylaşmanın yollarını aramaktadır. Bununla birlikte uluslararası ve ulusal otoriteler de konu üzerine çalışmalarını hızlandırmaya başlamıştır. Finansal okuryazarlık, finansal konulardaki tutum, beceri ve davranışlar gibi konular tüm ülkelerde daha fazla önem kazanmaktadır (Visa Turkey, 2013).

Diğer taraftan, pek çok ülkede tüketicilerin finansal kapasite düzeylerine ilişkin artan bir endişenin bulunduğundan söz etmek mümkündür. Bu nedenle bu konuyu ele almak için çok sayıda girişim geliştirilmekte ve ülkeler finansal kapasiteye ilişkin ulusal stratejileri giderek daha fazla uygulamaya koymaktadır (Kempson, 2009). Başını Lusardi ve Mitchell’in (2011a) çektiği konuyla ilgili araştırmalar, gelişmiş ve gelişmekte olan ülkeler arasında düşük finansal okuryazarlığın yaygın olduğunu ortaya koymuştur. Daha da kötüsü, insanlar finansal bilgi ve becerilerine aşırı güvenme eğilimindedir (Van Rooij et al., 2011). Düşük seviyedeki finansal okuryazarlığın, düşük tasarruf oranlarına (Moore & Mitchell, 1997) ve daha az emeklilik servet birikimine (Bernheim et al., 2001) yol açması daha olasıdır. Dolayısıyla bu kişilerin varlık kaybı yaşama (Lusardi & Mitchell, 2007a) ve borç sorunları yaşama olasılıkları daha yüksektir (Van Rooij et al., 2011). Buna karşılık, finansal okuryazarlığı daha yüksek düzeyde olanlar, verimli ve etkili finansal kararlar alma eğilimindedir (Lusardi & Mitchell, 2007a).

Dünya genelinde yapılan değerlendirmeler bu duruma dikkat çekmektedir. Örneğin Lusardi ve Mitchell (2014), finansal okuryazarlık ölçümlerini kullanarak, Amerika Birleşik Devletleri’nde finansal okuryazarlık düzeyinin düşük olduğu sonucuna varmıştır. Ayrıca, düşük finansal okuryazarlık düzeyinin Japonya dahil diğer gelişmiş ülkelerde de yaygın olduğu görülmektedir (Lusardi & Mitchell, 2011a; Shimizutani & Yamada, 2020). 15 ülkeden verileri içeren FLat World projesinden elde edilen bulgular, finansal okuryazarlığın iyileştirilmesine yönelik acil ihtiyacın altını çizmektedir. Ülkeler genelinde finansal okuryazarlık kriz seviyesindedir. Lusardi ve Mitchell (2008; 2011a; 2011b; 2011c; 2014) tarafından geliştirilen finansal okuryazarlık anketini doğru yanıtlayanlar tarafından ölçülen ortalama finansal okuryazarlık oranı %30 civarındadır. Üstelik çoğu ülkede yanıt verenlerin yalnızca %50’si faiz oranları ve enflasyonla ilgili iki finansal okuryazarlık sorusunu doğru yanıtlayabilmektedir. Finansal okuryazarlık düzeylerinin, ekonomik gelişme düzeyleri farklı olan ülkeler arasında çok benzer olması, gelir düzeylerinin veya karmaşık finansal ürünlerin her yerde bulunmasının finansal okuryazar nüfusun fazla olduğu anlamına gelmediğini göstermektedir. Bu bulgular diğer birçok araştırma tarafından da desteklenmektedir. Örneğin, 2014 Standard & Poor’s Küresel Finansal Okuryazarlık Araştırması, dünya çapında insanların risk ve risk çeşitlendirmesi hakkında en az bilgiye sahip olduğunu göstermektedir (Klapper et al., 2015).

Benzer şekilde, on Avrupa ülkesinden para, finansal okuryazarlık ve dijital çağda risk hakkında kanıt toplayan 2016 Allianz anketinin sonuçları, anketin kapsadığı tüm ülkelerde risk okuryazarlığının çok düşük olduğunu göstermektedir. Finansal bilgi açısından en iyi performans gösteren üç ülke olan Avusturya, Almanya ve İsviçre’de, katılımcıların %20’sinden azı risk bilgisi ve risk çeşitlendirmesi ile ilgili üç soruyu yanıtlayabilmektedir (Allianz, 2017). Dahası, ortalama olarak düşük finansal okuryazarlık, belirli nüfus alt grupları arasındaki kırılmalı kalıpları nedeniyle daha da kötüleşmektedir. Örneğin Lusardi ve Mitchell’in (2014) bildirdiği gibi eğitimsel başarı ile finansal okuryazarlık arasında pozitif bir ilişki olsa da bu yeterli değildir. İyi eğitilmiş insanlar bile para konusunda mutlaka bilgili olmayabilmektedir. Ülkeler arasında finansal okuryazarlık konusunda da cinsiyet farkı mevcuttur. Kadınların sorulara doğru cevap verme olasılığı erkeklere göre daha

d ř kt r. Bu u urum yalnızca genel  l ekte de il, aynı zamanda her konu bařlı ında, farklı gelir d zeyine sahip  lkeler arasında ve farklı yařlarda mevcuttur (Lusardi, 2019).

2.3. T rkiye’de Finansal Okuryazarlık

T rkiye’de di er ekonomiler gibi finansal okuryazarlık s recinde sorunlar bulundu u, gerekli adımların hızlı bir řekilde atılması zorunlu g r lmektedir. T rkiye hem ekonomisi hem de n fusu a ısından hızla b y mekte ve k resel krizlerin de g sterdi i gibi, finansal a ıdan e itimli vatandaşların bir  lkenin daha geniř ekonomik refahına katkıda bulunması s z konusudur (Visa Turkey, 2013).

T rkiye’de Finansal Okuryazarlık ve Eriřim Derne i (Foder) tarafından T rkiye i in OECD gibi uluslararası karřılařtırmalarla finansal okuryazarlık d zeyini tespit eden  alıřmalar ve T rkiye  zelinde ek analizlere duyulan ihtiya   zerine VISA sponsorlu unda 2017 yılında ger ekleřtirilen “T rkiye Finansal Okuryazarlık Arařtırması” raporuna g re T rkiye’de 15 yař ve  zeri toplam 2000 bireyle yapılan kamuoyu arařtırması sonu ları, temel finansal kavramlara y nelik bilgi d zeyinin y ksek ancak, aritmetik iřlem gerektiren durumlarda finansal beceri performansı g receli olarak daha d ř k oldu unu g stermiřtir. T rkiye’de toplumun  ok b y k bir kesimi halen hisse senedi, hazine bonusu, fon ve forex  r nlerini ya hi  duymamıřtır ya da bu  r nler hakkında kısıtlı bilgiye sahiptir. Hanelerin %35’inde hane b  esi yapılmamaktadır. “Yastık altı” gibi geleneksel para biriktirme y ntemleri toplumda hala yaygındır. Banka hesabı dıřında finansal  r nlerle birikim yapmak davranıřına pek rastlanılmamaktadır. Genel hayat akıřı i erisinde insanların ancak %44’  bir finansal plan i indedir. Toplumun sadece yarısı emeklili i i in iyi bir parasal planlama yaptığına inanmaktadır (Foder, 2017).

T rkiye’nin finansal okuryazarlık konusunda d nyadaki yeri Standard & Poor’s (S&P) tarafından y r t len arařtırmayla belirlenmiřtir. 144  lkede 150 bin kiřiyle yapılan arařtırmada T rkiye 120. sırada yer almıřtır. Arařtırma, T rkiye’de 18 yařından b y klerde finansal okuryazarlık oranını %23,6 olarak tespit etmiřtir. Sorulan beř soruya verilen yanıtlardan d rt finansal kavrama h kimiyeti  l en arařtırma, bir kiři d rt kavramdan en az    ne h kimse onu finansal okuryazar kabul etmektedir. Kavramlar ise riski da ıtmak, enflasyon, faiz ve bileřik faizden oluřmaktadır. Riski da ıtmak, enflasyon ve faiz i in birer soru sorulurken, bileřik faiz i in iki soru sorulmaktadır. Bu durumda T rkiye’de s z konusu d rt kavramdan    ne h kim olanların azınlıkta kaldığı belirlenmiřtir (Foder, 2021a).

Foder ile VISA adına IPSOS Sosyal Arařtırmalar tarafından 2019 yılında T rkiye temsili 15 yař ve  zeri toplam 2000 bireyle ger ekleřtirilen arařtırmada genel kamuoyunun temel finansal okuryazarlık d zeyinin 100  zerinden 55 oldu u anlařılmıřtır. Faiz oranı hakkında kamuoyunun %82’si cevap verememiřtir. Enflasyon oranına iliřkin katılımcıların %69’u, dolar kuruna iliřkin olarak %38’i fikir beyan etmemiřtir. Hisse senedi, bono, fon ve forex yine toplumun b y k bir kesimi tarafından bilinmemektedir. Vatandaşların  o u, finansal konularda tedirgindir (Foder, 2020).

Yine Foder ile VISA adına IPSOS Sosyal Araştırmalar tarafından 2021’de 3. dönemi Türkiye temsili 15 yaş ve üzeri toplam 2006 bireyle gerçekleştirilen araştırmada temel finansal okuryazarlık endeksi 2019 senesi ile benzer olmakla beraber finansal tutum endeksi ise 2019 yılına göre artmıştır. Toplumun basit finansal işlem becerilerinde gerileme gözlenmektedir. Faiz ve basit faiz hesaplama konularındaki doğru cevap oranlarındaki düşüş oldukça yüksektir. 2021 senesinde ise bilgi düzeyi 2017 senesinin bile altına düşmüştür. 2021 yılında kavramsal sorulara doğru cevap verenlerin de oranı oldukça gerilemiştir. Finansal planlama ve birikim gibi konularda önceki araştırmalara benzer bir tablo olduğu görülmüştür (Foder, 2021b).

2023 yılında yayınlanan Analitik ve İçgörü Araştırma Merkezi ve Boğaziçi Üniversitesi iş birliğinde yürütülen Türkiye’de Finansal Okuryazarlık ve Erişim (FOE) Raporu’na göre güncel veriler ışığında ülkedeki finansal okuryazarlık endeksi 62.1 olarak hesaplanmıştır. Bu düzey son on yılda Türkiye’nin eriştiği en yüksek finansal okuryazarlık değerini temsil etmesi yönüyle önem taşımakla beraber, halen düşük düzeydedir. Finansal okuryazarlık açısından dezavantajlı gruplar arasında ileri yaşta, düşük eğitim, gelir ve sosyoekonomik statüye sahip bireylerin ağırlık kazandığı tespit edilmiştir. Katılımcıların yaklaşık 10’da 9’u kişisel finansal durumundan memnun olmadığını ifade etmiş, yaklaşık 10’da 7’si aylık rutin harcamalarını karşılamakta zorlandığını belirtmiştir (Analitik ve İçgörü Araştırma Merkezi ve Boğaziçi Üniversitesi, 2023). Bu durum, Türkiye’deki finansal okuryazarlık seviyesinin hala yetersiz düzeyde olduğunu ve toplumun geniş bir kesiminin finansal bilgi ve beceri eksiklikleri nedeniyle ekonomik sıkıntılar yaşadığını göstermektedir. İleri yaşta bireylerin finansal okuryazarlık açısından dezavantajlı bir grup olarak öne çıkması, üzerinde özellikle durulması gereken bir konudur.

2.4. İleri Yetişkinlikte Finansal Okuryazarlık

Literatürde ampirik kanıtlar, optimal olmayan bireysel finansal kararların kayda değer oranda olduğunu ortaya koymaktadır; bazı sosyodemografik gruplarda durum daha da derinleşebilmektedir (Kaiser & Menkhoff, 2017). Dünya Sağlık Örgütü’nün 1963’te kabul ettiği yaklaşıma göre ileri yetişkinlik döneminde bulunan bireyler de bu açıdan riskli gruplar arasında ele alınmaktadır. 60-65’li yaşlar ve sonrasını kapsayan ileri yetişkinlik döneminde (Uçanok, 1971; Levinson, 1986, Levinson & Levinson, 1996; Aktu, 2016; Brittanica, 2024) bireyler genellikle emeklilik aşamasında bulunmakta ve finansal durumları refahlarında önemli bir rol oynamaya başlamaktadır. Emeklilik, birçok kişi için finansal durumlarını yönetme, tasarrufları etkili bir şekilde kullanma ve gelirlerini sürdürme zamanıdır (Lazzara, 2020; Kagan, 2024).

Finansal konuların başarılı yönetimi, yaşam döngüsünün her aşamasında önemlidir, ancak sağlıklı finansal karar verme, insanlar yaşlandıkça daha da zorlaşabildiğinden (Mitchell et al., 2017) bu dönemde mali bağımsızlık ve refah açısından bu konu bilhassa önemlidir. Ayrıca finansal okuryazarlık bu dönemde özellikle önemlidir, çünkü ileri yetişkin bireyler çalışma hayatlarına kıyasla yönetmeleri gereken daha fazla varlığa sahip olabilmektedir. Finansal ürün ve hizmetlerde artan karmaşıklık, ileri yetişkinlikte bilişsel

yeteneklerin azalmasıyla daha da k t leřebilmektedir (Fong et al., 2021). Literat rde yařlı bireylerde finansal okuryazarlıđın gen lere g re daha d ř k olduđu  ne s r lmektedir. Arařtırmalar, sınırlı finansal okuryazarlıđın ve sınırlı finansal karar alma, finansal davranıř, yatırım performansı gibi durumların yařlı yetiřkinlerde sık g r len bir olgu olduđunu ve finansal yoksunlukla, yani finansal refah eksikliđi ile iliřkili olduđunu ortaya  ıkarmıřtır (Weierich et al., 2011; Gamble et al., 2015; Han et al., 2015; Finke et al., 2020; Fong et al., 2021; Yu et al., 2021; Mis et al., 2023).

Arařtırmalar, finansal karar vermede gerekli olan matematik becerisinin yařlılar arasında,  zellikle de eđitim d zeyi d ř k olanlarda  ok d ř k olduđunu g stermiřtir (Lusardi, 2012). Ek olarak yařa bađlı biliřsel gerileme, belirsizlik altında karar vermede zorluklara yol a arak finansal kayıp riskini arttırabilmektedir (Ren et al., 2023). Yařlı bireyler arasında finansal okuryazarlık konusunda potansiyel zorluklara katkıda bulunan  eřitli fakt rler, onların finansal kararları ve davranıřlarıyla ilgili endiřeleri arttırmaktadır.  rneđin ekonomik ortam dinamikliđinden ve  zellikle teknoloji tabanlı finansal sistemlerin zamanla geliřip deđiřmesinden kaynaklı olarak yařlı bireylerin deđiřen paradigmlar karřısında ayak uydurmakta zorluk  ekebilmesi, yeni finansal  r nlerden yararlanamaması ve finansal kayıplara uđraması olasıdır. Bu durumlar, ileri yetiřkinlik d neminde zayıf finansal karar almanın potansiyel sonu larıyla birleřtiđinde, ileri yetiřkinlik d neminde bulunan bireyler arasında finansal okuryazarlık konusunun ele alınması ve geliřtirilmesinin y ksek  nemini vurgulamaktadır.

İleri yetiřkinlik d zeyindeki bireylerin yalnızca ne kadar tasarruf edeceklerini deđil, aynı zamanda bu emeklilik servetini nasıl tahsis edeceklerini de belirlemeleri gerekmektedir. Bireyler bu y k   stlenmeye ve mevcut ve gelecekteki mali durumları hakkında bilin li kararlar vermek i in gereken finansal bilgiyi iřlemeye ne kadar hazırlıklıdır? Bu ileri yetiřkin bireyler i in kritik bir sorudur (Lusardi, 2013). Bu anlamda finansal okuryazarlık, bu d nemde finansal varlıđın korunması, dođru kořullarda deđerlendirilmesi, yařam standardının korunması ve geliřtirilmesi a ısından b y k bir  nem arz etmektedir. Dolayısıyla finansal okuryazarlıđı teřvik etmek, orta yařlı ve yařlı yetiřkinlerin daha iyi bir yařam kalitesini ve uygun yařam standartlarını s rd rmelerine yardımcı olmak a ısından  nemli g r lmektedir (Bialowolski et al., 2022). Finansal okuryazarlıđın daha y ksek d zeyde olması, ekonomik refahın sađlanması ve ileri yařlarda yařam standardının, refahın y kseltilmesine y nelik bir ara  olarak hizmet edebilmektedir (Shimizutani & Yamada, 2020).

2.5. İleri Yetiřkinlikte T k tim ve Harcama Alıřkanlıkları

Bireylerin t k tim harcamaları talebe, tercihlere ve gelire dayanan kararların sonucu olarak kabul edilmekte; farklı yařam tarzlarının ve refahın dolayısıyla da mutluluđun bir g stergesi olarak ifade edilmektedir. Elbette her birey, kendi olanakları, řartları ve standartları dođrultusunda t k timde ve harcamada bulunmaktadır.  nemli olan bu konudaki farkındalık, yani harcama  zerinde  z-kontrol  sađlamaktır. Harcama  z-kontrol "bir bireyin harcamalarıyla alakalı olarak d ř nceleri ve kararlarını kendi belirlediđi

standartlara uygun bir biçimde izleme ve düzenleme yeteneği” olarak ifade edilmektedir (Haws et al., 2012). Ancak bazı hallerde, bu kontrol sağlanamadığı durumda, bireyin bireysel ve mali refahına olumsuz sirayet edebilecek durumlar meydana gelebilmektedir (Akbulut-Dursun & Erciş, 2023: 283). Rasyonel tüketici davranışlarından sapmalar söz konusu olabilmekte, bilinçli olmayan harcamalar yapılabilmekte, hatta impulsif (düşünmeden, ani kararlarla) ya da kompulsif (takıntılı bir biçimde) harcama alışkanlıkları (Temel, 2021) ortaya çıkabilmektedir. Bu durum, emeklilik döneminde finansal istikrar ve yaşam kalitesini korumak açısından özellikle sabit gelir ve tasarrufları yenileme fırsatları sınırlı olan ileri yetişkinlik döneminde önem arz etmektedir.

Başarılı bir yaşlanmaya ilişkin olarak Gregg (1992) tarafından geliştirilen ve Cutler (2003) tarafından yaygınlaştırılan, bir kişinin yaşamı boyunca kaynakların birikimi ve tüketimini ele alan “The human wealth span” modeline göre bir insanın yaşam süresi iki ana aşamadan oluşmaktadır. Bunlar servet birikimi ve harcamadır. İlk aşamada, bireyler finansal ve maddi kaynaklar biriktirmekte ve bunlar daha sonra ikinci aşamada tüketilmektedir. Sermaye genç ve orta yaşlarda biriktirilmekte ve daha sonra bireyler artık çalışmadığında emeklilikte harcanmaktadır (Szweda-Lewandowska, 2019: 1).

İleri yetişkinliğe geçiş genellikle gelir elde etmekten gelir yönetimine geçişi içermektedir ve burada odak noktası, mevcut kaynakların yaşamın kalan yıllarında yetecek şekilde kullanılması, yani ölçülü, dengeli ve kontrollü bir biçimde harcanmasını içermektedir. Bu geçiş, özellikle emekliliğe yeterince hazırlanmayanlar için zorlayıcı olabilmektedir. Zira, düzenli istihdam gelirinin kaybı, dikkatli bir finansal planlama gerektirmektedir, ancak birçok ileri yetişkin bu geçişi etkili bir şekilde yönetmek için gerekli finansal okuryazarlıktan yoksundur (Arnett, 1998; Sorgente & Lanz, 2017). Finansal bilgi eksikliği, kötü harcama seçimlerine yol açabildiğinden (Zeng et al., 2021), finansal okuryazarlık, ileri yetişkinlere finansal durumları hakkında bilinçli kararlar almaları için gerekli bilgi, beceri ve güveni sağladığı için doğru harcama tutum ve davranışlarının gelişiminde, harcama kontrolünde de önemli bir rol oynayabilecektir. Bu görüşten hareketle formüle edilen hipotezler şu şekildedir:

H₁. İleri yetişkinlikte finansal okuryazarlık, harcama öz-kontrolü pozitif anlamlı şekilde etkiler.

H_{1a}. İleri yetişkinlikte finansal yeterlilik, harcama öz-kontrolü pozitif anlamlı şekilde etkiler.

H_{1b}. İleri yetişkinlikte finansal davranış, harcama öz-kontrolü pozitif anlamlı şekilde etkiler.

2.6. İleri Yetişkinlikte Finansal Refah

Son dönemlerde, finansal refah yeni bir araştırma odağı haline gelmiş ve sosyal ve politik ilgiyi teşvik etmiştir. Bir ülkenin geliri arttıkça mutluluğun artmadığını öne süren Easterlin paradoksundan (1974) önce, finansal refah gelirle eş anlamlı olarak kabul edilmiştir; çünkü insanları mutlu etmek için yeterli bir finansal faktör olarak görülmüştür.

G n m zde insanlar olumlu bir finansal durumun farklı bir řey, y ksek bir gelirin  tesine ge en bir řey olduđu fikrini benimsemektedir. O halde insanların buna ulařmalarına yardımcı olmak i in finansal refahın ne olduđunu ele almak gerekmektedir (CFPB, 2015a; Sorgente & Lanz, 2017: 255).

Finansal refah, kiřinin mevcut finansal durumundan duyduđu memnuniyeti ifade etmektedir. Bu, genel refahın bir alt bileřenidir (Gerrans et al., 2014; Foong et al., 2021: 2). Bu anlamda finansal refah, finansal durumun  znel algısı olup, yařam boyu bireyler i in genel refahın  nemli bir  ng r c s  olarak kabul edilmektedir. Finansal refah hem řimdi hem de gelecekte finansal g venlik ve finansal se im  zg rl đ ne sahip olmak olarak tanımlanmaktadır (CFPB, 2015a). Bunun yanı sıra kavram daha geniř a ıdan bireyin maddi ve manevi bakımdan finansal durumuna iliřkin algısı, yařam standartları, kendini finansal a ıdan g vende hissetmesi, ihtiya larını karřılayabilmesi gibi konuları i ermektedir (Taft et al., 2013: 65). Kiřinin kendisi ve ailesinin ekonomide karřılařabileceđi iřsizlik, bor lıluk, iflas, yoksulluk i inde yařama gibi risklere karřı korunmuř olarak; kendisini finansal a ıdan g vende ve yeterli hissetmesidir (Taft et al., 2013: 65;  nal vd., 2015: 39). Kiřinin finansal durumu hakkındaki  znel deđerlendirmesini/ algısını kapsamaktadır. Bunun algı, bireylerin yařam mutluluđu ve refahında kritik bir rol oynamaktadır (Easterlin, 2001; Mugenda vd., 1990; Van Praag ve Ferreri-Carbonnell, 2004). İleri yařtaki bireyler, finansal durumları konusunda g venli bir his, yeterlilik duygusu ve řimdiki ve gelecekteki se im  zg rl đ  gibi finansal refahı deneyimlediklerinde, yařam memnuniyeti veya yařamları hakkında olumlu duygular yařamaktadır (Hira et al., 1989; Yeo & Lee, 2019: 594).

Konuya iliřkin olarak Scholnick vd. (2013) Kanada'da servet/gelir ile kredi kartı geri  demesi arasındaki iliřkiyi incelemiř ve daha yoksul bireylerin, daha d ř k servet, eđitim ve muhtemelen finansal geliřmiřlik nedeniyle  deme yapmama hataları yaptıkları sonucuna varmıřlardır.  stelik denekler,  demeyi zamanında yapmamaktan kaynaklanan gereksiz maliyetlerin farkında deđildir. Agarwal vd. (2009) pek  ok Amerikan hanesinin kredi kartı borcu, konut kredileri ve ipotekler i in  ok y ksek faiz oranları  dediđini tespit etmiřtir. Calvet vd. (2007), pek  ok İřve li hanenin yetersiz  eřitlendirilmiř portf ylere sahip olduđunu veya g z ardı edilemeyecek refah maliyetleriyle finansal piyasalara katılmadıđını g stermiřtir. Stolper (2018), finansal okuryazarlıkla iliřkili olduđuna inanılan  zelliklere sahip Alman hane halklarının geleneksel finansal tavsiyelere uyma olasılıklarının daha d ř k olduđunu bildirmiřtir. Bucher-Koenen ve Ziegelmeyer (2014), d ř k d zeyde finansal okuryazarlıđa sahip Almanların borsaya yatırım yapma olasılıklarının daha d ř k olduđunu ve finansal krizlere deđer kaybeden varlıkları satarak tepki verdiklerini g stermiřtir. Yaklařık 2000 Hollandalı haneden oluřan bir  rneklemi kullanan Van Rooij vd. (2011) finansal okuryazarlıđın hane halkının hisse senedi satın alma eđilimini azalttıđını bildirmiřtir.  in'de elde edilen ampirik kanıtlar, 3882 haneden oluřan bir  rneklemde finansal okuryazarlıđın gen  hanelerin riskli yatırımlarını artırdıđını, ancak daha yařlı, daha az eđitimi hanelerin getirilerini azalttıđını g stermiřtir (Li et al., 2020). Ancak birkaç istisna dıřında bu  alıřmaların  ođu yalnızca tek bir ekonomik sonuca odaklanmıřtır ( rneđin borsaya katılım). Bu nedenle, finansal okuryazarlıđın aynı n fusta eř zamanlı olarak  eřitli finansal kararları nasıl řekillendirebileceđi a ık deđildir.  rneđin, yařlı yetiřkinlerin finansal

karar vermenin bazı yönlerinde daha iyi performans göstermesi, diğer yönlerden ise daha kötü performans göstermesi mümkündür. Bunlar da finansal refah ile ilişkili olabilecektir. Ayrıca, zayıf karar vermenin belirleyicilerinin çeşitli finansal karar türleri arasında ortak olup olmadığı da belirsizdir. Örneğin, daha yüksek düzeyde eğitim ve finansal bilgi borsaya katılımı ilişkilendiriliyorsa, aynı faktörler iyi kredi kartı geri ödeme davranışıyla da ilişkili midir? Bu tür soruların yanıtlanabilmesi spesifik gruplar çerçevesinde değerli bulgular elde etmeye olanak tanıyabilecektir (Fong et al., 2021).

İleri yetişkinlik döneminde bulunan bireylerin varlıklarını ne kadar iyi yönettikleri, emeklilik sırasındaki finansal güvenliklerinin önemli bir belirleyicisidir (Fong et al., 2021). Literatürde finansal okuryazarlığın ileri yaşlarda daha düşük olduğu ve toplumun bu kesimi için finansal okuryazarlık konusunun problemlili bir alan olarak ortaya çıktığına dair sonuçlara rastlanmaktadır (James et al., 2012). Bununla birlikte, finansal okuryazarlığın ileri yaşlarda finansal dayanıklılık ve finansal refah açısından önemli olduğuna ilişkin ampirik bulgular yer almaktadır (Bialowolski et al., 2022). Ancak halen finansal karar alma süreçleri ve bunun finansal okuryazarlıklarıyla nasıl bağlantılı olduğu hakkında literatürdeki bilgi birikimi sınırlılık arz etmektedir (Fong et al., 2021). Diğer ileri yetişkinlerde finansal okuryazarlığın ölçülmesi bilgi, tutum ve davranışları dikkate alan kapsamlı bir yaklaşım gerektirmektedir. Bu yaklaşım, bireylerin finansal durumunu daha iyi anlamaya ve geliştirmeye yardımcı olabilecektir. Literatürde yer alan tüm bu bilgilerden ve sınırlılıktan hareketle, bu çalışmada ele alınan varsayımlar ışığında, ileri yetişkinlikte finansal okuryazarlık ve finansal refah arasındaki ilişkileri test edilmek üzere formüle edilen hipotezler ise şu şekildedir:

H₂. İleri yetişkinlikte finansal okuryazarlık, finansal refahı pozitif anlamlı şekilde etkiler.

H_{2a}. İleri yetişkinlikte finansal yeterlilik, finansal refahı pozitif anlamlı şekilde etkiler.

H_{2b}. İleri yetişkinlikte finansal davranış, finansal refahı pozitif anlamlı şekilde etkiler.

3. Yöntem

3.1. Araştırmanın Modeli

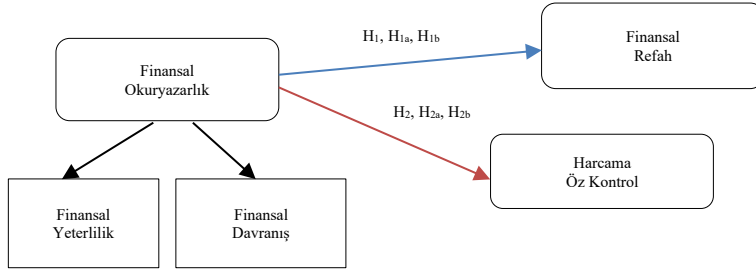
Çalışma, nicel araştırma yöntemine dayalı olarak yürütülen kesitsel niteliktedir. Çok değişkenli bir yapı arz ettiğinden, değişkenler arasındaki ilişkileri istatistiksel olarak tespit etmeyi hedefleyen bir ilişkisel taramadır. Çalışmada temel olarak ileri yetişkinlikte olan bireylerin finansal okuryazarlık düzeylerinin anlaşılması ve bunun çeşitli faktörlerle olan ilişkisinin tespit edilmesi hedefi ışığında şu araştırma soruları ileri sürülmektedir:

- İleri yetişkinlikte olan bireylerin finansal okuryazarlık (finansal yeterlilik ve finansal davranış) düzeyleri nedir?
- İleri yetişkinlikte olan bireylerin harcama öz kontrol düzeyleri nedir?
- İleri yetişkinlikte olan bireylerin finansal refah düzeyleri nedir?

- İleri yetişkinlikte olan bireyler bağlamında finansal okuryazarlık, harcama öz kontrol ve finansal refah arasında anlamlı ilişkiler var mıdır? Varsa ne yönde ve hangi güçtedir?

Bu araştırma değişkenleri, soruları ve önceki kısımlarda verildiği gibi, ele alınan değişkenler arasındaki hipotezleri temsil eden araştırma modeli aşağıdaki gibidir:

Şekil: 1
Araştırma Modeli



3.2. Veri Toplama Yöntemi ve Araçları

Nicel araştırma yöntemine dayalı olan bu çalışmanın veri toplama yöntemi yüz yüze anketlerdir. Bu kapsamda oluşturulan anket formunda iki temel kısım bulunmaktadır. Formun ilk kısmında katılımcıları tanıtıcı nitelikteki sosyodemografik özelliklerin belirlenmesini amaçlayan sorular yer alırken, ikinci kısımda araştırma değişkenlerini ölçümlemeyi amaçlayan, Likert esasına dayalı psikometrik ölçekler yer almaktadır. Ölçeklere ilişkin detaylar aşağıdaki gibidir:

3.2.1. Finansal Okuryazarlık Değişkeninin Ölçülmesi

Finansal okuryazarlık düzeyine yönelik çalışmalar düzenli olarak çeşitli anketler şeklinde yapılmaktadır. Bunlar, finansal kavramların ulusal ve uluslararası düzeyde bilgi ve anlayış düzeyi hakkında bilgi sağlamaktadır (Foucault & Le Huérou, 2022). Finansal okuryazarlık, matematiksel görevlerle (sayısal) test edilen temel sayısal becerileri içerebilmenin yanında belirli bir yatırıma, tasarrufa ve tüketiciye yönelik değerler ve tercihleri içermektedir. Finansla ilgili bilgi, davranış (yetenek) ve/veya tutumlar (değerler) ampirik olarak ölçülebilmektedir (Vidovićová, 2022: 1865). Bu çalışmada tercih edilen ölçek, Prevett vd. (2020) tarafından geliştirilmiş olan ve finansal okuryazarlığın finansal bilgi, para yönetimi, ileriye yönelik planlama, ürün seçimi gibi farklı yönlerini ele almayı amaçlayan bir psikometrik ölçektir. Orijinal ölçekte finansal yeterlilik bölümünde 13 ifade, finansal davranış (kişisel finansal uygulamalar) bölümünde 15 ifade olmak üzere toplam 28 ifade yer almaktadır. Ancak, orijinal ölçeğin hedefinde finansal eğitimin bir parçası olarak genç öğrenciler yer almaktadır ve kişisel finansal uygulamalar bölümünde yer alan iki ifade geleceğe dönük (kariyer yönelimli) niyeti ölçmeyi amaçlamaktadır. Bu ifadeler, bu

çalışmanın örnekleme uygun olmadığı gerekçesi ile araştırmaya dahil edilmemiştir. Bu bakımdan çıkarılan bu 2 ifade sonucunda nihai ölçekte kişisel finansal uygulamalar bölümü 13, finansal yeterlilik bölümü 13 ifade olmak üzere toplam 26 ifadelidir. Ölçek orijinal çalışmada 4’lü Likert tipi ifadelerden oluşan bir seridedir: 1-Hiç emin değilim, 2-Pek emin değilim, 3-Oldukça eminim, 4-Çok eminim. Ancak bu çalışmada, finansal refah ölçeği ile bütünlük oluşturmaya ve yanıtlayıcıların katılımlarının sağlığını korumak düşüncesi ile “Ortadayım” seçeneği eklenerek 5’li Likert skalasına dayalı olarak 1-Hiç emin değilim, 2-Pek emin değilim 3-Ortadayım 4-Oldukça eminim ve 5-Çok eminim şeklinde verilmiştir. Katılımcıların ölçekte verdikleri yanıtlara göre puan hesaplaması yapılabilmektedir ve bu ölçekte bunun hesaplanması oldukça basittir. Katılımcının kendisini temsil eden pozisyon (yani işaretlediği seçenek) ne kadar yüksekse, kişi bu ölçümde o kadar yüksek puan almaktadır, bu da finansal okuryazarlık öz yeterliliğinin daha yüksek olduğunu göstermektedir. Diğer bir ifade ile ölçekten alınan yüksek puanlar, yüksek finansal okuryazarlığa işaret ederken, düşük puanlar, düşük finansal okuryazarlığa işaret etmektedir.

3.2.2. Finansal Refah Değişkeninin Ölçülmesi

ABD Tüketici Mali Koruma Bürosu (CFPB, 2015b) tarafından, uygulayıcılara ve araştırmacılara bireysel finansal refahı ölçmek için standart, güvenilir ve geniş çapta erişilebilir bir yol sağlamak amacıyla finansal refahın tüketici odaklı bir tanımını geliştirmeye yönelik sıkı bir araştırma çabasının ardından geliştirilmiş olan bir Likert esaslı ölçektir. Ölçek, uygulayıcıların ve araştırmacıların doğrudan gözlemlenemeyen bir durumu doğru ve tutarlı bir şekilde ölçmesine ve dolayısıyla gözlemlenmesine olanak sağlamak üzere tasarlanmıştır. Hem tüketicilerin hem de uzmanların görüşlerinden yararlanan finansal refah tanımına dayanan, tüketici odaklı bir ölçümdür. CFPB en son yöntemleri kullanan çok sayıda uzmanın desteğiyle 10 ifadelidir bir ölçek geliştirmiştir ve ölçeğin kalitesini ve güvenilirliğini sağlamak için kapsamlı testler ve doğrulamalar gerçekleştirmiştir. Finansal refahın dört unsurunu kapsayan tek bir finansal refah puanı sunmayı amaçlayan ölçek, farklı kişilerin puanlarını doğrudan karşılaştırmanın veya bir bireyin finansal refahının zaman içinde nasıl değiştiğini görmeyi mümkün olacağı şekilde yapılandırılmıştır. Soruların doğru anlaşılmasını sağlamak için bilişsel görüşme ve testler de dahil olmak üzere en gelişmiş teknikler kullanılarak geliştirilmiş bir ölçüm aracıdır. Ölçek, çok sayıda niceliksel test dalgasına dayanan finansal refah yapısının son derece güvenilir ve geçerli bir ölçüsüdür. Ölçek 5’li Likert esasına dayanmaktadır ve katılımcıların ifadelerin kendisini ne kadar tanımladığına göre değerlendirme yapmasını talep etmektedir. Likert skalasında seçenekler “1-Hiç tanımlamıyor, 2-Çok az tanımlıyor, 3-Biraz tanımlıyor, 4-İyi tanımlıyor, 5-Tamamen tanımlıyor” şeklinde verilmiştir. Ölçekte alınan daha yüksek bir puan, daha yüksek düzeyde ölçülen finansal refaha işaret etmektedir, ancak “iyi” veya “kötü” finansal refah puanı için belirli bir sınır (bir kesme noktası) yoktur.

3.2.3. Harcama Öz Kontrol Değişkeninin Ölçülmesi

Katılımcıların harcamaları üzerinde sağladıkları kontrolü test etmek üzere Haws vd. (2012) tarafından geliştirilen Harcama Öz Denetim (Kontrol) Ölçeği (CSSC) kullanılmıştır.

CSSC, bireylerin harcama davranıřlarını kontrol etme yeteneklerini belirlemek i in Haws vd. (2012) tarafından geliřtirilen 10 ifadeli psikometrik bir  l ektir. Yetiřkin bireyler  zerinde g venilirli i ve yapı ge erlili i test edilmiřtir. CSSC  l  m maddelerine verilen yanıtların yanlılık veya algı sorunu yer almadı ından emin olmak ve tahminlerin daha g  l  bir řekilde test edilmesini sa lamak i in d rt hafta arayla iki ařamada ger ekleřtirilmiřtir.  l e in 10 ifadeli, tek fakt rl  (tek boyutlu) modeli i in destek,  nerilen  l e in do rulayıcı fakt r analizinden sa lanmıřtır. Gerbing ve Anderson (1988) tarafından  nerilen prosed rleri kullanan do rulayıcı fakt r analizleri, ayırıcı ge erlili i arařtırmak i in kullanılmıřtır. Ki-kare fark testi, CSSC ile genel  z kontrol arasında ayırıcı ge erlili i desteklemiřtir. ($\Delta\chi^2 = 837.80$, 1 d.f., $p < .01$). AVE tahminlerinin, genel  z kontrol  l  mleri ile CSSC arasındaki korelasyonu yansıtan kareli phi katsayısı ile karřılařtırılması, ayırıcı ge erlili e dair ek kanıt sa lamıřtır.  l e in Cronbach Alpha g venilirlik katsayısı 0.90 olarak tespit edilmiřtir ve bu  l e in y ksek g venilirlik g sterdi ine iřaret etmiřtir. CSSC’nin genel harcama ve t ketim kalıpları konusunda i   r  sa ladı ı tespit edilmiřtir. Ayrıca  l ek literat rde pek  ok farklı arařtırmada, farklı k lt rler ve  rneklemeler ba lamında g venle kullanılmıř ve ge erli  l  mler sa lamıřtır (Bearden & Haws, 2012; Haws et al., 2012; Haws, 2017; Ponchio et al., 2019; Baybars &  zhan-Dedeo lu, 2020; Du Plessis et al., 2024). 5’li Likert tipinde verilen  l ek ifadelerinde se enekler “1-Hi  do ru de il, 2-Pek do ru de il, 3-Ortadayım, 4-Gayet do ru, 5- ok do ru” bi iminde sıralanmaktadır.  l ekte katılımcıların y ksek puan alması, harcamaları  zerinde kontrol sahibi oluřlarının y ksek oldu una iřaret etmektedir.

3.3. Evren ve  rneklem

Levinson’a (1986, 1996) g re yařam d ng s ndeki  a lar d rt evreden oluřmaktadır. Bu evreler sırasıyla  n yetiřkinlik, ilk yetiřkinlik, orta yetiřkinlik ve ileri yetiřkinliktir. Orta yetiřkinlik  a ı, orta yař ile ileri yař ge iř d nemleri arasında kalan yaklaşık 40-65 yař diliminde yer alırken, ileri (son/ge ) yetiřkinlik  a ı ise, son yetiřkinlik ge iř d nemi ile ileri yetiřkinlik sonrası d nem arasında kalan yaklaşık 65 ve  st  yařları arasında bulunmaktadır (Aktu, 2016: 164). Brittanica Ansiklopedisi’ne g re insanlarda normal yařam s resinin son ařaması olan ileri yetiřkinlik, istatistiksel ve kamu idari ama ları a ısından 60 veya 65 yař veya  zeri olarak tanımlanmaktadır (Brittanica, 2024).

Engelli ve Yařlı Hizmetleri Genel M d rl  n n raporunda yer alan bilgilere g re Birleřmiř Milletler (BM) ve kimi alanlarda 60 ve  st  yařtaki bireyler “yařlı” tanımlaması ile ileri yetiřkin d zeyinde kabul edilirken, bir ok geliřmiř  l e 65 yařı ( zellikle sosyal g venlik sisteminden yararlanmak i in) yařlılı ın bařlangıcı a ısından referans kabul etmektedir. D nya Sa lık  rg t  (DS ) 1963 yılında yařlıların sa lık sorunları konusunda d zenledi i toplantıda 60 yař ve  zerini yařlılık i in bařlangı  olarak almıřtır (Karakuř, 2015: 6). T B TAK Sosyal Bilimler Ansiklopedisi’ne g re ileri yetiřkinlik veya ge  yetiřkinlik, 60’lı 65’li yařlarda bařlayan ve  l me kadar s ren d nemi kapsamaktadır (U anok, 1971). Bu bilgilerden yola  ıkararak, arařtırmanın kapsamı  er evesinde hedef grubu ileri yetiřkin d zeyinde bulunan bireyler oldu undan ve bu d neme iliřkin olarak 60-65 yařa referans verildi inden hareketle, arařtırmanın daha kapsayıcı olması bakımından

“60 yaş ve üzeri” bireylerin kapsama dahil edilmesi kararlaştırılmıştır. Bu itibarla, araştırmanın anakütlesini Türkiye’de yaşayan 60 yaş ve üzeri bireyler oluşturmaktadır. Ancak bu anakütleyi oluşturan popülasyona ilişkin net bir bilgi elde etmek olanaklar haricindedir. Bu surette örnekleme yöntemine başvurulması kaçınılmazdır.

Araştırmanın örnekleme yöntemi uygun örneklemedir. Burada ilgili popülasyona dahil olan, dahil edilme kriterlerine göre uyumlu olan, erişilebilir ve araştırmaya katılmaya gönüllü olduğunu ifade eden bireyler veri sürecine dahil edilecektir. Bu kapsamda, Türkiye’de farklı illerde aktif olarak faaliyetlerini sürdüren ve finansal okuryazarlık konusunda eğitimlerin bulunmadığı Tazelenme Üniversiteleri bünyesinde eğitim almakta olan, dahil olma kriterlerini taşıyan 60 yaş ve üzeri bireylere yüz yüze anket yöntemine dayalı olarak erişmek hedeflenmiştir. Toplanan verilerin doğruluğunu engelleyebilecek durumları ortadan kaldırmak amacıyla ele alınan dahil edilme ve dışlanma kriterleri aşağıda sunulmuştur.

Dahil Edilme Kriterleri:

- **Yaş:** Katılımcıların 60 yaş ve üzeri olması gerekmektedir.
- **Bilgilendirilmiş Gönüllü Onam:** Katılımcıların çalışmaya katılmak için bilgilendirilmiş onam vermeleri gerekmektedir.
- **Anket Formlarını Doldurabilme Becerisi:** Katılımcılar anket formlarını bağımsız ve doğru şekilde (gerekli bilgilendirmeler sağlanmış) doldurabilme becerisine sahip olmalıdır.

Dışlama Kriterleri:

- **Yaş:** 60 yaş altı katılımcılar kapsam dışıdır.
- **Bilgilendirilmiş Gönüllü Onamın Sağlanamaması:** Araştırmaya katılmaya gönüllü olmadıklarından dolayı aydınlatılmış onam veremeyen kişiler kapsam dışındadır.
- **Formları Bağımsız Olarak Dolduramama:** Anket formlarını yardım almadan bağımsız olarak dolduramayanlar kapsam dışındadır.
- **Bilişsel Bozukluk:** Anket sorularını anlama ve yanıtlama becerilerini engelleyebilecek bilişsel bozukluğu olan kişiler hariç tutulur.

Popülasyon hakkında net bir veri bulunmadığı, ancak popülasyonun oldukça büyük olduğunun bilinmesi durumunda, literatürde yaygın bir biçimde kabul görmüş olan araştırmada Cochran (1977: 81) öne sürülen “Örnekleme büyüklüğünü belirlemenin bir yöntemi, araştırma için en önemli kabul edilen maddeler için güvenilirlik ve hata paylarını belirlemektir” yaklaşımı temel alınabilmektedir. Bu hesaplamalar tamamlandığında, araştırmacı ölçeklendirilmiş, sürekli değişkenler için daha küçük n’lerden ikili veya kategorik değişkenler için daha büyük n’lere kadar değişen bir dizi n’e sahip olabilecek ve örnekleme büyüklüğü olarak kullanabilecektir. Araştırmacı, örnekleme kararlarını bu verilere dayanarak vermelidir (Bartlett et al., 2001: 43). Bir araştırmacının güvenilirlik (alfa) düzeyini a priori olarak .05 olarak belirlediği, orantılı bir değişken kullanmayı planladığı,

kabul edilebilir hata d zeyini %5 olarak belirledi i ve  l e in standart sapmasını .5 olarak tahmin etti i varsayıldı ında, buna karřılık gelen t de eri 1,96 olacak ve s reksiz de iřkenler i in  rneklem form l ne uygulandı ında řu řekilde  rneklem hesaplanabilecektir (Bartlett et al., 2001: 44):

$$n_0 = \frac{t^2 \cdot p \cdot q}{d^2} = \frac{(1,96)^2 \cdot 0,5 \cdot 0,5}{0,05^2} = \frac{3,8416 \times 0,25}{0,0025} = 384$$

Sosyal bilimler alanında yapılan nicel arařtırmalar  er evesinde, arařtırman evrenini oluřturan pop lasyonun  ok b y k olması ya da tam olarak listelenememesi halinde, %95 g ven aralı ı ve %5 hata toleransıyla 384  rneklemin yeterli ve ge erli oldu u kabul edilmektedir (Sekaran, 2003). Buna g re 384  rneklem b y kl   evreni temsil edebilme yetene ine sahip kabul edilmektedir (Bařt rk & Tařtepe, 2013). Krejcie ve Morgan (1970) gibi arařtırmacılar, pop lasyon 1.000.000 gibi b y k bir pop lasyon oldu unda dahi, gerekli olan  rneklem b y kl  n n 384 oldu unu ve bu  rneklemin evreni temsil edebilece ini kabul etmiřlerdir (Rahi, 2017: 3). Bu arařtırmanın anak tlesi g z  n ne alındı ında en az 384 katılımcıdan veri elde edilmesinin yeterli olaca ı anlařılmaktadır. Bu itibarla, arařtırma  er evesinde hatalı, yanlış ve eksik doldurma gibi durumları eleminize etmek ama lı olarak, verilerin sa lıklı bir bi imde  l  mlenebilmesini tesis etmeyi garanti altına almak maksadıyla 400'  ge kin ileri yetiřkin d zeyinde bulunan 60 yař ve  zeri katılımcıya eriřilmesi ve anket formları vasıtasıyla verilerin elde edilmesi planlanmıřtır. Veri toplama, 470 anket formlarına eriřildi inin anlařılmasıyla birlikte sonlandırılmıřtır. Bu formlar i erisinde 44'  eksik-hatalı doldurulmuř oldu undan arařtırma kapsamı dıřında kalmıř, nihai olarak 426 ileri yetiřkin katılımcının ge erli anket formları arařtırmanın veri setini oluřturmuřtur.

3.4. Arařtırmanın Etik Y n 

Arařtırmaya katılım tamamen g n ll l k esasına dayalıdır. Katılımcıların  alıřmaya katılmadan  nce bilgilendirilmiř onamı alınmıřtır. Arařtırmanın amacına iliřkin bilgilendirme yapılmıřtır. Katılımcıların istedikleri zaman cayma hakları bulundu una iliřkin a ık ve anlařılır bilgi verilmiřtir. Arařtırmanın hi bir s recinde,  l ek ifadelerinde katılımcıları duygusal sıkıntı veya mahremiyet ihlalleri gibi durumlara sebebiyet verebilecek,  rseleyebilecek herhangi bir ifade yer almamaktadır. Arařtırmacılar  n bilgilendirme haricinde herhangi bir y nlendirme veya m dahalede bulunmamıřtır.  alıřmanın y r t lmesi ve  l  m ara larının etik ilkelere uygun oldu unun tespit edilmesi noktasında Aydın Adnan Menderes  niversitesi Sosyal ve Beřeri Bilimler Arařtırmaları Etik Kurulu'ndan 31906847/050.04.04-10 sayılı ve 30.10.2024 tarihli karar ile etik kurul uygunluk onayı alınmıřtır.

3.5. Pilot Test ve Veri Analizi

Nihai uygulamadan  nce anket formu vasıtasıyla, arařtırmaya dahil olma niteli ine haiz olan 50 kiřilik bir  rneklem grubundan veri elde edilerek bir pilot test ger ekleřtirilmiřtir. Katılımcılarla y z y ze ger ekleřtirilen anket uygulaması esnasında,

ankette yer verilen sorular ve ölçeklerin ifadelerinde tam olarak anlaşılmayan, belirsizlik içeren veya dil ya da yazım yanlışsı konusunda anketin sağlıklı bir yapıda bulunup bulunmadığını araştırmacıların dışında üçüncü bir kontrol değişkeni olarak katılımcılardan gözden geçirmeleri ve herhangi bir husus var ise geri bildirim vermeleri talep edilmiştir. Bu kapsamda elde edilen veriler SPSS programında ön testlerden geçirilmiş, güvenilirlik (iç tutarlılık) açısından kontroller gerçekleştirilmiştir. Yürütülen pilot uygulamanın sonucunda, anket formlarında katılımcılarca anlaşılmayan bir nokta bulunmadığı, verilerin güvenilir ve tutarlı şekilde toplanabileceği anlaşılmıştır. Bu surette nihai veri toplama aşamasına geçilmiştir. Araştırmanın nihai verileri SPSS ve AMOS yazılımlarında tasnif edilmiş, kodlanmış ve çözümlenmiştir.

4. Bulgular

Öncelikle verilerin güvenilirliği Cronbach's Alpha katsayıları kapsamında değerlendirilmiştir. Verilerin normal dağılıp dağılmadığının tespitinde çarpıklık ve basıklık (Skewness-Kurtosis) katsayıları değerlendirilmiştir. Kaiser-Meyer-Olkin katsayılarıyla örneklemden toplanan verilerin ölçüm yeterliliği kontrol edilerek faktör analizine uygunluğu tespit edilmiştir. Bu bulgular Tablo 1'de verilmiştir.

Tablo: 1
Araştırma Ölçeklerinin Betimsel Özellikleri, İç Tutarlılık ve Normal Dağılım Katsayıları

Ölçek	İfade Sayısı	$\bar{x}$	S.S.	α	Çarpıklık	Basıklık	KMO
Finansal Okuryazarlık	26	2,5495	,74280	,939	,233	-,427	,950
Finansal Yeterlilik	13	2,4327	,81034	,902	,454	-,452	,932
Finansal Davranış	13	2,6663	,79270	,904	,082	-,680	,932
Harcama Öz Kontrol	10	2,9805	1,05066	,947	-,131	-1,101	,956
Finansal Refah	10	2,5789	,87618	,894	,252	-,436	,928

Tablodaki bulgular çerçevesinde tüm ölçekler, güvenilirlik açısından oldukça iyi sonuçlar sergilemiştir. Cronbach's Alpha değerleri tüm ölçeklerde $\alpha > 0,8$ düzeyinin üzerindedir. Bu bulgular, ölçeklerin güvenilirliğinin yüksek olduğunu göstermektedir (Nunnally & Bernstein, 1994; Tavakol & Dennick, 2011). KMO değerleri tüm ölçeklerde KMO $> 0,9$ düzeyinde yer almaktadır. Bu sonuçlar, veriler çerçevesinde ölçeklerin faktör analizine uygun olduğunu göstermektedir (Shrestha, 2021). Normal dağılım açısından ise çarpıklık ve basıklık katsayılarının genel olarak ± 1 aralığında olduğu anlaşılmaktadır. Literatürde normal bir dağılımın ölçüsü -1,5 ila +1,5 olarak kabul edildiği (Tabachnick et al., 2013; George & Mallery, 2019) göz önüne alındığında, ölçekler için ortaya çıkan dağılımın kabul edilebilir olduğunu ifade etmek mümkündür. Ayrıca ortalamalar açısından elde edilen bulgular, 5'li Likert skalasında ele alındığında ileri yetişkin katılımcılarının finansal okuryazarlık, yeterlilik ve davranış düzeylerinin genelde düşük ile orta seviyelerde olduğunu göstermektedir. Finansal bilgi boyutunu temsil eden yeterlilik açısından düşük düzey gözlemlenebilmektedir.

Katılımcıların demografik özelliklerinin, tasarruf ve yatırıma ilişkin alışkanlıklarının belirlenmesi için frekans analizleri gerçekleştirilmiştir. Elde edilen bulgular Tablo 2 ve Tablo 3’te sunulmuştur.

Tablo: 2
Katılımcıların Demografik Özelliklerinin Dağılımı (n=426)

Demografik Özellik	f	%	Demografik Özellik	f	%
Cinsiyet			Medeni Durum		
Kadın	169	39,7	Evli	299	70,2
Erkek	257	60,3	Bekar-Boşanmış-Dul	127	29,8
Eğitim Durumu			Kişisel Gelir Düzeyi		
İlkokul	26	6,1	12.000 TL veya altı	25	5,9
Ortaokul	43	10,1	12.001-20.000 TL	97	22,8
Lise	186	43,7	20.001 TL-30.000 TL	132	31,0
Yüksekokul	53	12,4	30.001 TL-50.000 TL	100	23,5
Lisans	103	24,2	50.001 TL ve üzeri	72	16,9
Lisansüstü	15	3,5			

Demografik özellikler açısından katılımcıların çoğunluğunu erkekler (%60,3) oluştururken, kadın katılımcıların oranı %39,7’dir. Medeni durum verileri incelendiğinde, katılımcıların %70,2’si evli, %29,8’i ise bekar, boşanmış veya dul kategorisinde yer almaktadır. Eğitim durumu dağılımında, lise mezunları %43,7 ile en büyük grubu oluştururken, lisans (%24,2) ve yüksekokul (%12,4) mezunları bunu takip etmektedir. İlkokul mezunları %6,1 oranında kalırken, lisansüstü eğitim almış bireylerin oranı oldukça düşük olup yalnızca %3,5’tir. Gelir düzeyine bakıldığında, katılımcıların %31,0’ı 20.001-30.000 TL arasında bir gelir düzeyine sahiptir ve bu grup en büyük dilimi oluşturmaktadır. Bunu %23,5 ile 30.001-50.000 TL gelir aralığı izlemektedir. Düşük gelir grubunda (%5,9) yer alan katılımcılar, topluluk içinde küçük bir oran oluştururken, 50.001 TL ve üzeri gelire sahip bireylerin oranı %16,9’dur.

Tablo: 3
Katılımcıların Finansal Durum ve Alışkanlıklarının Dağılımı

Finansal Alışkanlık	f	%	Finansal Durum	f	%
Geliri Tasarrufa Ayırma			Finansal Olarak Güvende Hissetme		
Hiç ayır(a)mıyorum	125	29,3	Hayır, hiç hissetmiyorum	91	21,4
Çok az bir kısmını ayırıyorum	146	34,3	Kısmen hissediyorum	219	51,4
Belirli bir bölümünü ayırıyorum	115	27,0	Evet, kesinlikle hissediyorum	116	27,2
Önemli bir bölümünü ayırıyorum	40	9,4	Finansal Stres		
Tercih Edilen Yatırım Aracı			Şu anda önemli ve beni strese sokacak hiçbir borcum yok	156	36,6
Banka hesabı vadeli	129	30,3	Bazı borçlarım var ama strese sokacak kadar değil	215	50,5
Döviz ve/veya altın	122	28,6	Önemli borçlarım var ve bunlar üzerimde stres yaratıyor	55	12,9
Gayrimenkul	62	14,6	Gelecekte Beklenti		
Devlet tahvilleri, bonolar, yatırım fonları veya hisse senetleri	20	4,7	Kötümserim, daha kötü olacak	78	18,3
Kripto piyasalar	19	4,5	Pek bir şey değişmeyecek	159	37,3
Diğer	74	17,4	İyimserim, daha iyi olacak	189	44,4

Finansal alışkanlıklar incelendiğinde, katılımcıların %29,3’ü gelirini tasarrufa hiç ayırmadığını, %34,3’ü ise çok az bir kısmını ayırdığını ifade etmiştir. Önemli bir bölümünü ayıranlar yalnızca %9,4 oranında kalmaktadır. Bu durum, bireylerin önemli bir kısmının tasarruf alışkanlıklarının düşük seviyede olduğunu göstermektedir. Katılımcıların yatırım tercihleri incelendiğinde, en çok tercih edilen yatırım aracının %30,3 ile vadeli banka hesapları olduğu görülmektedir. Bunu %28,6 ile döviz ve/veya altın takip etmektedir. Devlet

tahvilleri, bonolar, yatırım fonları ve hisse senetleri gibi araçlar yalnızca %4,7 oranında bir tercih oranına sahiptir. Kripto piyasalar ise %4,5 ile daha az tercih edilmektedir. Bu bulgular, ileri yetişkin bireylerin genellikle daha geleneksel ve düşük riskli yatırım araçlarına yöneldiğini ortaya koymaktadır. Finansal durum verilerine göre, katılımcıların %21,4’ü finansal olarak kendini güvende hissetmediğini ifade ederken, %51,4’ü kısmen güvende olduğunu ve %27,2’si ise tamamen güvende olduğunu belirtmiştir. Finansal stres açısından bakıldığında, %36,6’lık bir grup önemli borçlarının olmadığını ifade etmiş, %50,5’i bazı borçlarının bulunduğunu ancak bu borçların stres yaratacak düzeyde olmadığını belirtmiştir. Bununla birlikte, %12,9 oranında katılımcı önemli düzeyde borçlarının olduğunu ve bu borçların stres kaynağı oluşturduğunu ifade etmiştir. Geleceğe yönelik beklentilerde katılımcıların %44,4’ü iyimser bir bakış açısına sahip olduğunu ve durumlarının daha iyiye gideceğini düşündüğünü belirtmiştir. %37,3’ü pek bir değişiklik beklemediğini ifade ederken, %18,3’ü ise kötümser olduğunu ve gelecekte finansal durumlarının daha kötü olacağını düşündüğünü aktarmıştır. Genel olarak, finansal güven ve yatırım gibi konular çeşitlilik göstermektedir.

Demografik özelliklerin ölçekler bakımından istatistiksel olarak anlamlı ölçüde farklılaşıp farklılaşmadığına ilişkin olarak fark testleri gerçekleştirilmiştir. Burada normal dağılım varsayımının karşılanma durumuna göre parametrik testlerden yararlanılmış, ikili gruplar için t-testi, ikiden fazla gruplar için tek yönlü varyans analizi (ANOVA analizi) gerçekleştirilmiştir. ANOVA analizlerinde farkın hangi gruplardan kaynaklandığını belirlemek üzere Post-hoc analizlerine başvurulmuştur. Burada $n \leq 30$ varsayımından hareketle, varyansların homojenitesi gözlemlendiğinde, eşit olmayan varyanslar söz konusu olduğundan, varyansların homojenitesi şartını aramayan Games-Howell testi tercih edilmiştir. Bu kapsamda yapılan analizlerde elde edilen bulgular Tablo 4’teki gibidir.

Tablo: 4
Demografik Özelliklerin Fark Analizi

Özellikler	Değişkenler				
	Finansal Okuryazarlık	Finansal Yeterlilik	Finansal Davranış	Harcama Öz Kontrol	Finansal Refah
	$\bar{X} \pm SS$	$\bar{X} \pm SS$	$\bar{X} \pm SS$	$\bar{X} \pm SS$	$\bar{X} \pm SS$
Cinsiyet					
Kadın (n=169)	2,3716±,66120	2,2481±,75087	2,4952±,71359	2,9775±1,04510	2,5189±,78926
Erkek (n=257)	2,6664±,77102	2,5541±,82634	2,7788±,82280	2,9825±1,05633	2,6183±,87362
Test = t-testi	t= -4,081 p= ,000*	t= -3,876 p= ,000*	t= -3,665 p= ,000*	t= -,048 p= ,962	t= -1,145 p= ,253
Medeni Durum					
Evli (n=299)	2,6144±,73126	2,4971±,79272	2,7317±,78942	3,0883±1,03062	2,6127±,88297
Bekar (n=127)	2,3967±,75022	2,2810±,83404	2,5124±,78208	2,7268±1,05773	2,4992±,85815
Test = t-testi	t= 2,788 p= ,006*	t= 2,553 p= ,012*	t= 2,629 p= ,009*	t= 3,286 p= ,001*	t= 1,224 p= ,222
Eğitim Durumu					
İlkokul (n=26)	2,1198±,62040	2,0118±,70457	2,2278±,60353	2,5000±,87544	1,9769±,13060
Ortaokul (n=43)	2,3953±,64769	2,3453±,68505	2,4454±,68031	2,8651±1,06030	2,4535±,10007
Lise (n=186)	2,5054±,68089	2,3789±,74074	2,6319±,73062	2,9188±1,02637	2,4210±,05401
Yükseköğretim (n=53)	2,6110±,70568	2,4848±,75574	2,7373±,83184	3,0868±,90363	2,7623±,11379
Lisans (n=103)	2,7308±,85312	2,6184±,95160	2,8432±,89155	3,1233±1,14833	2,8806±,10185
Lisansüstü (n=15)	2,8205±,86525	2,6205±,98658	3,0205±,84589	3,5533±1,06962	3,2200±,30864
Test = Anova	F= 4,083 p= ,001*	F= 3,023 p= ,011*	F= 4,190 p= ,001*	F= 2,756 p= ,018*	F= 9,153 p= ,000*

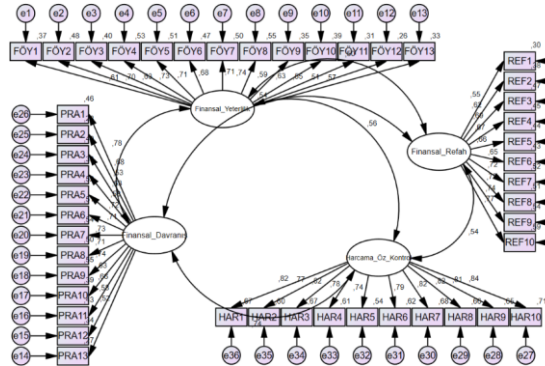
Kişisel Gelir Düzeyi					
12.000 TL veya altı (n=25)	2,0185±,67938	1,9415±,758052	2,0954±,63946	2,1040±,87105	1,8760±,72931
12.001-20.000 TL (n=97)	2,3807±,62590	2,2498±,65901	2,5115±,70493	2,8454±,89571	2,3412±,70898
20.001 TL-30.000 TL (n=132)	2,5254±,68038	2,4325±,76016	2,6183±,69828	2,8992±,1,02700	2,5205±,68737
30.001 TL-50.000 TL (n=100)	2,6258±,67506	2,5192±,74229	2,7323±,74895	3,0920±,1,00168	2,7680±,86712
50.001 TL ve üzeri (n=72)	2,8996±,92503	2,7297±,1,04120	3,0694±,97302	3,4611±,1,16698	2,9875±,1,15697
Test = Anova	F= 9,438 p=,000*	F= 6,561 p=,000*	F= 9,878 p=,000*	F= 9,736 p=,000*	F= 12,195 p=,000*

* ≤ ,05 düzeyinde istatistiksel olarak anlamlı.

Bulgular, anlamlı şekilde erkek katılımcıların kadın katılımcılara kıyasla daha yüksek düzeyde finansal okuryazarlık ($\bar{X}$ =2,6664), finansal yeterlilik ($\bar{X}$ =2,5541), finansal davranış ($\bar{X}$ =2,7788) ve harcama öz kontrol ($\bar{X}$ =2,9825) sergilediğini göstermektedir (p=,000). Kadın katılımcılar bu alanlarda daha düşük puan almışlardır. Medeni durum incelendiğinde, evli bireyler bekar bireylere kıyasla finansal refah hariç tüm ölçeklerde istatistiksel olarak anlamlı şekilde (p=,006; p=012; p=009, p=001) daha yüksek puanlar bildirmiştir. Bulgular evli olmanın katılımcıların finansal bilgi ve davranışlar ile harcama kontrolünde olumlu yönde etkilediğini göstermektedir. Eğitim düzeylerinin analizi, yüksek öğrenimin daha iyi finansal sonuçlarla ilişkili olduğu açık bir eğilim göstermektedir. Lisansüstü düzeydeki katılımcılar anlamlı şekilde tüm ölçeklerde (p=,001, p=,011, p=,001, p=,018), özellikle de finansal refahta ($\bar{X}$ =3,2200; p=,000) en yüksek ortalama puanlara sahiptir. Kişisel gelir düzeyi ayrıca değişkenleri etkileyen kritik bir faktör olarak ortaya çıkmıştır. En yüksek gelir grubunu oluşturan 50.000 TL'nin üzerinde gelire sahip katılımcılar tüm ölçeklerde anlamlı şekilde en yüksek puanı almıştır (p=,000).

Araştırmada formüle edilen hipotezlerin test edilmesinde yapısal eşitlik modellemesinden yararlanılmış olup, öncelikle araştırma ölçekleri çerçevesinde Doğrulayıcı Faktör Analizi (DFA) gerçekleştirilmiştir. Burada ifadelerin faktör yükleri, kovaryans değerleri ve elde edilmiş olan verilerin araştırmada ortaya konulan teorik modele ne kadar doğru bir biçimde uyduğunu gösteren uyum iyiliği test edilmiştir. Bu noktada standart artık katsayılar ve modifikasyon önerileri gözden geçirilmiş olup, modelin ölçümlere uygunluğu tespit edilmiştir. Elde edilen bulgular Şekil 2 ve Tablo 5'te sunulmuştur.

Şekil: 2
DFA Modeli



Tablo: 5
Doğrulaıcı Faktör Analizi Bulguları

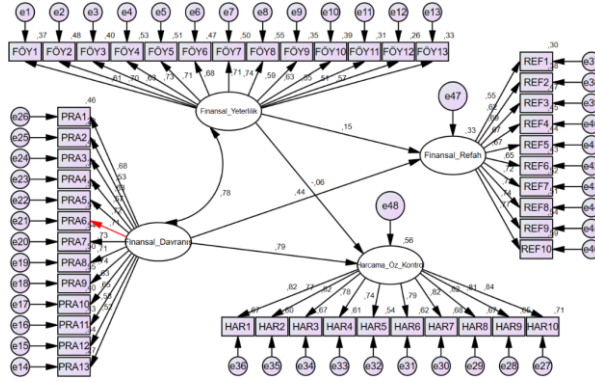
Örtük Değişken	Gözlenen Değişken	Faktör Yüğü	t	Std. E.	p	Örtük Değişken	Gözlenen Değişken	Faktör Yüğü	t	Std. E.	p
FÖY1	Finansal Yeterlilik	,609				HAR10	Harcama Öz Kontrol	,841			
FÖY2	Finansal Yeterlilik	,696	11,807	,107	***	HAR9	Harcama Öz Kontrol	,806	20,448	,043	***
FÖY3	Finansal Yeterlilik	,632	10,981	,101	***	HAR8	Harcama Öz Kontrol	,815	20,833	,043	***
FÖY4	Finansal Yeterlilik	,729	12,214	,102	***	HAR7	Harcama Öz Kontrol	,824	21,212	,046	***
FÖY5	Finansal Yeterlilik	,712	12,015	,103	***	HAR6	Harcama Öz Kontrol	,786	19,676	,045	***
FÖY6	Finansal Yeterlilik	,684	11,659	,096	***	HAR5	Harcama Öz Kontrol	,736	17,828	,046	***
FÖY7	Finansal Yeterlilik	,708	11,966	,100	***	HAR4	Harcama Öz Kontrol	,780	19,453	,043	***
FÖY8	Finansal Yeterlilik	,739	12,332	,096	***	HAR3	Harcama Öz Kontrol	,819	21,008	,042	***
FÖY9	Finansal Yeterlilik	,593	10,441	,091	***	HAR2	Harcama Öz Kontrol	,773	19,183	,042	***
FÖY10	Finansal Yeterlilik	,628	10,925	,092	***	HAR1	Harcama Öz Kontrol	,820	21,019	,044	***
FÖY11	Finansal Yeterlilik	,555	9,904	,090	***	REF1	Finansal Refah	,546			
FÖY12	Finansal Yeterlilik	,507	9,189	,091	***	REF2	Finansal Refah	,618	9,787	,102	***
FÖY13	Finansal Yeterlilik	,574	10,181	,090	***	REF3	Finansal Refah	,687	10,464	,119	***
PRA13	Finansal Davranış	,520				REF4	Finansal Refah	,672	10,322	,107	***
PRA12	Finansal Davranış	,859	9,194	,128	***	REF5	Finansal Refah	,664	10,245	,105	***
PRA11	Finansal Davranış	,656	9,874	,131	***	REF6	Finansal Refah	,653	10,143	,114	***
PRA10	Finansal Davranış	,628	9,627	,125	***	REF7	Finansal Refah	,718	10,734	,125	***
PRA9	Finansal Davranış	,745	10,575	,147	***	REF8	Finansal Refah	,716	10,719	,117	***
PRA8	Finansal Davranış	,710	10,315	,141	***	REF9	Finansal Refah	,738	10,904	,117	***
PRA7	Finansal Davranış	,734	10,500	,143	***	REF10	Finansal Refah	,767	11,142	,133	***
PRA6	Finansal Davranış	,714	10,343	,131	***						
PRA5	Finansal Davranış	,724	10,422	,133	***						
PRA4	Finansal Davranış	,575	9,115	,120	***						
PRA3	Finansal Davranış	,633	9,666	,132	***						
PRA2	Finansal Davranış	,527	8,603	,122	***						
PRA1	Finansal Davranış	,680	10,075	,142	***						
Uyum İyiliği Endeksleri			İyi Uyum Kriteri			Elde Edilen Bulgu			Uyum*		
χ^2 uyum testi p değeri			$p > .05$			,000			İyi uyum		
χ^2/df (CMIN/df)			$0 \leq \chi^2 \leq 3df$			1,988			İyi uyum		
RMSEA			$0 \leq RMSEA \leq ,08$			,048			İyi uyum		
CFI			$,90 \leq CFI \leq 1$			,909			İyi uyum		
GFI			$,90 \leq GFI \leq 1$			,831			Kabul edilebilir		
IFI			$,90 \leq IFI \leq 1$			,909			İyi uyum		
RFI			$,90 \leq RFI \leq 1$			,824			Kabul edilebilir		
TLI			$,90 \leq TLI \leq 1$			,904			İyi uyum		

* $\leq ,001$ düzeyinde anlamlı (çifti kuyruk); *** Uyum değerlendirmesi için esas alınan kaynaklar: Hu & Bentler, 1999; Byrne, 2001; Kline, 2023.

DFA sonucunda elde edilen bulgular incelendiğinde, faktör yüklerinin genelde ,50’ nin üzerinde olduğu görülmektedir; t değerleri tümünde önemli ve anlamlıdır ($p < ,001$). Standart hatalar düşük düzeyde olup tahminlerin doğruluğunun yüksek olduğunu göstermektedir. Bu sonuçlar itibarıyla, gözlenen değişkenlerin ilgili örtük değişkenleri yeterli düzeyde temsil ettiği anlaşılmaktadır. Uyum iyiliği endeksleri genel olarak modelin veriyle uyumlu olduğunu göstermektedir. GFI ve RFI katsayıları iyi uyum kriterinin altında kalmakla beraber, modelin genel uyum iyiliği göz önünde bulundurulduğunda kabul edilebilir düzeydedir (Hu & Bentler, 1999; Byrne, 2001; Kline, 2023). Sonuç olarak DFA bulguları, modelin yapısal geçerliliğinin kabul edilebilir düzeyde olduğunu, genel olarak modelin iyi bir uyuma sahip olduğunu ortaya koymaktadır.

Hipotezlerin test edilmesi için yapısal eşitlik modellemesi kurulmuş, değişkenler arası kovaryanslar yerine direkt etkiyi temsil eden oklar vasıtasıyla değişkenler arası yollar çizilerek yol katsayıları ile uyum iyiliği katsayıları değerlendirilmiştir. Bu surette hipotezler sınanmıştır. Bulgular Şekil 3 ve Tablo 6’da sunulmuştur.

Şekil: 3
Yapısal Eşitlik Modeli



Tablo: 6
Yapısal Eşitli Modeli Testi Sonucunda Erişilen Bulgular

İlişki	Std β	Std. E.	t	p	Hipotez Sınaması
H ₁ . Finansal okuryazarlık → Harcama öz-kontrol (+)					Kısmen Kabul
H _{1a} . Finansal yeterlilik → Harcama öz-kontrol (+)	-,056	,111	-,804	,422	Ret
H _{1b} . Finansal davranış → Harcama öz-kontrol (+)	,789	,191	8,090	***	Kabul
H ₂ . Finansal okuryazarlık → Finansal refah (+)					Kabul
H _{2a} . Finansal yeterlilik → Finansal refah (+)	,156	,081	1,984	,049	Kabul
H _{2b} . Finansal davranış → Finansal refah (+)	,443	,114	4,628	***	Kabul
Uyum İyiliği Endeksleri	İyi Uyum Kriteri		Elde Edilen Bulgu		Uyum*
χ ² uyum testi p değeri	p>,05		,000		İyi uyum
χ ² /sd (CMIN/df)	0 ≤ χ ² ≤ 3df		2,005		İyi uyum
RMSEA	0 ≤ RMSEA ≤ ,08		,049		İyi uyum
CFI	,90 ≤ CFI ≤ 1		,907		İyi uyum
GFI	,90 ≤ GFI ≤ 1		,829		Kabul edilebilir
IFI	,90 ≤ IFI ≤ 1		,908		İyi uyum
RFI	,90 ≤ RFI ≤ 1		,822		Kabul edilebilir
TLI	,90 ≤ TLI ≤ 1		,902		İyi uyum

YEM modelinde ilk hipotez (H₁), finansal okuryazarlığın harcama öz kontrolü olumlu yönde etkilediğine yöneliktir. Bu hipotez kısmen kabul edilmiş olsa da finansal yeterliliğin harcama öz kontrol üzerindeki etkisini inceleyen alt hipotez olan H_{1a} hipotezinin reddedildiğini belirtmek önemlidir (β=-,056, t=-,804, p=,422). Elde edilen sonuçlar istatistiksel olarak anlamsızdır. Bunun aksine H_{1b} ise güçlü bir şekilde desteklenmiştir ve finansal davranış ile harcama öz kontrol arasında anlamlı bir pozitif ilişki olduğunu göstermektedir (β=,789, t=8,090, p<,001). Bu bulgu, daha iyi finansal davranışlara sahip bireylerin harcama alışkanlıklarında daha yüksek düzeyde kontrol sağlama eğiliminde olduğunu göstermektedir.

İkinci hipotez (H₂), finansal okuryazarlık ile finansal refah arasındaki ilişkiyi araştırmıştır. Bulgular bu iki yapı arasında pozitif bir ilişki olduğunu göstermiştir ve bu hipotez kabul edilmiştir. Alt hipotezlerin daha ileri analizi, hem finansal yeterliliğin (H_{2a}) (β=,156, t=1,984, p=,049) hem de finansal davranışın (H_{2b}) (β=,443, t=4,628, p<,001) finansal refaha anlamlı ölçüde katkıda bulunduğunu ortaya koymuştur. Burada finansal

davranış ve finansal refah arasındaki ilişki daha güçlü düzeydedir. Uyum iyiliği endeksleri, modelin geçerliliğini desteklemektedir. Özetle, bu bulgular harcama öz kontrolü ve finansal refahı iyileştirmenin bir yolu olarak finansal bilginin de ötesinde finansal davranışları geliştirmenin önemini vurgulamaktadır.

5. Sonuç, Tartışma ve Öneriler

Bu çalışma temel olarak finans ve gerontoloji disiplinlerinin ortak noktasını oluşturan finansal gerontoloji alanına odaklanmış, odağına “ileri yetişkinlikte finansal okuryazarlık” kavramını almıştır. Çalışmanın temel motivasyonu ileri yetişkinlik döneminde bulunan bireylerin finansal okuryazarlık ve refah bağlamında riskli gruplar arasında ele alınmasıdır. Esasında finansal okuryazarlık, finansal yönetim her birey için her yaşta, yaşam döngüsünün her aşamasında önemlidir. Ancak ileri yetişkinliğe geçiş genellikle gelir elde etmekten gelir yönetimine geçişi içermektedir; bu dönemde maddi olanaklar daha kısıtlı, mali bağımsızlığı ve güvenliği gerektiren sağlık harcamaları gibi beklenmedik harcamalar ise daha yüksek olabilmektedir. Ayrıca yaş ilerledikçe finansal karar alma zorlaşabilmekte, finansal ürün ve hizmetlerin çeşitliliğine uyum sağlamak zorlaşabilmektedir. Dolayısıyla, bireylerin yaşlandıkça her gün karşılaştıkları finansal kararda finansal bilgileri, kişisel mali durumları, harcama kontrolleri ve refahları üzerinde daha fazla bilgi ve kontrol sahibi olmaları gerekmektedir. Yine de pek çok gelişmekte olan ülkede ileri yaştaki bireyler bağlamında bu konularda optimal olmayan durumların kayda değer bir oranda olduğu kabul edilmektedir. Konunun önemine rağmen literatürde ileri yetişkinlik bağlamında bu değişkenleri ilişkilendiren çalışmaların sınırlılık arz ettiği görülmektedir. Bu görüşlerden ve mevcut literatür boşluğundan yola çıkan bu çalışma, ileri yetişkinlikte finansal okuryazarlık ve ardılları olarak harcama öz kontrol ve finansal refah değişkenlerini ele almış, bu değişkenler arasındaki ilişkilerin istatistiksel olarak tespit edilmesini hedeflemiştir. Türkiye’de ileri yetişkinlik döneminde bulunan, tazelenme üniversitelerinde kayıtlı 426 katılımcıdan elde edilen birincil veriler üzerinden istatistiksel çözümlemeler yapılmıştır. Finansal okuryazarlığı, ileri yetişkinlikte harcama kontrolü ve finansal refah bakımından önemli olduğu görüşünü destekleyen bu araştırma aracılığıyla, güncel bir toplumsal olarak karşımızda duran bu soruna dikkat çekmenin ötesinde, ampirik bulgular sunmak suretiyle literatüre, sosyal politikalara, kişisel gelişmeye ve gelecekte yapılacak olan araştırmalara katkı sunmak hedeflenmiştir. Bu çerçevede yapılan istatistiksel analizler sonucunda birtakım önem arz eden bulgulara erişilmiştir.

Betimsel istatistiklerde puan ortalamaları açısından ileri yetişkin katılımcılarının finansal okuryazarlık, yeterlilik ve davranış düzeylerinin genelde düşük-orta seviyelerde olduğu anlaşılmıştır. Bilhassa finansal yeterlilik açısından düşük puan ortalaması olduğu gözlemlenebilmektedir. Açıkçası bu sonuç, literatürde daha önceden yapılmış olan araştırmalarda elde edilen bulgulara benzerlik arz etmektedir. Türkiye’de Finansal Okuryazarlık ve Erişim (FOE) Raporu’na göre güncel veriler ışığında ülkedeki finansal okuryazarlık endeksi 62.1 olarak hesaplanmış ve düşük-orta düzeyde olduğuna kanaat getirilmiştir (Analitik ve İçgörü Araştırma Merkezi ve Boğaziçi Üniversitesi, 2023). Finansal okuryazarlığın ileri yaşlarda genel olarak daha düşük olduğu, temel finansal

bilgilerde  nemli bořluklar bulunduđunu ve dolayısıyla finansal karar, davranıř ve yatırım performansları gibi fakt rler  zerinde olumsuz etki edebildiđine dair bulgular yer almaktadır (Lusardi & Mitchell, 2007a; Lusardi & Mitchell, 2011a; Han et al., 2015; Finke et al., 2020; Fong et al., 2021; Yu et al., 2021; Mis et al., 2023). Literat rde yer alan bu bulgular, finansal okuryazarlıđın bu t r finansal kararlarda/davranıřlarda g z ardı edilemez bir rol oynadıđını dođrulamıř ve d ř k d zeylerde finansal okuryazarlıđın finansal pek  ok alanda da d ř k katılımı beraberinde getirdiđini g stermiřtir (Shimizutani & Yamada, 2020).

Fark analizleri cinsiyet, medeni durum, eđitim d zeyi ve gelirin finansal okuryazarlık ve davranıřın  eřitli boyutlarını  nemli  l  de etkilediđini g stermiřtir. Erkekler kadınlardan daha iyi finansal yeterliliklere sahip olma eđilimindedir; evli bireyler bekarlara kıyasla  st n finansal davranıřlar sergilemektedir; daha y ksek eđitim d zeyi geliřmiř finansal sonu larla iliřkilidir ve artan kiřisel gelir, geliřmiř finansal okuryazarlık ve refahla iliřkilidir.  ne  ıkan bu bulgular, finansal okuryazarlıđı geliřtirmek i in stratejiler geliřtirirken demografik fakt rleri ele almanın  nemini vurgulamaktadır. Bu sonu lar, kad nlar, d ř k eđitim d zeyine sahip olanlar ve d ř k gelir grubundaki ileri yetiřkin bireylerin finansal okuryazarlık, harcama ve finansal refah bakımından daha fazla desteklenmesi gerektiđine iřaret etmektedir. Ayrıca eđitim d zeyi y kseldik e deđiřkenlerde alınan ortalamaların da y kselmesi, eđitimin  nemini vurgular y ndedir. Benzer řekilde, T rkiye’de yapılan arařtırmaya dayalı FOE Raporu’na g re finansal okuryazarlık a ısından avantajlı grubun genellikle erkek, evli, y ksek eđitim, gelir ve sosyoekonomik stat ye sahip bireylerden oluřtuđu g r lm řt r. Buna karřın dezavantajlı grubun kad n, bekar, 55 yař  st , d ř k eđitim, gelir ve sosyoekonomik stat ye sahip bireylerden oluřtuđu g zlemlenmiřtir (Analitik ve İ g r  Arařtırma Merkezi ve Bođazi i  niversitesi, 2023). Bu arařtırmada elde edilen bulgular da bu raporun ampirik bulgularıyla paralellik arz etmektedir.

Diđer taraftan, analizler kapsamında YEM modelinde ger ekleřtirilen iliřkisel hipotez testlerine g re finansal okuryazarlık ile harcama  z-kontrol deđiřkenini iliřkilendiren hipotez kısmen kabul edilirken, finansal okuryazarlık ile finansal refahı iliřkilendiren hipotez kabul edilmiřtir. Elde edilen sonu lar, finansal yeterliliđin harcama  z kontrol  zerindeki etkisinin anlamlı olmadıđını, ancak finansal davranıřın etkisinin anlamlı olduđunu g stermiřtir. Bu sonu , ileri yetiřkinlik ařamasındaki bireylerin sahip oldukları finansal bilgi seviyesinin dođrudan harcama alışkanlıklarını ve kontrol yeteneklerini etkilemediđinin bir g stergesi olmuřtur. Bu durum, finansal bilgi birikiminin pratik hayata aktarılmasında bir eksiklik olabileceđine iřaret edebilecektir. Sonu lara g re hem finansal yeterliliđin hem de finansal davranıřın finansal refaha anlamlı  l  de katkıda bulunduđu anlařılmıřtır. Finansal davranıř daha g  l  bir etki g stermiřtir. Bu durum, teorik bilgiye sahip olmaktan ziyade, uygulamada g sterilen finansal disiplinin daha belirleyici olabileceđine iřaret etmektedir. Ortaya  ıkan bu sonu lar, finansal okuryazarlıđın ileri yetiřkinlik d zeyinde bulunan bireylerin yařamında etkili bir fakt r olduđunu ancak bilgi ile davranıř arasındaki farkın g z ardı edilmemesi gerektiđini g stermektedir.

İleri yaştaki bireylerin finansal okuryazarlık açısından dezavantajlı bir grup olarak öne çıkması, üzerinde özellikle durulması gereken bir konuyu oluşturmaktadır. Literatürde yer alan ampirik bulgular, görüşler, resmi raporlar ve bu araştırmanın da tüm bunları destekler yönde ortaya koymuş olduğu sonuçlar, ileri yaştaki bireylerin bu konuda dezavantajlı durumda olduğunu, bunun da harcama, yatırım gibi mali konulara sirayet etmek suretiyle finansal refahlarını olumsuz etkileyebileceğini göstermektedir. Araştırmalar, sınırlı finansal okuryazarlığın ve dolayısıyla sınırlı finansal karar alma, sınırlı finansal davranış gibi durumların ileri yaştaki yetişkinlerde sık görülen bir olgu olduğunu ve bunun da finansal yoksunlukla önemli bir şekilde ilişkili olduğunu ortaya çıkarmıştır (Weierich et al., 2011; Gamble et al., 2015; Yu et al., 2021; Mis et al., 2023).

Açıkçası ileri yetişkinlikte finansal okuryazarlık, finansal bilgi ve davranış, harcama kontrolü, tasarruf ve yatırım alanlarındaki bilinçli kararların sonucu olarak finansal refah, bu aşamada yüksek yaşam kalitesini sağlamak için gerekli olan çok yönlü bir konuyu olarak ele alınabilmektedir. Finansal okuryazarlığın geliştirilmesi, harcama, yatırım, birikim, tasarruf gibi pek çok finansal noktada farkındalık oluşturulmasına yönelik çabalar, bireyler, toplumlar ve daha makro açıdan ülke ekonomilerinin gelişimi için önemli görülmektedir.

İleri yetişkinlik döneminde bulunan bireylerin genellikle sabit veya sınırlı gelir kaynaklarına sahip olmaları, finansal okuryazarlık eksikliklerini kritik bir sorun haline getirmektedir. Ayrıca, bu grup teknolojiye ve dijital finansal araçlara erişmekte, anlamakta ve kullanmakta da genellikle zorlanmaktadır. Bu durum hem finansal olanaklardan yararlanamamaları hem tasarruflarını etkin kullanamamaları hem harcamalarını etkin kontrol edememeleri gibi durumları beraberinde getirmekte, hem de dolandırıcılık gibi faaliyetlere daha açık hale getirmektedir. Bu durum, ileri yaşta bireylerin bütçe yönetimi, tasarruf, borçlanma ve yatırım gibi konularda daha fazla desteklenmesi gerekliliğinin altını çizmektedir. Finansal okuryazarlığın bilhassa ileri yetişkinlik düzeyindeki bireyler için geliştirilmesi, finansal bağımsızlıklarını ve güncelerini korumaları, mali sıkıntılara karşı daha dirençli olmaları ve yaşam kalitelerinin artırılması açısından hayati önem taşımaktadır. Ancak elbette bu bireysel olduğu kadar toplumsal bir soruna işaret etmektedir.

Konuya ilişkin olarak Szweda-Lewandowska'nın (2019) dikkat çektiği üzere, ileri yetişkinlikte finansal refah ile giderek daha fazla alakalı hale gelen bir diğer husus, uzun ömürlülüğe hazırlanma ihtiyacıdır. Gerçekten de gelecekteki finansal refah için hazırlıklar, yaşlılık dönemi için tasarruf, yatırım ve servet birikimiyle ilgili ilk kararların alındığı bir zamanda, genç yaşta işgücü piyasasına girildiği andan itibaren başlatılmalıdır. Bu açıdan, yalnızca teorik bir temel olarak değil, aynı zamanda bireyler, sivil toplum kuruluşları ve finans, yatırım ve sigorta profesyonelleri ile politika yapımcıların iş birliği ve koordinasyon içerisinde eğitim ve geliştirme programları geliştirmeleri ve uygulamaları önemli olabilecektir. Tüm bunlar ışığında, ileri yetişkin bireylerin farkındalığını artıracak yönde projeler, eğitimler, çalıştaylar, seminerler gibi faaliyetlerin önemi bir kez daha ortaya çıkmaktadır. Ancak bu tür kısa vadeli önlemlerin yanında, tazelenme üniversiteleri bünyesinde öğrenim gören yaşlı bireylerin müfredatlarına finansal okuryazarlığın eklenmesi fayda sağlayıcı bir adım olabilecektir. Bu konuda üniversiteler, sivil toplum kuruluşları ve

sivil otoriteler, kamu otoriteleriyle ortaklık ađlarının kurulması  nemli g r lmektedir. Ulusal medya ara larında, sosyal medyada finansal okuryazarlık konusunun g r n rl   n n artırılması, konuya iliřkin materyaller (broř rlar, posterler ve di er basılı malzemeler) ile desteklenen etkinlikler b nyesinde finansal okuryazarlıđa daha fazla  nem verilmesi gerekmektedir.

Finansal okuryazarlıđın yalnızca ileri yetiřkin bireylerin bađımsızlıđı ve refahı  zerinde deđil, aynı zamanda aileler ve toplum  zerinde de  nemli bir etkisi olabilmektedir;      ileri yařtaki yetiřkinler emeklilik tasarrufları ve nesiller arası servet aktarımı konusunda bir ok  nemli karar alıcılarıdır. Bu nedenlerden dolayı, finansal okuryazarlıđın daha iyi anlařılması, t m d nemlerde, ancak  zellikle de ileri yetiřkinlikte kritik  neme sahiptir.

Di er yandan, literat rde, bilhassa ulusal alanda bu konuya iliřkin olarak  alıřmaların artırılması bilimsel modeller ve finansal gerontoloji alanının geliřimine katkı sunma potansiyeli a ısından  nemli g r lmektedir. İleri yetiřkinlikte bireylerin ve dolayısıyla toplumların finansal refahını iyileřtirmek y n nden farklı deđiřkenlerin birlikte incelenmesi, mevcut durumun ortaya konulmasının yanında alınabilecek  nlemler, geliřtirilebilecek alanlar gibi y nlerden yapılan deđerlendirmeler ile literat re katkı sunabilecektir. Buna ek olarak bireylere, politika yapıcılara ve iliřkili otoritelere, toplumsal iyileřtirmeler elde etmek y n nden faydalanılabilecek bir bilgi birikimi ve i  r  sađlayabilecektir. Bu anlamda ileri yetiřkinlikte bu konuları ele alan arařtırmalar  nem arz etmekte, bu konuda gelecek arařtırmalara ilham verecek bir bořluk halen bulunmaktadır. Bu bořluktan hareketle, ileri yetiřkinlik  ađında bulunan bireylerin finansal refahını řekillendirmede ve iyileřtirmede sosyal kořullarını da kapsayan gelir ve birikimin  tesinde di er iliřkili olabilecek fakt rleri arařtırmak literat re ve finansal okuryazarlıđın g nl k yařam pratiđine uygulanması y n nden  nemli olabilecektir. T m bunların yanında, bu  alıřma nicel arařtırma y ntemine dayalı olarak ger ekleřtirilmiř kesitsel niteliđine sahiptir. Gelecekte yapılabilir boylamsal taramalar, nitel y ntemler, nicel-nitel karma y ntemler, konuya iliřkin derinlikli i  r ler sađlamak bakımından katkılar sunabilecektir.

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Articles in edited books: Krugman, P. (1995), "The Move Toward Free Trade Zones", in: P. King (ed.), *International Economics and International Economic Policy: A Reader* (163-182), New York: McGraw-Hill, Inc.

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