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CORPORATE SAVING AND DETERMINANTS OF CASH HOLDINGS IN DEVELOPING ECONOMIES

Doktora Tezi

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ÖZ

GELİŞMEKTE OLAN EKONOMİLERDE KURUMSAL TASARRUF VE NAKİT TUTMA EĞİLİMLERİ

Bu tez çalışması, 2009-2022 yılları arasında 10 gelişmekte olan ekonomide faaliyet gösteren 1276 halka açık finansal olmayan firmanın nakit tutma kararlarını ve kurumsal tasarruf davranışlarını, firma bazlı ve makroekonomik değişkenler çerçevesinde incelemektedir. Firma düzeyinde veriler ve makroekonomik göstergeler kullanılarak sabit etkiler panel veri modeli ile yapılan analiz sonucunda, kârlılık, firma büyüklüğü, nakit akışı, kaldıraç oranı ve net işletme sermayesinin, nakit tutma düzeyleri ve net kredi verme davranışları üzerinde anlamlı etkileri olduğu bulunmuştur. Yatırım harcamalarının ve büyüme fırsatlarının yalnızca nakit tutmayı etkilediği, gayri safi yurt içi hasılanın (GSYH) ise net kredi vermeyi etkilediği tespit edilmiştir. Ancak, Ar-Ge harcamaları ve enflasyon oranının seçilen şirketlerin nakit tutma ve kurumsal tasarruf düzeyleri üzerinde anlamlı bir etkisinin olmadığı tespit edilmiştir. Bulgular, finansal olmayan firmaların nakit tutma davranışlarının açıklanmasında Finansal Hiyerarşi teorisi, Dengeleme teorisi ve Serbest Nakit Akım teorilerinin geçerliliğini doğrulamaktadır. Ayrıca, gelişmiş ekonomilerde gözlenen kurumsal tasarruf fazlasının aksine, incelenen gelişmekte olan ekonomilerdeki finansal olmayan şirketlerin çalışma dönemi boyunca genel olarak net borçlu kaldıkları görülmüştür. Ancak, ulusal sektör hesapları kullanılarak yapılan betimleyici analizler sonucunda, nakit tutma eğilimleriyle net kredi verme veya net borç alma eğilimleri arasında bir paralellik olduğu tespit edilmiştir. Bu tez çalışması, makroekonomik düzeydeki eğilimleri firma düzeyi analizlerle birleştirerek yukarıdan aşağıya bir analitik çerçeve sunmakta ve gelişmekte olan ekonomilerde nakit tutma ve kurumsal tasarruf dinamiklerine ilişkin literatüre katkıda bulunmakta; paydaşlar ve işletme yöneticileri için faydalı bakış açıları sağlamaktadır. Bulgular, nakit yönetimi ile tasarruf verimliliği arasında etkili bir denge kuran politikaların, finansal performansın sürdürülebilirliğini sağlamak açısından önemini vurgulamaktadır.

Anahtar Kelimeler: Nakit tutma, Kurumsal tasarruf, Net borç verme, Gelişmekte olan ekonomiler, Panel veri

ABSTRACT

CORPORATE SAVING AND DETERMINANTS OF CASH HOLDINGS IN DEVELOPING ECONOMIES

This thesis investigates cash holdings and corporate saving behaviors among publicly listed 1276 non-financial firms in ten emerging economies from 2009 to 2022 using both firm-specific and macroeconomic determinants. Using firm-level data and macroeconomic indicators within a fixed effects panel data model framework, the study finds that profitability, firm size, cash flow, leverage, and working capital significantly affect cash holding levels and net lending behavior. Capital expenditure and growth opportunities influence cash holdings level of companies, while the macroeconomic indicator of GDP only affects net lending. However, R&D expenses and inflation rate are found to have no significant impact on cash holdings and net lending of the selected firms The results confirm the relevance of the pecking order, trade-off, and free cash flow theories in explaining cash holdings of non-financial firms in emerging markets. Moreover, unlike developed economies, where a corporate saving glut has been observed, the non-financial corporate sectors in the sampled emerging economies generally remained net borrowers throughout the study period, despite notable co-movements with cash holding trends utilizing national sector accounts with descriptive analysis. By combining macro-level trends with firm-level analysis, this study offers a top-down analytical framework while contributing to the literature by providing insights into the dynamics of cash holdings and savings in emerging economies, offering valuable perspectives for creditors, shareholders, and managers. The findings highlight the importance of policies that strike a balance between effective cash management and saving efficiency to sustain financial performance.

Keywords: Cash holdings, Corporate saving, Net lending, Developing economies, Panel data

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Oğuzhan ERCAN

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ABBREVIATIONS

ADF : Augmented Dickey-Fuller

CAPEX : Capital Expenditure

CPI : Consumer Price Index

EBITDA : Earnings Before Interest, Taxes, Depreciation, and Amortization

EMU : European Monetary Union

FEM : Fixed Effects Model

GDP : Gross Domestic Product

GMM : Generalized Method of Moments

IMF : International Monetary Fund

LM : Lagrange Multiplier

MSCI : Morgan Stanley Capital International

NFC : Non-Financial Corporation

NFCs : Non-Financial Corporation Sector

OECD : Organization for Economic Cooperation and Development

OLS : Ordinary Least Squares

R&D : Research and Development

REM : Random Effects Model

SIC : Standard Industrial Classification

SMEs : Small and Medium-Sized Enterprises

SNA : System of National Accounts

S&P : Standard and Poor's

UK : The United Kingdom

U.S. : The United States

VIF : Variance Inflation Factor

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1. INTRODUCTION

The saving of the non-financial corporations (NFCs) sector has gathered increasing attention in both academic research and policy circles in recent decades. Traditionally viewed as net borrowers in the macroeconomic landscape, NFCs have exhibited a structural shift towards net lending in developed economies (Dao & Maggi, 2018). This reversal, often referred to as the corporate saving glut, was first highlighted in empirical study by the International Monetary Fund (IMF, 2006) and later examined in depth by researchers such as Gruber and Kamin (2016), and Chen et al. (2017). The corporate saving glut could result from various factors that encourage firms to retain gross savings rather than allocate them to investment. Compared to developed countries, in emerging markets, where credit and debt markets may be less mature and exchange rate volatility more pronounced, the excess corporate saving rationale for NFCs could be even stronger. To examine whether the trend of increasing net lending is also present in developing economies, this thesis applies a descriptive analysis based on macro-level sectoral gross saving and capital expenditure data obtained from national accounts.

The cash holding behavior of firms is considered a critical topic in corporate finance, as holding adequate cash reserves is essential for sustaining day-to-day operations. Although academic interest in corporate cash holding policies dates back to Keynes (1936), the issue has remained a central focus in the literature due to the critical role of cash in maintaining a firm's financial stability. The reasons stem from the role of cash holdings in enabling firms to meet debt and tax obligations, maintain liquidity, finance future investments, and achieve operational goals. The significant increase in corporate cash holdings in developed economies has also drawn growing academic interest. Following the 2008 global financial crisis, the upward trend in cash holding ratios has become even more pronounced among firms in developed countries (Bates et al., 2009; Pinkowitz et al., 2012). As a result, the evolving patterns of corporate cash holdings and their underlying drivers have drawn significant scholarly attention, prompting extensive research into the determinants of cash holding across both developed and developing economies.

Three major motives for cash holdings have emerged prominently in the academic literature as explanations for corporate cash holding decisions which are the transaction, precautionary and speculative motives (Keynes, 1936). The transaction motive refers to the need for firms to hold cash in order to continue daily operations and minimize transaction costs. Firms require liquid assets to sustain their day-to-day activities. In cases where firms experience a shortage of cash, they may be forced to liquidate fixed assets to cover operational expenses, which can incur additional transaction costs. To

avoid such situations, firms hold a certain level of cash. The precautionary motive posits that companies retain cash to mitigate risks from unforeseen events and seize profitable investment opportunities. This motive views cash holdings as a tool for risk management and as a form of insurance for the firm. By maintaining cash reserves, companies are better positioned to sustain operations during unexpected situations, such as economic crises, supply-demand imbalances or political issues that lead to cash shortages. Finally, the speculative motive for holding cash refers to the intention of profiting from irregular price fluctuations and market uncertainties. It is the potential gains a company can realize by acting contrary to the majority of market participants.

Three theories are frequently referenced in the literature to explain the determinants of cash holdings: the trade-off theory, the pecking order theory, and the free cash flow theory. The trade-off theory posits that firms seek an optimal balance between the marginal benefits and marginal costs of holding cash (Miller & Orr, 1966). According to this view, maintaining either excessive or insufficient cash reserves can reduce firm value, and the optimal cash level is shaped by the tradeoff between the opportunity cost of excess cash and the cost of debt when cash is deficient. The pecking order theory suggests that managers prioritize financing options based on the degree of information asymmetry, preferring internal financing first, followed by debt, and lastly equity (Myers & Majluf, 1984). The free cash flow theory (Jensen, 1986) argues that when firms accumulate excess cash, managers may use these resources to serve their own interests rather than those of shareholders. This theory emphasizes that free cash flows should be directed toward dividends, debt repayment, or share repurchases. Otherwise, managers may avoid external oversight by holding excess cash, granting themselves more discretion over investment decisions. Such behavior can create agency conflicts, as managers may prefer to hold more cash.

This thesis aims to provide a top-down understanding of the main trends shaping corporate saving and cash holding behavior of non-financial companies while integrating the firm-level perspective on cash holdings with a macro-level analysis of the aggregate non-financial corporation sector's national accounts. The thesis also contributes to the macro-level literature on corporate saving and the evolving net lending or borrowing positions of the NFCs sector in developing economies. While the empirical literature on this topic predominantly focuses on developed countries, research on developing economies remains limited. Accordingly, the thesis offers a fresh perspective on this topic in developing markets and examines whether developing countries differ from developed countries regarding corporate saving glut.

While there is extensive research on corporate cash holdings, most studies primarily focus on firm-specific determinants and fail to establish a link with corporate saving behavior or macroeconomic factors. This thesis addresses this gap by offering a broader analytical perspective that integrates both micro-level and macro-level determinants. In doing so, it contributes to the literature by enhancing the

understanding of corporate financial decision-making in emerging markets with the current dataset, while grounding the analysis in relevant theoretical frameworks discussed throughout the study.

The overall objective of the thesis is to understand the behavior of cash holdings and net lending in developing economies. It examines the key determinants of cash holdings and corporate saving, and explores the underlying macroeconomic and firm-specific factors driving these patterns while evaluating the relevance of financial theories. For this reason, the thesis seeks to investigate the determinants of cash holdings and net lending of publicly listed companies across ten developing countries from 2009 to 2022. The thesis aims to explore key research questions:

Which firm-specific and macroeconomic variables determine cash holdings and net lending?

How do these determinants influence cash holdings and net lending?

How do the effects of these determinants vary across regions and technological classifications?

Are traditional financial theories sufficient to explain cash holdings behavior of companies in emerging markets?

Does the rising trend of corporate saving glut in developed countries also exist in developing economies?

What is the relationship between net lending and cash holdings at the macro level?

The dataset of the thesis includes panel data from 2009–2022 derived from 1,276 non-financial publicly listed firms which are 17,864 firm-year observations sourced from the Standard and Poor's (S&P) Capital IQ platform, with further analysis conducted based on regional differences and technological intensity. Macroeconomic indicators are obtained from Organization for Economic Cooperation and Development (OECD) and International Monetary Fund (IMF) databases. A static panel data regression with a fixed effects model is employed to identify significant relationships between the dependent variables (cash holding and net lending) and independent variables (firm-specific and macroeconomic variables). Firm-specific variables are firm size, leverage, net working capital, cash flow, market-to-book ratio, return on equity, R&D expenditures, and capital expenditures, while macroeconomic variables are inflation and gross domestic product (GDP).

The remainder of the thesis is organized as follows: the next section explores the corporate saving behavior of the NFCs sector, offering a macroeconomic overview and descriptive analysis of net lending (or excess corporate savings) and cash ratio. It begins with a macroeconomic overview of rising corporate savings in developed economies and examines whether similar patterns are observable in emerging markets. Drawing on national sector accounts data, the section presents a descriptive and comparative analysis of the net lending and cash positions of the non-financial corporations sector. This section also discusses the uses of excess corporate savings and reviews the relevant literature on net

lending at both macro and firm levels. Section 3 focuses on corporate cash holdings, examining the underlying motives and theoretical foundations. The section concludes with a comprehensive review of empirical research on cash holdings in both developed and developing economies. Section 4 outlines the development of hypotheses, grounded in the theoretical framework and previous empirical studies. Section 5 provides the research design, data, methodology, and empirical analysis, including descriptive statistics and regression results. Finally, the last section concludes the thesis by summarizing the major findings, discussing theoretical and practical implications and limitations, and offering suggestions for future research.

2. CORPORATE SAVING

Empirical research on corporate savings has gained increasing attention in recent years. The primary motivation appears to be the global rise in the corporate saving rate. In the economy, companies are frequently viewed as net borrowers. To repay the money it borrowed, a company should raise money, invest in efficient capital, and create future cash flow streams, in theory. The general assumption is that a much greater number of companies raising money than there are paying it back at an aggregate level. Nevertheless, the non-financial corporation sector (NFCs) has shifted over the previous few decades to a net lending position from a net borrowing position in the majority of developed nations (Andre et al., 2007; Chen et al., 2017; Dao and Maggi, 2018). In these countries, corporate savings patterns have undergone significant transformations over the past few decades, influenced by macroeconomic conditions, financial policies, and global market dynamics (Bacchetta & Benhima, 2015). This pattern conflicts with non-financial companies' historical function as a net borrower (Cesaroni et al., 2018). This issue is unique because companies historically have borrowed money from other areas of the economy to support their capital investments. Therefore, it has attracted increasing attention in the academic literature, especially after the 2007-2008 Financial Crisis. The "corporate saving glut" is the term to describe this macroeconomic trend (Gruber and Kamin 2016).

The saving glut of non-financial companies may be caused by a number of variables that favor gross savings over investments. According to the academic literature that examines national account statistics, rising gross savings and stagnant or declining investment expenditures are the main causes of the increase in corporate net lending among developed nations. Despite recent academic literature highlighting the significance of corporate sector behavior as a catalyst for macroeconomic development trends (e.g. Dao and Maggi, 2018; Gruber and Kamin, 2016), academic research on the possible factors influencing corporate net lending is still comparatively limited, especially in emerging markets.

This section of the thesis summarizes and reviews the background on excess corporate savings / net lending. Firstly, the section aims to explore the macroeconomic literature on corporate savings and the corresponding increase in net lending positions of non-financial corporations mostly in developed economies. Secondly, it provides a graphical context on the net lending positions of developing countries that the thesis investigated. Utilizing national sector accounts, the study will examine net lending positions of all sectors and non-financial corporation sectors respectively from 2009 to 2022, and co-movement relations regarding net lending and cash holding of NFCs. It allows us to understand whether excess corporate saving trends in developed countries are also applicable to developing nations. Then, the study examines the uses of excess corporate savings of non-financial corporations. Finally, the

section delves into previous academic literature that analyzes firm-specific balance sheet data to examine the determinants of net lending and their effects. It serves to familiarize the reader with key concepts and essentials related to excess corporate savings and net lending of companies for the following sections.

2.1. Macroeconomic Overview of Corporate Saving

In recent decades, the substantial rise in corporate savings has emerged as a significant macroeconomic phenomenon across developed economies. This shift is characterized by firms transitioning from net borrowers to net lenders, reflecting changes in corporate financial behavior. This section will summarize empirical studies that document high corporate savings and net lending trends in mostly developed countries and attempt to explain this trend primarily through a macroeconomic view with national accounts.

The International Monetary Fund (IMF, 2006) examines the unprecedented rise in corporate savings among G7 countries, where non-financial companies have transitioned from net borrowers to net lenders. The paper identifies several key factors behind the increase in corporate net savings. First, weak capital investment relative to corporate profits has led firms to accumulate financial assets. Secondly, firms have prioritized debt repayment and financial asset accumulation over investment due to economic uncertainty. Finally, lower interest rates and declining tax burdens have contributed to higher net corporate savings, as firms benefit from lower interest costs and higher after-tax profits. The study also explores cross-country variations. In Japan and Germany, firms have accumulated substantial savings, primarily to reduce debt and strengthen balance sheets. In contrast, corporate net savings in France and Italy have been more modest, as firms continue to rely on external financing. The United Kingdom and The United States stand out for their significant corporate cash holdings, driven by share buybacks and foreign direct investment. The paper concludes that while some factors behind corporate savings may be temporary, structural elements like increased financial uncertainty, globalization, and a preference for liquidity could sustain elevated corporate savings in the long term.

Andre et al. (2007) highlight the global increase in corporate savings relative to investment in developed countries, which contributed to the strengthening of the non-financial corporate sector's net lending position. In their study, they examine the sharp rise in corporate net lending across OECD countries from 2001 to 2006. The study finds that part of this increase is cyclical and linked to adjustments in the financial and housing sectors. Furthermore, it suggests that some structural changes in corporate behavior could lead to a persistent trend. The paper highlights that economic downturns and developments in housing markets have played crucial roles in explaining the rise in corporate net lending. According to the paper, companies became more cautious, cutting investment expenditures and

increasing savings, following the 2001 slowdown. The decline in corporate investment as a share of GDP is another key finding of the study. Additionally, companies increasingly shifted investments abroad through foreign direct investment, further contributing to domestic corporate net savings. The study finally highlights those structural factors such as globalization, wage moderation, and low inflation which may sustain higher corporate savings levels over the long term.

Gruber and Kamin (2016) investigate the rise in net lending by non-financial companies across OECD countries after the 2008 financial crisis. Their study attributes the increase to both higher corporate savings and a decline in investment spending. They mainly emphasize how declining investment contributes to the increase in corporate net lending. Using panel regression analysis, the study found that the drop in investment was generally consistent with fundamental macroeconomic factors such as GDP growth, interest rates, and corporate profits. They highlight that companies in many advanced economies have transitioned into net lenders since the early 2000s. This trend intensified after the crisis, leading to a substantial accumulation of internal funds relative to investment needs. The study suggests that the fall in investment is largely cyclical and a response to the recession and slow economic growth following the crisis.

Armenter and Hnatkovska (2017) examine the shift of the United States (U.S.) non-financial corporate sector from being a net borrower to a net lender in the early 2000s, despite the traditional tax advantages of debt financing over equity. The paper highlights that, historically, firms relied heavily on debt financing due to its tax advantages, as interest payments are deductible while equity distributions are taxed. However, empirical data from the 2000s reveal that more than 40% of publicly traded firms in the U.S. held financial assets exceeding their debt liabilities, suggesting a widespread trend of corporate net savings. The authors argue that this behavior arises from a precautionary savings motive rather than a fundamental shift in financing costs. The study shows that firms optimally accumulate financial assets even when debt financing remains fiscally advantageous. Firms with low net worth are particularly vulnerable to financial shocks and face high capital costs when issuing equity under borrowing constraints. Consequently, these firms prioritize internal fund accumulation to reduce future reliance on costly external financing. The study suggests that while tax advantages traditionally favor debt financing, the precautionary savings motive and the potential costs of financial distress led firms to hold significant internal funds.

Chen et al. (2017) examined and documented the shift in global savings composition, which is away from household savings and toward corporate savings. Using national income accounts and firm-level data across more than 60 countries between 1960 and 2013, the study highlights that corporate net lending has risen significantly, transforming firms from net borrowers to net lenders as the studies mentioned before. The study identified that declining labor shares and rising company profits have

contributed to increased retained earnings of corporations. While firms historically distributed a stable share of profits as dividends, rising profits have outpaced dividend growth, leading to higher corporate savings. Furthermore, the declining cost of capital has encouraged firms to retain more profits. Using a dynamic general equilibrium model, the study demonstrates that a decrease in investment goods prices and real interest rates causes companies to substitute labor with capital, leading to higher corporate savings. Therefore, it suggests that the increase in corporate savings is driven by a decrease in the labor share. This result is reasonable, given that the global decline in labor share aligns with a reduction in household savings.

Dao and Maggi (2018) examine the significant increase in corporate savings and cash holdings among non-financial corporations in advanced economies from 1995 to 2016. Using cross-country national accounts and firm-level data, the study documents that this trend is particularly strong in economies with persistent current account surpluses. The study highlights that firms have shifted from being net borrowers to net lenders since the early 2000s. The increase in gross corporate savings is attributed to rising profitability, lower financing costs, and reduced corporate tax rates. However, rather than being directed toward capital investment, these savings have largely accumulated in liquid assets such as cash and cash equivalents. The study further decomposes corporate net lending and finds that the increase in savings comes from higher gross profits and declining interest payments, while dividends and tax payments have not increased proportionally.

Saibene (2019) examines the phenomenon of the corporate saving glut, where the non-financial corporate sector in advanced economies has shifted from being a net borrower to a net lender since the 2000s. Using firm-level data from U.S. listed companies, the study explores the main drivers of this trend and evaluates potential explanations. The study finds that the corporate saving glut has emerged as a result of three key financial trends which are a stable and high profit, a declining investment, and a low and constant dividend. The persistent gap between profits and investment has led firms to accumulate financial assets rather than allocate earnings to capital expenditures or shareholder distributions. Finally, the study concludes that the corporate saving glut is likely the result of a structural decline in investment rather than a response to economic uncertainty.

Behringer (2019) investigates the shift of the corporate sector from a net borrowing position to a net lending position across advanced economies over recent decades. The study focuses on how changes in the distribution of income between wages and profits have contributed to this trend, analyzing data from 40 countries between 1990 and 2016. The paper finds that increases in corporate profit shares are positively associated with corporate net lending, suggesting that rising profits have driven firms to retain earnings rather than invest them. The decline in the cost of capital has not led to a proportional increase in investment. Instead, firms have chosen to accumulate financial assets, including cash reserves, rather

than expand capital expenditures. The paper concludes that corporate profits have increased at the expense of labor income, the trend may contribute to widening income inequality. The study also emphasizes that structural factors play a crucial role in explaining corporate saving behavior and its impact on national accounts.

Granelli et al. (2020) examine the rise in corporate net lending among NFCs across G20 economies and its implications for global imbalances between 1996 and 2018. The study finds that increasing corporate savings, rather than declining investment, has been the primary driver of net lending trends. The paper highlights that NFCs have shifted from being net borrowers to net lenders since the 1990s, a trend that persisted after the 2008 financial crisis. The study identifies several key drivers for rising corporate savings which are rising corporate profitability, declining labor shares, falling interest rates, and lower corporate tax burdens. The findings suggest that while corporate savings have risen, investment has remained stable, implying that excess savings are primarily allocated to cash holdings rather than capital expenditures. Cross-country analysis reveals that corporate savings play a significant role in determining current account balances. Countries with persistent current account surpluses, such as Germany and Japan, have experienced sustained increases in NFC net lending, while economies like China and Mexico have seen higher corporate borrowing.

Demary at. al. (2021) examines how the COVID-19 pandemic might influence the long-term trend of rising corporate savings in nine developed economies. The paper highlights how firms have transitioned from being net borrowers to net lenders between 1996 and 2018. These trends have been most pronounced in advanced economies with persistent current account surpluses, such as Germany, Japan, and South Korea. While corporate net lending had been increasing for decades due to factors such as economic uncertainty, reduced reliance on bank financing, and increased internal funding for R&D, the pandemic initially disrupted this trend by causing revenue declines and financial distress. However, the COVID-19 pandemic is likely to reinforce the corporate saving trend, as firms seek to restore their liquidity buffers and strengthen balance sheets in preparation for future economic shocks as a precautionary motive in the long run. As mentioned in prior studies in this section, previous financial crises led companies to increase their savings to reduce reliance on external financing, similarly. The paper also emphasizes that corporate savings are mainly held in liquid financial assets, with limited redistribution through investment or dividends.

Overall, IMF (2006) and Andre et al. (2007) were among the earliest to highlight the global trend of rising corporate savings surpassing investment in advanced countries, which contributed to enhancing the position of net lending in the NFC sector. After these papers, many studies have contributed to the literature that supports the rising corporate savings trend, especially for developed countries (Gruber and Kamin, 2016; Demary et al., 2021). The studies emphasize the significance of structural and cyclical

factors in explaining the increase in corporate savings. The papers also find that increasing corporate savings, rather than declining investment, has been the primary driver of net lending trends of non-financial corporations.

2.2. Descriptive Analysis of Net Lending

National sector accounts that break down the economy into the government, household, non-profit and corporate sectors are included in national account statistics. National savings are equivalent to corporate, government, household and non-profit savings combined. The corporate sector might be separated by financial corporations and non-financial corporations in the majority of economies. The definition of non-financial corporation sector net borrowing or net lending is the difference between gross savings and capital expenditures of all non-financial companies operating in the economy. The non-financial corporation sector is a net borrower when this difference is negative, and a net lender when it is positive.

From the standpoint of an individual household, saving is defined as the portion of income that is not spent on expenditure. However, from the standpoint of a company, there is a significant distinction between net borrowing/lending and gross savings. Besides, retained profit or retained earnings represent gross savings, which are described as gross profit minus dividends. Net lending is the remaining portion of gross savings that is greater than capital formation/capital expenditures:

Net Lending = Gross Savings – Capital Expenditures (1)

On the other hand, net borrowing is the remaining portion of capital formation /capital expenditures that is greater than gross savings:

Net Borrowing = Capital Expenditures - Gross Savings (2)

A company's net borrowing /net lending is zero when it purchases investment products with all of its gross savings. A company's net lending will be negative whenever it makes more investment product purchases than it can afford to fund with its retained earnings. Therefore, a company must borrow funds (turns into a net borrower) in order to invest a larger volume of money than its gross savings. On the other hand, the company will turn into a net lender if it buys fewer investment products than its retained earnings. In this case, the company is accumulating its financial assets and/or decreasing its liabilities using its excess savings.

In light of this information, to test whether the trend of rising excess corporate savings in developed countries is also present in developing countries, the thesis employed descriptive analysis by compiling sectoral gross savings and capital expenditures datasets from 10 developing economies' national accounts between 2009 and 2022. The study utilized the annual digital data of the OECD at the national

and sector levels. Although methods vary over time and between nations, the data typically follow System of National Accounts (SNA) standards.

Figure 1 illustrates the net lending/borrowing position of each sector relative to GDP across the 10 countries in the sample, highlighting how sectoral net lending contributes to the overall net lending of the domestic economy. One of the most consistent findings is that governments in almost all countries tend to be net borrowers. This pattern became even more pronounced in 2020 due to the COVID-19 pandemic, which led to increased public spending and rising fiscal deficits. In contrast, households generally act as net lenders, meaning they save more than they borrow. This suggests that individuals are cautious with their finances, possibly due to uncertainty or limited investment opportunities (Dao & Maggi, 2018). The corporate sector, however, shows different trends across countries.

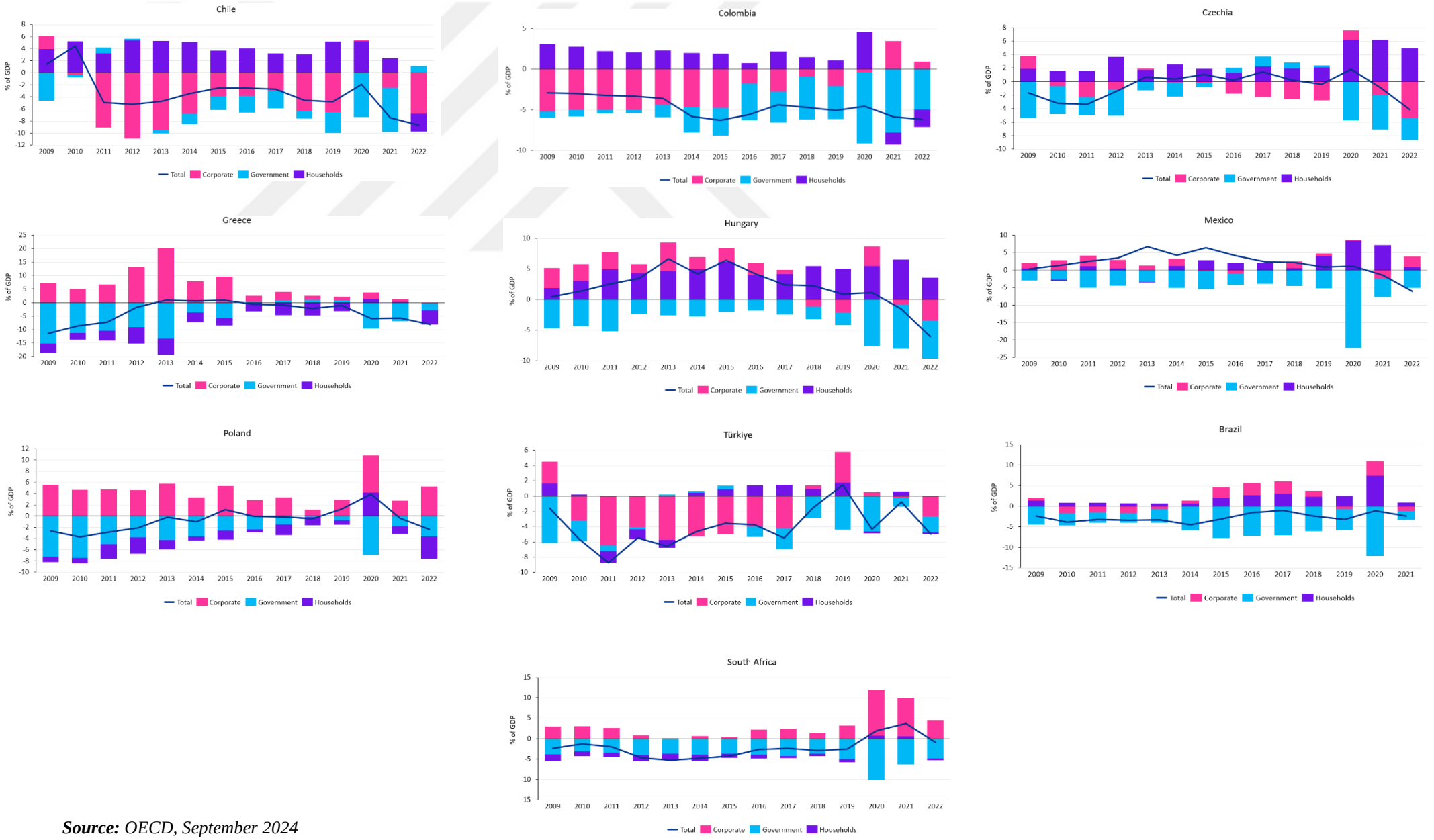
In Poland and Czechia, firms maintained a relatively stable financial position, with minimal fluctuations in borrowing and lending. Companies in Poland and Greece show a stable net lending trend across the investigated time period. Conversely, in Hungary, firms initially accumulated savings but later increased borrowing. In Latin American economies, such as Colombia and Chile, corporate borrowing followed economic cycles, increasing during periods of expansion and declining during downturns. However, Türkiye displayed particularly volatile corporate sector behavior, with firms alternating between borrowing and saving in response to macroeconomic instability, including inflation and exchange rate fluctuations.

Government borrowing played a crucial role in shaping national financial trends. Greece experienced high fiscal deficits in the aftermath of the global financial crisis, followed by efforts to reduce borrowing after 2013. Meanwhile, Poland and Latin American countries, particularly Brazil, Colombia, and Mexico, relied heavily on government borrowing in the sample period.

Türkiye and South Africa displayed distinct financial patterns compared to the other countries. In Türkiye, all three sectors which are households, corporations, and the government exhibited considerable fluctuations. In contrast, South Africa's trends were relatively stable, with continuous government borrowing, continuous corporate lending and steady household sector trends.

Overall, the findings highlight that most emerging economies rely on government borrowing. The corporate sector's financial behavior depends on factors such as credit availability and economic stability, while households tend to save rather than borrow. Some countries, such as Türkiye and Hungary, experience frequent shifts in borrowing and lending behavior.

Figure 1: Net Lending / Net Borrowing of Sectors (% GDP)



Source: *OECD, September 2024*

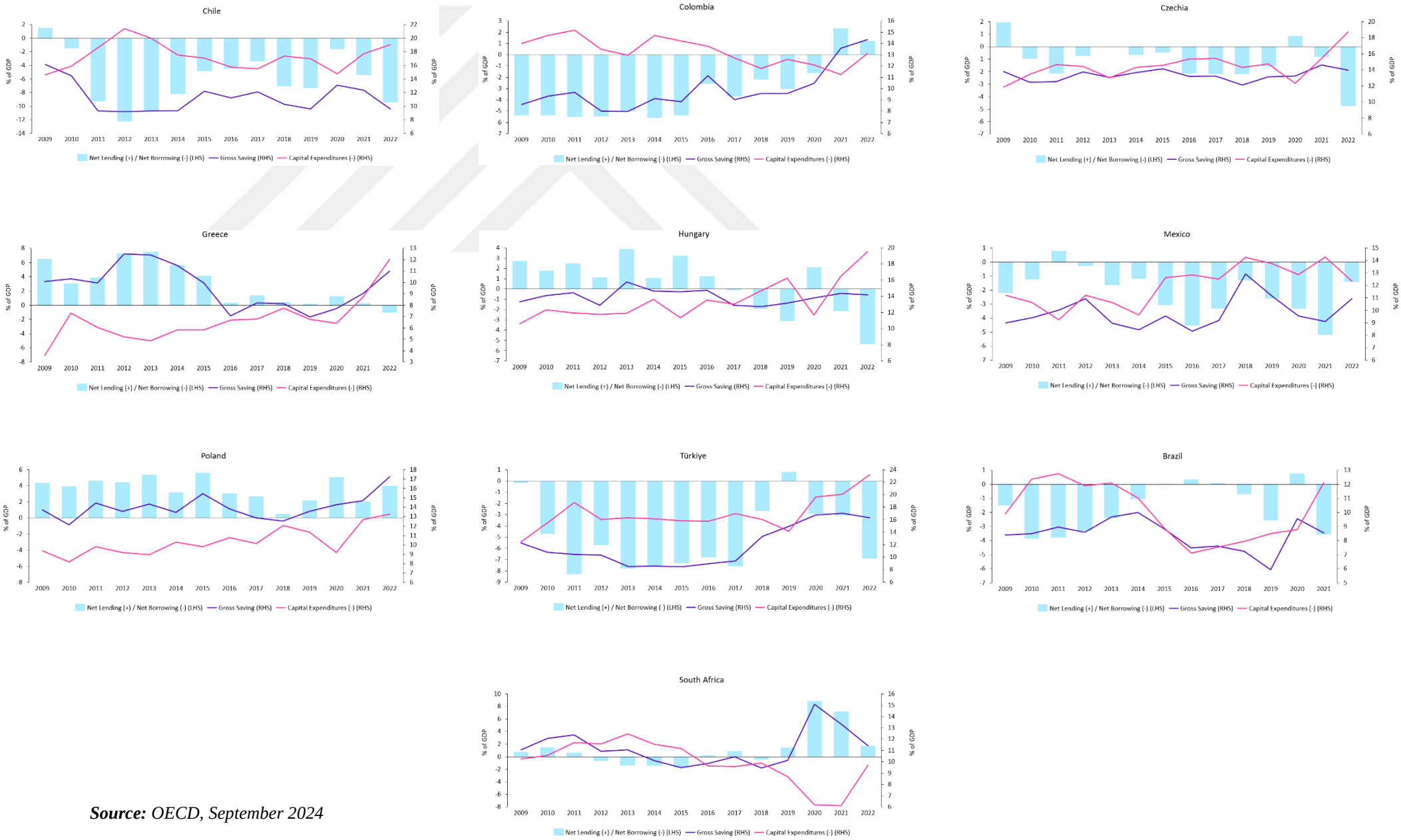
The study continues by examining the dynamics of the net lending components as defined in equation (1). In Figure 2, the study presents the net lending position against GDP of the non-financial corporate (NFC) sector along with its two key components which are capital expenditure and gross saving across 10 developing economies. According to the results, non-financial corporation sectors of most countries consistently displayed net borrowing behavior, while only two countries remained in a net lending position, reflecting differences in capital expenditures and gross savings.

A general pattern observed in Poland and Greece is the tendency for corporate net lending. In Greece, the corporate sector transitioned from a net lending position in the early years to a more stable position by the later years of the period. Poland showed relative stability in corporate net lending, with moderate fluctuations driven by investment cycles.

Conversely, Türkiye, Brazil, Chile, and Colombia exhibited persistent net borrowing throughout the period, indicating that capital expenditures remained consistently higher than gross savings. Brazil, in particular, experienced a sharp increase in net borrowing around 2015-2016, coinciding with a severe economic contraction that affected corporate profitability and financial stability (IMF, 2017). Unlike other countries with persistent trends, Türkiye's corporate savings and investment behavior appear to have been more sensitive to macroeconomic conditions. The year 2019, a period of net lending, coincided with increases in gross savings. This cyclical nature suggests that corporate financial decisions in Türkiye have been closely linked to domestic economic fluctuations and credit market conditions. Hungary demonstrated fluctuating trends in net lending and borrowing.

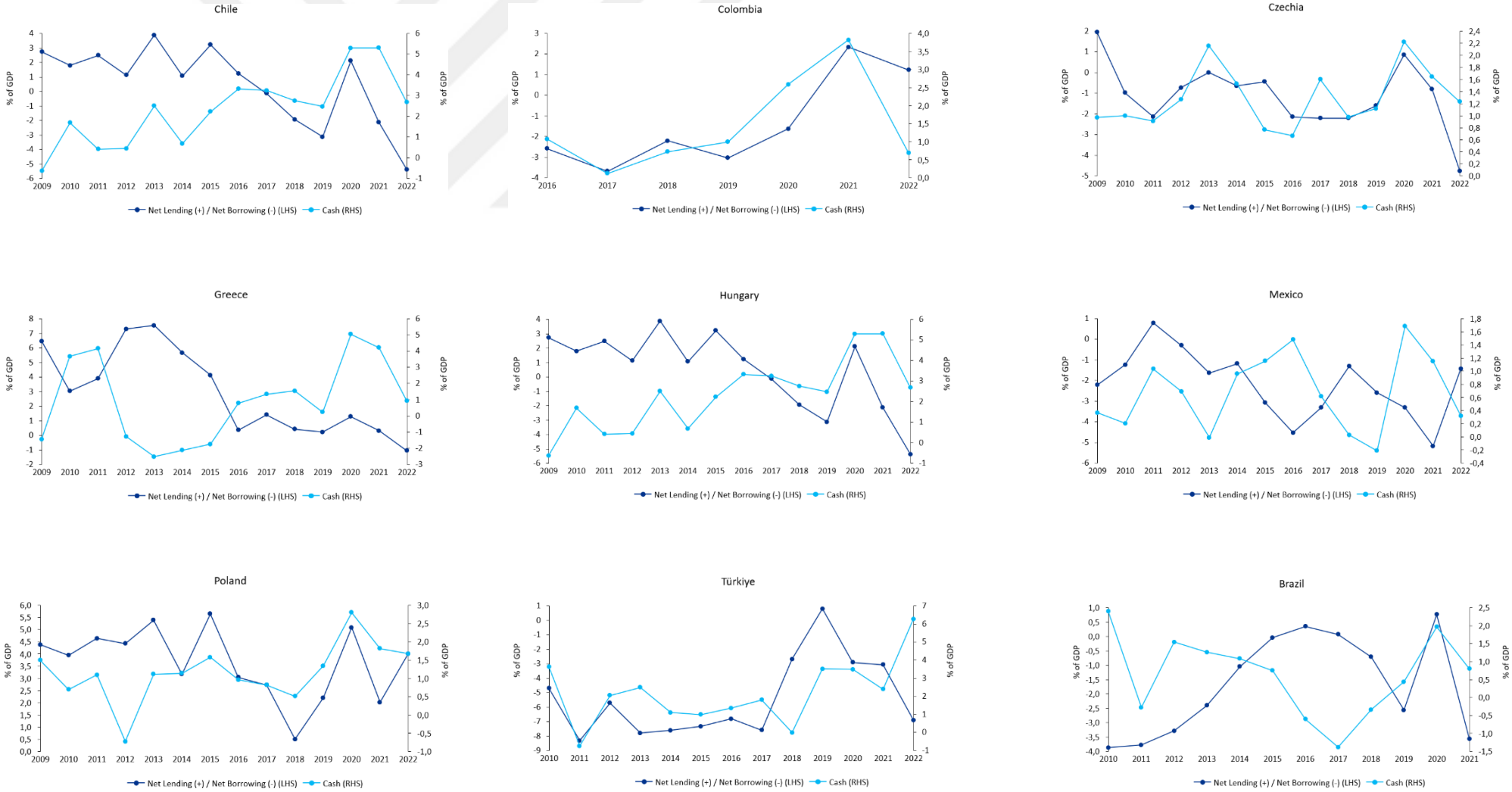
South Africa stands out as a unique case, exhibiting a sharp increase in net lending after 2018. This shift appears to be driven by a notable rise in corporate savings rather than a decrease in investment expenditures. The trend suggests that firms may have adopted a more cautious financial stance, possibly in response to economic uncertainty and risk aversion, leading them to accumulate liquidity rather than engage in aggressive capital spending.

Figure 2: Net Lending / Net Borrowing of Non-Financial Corporate Sector (% GDP)



Source: *OECD, September 2024*

Figure 3: Movement of Net Lending / Net Borrowing and Cash of NFC Sector (% GDP)



Source: *OECD, September 2024*

Figure 3 shows how net lending/net borrowing and cash holdings in percent of GDP have changed for the non-financial corporate sector in ten countries between 2009 and 2022. Overall, the data suggests that corporate cash holdings and net lending generally move together. The relationship of co-movement is clear in Chile, Colombia, Czechia, Hungary, and Poland, where increases or decreases in net lending are closely followed by similar changes in cash holdings.

A major trend across many countries is the sharp rise in both net lending and cash holdings in 2020. This period corresponds with the COVID-19 pandemic, which created economic uncertainty and led firms to increase cash reserves as a precautionary measure (Bates et al., 2009). Government financial support and lower investment activity may have also contributed to this trend.

Despite these general trends, Mexico and Brazil show a weaker relationship of co-movement between these variables. In Mexico, cash holdings fluctuate without a consistent pattern, while in Brazil, net lending and cash holdings show a reverse pattern. This may indicate different corporate financial strategies influenced by domestic policies and economic conditions.

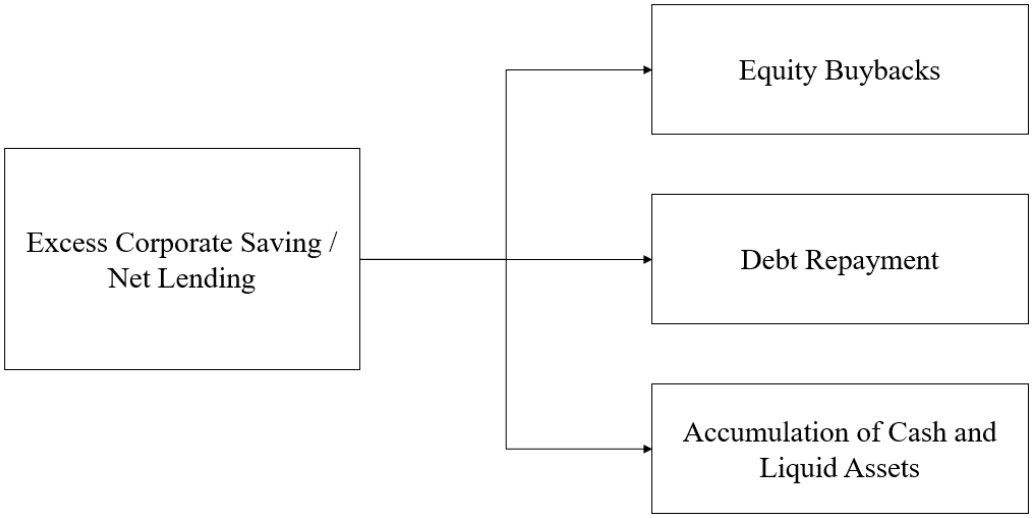
Overall, the rising trend of corporate saving glut observed in developed economies, which has been widely discussed in the literature, has not been similarly reflected in the national balance sheets of developing countries that are investigated. Contrary to developed countries, the non-financial corporations sector is generally in a net borrowing position between 2009 and 2022. Nevertheless, the fact that the net lending or net borrowing movements of NFCs generally align with cash holdings in national balance sheets of NFCs suggests that whatever drives an increase or decrease in cash holdings is also highly likely to influence net lending or net borrowing in the same way. Therefore, examining the determinants of cash holdings, frequently analyzed in the academic literature using firm-level data, alongside excess corporate savings or net lending, will enable to explanation of the co-movement.

2.3. Uses of Excess Corporate Saving

Corporate saving, defined as the retained earnings of firms after dividends and other distributions, plays a critical role in the financial stability and investment capacity of companies (Gutiérrez & Philippon, 2017). While at the aggregate level, this excess in savings is generally referred to as “excess corporate saving”, in this and the following sections, as a firm-level perspective is adopted, the term “net lending” or “corporate saving” is used. It is more crucial for companies in developing economies where access to external financing is often limited. Unlike in developed countries, where companies have greater access to capital markets, companies in developing nations tend to rely more on retained earnings as a primary source of funding (Demirgüç-Kunt & Maksimovic, 1996).

Non-financial corporations may allocate their net lending in a variety of ways, such as increasing equity buybacks, paying off debt, or accumulating liquid financial assets such as cash and cash equivalents which is demonstrated on Figure 4 below. Therefore, the main purpose of corporate saving of companies is to enhance their cash position by increasing their financial assets or decreasing their financial obligations. Corporate saving is theoretically applicable to equity buybacks. However, Chen et al. (2017) and Dao and Maggi (2018) demonstrate that, although equity buybacks are a common way for companies to utilize excess corporate savings, they do not account for the majority only partially of the increase in net lending in developed economies. Likewise, debt repayment cannot be the primary driver of net lending, as debt levels have risen in all developed economies. Companies have not systematically used their excess corporate savings to reduce debt. Instead, companies have been accumulating both financial assets and debt, with excess corporate savings primarily allocated toward expanding their overall asset position rather than increasing debt (Dao & Maggi, 2018). The results of Chen et al. (2017) and Dao and Maggi (2018) clearly imply that the most prominent use of companies' excess savings has been the accumulation of cash balances. In all developed countries analyzed, changes in the cash ratio have shown a significant positive relationship with higher corporate excess savings. This suggests that firms accumulating excess corporate savings have simultaneously increased their cash holdings. Although the evidence does not necessarily establish a causal link between corporate net lending and cash holdings, it does indicate that, regardless of the underlying motives for increased cash holdings, they likely contribute to the rise in net lending (Dao & Maggi, 2018). Therefore, understanding the determinants of net lending and cash holdings is crucial for explaining this relationship. Thus, the next part of the thesis investigates related empirical literature using firm-level data regarding determinants of net lending.

Figure 4: Uses of Excess Corporate Saving by Non-Financial Corporations



Source: *Prepared by The Author*

2.4. Literature Review of Net Lending

Up to this point, the thesis has provided a descriptive analysis of the changes in net lending or net borrowing by NFCs using the national balance sheet data, alongside an examination of macroeconomic indicators and the relevant literature. From this point onward, the analysis adopts a top-down approach, transitioning into corporate finance by utilizing firm-level balance sheet and income statement data, and continuing the literature review accordingly. This part of the study focuses on the strand of academic literature that evaluates the determinants of excess corporate savings using firm-level balance sheet data. Although the academic literature on cash holdings determinants is more comprehensive and outnumber, major studies regarding drivers of net lending of companies are presented in this subsection of the study.

Özmen et al. (2012) analyze the determinants and implications of corporate saving among non-financial firms in Türkiye from 1996 to 2008, highlighting the role of corporate savings play in facilitating economic growth. Initially, the study underscores the importance of corporate saving, especially in developing economies, where domestic financial systems are relatively shallow, and external financing options are limited or costly. Under such conditions, corporate investment is closely tied to retained earnings, with firms unable to secure adequate external finance due to collateral limitations or high-interest payments. The empirical analysis based on Generalized Method of Moments (GMM) reveals that several firm-specific and macroeconomic factors influence corporate savings. Higher profitability, firm size, growth opportunities and GDP positively affect savings, while leverage, capital expenditures, public debt-to-GDP ratio, and real exchange rate appreciation negatively impact savings. Larger firms and firms generating higher profitability and investment potential tend to save more internally. The results indicate that financially healthier firms with better access to external financing are more likely to save and invest, whereas highly leveraged firms tend to retain fewer earnings due to debt repayment obligations. The study reveals that policy interventions aimed at enhancing corporate profitability, promoting higher saving rates among Turkish firms, and stimulating investment-driven economic growth.

Brufman et al. (2013) examine the increasing trend of excess savings in the corporate sector of developed economies, analyzing firm-level data from 5,000 publicly traded manufacturing firms between 1997 and 2011 by using a fixed-effects model. The study finds a consistent increase in excess savings, coupled with a decline in gross capital formation, suggesting a change in corporate finance behavior. According to the results, financially constrained firms exhibit greater increases in excess savings as parallel to precautionary saving theories, so it suggests a negative relationship between net lending and leverage. Companies facing greater uncertainty, particularly volatility in earnings and operating costs, tend to increase savings. Regarding growth opportunities, the study finds that high-growth firms experiencing

a slowdown in growth opportunities tend to increase their savings, potentially reflecting diminished profitable investment opportunities. Finally, the study highlights the importance of addressing structural factors contributing to excess corporate savings, including decreasing financial constraints, managing uncertainty, and fostering sustainable growth opportunities.

Grigoli et al. (2014) provide a comprehensive analysis of global saving behavior by examining panel data from 165 countries between 1981 and 2012. The paper examines national, private, household, and corporate savings, assessing their determinants across different country groups and time periods. The study extends previous research by incorporating a broader dataset and introducing unconsidered saving determinants. According to findings, higher inflation rates consistently correlate positively with saving rates, which is likely attributable to precautionary motives driven by economic uncertainty and concern about future purchasing power erosion. Companies accumulate excess savings in response to investment opportunities, GDP growth, and macroeconomic uncertainty such as high inflation.

Dao and Maggi (2018) analyze the rising trend in corporate saving and cash holdings among non-financial corporations in advanced economies over the past two decades. The study examines the firm-level datasets by utilizing the panel data method to understand the firm-level determinants behind aggregate corporate saving trends. They find that large, profitable firms engaged in research and development expenses and those exploiting sophisticated international tax strategies have particularly strong tendencies to retain earnings. Also, companies with higher shares of foreign sales, higher growth opportunities, and higher working capital have higher net lending. These companies also tend to be less leveraged and pay less dividends, for increasing net lending or retained earnings.

Demircan and Öz (2018) investigate the determinants of corporate saving behavior among non-financial corporations in Türkiye, employing Ordinary Least Squares (OLS) method and firm-level data for 2013 and 2014. The study underlines that corporate saving, defined as retained earnings or undistributed profits relative to net sales, is crucial in economies like Turkey, characterized by relatively underdeveloped financial markets against developed economies. Empirical results indicate several significant determinants of corporate saving behavior among Turkish non-financial firms. The study confirms that a firm's past net profitability significantly impacts its saving rate. Firms reporting positive profits in the previous year tend to save a greater share of their profits for future investments. Smaller firms demonstrate a stronger inclination to save due to limited access to external funding sources in Türkiye. The study identifies leverage ratios as negatively correlated with net lending. Higher indebtedness constrains firms' capacity to retain earnings due to increased debt-service obligations, thereby reducing corporate savings. Exporting firms often achieve higher profitability, enabling increased retained earnings in Türkiye. Additionally, firms with higher capital expenditures exhibit lower savings, as high tangibility implies limited liquidity and flexibility for further investment.

Conversely, firms holding fewer tangible assets must retain greater earnings to finance future investment, thus exhibiting higher savings. The study offers policy implications for Türkiye, suggesting measures such as enhancing profitability, supporting firms through improved financial market access, and encouraging export orientation could substantially boost corporate savings.

Saibene (2019) examines the corporate saving glut phenomenon using firm-level data from U.S. publicly traded companies to 2015 from 1960. The study evaluates three hypotheses behind the corporate saving glut which are strategic motives, precautionary savings, and deleveraging. Utilizing panel regressions, the findings show that excess corporate savings are positively correlated to firm size, growth opportunities, and net working capital, while negatively correlated to leverage, dividend payment, and R&D expenses.

Villani (2021) investigates the corporate net lending among publicly listed companies of G7 economies from 1990 to 2015 through firm-level analysis. Villani identifies that the main drivers for the rise in corporate net lending are structural changes related to financialization and the redistribution of income from labor to capital. Using panel data regression, the study finds that financial payouts are positively associated with net lending, particularly after 2001. This suggests that the increasing role of share buybacks and dividends has contributed to the widening gap between corporate savings and investment. The findings also show that net lending has a negative relationship with leverage, working capital, and R&D expenses.

3. CASH HOLDINGS

Cash typically refers to physical currency in everyday language, including coin and banknote used for daily transactions. However, in the context of the thesis, cash refers to the cash and cash equivalents account reported on a company's balance sheet. The cash and cash equivalents account are classified as most liquid assets, with cash being the most readily accessible and spendable. Cash equivalents require conversion before they become spendable. These include financial instruments with maturities of less than 90 days, such as treasury bills, bank certificates of deposit, and commercial paper.

Cash is one of the most basic requirements for carrying out operational activities and also determines asset value. It is required for the operations such as production and service delivery that companies carry out in order to generate income. It is the basic need of companies to achieve their operational objectives. Companies can access the resources needed to carry out these basic operations and ensure sustainability of companies in many different ways. Cash and cash equivalents have a significant role among the resources required to sustain basic operational activities (Aksoy & Yalçıner, 2008).

Cash serves as the fundamental element for a wide range of economic and financial activities, encompassing key concepts such as buying, selling, exchange, income, expenditure, wages and salaries. Moreover, it is linked to concepts such as profitability, sustainability and growth within the corporate framework. Cash can be kept within the companies to meet their liabilities, to ensure sustainability, assess potential opportunities and to protect against emerging risks (Güzel, 2012).

Cash management is defined as determining the optimum cash level held within the companies by considering the cash movements, cash inflows and outflows as an organizational activity, and is defined as total activities that will protect the organization against unexpected and undesirable situations which will ensure the sustainability of operations and the use of resources (Aydın et al., 2012). In the context of cash management, cash is viewed as an insurance for the company and the key to efficient implementation of funding, investment and strategic decisions, particularly in situations where liquidity is restricted or problems arise due to economic and sectoral fluctuations (Aygün & İç, 2009).

The decisions regarding cash holdings are regarded as a critical issue in corporate finance. Although academic exploration of corporate cash holding policies began with Keynes (1936), the topic has remained consistently relevant in corporate finance literature. Especially following the 2008 economic crisis, the concept of cash holdings has become an important issue in both academic and practical contexts and has been the subject of many studies. This is because it provides companies with the ability to meet debt and tax obligations, ensure liquidity, finance future investments, achieve operational goals and improve financial performance. Therefore, it is important for companies to determine optimal level

of cash holding. Consequently, the cash holding tendencies of companies and how these tendencies change over time have attracted the attention of academicians, leading to extensive research on the determinants of cash holding ratios across both developed and developing economies.

The third section of the thesis summarizes and reviews the background on cash holdings. It aims to explore the dynamics of cash holdings and the factors influencing them. Additionally, it outlines the motivations behind maintaining cash reserves. Moreover, the section examines cash holding theories and reviews relevant literature which will offer a basic understanding of key concepts and issues related to cash holdings.

3.1. Motives of Cash Holdings

When the academic literature is reviewed, various motives for corporate cash holding behavior can be identified. Among these, the most widely accepted are the motives proposed by Keynes (1936). In his work, Keynes systematically explained monetary policy for the first time and outlined the reasons why firms hold cash, referring to them as cash holding motives. According to Keynes, firms hold cash for three primary reasons: the transaction motive, the precautionary motive, and the speculative motive. Each of these motives is explained respectively in detail below.

3.1.1. Transaction Motive

The transactional motive, dated back to the pioneer book of Keynes (1936), expresses the need for companies to keep cash to carry out ordinary operations and minimize transaction costs. Companies need liquid assets to maintain their day-to-day operations and uphold the going concern principle (Kim et al., 1998). If companies face a cash shortage when needed, they may be forced to liquidate their fixed assets to cover operational costs and expenses. However, this situation will burden transaction costs to the companies. Therefore, companies need to hold cash and cash equivalents in order to avoid transaction costs (Miller and Orr, 1966; Dittmar et al., 2003). Companies with higher access to external debt and capital prefer to holding less cash because of lower transaction costs (Opler et al., 1999).

3.1.2. Precautionary Motive

The precautionary motive suggests that firms keep cash to hedge against unforeseen circumstances and capitalize on profitable investment opportunities (Kim et al., 1998). This motive considers cash holdings as a risk avoidance tool and insurance for the company. Thus, by holding cash, companies can maintain their operations even during unexpected and adverse events such as economic crises, supply-demand imbalances, supply chain disruptions, and political issues that cause cash shortages. Companies hold cash to safeguard against the negative consequences of unforeseen events. The precautionary motive

refers to holding cash to secure future cash flows by saving a portion of past cash inflows. This motive becomes especially important when access to external financing is limited or costly. Firms do not only reserve precautionary cash to cover unexpected expenditures necessary for maintaining operations but also to take advantage of unforeseen profitable opportunities. This view gives greater emphasis on the cost of missed investment opportunities. When a company has stable and predictable cash flows, the incentive to hold precautionary cash is relatively low. Conversely, in business environments characterized by market uncertainty and irregular cash flows, firms are more likely to hold cash as a precautionary motive.

3.1.3. Speculative Motive

The speculative motive for holding cash refers to the intention of generating profits by taking advantage of irregular price movements and market uncertainties. It is also defined as the potential profit that companies can achieve by acting differently from the majority of market participants (Aksoy and Yalçıner, 2008). A firm holding cash for speculative purposes typically believes it possesses superior information about future market developments. When anticipated conditions materialize, the firm aims to use its cash reserves to generate profit. Moreover, speculative cash holdings provide the flexibility to seize investment opportunities without having to liquidate existing assets or change other investment positions (Keynes, 1936).

3.2. Theories of Cash Holdings

This chapter focuses on three prominent theories that explain the characteristics of the firms that affect its cash holding decisions. These theories are the trade-off theory, the pecking order theory, and the free cash flow theory which are widely used in the literature to examine the determinants of cash holdings (Al-Naijar & Belghitar, 2011; Gül & Şahin, 2022). Each of these theories is discussed in detail in the following respectively.

3.2.1. Trade-Off Theory

The trade-off theory suggests the optimum equilibrium level of marginal costs and marginal benefits of holding cash for firms (Miller & Orr, 1966). Accordingly, this theory proposes that firms should aim for an optimal cash balance to prevent a decline in equity value, which may result in holding excessive or insufficient levels of cash.

The optimal cash level is shaped by the tradeoff between the opportunity cost of excess cash and the cost of debt when cash is deficient. A major cost of holding liquid assets is the relatively lower rate of return compared to other investment alternatives. However, holding liquid assets also offers several

advantages. First, it minimizes the transaction costs associated with raising external funds, as firms are not required to convert fixed assets into liquid form to meet payment obligations. Second, in the event of financial constraints, when external financing may be limited or expensive, liquid assets can be used to fund new investment opportunities. Otherwise, firms may face underinvestment problems. By holding liquid assets, companies can implement their optimal investment strategies. Finally, maintaining liquidity reduces the risk of financial distress and provides a buffer against unexpected cash flow fluctuations and uncertain market conditions.

3.2.2. Pecking Order Theory

The pecking order theory or financial hierarchy model, developed by Myers and Majluf (1984), offers that managers follow a hierarchy when choosing their funding options, giving priority to those with the lowest information asymmetry over those with higher information asymmetry. Specifically, retained earnings are used first, then debt, and finally followed by equity. Investors typically have less information about the financial position of a company than its managers. Therefore, a firm's financing strategies can serve as signals to investors about its financial health. The issuance of debt or equity may indicate that the firm believes its investments are secure and profitable, and that it can comfortably meet fixed obligations such as interest and dividend payments. These signals are regarded as too costly for underperforming companies to pay. On the other hand, issuing equity can carry negative implications. If the company's cost of capital increases following an equity issuance, investors may interpret this as a sign of financial weakness. In such cases, the firm may be perceived as needing expensive capital to sustain its operations and investments, which can raise concerns about its future profitability.

In contrast to the trade-off theory, the pecking order theory argues that there is no optimal cash holding level of companies. Instead, cash serves as a buffer between retained earnings and new investment opportunities. According to this theory, a firm's cash balance is the result of its investment and financing decisions. When investment opportunities arise, companies prefer to accumulate cash to ensure the availability of internal financing, thereby avoiding the need for costly external sources such as debt or equity. Firms with abundant investment opportunities but limited access to external capital are more likely to hold higher levels of cash.

Another implication derived from the study by Myers and Majluf (1984) is that managers are more likely to issue equity when they believe the firm's stock is overvalued and less likely to do so when they believe it is undervalued. Consequently, investors often interpret new equity issuance as a negative signal.

3.2.3. Free Cash Flow Theory

Free cash flow theory (Jensen, 1986) suggests that executives may act in their own interests when there is excess cash. According to this theory, firms should allocate free cash flows to options such as paying dividends, paying off debt, and repurchasing stocks. Excessive cash holdings allow executives to evade debt and the external scrutiny of capital markets and banks, while also granting them the flexibility to conduct new investment opportunities. However, this can lead to conflicts between shareholders and executives, as executives may prefer to hold more cash than is necessary.

According to Jensen, managers may prefer to hold excess cash to increase the assets under their control and to gain greater authority over the company's investment decisions. Risk-averse managers accumulate surplus cash as a safeguard against potential economic downturns, as holding more cash reduces the firm's dependence on external capital markets. Ideally, cash reserves should be sufficient to sustain daily operations and support new investment projects.

Conflicts of interest between shareholders and managers often arise from differing preferences in cash policies. Dividend payments to shareholders reduce the cash available to managers, thereby limiting their ability to invest in new projects. If internal funds are insufficient, the firm must resort to external debt financing. In such cases, investment outcomes become subject to scrutiny by capital markets and financial institutions, which discourages managers from pursuing high-risk, low-return projects. Managers with access to high free cash flow may seek to invest in projects that serve their personal interests, even if those projects offer low returns, particularly when their compensation depends on the firm growth. According to Jensen, the use of debt imposes discipline on managers by limiting the amount of free cash flow under their discretion and ensuring that such funds are allocated only to high-return investments.

3.3. Literature Review of Cash Holdings

For many years, one of the most controversial issues in financial management has been the determinants of cash holdings of the companies. Beyond the theoretical explanations aforementioned before, it has been suggested that firm-specific variables also influence cash holdings. Numerous empirical investigations have researched the variables influencing the cash holdings decisions of the companies. Before the 2010s, studies on the factors influencing cash holdings mainly focused on advanced economies (Opler et al., 1999; Ozkan & Ozkan, 2004; Ferreira & Vilela, 2004; García-Teruel & Martínez-Solano, 2008; D'Mello et al., 2008; Al-Najjar & Belghitar, 2011). In contrast, studies focusing on individual developing economies or cross-country comparisons were relatively limited during the 2010s. However, there has been a growing body of literature on emerging economies since the 2010s including studies on individual developing countries (Uyar & Kuzey, 2014; Abdioğlu, 2016; Guizani,

2017; Yiğit, 2020; Gül & Şahin, 2022) and cross-country analyses (Al-Najjar, 2013; Akben-Selcuk & Yılmaz, 2017; Al-Naijar & Clark, 2017; Batuman et al., 2021; Alnori et al., 2022). The following section of the study presents empirical findings from developed economies regarding corporate cash holdings behavior. Subsequently, attention will be directed toward summarizing empirical evidence from developing economies, with the aim of understanding how firms make decisions about cash holdings.

3.3.1. Empirical Evidence from Developed Countries

Regarding the literature related to developed countries, the research analyzed the determinants of cash holdings that began to surface around the beginning of the 2000s. Many of the studies in developed nations have been conducted in a single-country context, especially in the United States and the United Kingdom.

Kim et al. (1998) investigated the determinants of corporate liquidity by analyzing the cash holding behavior of firms in the United States between 1975 and 1994. One of the key findings of the study is a negative relationship between leverage and cash holdings. Conversely, a positive relationship was identified between growth opportunities and cash holdings. The authors also found that larger and more established firms tend to hold less cash compared to smaller ones.

Publicly traded U.S. corporations' corporate cash holdings are examined by Opler et al. (1999) for their causes and effects from 1971 to 1994. The research indicates that cash flow, growth prospects, and capital expenditures have a major impact on cash holdings. Additionally, the analysis shows that companies that perform better have a tendency to hold more cash than is implied by the trade-off hypothesis, which holds that managers should try to maximize shareholder wealth. The study emphasizes how important it is to take into account both firm-specific characteristics and general economic conditions when analyzing corporate liquidity management strategies. They found that there is a positive correlation between cash holdings and growth opportunities, cash flows, capital expenditures and R&D expenses, and a negative correlation between cash holdings and size, leverage and liquidity. Therefore, the study supports the trade-off theory.

Ozkan and Ozkan's (2004) study examines the factors that influence corporate cash holdings in the United Kingdom (UK) businesses, utilizing a variety of theoretical models and empirical data between 1984 and 1999. Regression analysis is used in the study to evaluate the assumptions using a large dataset of UK companies. They found that there is a positive correlation between cash holdings and cash flows, and market-to-book ratio, and a negative correlation between cash holdings and leverage, and liquidity.

Ferreira and Vilela (2004) examine the factors that influence corporate cash holdings in companies operating in European Monetary Union (EMU) member states between 1987 and 2000. Firms with more

potential for investment typically have higher cash reserves. Leverage and cash holdings have an inverse connection. Cash holdings suffer when liquid asset replacements are available. Large cash reserves are less common among companies with larger amounts of liquid assets than cash. Larger companies usually have less cash on hand. The relationship between cash holdings and equity market development is inverse, indicating that companies in nations with more established equity markets have greater access to external financing and hence store less cash. Conversely, the growth of the debt markets has a favorable effect on cash holdings. The results of this research related to the factors influencing cash holdings are in line with earlier studies conducted by Opler et al. (1999). The research is in line with the trade-off argument about cash holding.

The determinants of corporate cash holdings among Swiss companies from 1995 to 2004 are examined in this research by Drobetz and Grüninger (2007). According to the research, Swiss companies have larger cash reserves than their counterparts in the U.S. and the UK. The authors examine a large sample of 156 publicly traded Swiss companies using panel models of random and fixed effects. They find that cash holdings are inversely correlated with asset tangibility, leverage, liquidity and firm size. Cash holding has a positive correlation with cash flows and dividends. Contrary to some previous researches, the study surprisingly finds no meaningful correlation between growth opportunity and cash holdings. Generally, the results point to transaction and precautionary considerations as explanations for Swiss companies' cash holdings.

Using data between 1996 and 2001, García-Teruel and Martínez-Solano's research (2008) explores the determinants impacting the cash holdings of small and medium-sized enterprises in Spain. The study employed a dynamic panel approach to conduct an empirical analysis. Interestingly, companies with better growth opportunities and cash flows have larger cash reserves. On the other hand, lower target cash levels are linked to reliance on liquidity. The report also notes that companies respond to higher interest rates by reducing their cash holdings. By concentrating on Small and Medium-Sized Enterprises (SMEs), the paper adds to the body of existing literature.

D'Mello et al. (2008) look at how the United States companies allocate cash during spin-offs between 1985 and 2000. According to the study, larger cash ratios are assigned to smaller businesses. Cash allocations to firms that spend more on research and development (R&D) are likewise higher. Higher cash ratios are assigned to firms with smaller net working capital and lower leverage. The research is in line with the pecking order and trade-off argument about decision of cash allocation.

Bigelli and Sánchez-Vidal (2012) use a large sample of private companies to 2005 from 1996 to investigate the factors that influence cash holdings in Italy. Smaller companies have more cash on hand than larger ones. In line with the pecking order theory, private companies with quicker cash conversion

cycles also often store less cash. Since net working capital can be used in place of cash as liquidity, companies with more liquid assets do not need as much cash on hand.

The relationship between cash holdings and dividend distribution decision is analyzed by Al-Najjar and Belghitar (2011) using a sample of about 400 UK firms between 1991 and 2008. They discover that a company's size, liquidity and leverage have an adverse effect on cash holdings. Growth prospects, on the other hand, are observed to positively correlate with cash holdings. Cash holdings are favorably impacted by risk, with riskier companies keeping larger cash reserves. However, risk has a detrimental impact on dividend distributions.

The determinants impacting cash holdings in the restaurant industry are examined in the study conducted by Kim et al. (2011). The authors investigate the United States restaurant companies from 1997 to 2008 using panel data. According to the analysis, restaurant companies that have more investment prospects typically have larger cash reserves. On the other hand, dividend-paying firms, larger companies, and companies that have higher non-cash liquid assets, and higher capital expenditures maintain less cash. The findings support the transaction and precautionary motives about cash.

As detailed in the Corporate Savings section, cash holding and corporate savings have increased in major developed nations as examined by Dao and Maggi (2018) over the past 20 years. Focusing on the findings regarding cash holdings, the paper highlights the negative relationship of leverage, size and net working capital with cash holding. However, the study concludes a positive correlation between growth opportunity, profitability and R&D expense with cash holdings. When concluding these findings, the paper utilized a panel data model.

La Rocca and Cambrea (2019) examine the effect of cash holdings on company performance in large Italian companies over a 36-year span from 1980 to 2015. In order to assess the relationship between cash holding and firm performance, the study takes institutional and firm-specific determinants into account. According to the study, cash holdings have a positive effect on a firm performance as indicated by the market-to-book ratio and return on assets.

Magerakis et al. (2020) investigate the moderating role of company size as the determinants influencing cash holdings among United Kingdom non-financial firms to 2018 from 2010 using panel regression model. Companies with high growth potential, unstable cash flows, or high R&D expenses keep larger cash reserves to reduce risk and support innovation. On the other hand, companies with greater net working capital, and capital expenditures, lessen the need for cash reserves. Due to their greater financial constraints and lack of financing economies of scale, smaller companies are observed to have larger cash reserves for precautionary reasons. Also, the findings show that high leverage companies have lower cash.

3.3.2. Empirical Evidence from Developing Countries

Reflecting the growing interest seen in developed countries, researchers in developing economies have also increasingly focused on the determinants of corporate cash holdings, particularly over the past decade. While many studies aim to identify the key factors influencing cash holdings, others explore the relationship between cash holdings and variables such as managerial ownership, dividend policy, and corporate governance, often incorporating a range of firm-specific financial control variables.

The research by Dittmar et al. (2003) looks at what factors influence a company's cash holdings, with a focus on agency issues and corporate governance. Firms in countries with fewer shareholder protections often store much more cash than those in countries with higher safeguards, according to the authors' analysis of data from over 10,000 companies across 45 developed and developing nations. Larger companies and those with higher net working capital maintain less cash than those with higher cash flow, higher market-to-book ratios and R&D spending.

Using data from companies listed in China, Russia, Brazil and India, Al-Najjar's (2013) paper examines the main determinants influencing corporate cash holdings in emerging markets between 2002 and 2008 for a sample of 1992 firms. The study's empirical findings support a number of important conclusions. First, it is suggested that companies with higher debt levels maintain less cash as leverage has a negative relationship with cash holdings in Russia, India and China. Furthermore, the study reveals that profitability shows a negative correlation with cash holdings in Brazil, India and China, while shows a positive relationship in Russia.

The Turkish publicly traded companies' corporate cash holdings from 1997 to 2011 are examined in a study by Uyar and Kuzey (2014). The study use 389 companies that are listed on the Borsa Istanbul. According to the authors, Turkish companies maintain cash and cash equivalents for an average of 9.1% of their total assets, and this percentage has been rising over time. The empirical findings show that growth prospects and cash flow have a major and favorable impact on cash holdings. On the other hand, cash holdings are adversely affected by capital expenses, leverage, asset tangibility, liquid assets utilized as cash substitutes, and financial debt ratios. These results are consistent with theory and support earlier research, explaining Turkish enterprises' cash holdings through both the pecking order and trade-off hypotheses.

Using a sample of Chinese listed companies from 1998 to 2009, Wang et al. (2014) examine a connection between corporate cash holding and inflation. Cash holdings are significantly impacted by inflation, according to one of the research's main findings. When inflation is low, companies have less cash on hand. However, companies start to raise their cash reserves as a safeguard against economic instability once inflation reaches a particular level. As a result, there is a U-shaped link between inflation

and cash holdings, with bigger cash reserves being associated with both extremely low and extremely high inflation levels.

Abdioğlu (2016) examines the connection between cash holding and managerial ownership by using dynamic panel data in Turkish public companies between 2005 and 2013. The study comes to the conclusion that managerial ownership could aid in bringing managers' and shareholders' objectives into alignment. Excessive ownership supports entrenchment and it raises cash holdings at the expense of shareholder value. The study delves into other factors that affect cash holdings than managerial ownership. Larger companies tend to have less cash on hand. Likewise, companies with more physical assets are less likely to have cash on hand. Another element that affects cash holdings is liquidity, with less liquid companies keeping larger cash reserves.

The factors influencing cash holdings in five developing markets including Türkiye are examined by Akben-Selcuk and Yılmaz (2017). The study looks at firm-level data from over 1,900 companies that were listed between 2009 and 2015. The findings of the research support the precautionary incentive for cash holdings by showing that leverage has a favorable effect on cash holdings. Profitability is also positively correlated. However, the study discovers a negative correlation between cash holdings and firm size, capital expenditures and liquidity.

The impact of internal and external corporate governance procedures on cash holding among companies in 9 developing MENA nations between 2000 and 2009 is examined by Al-Naijar and Clark (2017). According to the study, board size and cash holding have a negative association, indicating that larger boards are better at keeping an eye on executive behavior. Companies store less cash in nations with better financial and legal systems, especially those with more banking oversight and powerful securities regulations. Research shows that while firm size and profitability are favorably correlated with cash holding, leverage is inversely correlated.

Guizani's study (2017) examines the factors that influence corporate cash holdings in Saudi Arabia covering the years 2006–2014. According to the study, smaller businesses typically have less cash on hand. While cash holdings have a negative relationship with leverage, capital expenditures, and liquidity. Conservative companies, which have higher cash holdings, have lesser capital expenditures and less leverage.

The factors influencing corporate cash holdings in developed and developing countries across various global regions, including South America, the Middle East, North America, Africa, Europe, and Asia Pacific are examined by Aftab et al. (2018). GMM is used in the analysis of a dataset that includes 5,956 companies from 46 countries between 2007 and 2016. The findings show a positive and significant relationship between cash holdings and cash flows, investments, financial strength, and firm size. On

the other hand, cash holdings are significantly impacted negatively by working capital, profitability, growth opportunities, dividend payments, and leverage. The results also highlight the importance of taking into account local institutional contexts when looking at cash-holding factors in various regions around the world.

Diaw (2021) examines the factors that influence cash holding of public companies in 21 emerging countries between 2010 and 2018, using both dynamic and static panel data analysis. The results show that larger companies with lower levels of borrowing, working capital, capital expenditures, and intangible assets have greater cash on hand. A possible moral hazard issue when managers hoard cash instead of engaging in value-enhancing projects is also suggested by the negative link between growth opportunities and cash holdings. The study also finds that companies in developing countries adjust more slowly toward their target cash levels than those in developed countries due to higher adjustment costs and market inefficiencies.

Yiğit (2020) investigates how cash holdings of non-financial public companies in Borsa Istanbul from 2010 to 2019 are influenced by institutional and firm-specific financial determinants. The study uses system GMM estimators and fixed effects with unbalanced panel data. Cash holdings are positively impacted by growth potential. In a similar result, cash holdings show positive correlations with firm size and cash flow. On the other hand, cash holdings have a negative correlation with leverage, capital expenditures, and net working capital. The study highlights the complex determinants of cash holdings, stressing the important influence of both firm-specific financial and institutional factors.

Using static panel regression, Alnori et al. (2022) investigate the factors influencing corporate cash holdings in Shariah-compliant and non-Shariah-compliant companies across six Gulf Cooperation Council nations between 2005 and 2019. According to the study, operating cash flow exhibits a positive correlation with cash holdings for both company types, whereas leverage and net working capital have a negative correlation. Nonetheless, neither company type's decisions regarding cash holdings are significantly influenced by firm size, growth prospects, or cash flow volatility.

Batuman et al. (2021) look into how cash holding policies of Eastern European companies were affected by the global financial crisis of 2008. The study looks at a non-financial companies from 2003 to 2016 in 12 countries, including Türkiye, and finds macroeconomic and firm-specific factors that influence cash holdings. The GMM estimations and panel fixed effects model are used in the study. To better capture the changes brought about by the crisis, the authors divide the analysis into pre-crisis (2003–2007) and post-crisis (2010–2016) eras. During the full-sample period, decisions on cash holdings were more significantly influenced by size, leverage, cash flow, net working capital, and R&D expenditures. For example, larger companies tended to hold more cash to finance operations because they benefited

from greater diversification. On the other hand, companies that invested heavily in research and development had trouble keeping cash on hand, probably because they relied on their cash reserves to support innovation during volatile capital markets. Similarly, leverage and net working capital shows a negative relationship with cash holdings, while cash flow shows a positive trend. However, macroeconomic variables such as law index and GDP growth had no effect on cash holdings. The findings show that the financial crisis significantly altered the factors influencing cash holdings. Leverage and cash flows were the main determinants of cash holdings before to the financial crisis. However, other factors including size, profitability, and dividend policies become more significant in the post-crisis era. During both times, the effect of net working capital on cash holdings was a constant.

Gül and Şahin (2022) examine the connection between cash holding and monetary policy on public non-financial companies in Türkiye from 2006 to 2019. The study finds no significant relationship between cash holding and monetary policy in the Türkiye. Furthermore, cash holding rises as a result of favorable developments in cash flow and uncertainty. On the other hand, it has a negative correlation with liquidity, capital expenditures and leverage.

Alves and others (2022) conducted a study that examined the trends and determinants of business cash holdings in 32 developed and developing nations between 1995 and 2020. The study shows that cash holdings by businesses have significantly increased, especially since the 2008 financial crisis. On average, cash holdings have increased from 16.5% in 1995 to 19.7% in 2020 and have reached a peak of 31.5% in 2020. Higher liquidity and higher tangibility, according to the study, are associated with lower cash holdings. On the other hand, cash holdings are positively impacted by growth possibilities and cash flow.

Özcan (2024) uses a fixed-effects regression model to examine the relationship between cash holdings and financial performance in non-financial companies in Borsa Istanbul 50 Index during the 2016–2020 period. Utilizing return on asset as a financial performance indicator, the study reveals a significant positive correlation between cash holdings and financial performance, indicating that having more cash on hand increases a company's worth by lowering the cost of outside funding and allowing it to take advantage of investment possibilities.

Table 1 and Table 2 present a summary of the aforementioned empirical studies that examine the impact of firm-specific determinants on cash holdings in developed and developing economies respectively.

Table 1: Empirical Results from Developed Countries

CASH	Kim et al. (1998)	Opler et al. (1999)	Ozkan & Ozkan (2004)	Ferreira & Vilela (2004)	Drobetz & Grüninger (2007)	García-Teruel & Martínez-Solano (2008)	D'Mello et al. (2008)	Al-Najjar & Belghitar (2011)	Kim et al. (2011)	Bigelli and Sánchez-Vidal (2012)	Dao & Maggi (2018)	La Rocca & Cambrea (2019)	Magerakis et al. (2020)
SIZE	-	-		-	-		-	-	-	-	-		-
LEV	-	-	-	-	-		-	-			-		-
NWC		-	-	-		-	-	-	-	-	-		-
CF		+	+	+	+	+					+		
MB	+	+	+	+		+		+	+		+	+	+
ROE											+	+	
RD		+					+				+		+
CAPEX		+							-				-

(-) negative (+) positive.

Table 2: Empirical Results from Developing Countries

CASH	Dittmar et al. (2003)	Al-Najjar (2013)	Uyar & Kuzey (2014)	Abdioğlu (2016)	Akben-Selcuk & Yılmaz (2017)	Al-Naijar and Clark (2017)	Guizani (2017)	Aftab et al. (2018)	Diaw (2021)	Yiğit (2020)	Alnori et al. (2022)	Batuman et al. (2021)	Gül and Şahin (2022)	Alves et al. (2022)	Özcan (2024)
SIZE	-			-	-	+	+	+	+	+		+		-	
LEV		-	-		+	-	-	-	-	-	-	-	-		
NWC	-		-	-	-		-	-	-	-	-	-	-	-	
CF	+		+					+		+	+	+	+	+	
MB	+		+					-	-	+				+	
ROE		-			+	+		-							+
RD	+							-	-			-			
CAPEX			-		-		-	+	-	-			-		

(-) negative (+) positive.

4. HYPOTHESIS DEVELOPMENT

A substantial body of literature has focused on firm-specific variables influencing cash holdings. Factors such as firm size, leverage, profitability, net working capital, growth opportunities, cash flow, and capital expenditures have been widely examined as potential determinants. Although the literature on cash holding determinants is more extensive, some studies have also investigated the drivers of corporate net lending. The impact of these variables on cash holdings and net lending may vary depending on the theoretical frameworks discussed earlier. This section aims to develop hypotheses by presenting the drivers of cash holdings and net lending by referring to earlier studies and the aforementioned theoretical frameworks.

4.1. Size

The free cash flow and the pecking order theories suggest a positive link between firm size and cash holdings. According to the pecking order theory, larger firms tend to accumulate more liquid assets after funding their investments, as they are more likely to generate successful investment outcomes (Opler et al., 1999).

The free cash flow theory highlights that larger firms typically have more dispersed shareholders, leading to greater managerial discretion (Ferreira & Vilela, 2004). Furthermore, because of the amount of money the bidder would need, larger businesses are unlikely to be the subject of a takeover. Therefore, it makes sense that the management of larger companies would have more power in deciding the firm's financial and investment policies, which would result in larger cash holding. The studies of Guizani (2017), Al-Naijar and Clark (2017), Aftab et al. (2018), and Batuman et al. (2021) provide evidence supporting a positive relationship between firm size and cash holdings. However, few studies resulted in no significant relationship (Ozkan and Ozkan, 2004; García-Teruel and Martínez-Solano, 2008; Uyar and Kuzey, 2014).

In contrast, the trade-off theory posits a negative relationship between firm size and cash holdings. According to Miller and Orr's (1966) model of the demand for money by businesses, cash management can benefit from economies of scale. This will lead large companies to hold less cash than smaller companies. Additionally, the borrowing costs are fixed and unrelated to the quantity of the loan (Kim et al., 2011). As a result, small companies find it more costly to get capital than larger ones, which encourages them to hold more cash (Ferreira & Vilela, 2004). Furthermore, large firms reduce the likelihood of financial stress because they have more diversification (Rajan & Zingales, 1995). Most of

the empirical studies in the literature support this relationship (Ferreira & Vilela, 2004; Drobetz & Grüninger, 2007; D'Mello et al., 2008; Kim et al., 2011; Bigelli & Sánchez-Vidal, 2012; Abdiğlu, 2016; Dao & Maggi, 2018). Opler et al. (1999) analyze the determinants of cash holdings by publicly traded companies to 1994 from 1971 in the United States, finding evidence that supports a trade-off model of cash holdings, larger companies and those with high credit ratings hold fewer cash holding rates. Big companies have less information asymmetry than small companies. Therefore, small companies have higher borrowing costs than larger ones. In light of the trade-off theory and the above-mentioned empirical findings, this thesis hypothesizes a negative relationship between firm size and cash holdings.

Due to their greater ability to save, large companies typically have significant levels of savings (Özmen et al., 2012). They need fast and simple accessibility to their own savings. The larger companies have less savings since they should have less expensive and easier accessibility to external funding (Rajan and Zingales, 1995; Demircan and Öz, 2018). It also emphasizes that when converting non-liquid assets into cash, large companies can take advantage of scale economics, which lowers the demand for liquidity. Prior research in the literature is generally still unclear regarding the relationship between firm size and firm-level saving. Based on the transaction motive and the prevailing findings in the literature, this study hypothesizes a negative relationship between firm size and net lending.

4.2. Leverage

Leverage can be a substitute for cash, and the cost of holding excess cash is higher than the cost of debt. Therefore, financially stable firms with lots of investment opportunities need much more cash than their accumulated profits, and they meet this with debt (Ferreira & Vilela, 2004; Chen, 2008). Leverage can be used instead of cash up to a certain point and will accelerate the growth of the company. However, after a certain level, excess debt will increase the likelihood of bankruptcy and financial distress. Therefore, it will cause more cash to be kept to eliminate these risks (Drobetz & Grüninger, 2007).

Pecking-order theory suggests that investment and retained earnings have a direct impact on leverage. Leverage increases when investments exceed retained earnings, while it decreases when retained earnings outpace investments (Ferreira & Vilela, 2004). Since cash represents the residual of them, this also affects cash holdings. Consequently, the pecking-order theory proposes a negative relationship between leverage and cash holdings.

The free cash flow theory highlights the monitoring function of debt. In highly leveraged companies, managers are closely monitored by creditors through obligations and debt covenants, limiting managerial discretionary power over how funds are utilized. Conversely, in low-leverage companies,

where managers are less closely monitored, they are able to exercise greater managerial discretion. As a result, less leveraged firms are expected to hold more cash (Opler et al., 1999).

In contrast, the trade-off theory asserts that there is no definitive or clear relationship between these two variables. As the leverage rises, firms will hold more cash to lower the likelihood of bankruptcy and financial distress. However, it would be expected that firms with higher leverage hold less cash to the degree that the leverage ratio serves as a proxy for the firm's ability to issue debt (Kim et al., 2011; Al-Najjar & Belghitar, 2011). The positive relationship viewpoint of the trade-off theory is supported by García-Teruel and Martínez-Solano's (2008) analysis of the factors influencing small and medium firms' cash holdings in Spain, which found a positive correlation between leverage and cash holdings.

Most of the empirical studies in the literature support the pecking-order and free cash flow theories, and show empirical evidence for a negative relationship between leverage and cash holdings (Ozkan & Ozkan, 2004; D'Mello et al., 2008; Al-Najjar & Clark, 2017; Al-Najjar & Belghitar, 2011; Ferreira & Vilela, 2004; Drobetz & Grüninger, 2007; Uyar & Kuzey, 2014; Guizani, 2017; Batuman et al., 2021; Alves et al., 2022). Given the arguments and empirical results in the literature mentioned above, the study proposes an inverse link between cash holdings and leverage.

Due to financial limits in the capital market, heavily leveraged companies should rely on internal funding. A higher debt-to-equity ratio not only increases interest expenses but also leads to lower levels of corporate savings, as debt repayments reduce the funds available for saving (Demircan and Öz, 2018). Parallel to this argument, the deleveraging motive suggests that corporate savings may be increased by indebted companies in an effort to lower their leverage level (Saibene, 2019). Similar to these arguments, most studies suggest a negative relationship between net lending and leverage (Özmen et al., 2012; Brufman et al., 2013; Dao and Maggi, 2018; Demircan and Öz, 2018). Considering these arguments and the academic literature, the thesis proposes that leverage has a negative association with net lending.

4.3. Net Working Capital

Net working capital is considered as a substitute for cash, and it could be liquidated in case of a shortage of cash. Trade-off theory argues that there is an inverse connection with cash holdings because of this substitution. Since working capital could be quickly converted to cash at a lower cost (Ferreira & Vilela, 2004), a firm with a higher level of liquid assets is expected to keep less cash. Most empirical studies confirm a negative relationship among them (Opler et al., 1999; Ozkan & Ozkan, 2004; Ferreira & Vilela, 2004; Kim et al., 2011; García-Teruel & Martínez-Solano, 2008; D'Mello et al., 2008; Uyar & Kuzey, 2014; Al-Najjar & Belghitar, 2011; Dao & Maggi, 2018; Gül & Şahin, 2022; Alnori et al., 2022). Free cash flow and pecking order theories do not suggest any link between net working capital and cash

holdings. Based on the trade-off theory and the empirical evidence mentioned above, the study proposes a negative connection between net working capital and cash holdings.

The existing literature on corporate savings often overlooks the role of liquid asset measures. Nevertheless, the higher liquid assets requirements that companies should meet in order to carry out their operations are directly related to corporate savings. It might be argued that a positive effect on the amount of corporate savings if the rise of liquid assets requirements was substantial. The study by Dao and Maggi (2018) also found a positive sign of relation between net working capital and net lending. Contrary to this argument, higher net working capital reduces the need for corporate savings since companies with efficient working capital management can rely on short-term assets and liabilities to meet operational needs, leading to a negative relationship (Hill et al., 2010). Despite these contrasting views, this study proposes that net working capital is positively associated with net lending.

4.4. Cash Flow

Trade-off theory has a negative relationship between cash flow and cash holdings, as cash flow serves as an easily accessible source of liquidity that can substitute for cash holdings (Kim et al., 1998).

In contrast, the pecking order theory predicts a positive relationship. According to this theory, high cash flow enables companies to use more internal financing, which reduces reliance on external funding. If the cash flow levels of the companies are high, the cash level is increased by keeping the excess cash entering the company for precautionary purposes to pay off debts or for funding future investment opportunities (D'Mello et al., 2008).

Most empirical studies in the literature support the pecking order theory and show empirical evidence for a positive relationship between cash flow and cash holdings (Opler et al, 1999; Ozkan & Ozkan, 2004; Ferreira & Vilela, 2004; Drobetz & Grüninger, 2007; García-Teruel & Martínez-Solano, 2008; Uyar & Kuzey, 2014; Dao & Maggi, 2018; Alnori et al., 2022; Gül & Şahin, 2022). Considering the pecking order theory and empirical results in the literature mentioned above, the study proposes a positive link between cash flow and cash holdings.

A strong and consistent cash flow provides firms with greater opportunities to increase corporate savings through the effective use of internal funds (Almeida et al., 2004). In addition, it reduces reliance on external financing sources (Acharya et al., 2013). Supporting this view, Dao and Maggi (2018) found a positive correlation between cash flow and net lending. Therefore, this thesis hypothesizes a positive relationship between cash flow and net lending.

4.5. Market-to-Book Ratio

Growth opportunity or investment opportunity is a common variable examined in the literature. The trade-off theory and pecking order theory suggest a positive correlation between growth opportunity and cash holdings. According to trade-off theory, due to the anticipated losses from forgoing lucrative investment opportunities, companies that have higher investment opportunities face higher costs if they experience a liquidity shortfall. Hence, companies with greater investment opportunities have a tendency to keep more cash to evade expensive external capital (Kim et al., 2011). The trade-off theory also suggests that greater investment opportunities result in higher financial distress costs for the company due to the net present value of these investments going away, and holding more cash on hand offers an additional safeguard against bankruptcy or financial distress. Similarly, the pecking order theory predicts that companies with greater growth opportunities generate higher levels of cash to avoid the risk of forgoing valuable growth opportunities due to cash shortage (Ferreira & Vilela, 2004). While the pecking order theory reflects the precautionary motives of cash holding, the trade-off theory represents the costs associated with transactions. Therefore, there is an interpretation difference between them. This indicates that the pecking order theory raises the possibility that the company could be entirely restricted from receiving outside funding, however, the trade-off theory views the high amount of cost of external financing as the problem.

In contrast, the free cash flow theory anticipates a negative link when the net present value of the firm's expansion projects is negative (Drobetz & Grüninger, 2007). In such cases, executives of companies with limited investment opportunities may prefer to keep more cash to ensure that funds will be available for these projects. Even this may result in a lower market-to-book ratio and a reduction in shareholders' value.

Empirical researches largely confirm a positive relationship among the mentioned variables (Opler et al., 1999; Dittmar et al., 2003; Ferreira & Vilela, 2004; Ozkan & Ozkan, 2004; Chen, 2008; Kim et al., 2011; Al-Najjar & Belghitar, 2011; García-Teruel & Martínez-Solano, 2008; Dao & Maggi, 2018; Alves et al., 2022). Bigelli and Sánchez-Vidal (2012) and Drobetz and Grüninger (2007) suggest an insignificant relationship. Considering the suggestions of the trade-off theory, the pecking order theory, as well as the empirical evidence mentioned above, this study proposes a positive relationship between market-to-book ratio and cash holdings.

Companies will be encouraged to raise internal finances in the face of expensive external financing sources if future growth opportunities arise. So, savings for the company will rise owing to financing to potentially profitable investment opportunities in the future (Özmen et al., 2012; Horioka & Terada-Hagiwara, 2013). The studies of Özmen et al. (2012) and Dao and Maggi (2018) also find a positive

correlation. Thus, the study suggests a positive sign of correlation between net lending and investment opportunities.

4.6. Return on Equity

Return on equity (ROE) can be defined as the firm's ability to generate profit from its capital. Less profitable companies are reluctant to issue equity shares since the cost of doing so is higher. Pecking order theory suggests a positive relationship that less profitable companies rely more on debt financing and tend to hold less cash, while more profitable companies generate more cash, which enables them to pay greater dividends and pay their debts (Opler et al., 1999). Companies with higher returns on equity generate more profit with the same level of capital, indicating better cash flows and as a result, a greater propensity to hold cash. Empirical studies also confirm a positive relationship among them (Dao & Maggi, 2018; Akben-Selcuk & Yılmaz, 2017 Al-Naijar & Clark, 2017; Özcan, 2024). On the other hand, Al-Najjar (2013) and Aftab et al. (2018) found a negative relationship consistent with the trade-off theory. The theory states that profits and cash are substitutes for each other and profitable firms generally have sufficient cash flow to evade underinvestment problems, consequently, they don't need to hold excess cash (Kim et al., 1998). Considering the theoretical argument favoring a positive link and the supporting empirical evidence in the literature, this study proposes a positive relationship among the mentioned variables.

A high degree of profitability raises the company's saving potential (Lemmon & Zender, 2010; Özmen et al., 2012). Research in the academic literature concluded a positive relationship between return on profitability and net lending (Özmen et al., 2012; Dao & Maggi, 2018). Therefore, the study also suggests a positive sign of relation with return on equity.

4.7. R&D Expense

The trade-off theory assumes that companies with significant R&D expenses are more likely to keep more cash since they are exposed to greater risks and need to keep sufficient cash to protect themselves against potential losses and R&D-related risks (Bates et al., 2009). Thus, it suggests a positive link between cash holdings and R&D expenses, as parallel to some empirical studies in the literature (Opler et al., 1999; Dao & Maggi, 2018; D'Mello et al., 2008). However, as research and development (R&D) expense is a kind of investment, the same logic that applies to capital expenditures can also be extended to R&D, implying a negative correlation with cash holdings (Aftab et al., 2018; Diaw, 2021). Additionally, some studies in the literature have not found a significant relationship between R&D expenditures and cash holdings, and therefore it has been concluded that this relationship is ambiguous

(Bigelli & Sánchez-Vidal, 2012). Considering the mixed empirical findings in the literature mentioned above, this study proposes an insignificant relationship between R&D expenses and cash holdings.

There are restrictions on the capacity to pledge intangibles as collateral for external financing. As a result, in order to have sufficient internal resources to finance R&D expenditures, companies should save more (Falato et al., 2014). Parallel to the study of Dao and Maggi (2018), the thesis suggests that R&D expenses have a positive association with corporate savings.

4.8. Capital Expenditure (Capex) Ratio

Trade-off theory posits a positive link between capital expenditures and cash holdings. Companies with high capex are likely to hold more cash to minimize transaction costs related to external financing (Opler et al., 1999).

In contrast, according to the pecking order theory, companies with significant capital expenditures will experience a reduction in their cash reserves due to increased spending, as a result, it posits a negative link between the related variables. Moreover, as firms invest more, their assets increase, which enables them to borrow more easily by using these assets as collateral. Consequently, this reduces the need for holding excess cash (Dittmar et al., 2003).

The studies of Kim et al. (2011), Uyar and Kuzey (2014), Akben-Selcuk and Yılmaz (2017), Guizani (2017), Diaw (2021), and Gül and Şahin (2022) provide a significant negative relationship between Capex and cash holdings. However, parallel to the trade-off theory, Opler et al. (1999) and Aftab et al. (2018) document a positive link. Considering the theoretical framework and empirical findings discussed above, this study proposes a negative relationship between capital expenditures and cash holdings.

Companies with high capital expenditures may be able to substitute outside funding because of a high pledging of collateral. So, they face lower interest costs from external funding. As a result, they might not favor saving in order to fund investments (Demircan & Öz, 2018). The study proposes a negative relationship between net lending and capital expenditures considering this argument.

4.9. Gross Domestic Product (GDP)

A rise in GDP shows that the economy is growing, and employment levels are rising. Such economic expansion creates a favorable environment for any investors which encourages them to fund profitable projects. A rise in GDP offers firms with additional opportunities, stimulating them to keep higher amount of cash to take advantage of these prospects. Considering these arguments, this study proposes a positive connection between GDP and cash holdings.

A higher GDP growth rate level reflects the economy's favorable and growing demand, which bolsters the claim that increased demand would result in a greater source of savings for the company, so it leads to a positive relationship by utilizing this argument (Özmen et al., 2012; Grigoli et al., 2014). Contrary to this argument, in periods of economic growth (increase of GDP), companies anticipate stable revenues, low uncertainty and it is leading companies to retain less cash, suggesting a negative relationship with corporate saving. The study suggests a negative relationship between GDP and net lending considering the arguments above.

4.10. Inflation Rate

Inflation can be defined as the rise in general price levels caused by the imbalance between demand and supply in the market. As inflation increases, the cash holding amount needed for the companies also increases. As inflation rises up to a point, firms may purchase raw materials earlier to avoid rising costs, which contributes to a fall in cash levels (Wang et al., 2014). However, as the inflation continues to rise, companies may increase their cash to improve their external borrowing parameters. Considering the arguments and empirical results in the literature mentioned above, this study proposes an adverse relationship between inflation and cash holdings.

Companies may raise internal funds in anticipation of greater uncertainty in the economic future when inflation rises (Grigoli et al., 2014). Because when it happens, it leads to unstable macroeconomic circumstances and expensive funds from banks. Therefore, companies may have precautionary motives about savings and anticipate high savings because of the unstable business environment, and suggest a positive correlation. However, high inflation erodes the real value of savings, incentivizing firms to invest excess savings rather than retain it, implying a negative relationship. The thesis proposes a positive relationship between inflation and net lending.

To briefly illustrate, Table 3 presents the predictions of the thesis regarding the impact of firm-specific and macroeconomic determinants on cash holdings and excess corporate savings. Additionally, Table 4 provides a summary of the predictions estimated by the trade-off theory, the pecking order theory, and the free cash flow theory concerning the relationship between firm-specific determinants and cash holdings, respectively.

Table 3: Thesis Predictions

	CASH	NL
SIZE	-	-
LEV	-	-
NWC	-	+
CF	+	+
MB	+	+
ROE	+	+
RD		+
CAPEX	-	-
GDP	+	-
INF	-	+

(-) negative (+) positive.

Table 4: Theory Predictions for Cash Holdings

CASH	Trade-Off Theory	Pecking Order Theory	Free Cash Flow Theory
SIZE	-	+	+
LEV		-	-
NWC	-		
CF	-	+	
MB	+	+	-
ROE	-	+	
RD	+		
CAPEX	+	-	

(-) negative (+) positive.

5. RESEARCH DESIGN, EMPIRICAL ANALYSIS AND FINDINGS

This section provides a comprehensive overview of the research data and variables, introduces the research model and methodological approach, and presents the descriptive statistics and empirical findings. Specifically, the section covers the variables utilized in the study, the dataset, formulation of the research model and the applied methodology. Furthermore, it outlines the diagnostic tests conducted, followed by a presentation of the descriptive statistics and empirical results, respectively.

5.1. Data and Variable Description

The thesis focuses on companies from developing countries based on the MSCI (Morgan Stanley Capital International) Emerging Market classification. This classification includes developing countries from various regions of the world, namely; Europe, America, and Africa. These emerging countries are Brazil, Chile, Colombia, Czechia, Greece, Hungary, Mexico, Poland, South Africa and Türkiye.

Before starting data analysis, outliers were detected by investigating descriptive statistics. To prevent data loss, outliers are approximated to the mean rather than removing from the dataset in the winsorize technique. To mitigate the effect of extreme values, the winsorization technique was applied to all variables at a 1 % level from both tails which is a parallel approach with Harford et al. (2008).

Due to limitations in macroeconomic data availability prior to 2009, this study employs balanced panel data of publicly traded firms in the mentioned 10 emerging countries from 2009 to 2022.

S&P Capital IQ platform, OECD, and IMF database sources are used for the analysis. S&P Capital IQ database provides firm-specific data such as year-end balance sheet, year-end income statement, financial market data, and year-end market price of publicly traded firms in 10 countries. Because the firm-specific data used in the analysis covers the publicly traded firms from various developing economies, S&P Capital IQ database enables data consistency among countries. OECD and IMF databases give macroeconomic data of the selected countries. STATA 13 was used to analyze the dataset.

In Section 2, the corporate savings and cash holding data examined descriptively at the macro level within national accounts, encompass all non-financial companies in the selected country. Even though publicly traded companies only represent a small portion of companies in each nation, publicly traded companies are the most profitable and largest. As such, they are likely the main drivers of the overall saving dynamics of the corporate sector. The dataset analyzed in the study is suitable for investigating corporate saving trends since all investments and profits are significantly more concentrated among listed companies than SMEs which are largely influenced by wage bills and total employment.

The initial dataset covers 50,638 firm-year observations spanning 14 years. The companies that have publicly available financial data only after 2019 were excluded from the model. The financial institutions operating in the financial sector and real estate investment firms, identified by Standard Industrial Classification (SIC) codes from 6000 to 6999, were eliminated because of the different formats of their financial statements. Similarly, firms in the utility industry, which have SIC codes from 4000 to 4999; holding companies and public administration companies, which have SIC codes from 9000 to 9999 were excluded because of their nature. Lastly, observations with missing firm-year data were also eliminated. Following all these adjustments, the final dataset consists of 17,864 firm-year observations which cover 1,276 firms over 14 years in the selected 10 countries which is summarized and presented in Table 5. As presented, the highest number of firm-year observations is recorded in Poland, while the lowest is in Czechia, with only four firms included in the sample. Türkiye, Greece, South Africa, Brazil, and Chile are also among the countries with a relatively large number of companies in the analysis.

Table 5: Distribution of Sample Firms by Country Classification

Country	Firms (#)
Greece	105
Mexico	65
Brazil	142
Hungary	15
Colombia	32
Türkiye	245
South Africa	121
Czechia	4
Chile	85
Poland	462
Total	**1276**

Table 6: Distribution of Sample Firms by Regional Classification

Country	Firms (#)
Europe	586
America	324
Türkiye	245
South Africa	121
Total	**1276**

For investigating regional differences, the firms in the sample are grouped according to their geographical locations. Greece, Hungary, Czechia and Poland are classified under Europe, while Mexico, Brazil, Colombia and Chile are classified as America. Türkiye and South Africa are analyzed separately because of their unique regional contexts. The regional distribution of companies is presented in Table 6.

In addition to regional classification, the 1,276 publicly listed firms are also categorized based on technological intensity. The distribution of companies regarding technological intensity is as follows: 223 firms are classified as high-technology firms while the remaining 1,053 firms are classified as low and middle-technology firms. The SIC Primary Industry Classification of high technology firms is presented in the Appendix A.

The variables employed in the research model are divided into three categories: dependent variables, firm-specific independent variables and macroeconomic independent variables. The dependent variables are represented by the cash holding ratio and the net lending ratio. The firm-specific variables include firm size, leverage, net working capital, cash flow, market-to-book ratio, return on equity, research and development expenditures, and capital expenditures. The macroeconomic variables are inflation and gross domestic product (GDP). The detailed explanations for all variables are shown in Table 7. The table covers definitions, abbreviations and measurement methods for the dependent and independent variables.

Table 7: Variable Descriptions

Variables	Abbreviation	Measurement
Dependent Variable		
Cash Holding Ratio	CASH	Cash and Cash Equivalents / Total Assets
Net Lending Ratio	NL	(Net Income + Depreciation - Dividends) / Total Revenue
Firm-specific Independent Variables		
Firm Size	SIZE	Natural Logarithm of Total Assets in USD
Leverage	LEV	Total Debt / Total Assets
Net Working Capital*	NWC	Net Working Capital / Total Assets
Cash Flow	CF	EBITDA / Total Assets
Market-to-Book Ratio	MB	Market Capitalization / Total Equity
Return on Equity	ROE	Net Income / Total Equity
R&D Expense	RD	R&D Expense available (1) or not (0)
CAPEX Ratio	CAPEX	Capital Expenditure / Total Assets
Macroeconomic Independent Variables		
GDP	GDP	(GDP year $_{+1}$ - GDP year) / GDP year
Inflation Rate	INF	(CPI year $_{+1}$ - CPI year) / CPI year

(*) Net Working Capital: Trade Receivables + Inventories – Trade Payables

The analysis in this study utilizes two dependent variables: the cash and net lending ratios. The cash ratio serves as a proxy for measuring cash holding and is formulated as the ratio of cash and cash equivalents to total assets. It indicates how much of a firm's assets are kept in cash and is widely used in the literature (Kim et al., 1998; Ozkan & Ozkan, 2004; Dao & Maggi, 2018; Abdioğlu, 2016; Akben-Selcuk & Yılmaz, 2017; Uyar & Kuzey, 2014; Aftab et al., 2018; Al-Naijar & Clark, 2017). Even though it is the most common usage, some studies alternatively use the ratio of cash and cash equivalents to net assets (Ferreira & Vilela, 2004; Dittmar et al., 2003; D'Mello et al., 2008; Guizani, 2017; Alves et al., 2022).

The net lending ratio, also referred to as the corporate saving ratio, is used as a proxy for the corporate savings of firms. The ratio is formulated by adding net income and depreciation, then subtracting dividends and dividing the result by total revenue which aligns with the studies of Dao and Maggi (2018), and Özmen et al. (2012).

Regarding the independent variables, firm size is proxied by the natural logarithm of total assets, following prior studies such as Opler et al. (1999), Ozkan and Ozkan (2004), Al-Naijar and Clark (2017), Ferreira and Vilela (2004), D'Mello et al. (2008), Uyar and Kuzey (2014). While some studies use the market value of assets (Kim et al., 1998; Drobetz & Grüninger, 2007), others rely on the natural logarithm of revenues (García-Teruel & Martínez-Solano, 2008). In developing countries, where local currencies are often subject to high dollarization and international trade is conducted in USD, firm size is calculated using total assets in USD for consistency and comparability. Year-end exchange rates are used for currency conversion before applying the logarithmic transformation.

The ratio of total debt to total assets is employed as a proxy for leverage in the thesis, consistent with Opler et al. (2001), Kim et al. (1998), Ozkan and Ozkan (2004), Ferreira and Vilela (2004), Abdioğlu (2016), Guizani (2017), Gül and Şahin (2022). However, alternative proxies employed in the literature include the ratio of total debt to total equity (García-Teruel & Martínez-Solano, 2008), and the ratio of total debt to a total asset excluding cash (D'Mello et al., 2008).

Liquidity is proxied by the ratio of net working capital to total assets. Net working capital is calculated as trade receivables plus inventories minus trade payables, reflecting the key operational components of current assets and current liabilities. While this formulation captures the liquidity available for day-to-day operations, many academic studies prefer an alternative proxy: current assets minus current liabilities minus cash, divided by total assets (Ferreira & Vilela, 2004; Uyar & Kuzey, 2014).

Earnings before interest, taxes, depreciation, and amortization (EBITDA) divided by total assets is utilized as a proxy for cash flow consistent with the studies of Gül and Şahin (2022), Opler et al. (1999), D'Mello et al. (2008), Aftab. et al. (2018), and Alves et al. (2022). Some studies use the ratio of EBITDA to total revenue (Kim et al., 1998), while some use earnings before tax including depreciation and amortization divided by total assets (Ozkan & Ozkan, 2004; Ferreira & Vilela, 2004).

The market-to-book ratio is used as a proxy for growth or investment opportunities. It is calculated by dividing the market capitalization of equity by the book value of the company, following the approach adopted by Uyar and Kuzey (2014), Al-Najjar and Belghitar (2011), Kim et al. (2011), Abdioğlu (2016), and Gül and Şahin (2022).

As a proxy for profitability, return on equity (ROE) is employed in analysis which is formulated as net income divided by the book value of equity, following Al-Najjar and Belghitar (2011), Abdioğlu (2016), and Al-Najjar (2013). There are also empirical studies using the return on assets ratio as an alternative (Akben-Selcuk & Yılmaz, 2017; Al-Naijar & Clark, 2017; Guizani, 2017).

Since not all companies report R&D expenditures, a common practice in the literature is to treat missing values as zero (Drobetz & Grüninger, 2007). The analysis is conducted using the data on R&D expenditures reported by companies (considering zero if not reported). Regardless of the R&D expenditure amount of the companies, a dummy variable is created with a value of "1" for any non-zero value and "0" for zero values. Thus, companies are divided into those that do and do not spend on R&D investments. Another commonly used proxy in the literature is the ratio of R&D expenditures to revenue (Bigelli & Sánchez-Vidal, 2012; D'Mello et al., 2008; Opler et al, 1999; Uyar & Kuzey, 2014; Aftab et al., 2018; Alves et al., 2022).

Capital expenditures divided by total assets is used as a proxy for investment intensity, a measure commonly employed in the empirical literature (D'Mello et al., 2008; Opler et al., 1999; Guizani, 2017; Uyar & Kuzey, 2014). An alternative proxy, used in some studies, is the ratio of capital expenditures to total revenue (Akben-Selçuk & Yılmaz, 2017).

The gross domestic product (GDP) growth rate is calculated by comparing the ratio of the current year's GDP with that of the previous year, based on the country-level data relevant to each firm's home economy. Similarly, inflation is measured using the annual growth in the Consumer Price Index (CPI), consistent with the method used by Wang et al. (2014).

Table 8 below summarizes empirical studies that use similar proxies for the variables included in this thesis. Thus, the selection of variables and measurement methods grounded in this thesis were adapted from these studies.

Table 8: Literature Review for Determination of Variables

Abbreviation	Authors
CASH	Kim et al. (1998), Ozkan & Ozkan (2004), Al-Najjar & Belghitar (2011), Uyar & Kuzey (2014), Al-Naijar & Clark (2017), Abdioğlu (2016), Akben-Selcuk & Yılmaz (2017), Aftab et al. (2018), Dao & Maggi (2018)
NL	Dao & Maggi (2018)
SIZE	Opler et al. (1999), Ozkan & Ozkan (2004), Ferreira & Vilela (2004), D'Mello et al. (2008), Al-Najjar & Belghitar (2011), Kim et al. (2011), Bigelli & Sánchez-Vidal (2012), Uyar & Kuzey (2014), Abdioğlu (2016), Akben-Selcuk & Yılmaz (2017), Gül & Şahin (2022), Dittmar et al. (2003), Al-Najjar (2013), Guizani (2017), Aftab et al. (2018), Alves et al. (2022), Al-Naijar & Clark (2017), Dao & Maggi (2018)
LEV	Kim et al. (1998), Opler et al. (1999), Dittmar et al. (2003), Ozkan & Ozkan (2004), Ferreira & Vilela (2004), Drobetz & Grüninger (2007), Bigelli & Sánchez-Vidal (2012), Al-Najjar & Belghitar (2011), Uyar & Kuzey (2014), Abdioğlu (2016), Akben-Selcuk & Yılmaz (2017), Al-Najjar (2013), Al-Naijar & Clark (2017), Guizani (2017), Aftab et al. (2018), Alves et al. (2022), Gül & Şahin (2022)
CF	Opler et al. (1999), García-Teruel & Martínez-Solano (2008), D'Mello et al. (2008), Kim et al. (2011), Uyar & Kuzey (2014), Abdioğlu (2016), Aftab et al. (2018), Gül & Şahin (2022), Alves et al. (2022)
MB	Al-Najjar & Belghitar (2011), Kim et al. (2011), Uyar & Kuzey (2014), Abdioğlu (2016), Gül & Şahin (2022)
ROE	Al-Najjar & Belghitar (2011), Al-Najjar (2013), Abdioğlu (2016)
RD	Drobetz & Grüninger (2007),
CAPEX	Opler et al. (1999), D'Mello et al. (2008), Uyar & Kuzey (2014), Aftab et al. (2018), Guizani (2017), Gül & Şahin (2022)
INF	Wang et al. (2014)

5.2. Methodology

The primary objective of this study is to identify the determinants of corporate cash holdings and excess corporate savings by utilizing both firm-specific and macroeconomic variables. In addition, the study aims to analyze the direction and strength of the relationship between the dependent and independent variables.

To achieve these aims, the study employs the panel data methodology, which offers several methodological advantages. Panel data increases the number of observations over time and across units, provides higher degrees of freedom, reduces multicollinearity, enables more sophisticated modeling, and helps mitigate the effects of missing data. However, a key limitation of this method is its relatively limited ability to control for unobservable heterogeneity, typically represented by random parameters.

The literature on panel data analysis typically distinguishes between two main types of models: static panel data models (random or fixed effects) and dynamic panel data models. The models to be analyzed using static panel data models are presented below. A constant (intercept) is also included in the models. The dependent variables are the cash holding ratio and net lending ratio. The independent variables respectively are size, leverage, net working capital, cash flow, market-to-book ratio, return on equity, R&D expenses, capital expenditure, GDP annual growth rate and inflation rate, respectively. The general model specifications are as follows:

$$CASH_{i,t} = \alpha + \beta1\ SIZE_{i,t} + \beta2\ LEV_{i,t} + \beta3\ NWC_{i,t} + \beta4\ CF_{i,t} + \beta5\ MB_{i,t} + \beta6\ ROE_{i,t} + \beta7\ RD_{i,t} + \beta8\ CAPEX_{i,t} + \beta9\ GDP_{i,t} + \beta10\ INF_{i,t} + u_{i,t}$$

$$NL_{i,t} = \alpha + \beta1\ SIZE_{i,t} + \beta2\ LEV_{i,t} + \beta3\ NWC_{i,t} + \beta4\ CF_{i,t} + \beta5\ MB_{i,t} + \beta6\ ROE_{i,t} + \beta7\ RD_{i,t} + \beta8\ CAPEX_{i,t} + \beta9\ GDP_{i,t} + \beta10\ INF_{i,t} + u_{i,t}$$

Where;

α donates the intercept

$\beta1 - \beta10$ are the coefficients for the independent variable,

$u_{i,t}$ is the error term,

i and t denote the firms and time, respectively.

Prior to the data analysis using static panel data models, the stationarity of the variables was tested. For this purpose, the Augmented Dickey-Fuller (ADF) unit root test was applied. The Jargue-Bera test was employed for the normality diagnostic. Then, variance inflation factor (VIF) values were examined to detect potential multicollinearity issues. To determine the suitability of the static panel models, both the Lagrange Multiplier (LM) test and the Hausman test were performed and their results were compared.

The correlation matrix between variables was also examined for correlation values that may affect the direction and degree of the relationship among variables.

Stationarity is one of the most important indicators to avoid the problem of spurious regression. Panel unit root tests are used to determine whether a time series is stationary or not. In this study, the Fisher-type Augmented Dickey-Fuller (ADF) test was employed as the panel unit root test (Levin et al., 2002). The null hypothesis of this test suggests the presence of a unit root in all panel units, whereas the alternative hypothesis indicates that at least one panel unit is stationary.

According to the unit root test results, most variables were found to be statistically significant at the 1% level, indicating stationarity. However, the inflation rate was found to be non-stationary under the ADF test. To address this, the first difference of the inflation rate was taken, and the the first difference of the variable was used in the analysis. As a result, the null hypothesis was rejected for all variables, confirming that the panel data series are stationary and the issue of spurious regression is avoided. In addition, the Jarque-Bera test was conducted to assess the normality of the data. The results indicated that the data follow a normal distribution.

VIF values, which detect the existence of multicollinearity problems, are calculated for each variable. As the VIF value increases, the degree of relationship between variables in the regression strengthens. A perfect correlation between variables results in an infinite VIF value, while a VIF value of 1 (one) signifies no correlation (Marquardt,1970). A VIF value of 5 is considered a critical value in the literature (O'Brien, 2008). Therefore, a VIF value of 5 or above indicates a multicollinearity problem. Table 9 shows the VIF values of the variables, which are less than 5, used in the model. It indicates that there is no multicollinearity problem in the model.

The correlation matrix for the variables listed in the empirical model is shown in Table 10. The highest correlations are between net lending and cash flow, and cash flow and return on equity which are equal to 0.32 and 0.35 respectively. All other correlation coefficients are all less than 0.30. However, the correlation between leverage and size is close to 0.30. Since none of the correlation values indicate strong relationships, the empirical analysis can proceed.

The Breusch-Pagan Lagrangian Multiplier test determines which of the pooled OLS and static panel data methods should be used. This test assumes under the null hypothesis that the variance between groups is zero. If the null hypothesis is rejected, either the random or fixed effects models should be used. However, if the null hypothesis is failed to reject, the pooled OLS method, which assumes no variance between groups, is appropriate (Tatoğlu, 2012). Rejection of the null hypothesis indicates the presence of unit effects, time effects, or both, making the pooled OLS method unsuitable. Breusch-Pagan Lagrangian Multiplier test results are given in the Appendix F. When the results were examined,

the null hypothesis was rejected which means that static panel data methods (random or fixed effects models) will be used for both models.

The random effects model (REM) is appropriate if there is no correlation between the individual error term appearing in the model and the independent variables. The existence of a possible correlation shows that the fixed effects model (FEM) is more appropriate. For choosing which fixed or random effects method is more suitable for panel data, Hausman (1978) developed an objective test. Hausman test, as mentioned above, measures whether there is a correlation between error terms and explanatory variables or not. The null hypothesis of the Hausman test states that time and unit effects are random; the alternative hypothesis shows that there is a correlation between the error term and the explanatory variables and that the fixed effects model is more suitable for analysis. Accordingly, if the null hypothesis is rejected as a result of the analysis, the fixed effects model is appropriate; if it is failed to reject, the random effects model is appropriate. According to results of the test, the p-values were 0.000 for both models. In this case, the null hypothesis is rejected and the fixed effects model is determined as the most appropriate model for each regression. However, the results of the pooled OLS and the random effects model are also shown in the Appendix C and Appendix D, respectively.

Table 9: Variance Inflation Factors

Variable	VIF	1 / VIF
SIZE	1.22	0.81932
LEV	1.14	0.880361
NWC	1.08	0.925942
CF	1.31	0.76103
MB	1.01	0.988342
ROE	1.15	0.869135
RD	1.06	0.945024
CAPEX	1.06	0.940032
GDP	1.08	0.928935
INF	1.06	0.942382
Mean VIF	**1.12**	

Table 10: Correlation Coefficients

	CASH	NL	LEV	NWC	SIZE	CF	MB	ROE	RD	CAPEX	INF	GDP
CASH	1											
NL	-0.0021	1										
LEV	-0.1534	-0.0799	1									
NWC	-0.0919	0.1242	-0.0517	1								
SIZE	0.1412	0.0571	0.2919	0.1438	1							
CF	0.1706	0.324	-0.091	0.2051	0.248	1						
MB	0.0025	0.0075	0.0192	0.0202	0.0731	0.0067	1					
ROE	0.093	0.18	-0.0156	0.0198	0.077	0.3492	-0.05	1				
RD	0.0647	0.0347	0.0825	0.1203	0.1234	0.0692	-0.0397	0.0336	1			
CAPEX	0.0551	0.0144	0.028	-0.0346	0.1805	0.1907	0.0112	0.033	0.0398	1		
INF	0.0225	0.0457	0.0092	0.0263	0.0616	0.0821	-0.0116	0.077	0.2212	0.0184	1	
GDP	0.0108	-0.0048	-0.0929	0.0141	-0.0581	0.0408	0.0097	0.0379	0.0719	0.0618	0.2097	1

5.3. Empirical Analysis and Findings

This part of the section outlines a presentation of the descriptive statistics and empirical findings with interpretations, respectively.

5.3.1. Descriptive Statistics

This thesis examines the cash holdings and net lending behavior of 1,276 publicly listed companies from 10 developing countries over the period 2009–2022, using panel data analysis. Descriptive statistics are given in Table 11, including the number of observations, mean, standard deviation, minimum and maximum values of the variables utilized. Furthermore, the Appendix B provides descriptive statistics for all variables, categorized by geographical region and technological classification.

Table 11: Descriptive Statistics

Variable	Mean	Std. Dev.	Min.	Max.	Obs.
CASH	0.09	0.11	0.00	0.60	17864
NL	-0.21	1.65	-14.41	1.35	17864
SIZE	17.17	5.06	0.00	23.72	17864
LEV	0.22	0.22	0.00	1.28	17864
NWC	0.13	0.22	-0.85	0.67	17864
CF	0.07	0.12	-0.49	0.44	17864
MB	9.00	52.14	-4.38	464.99	17864
ROE	0.04	0.45	-2.74	1.59	17864
RD	0.10	0.30	0.00	1.00	17864
CAPEX	0.04	0.05	0.00	0.30	17864
GDP	0.03	0.04	-0.10	0.12	17864
INF	0.06	0.09	-0.02	0.72	17864

Std. Dev. : Standard Deviation, Obs. : Observation, N: 1276 Companies

According to findings, between 2009 and 2022 the average corporate cash holding ratio is found to be 8.7%, with a standard deviation of 11%. It implies that, on average, firms held cash equal to 9% of their total assets, although the cash holdings varied significantly, ranging from zero to as high as 60%. A breakdown by country and region shows that the average cash holding ratio in Türkiye was 9.3%, in South Africa 9.7%, in European countries 9.0% and in American countries 7.5%. These figures are consistent with data from other nations. For instance, firms in Italy and the United Kingdom were reported to hold, on average, 10% of their total assets in cash (Bigelli & Sánchez-Vidal, 2012; Ozkan & Ozkan, 2004). Prior studies focused on Türkiye report similar results. Akben-Selçuk and Yılmaz (2017) found an average ratio of 8%, Uyar and Kuzey (2014) reported 9%, and Abdioğlu (2016) found 10%. These outcomes align closely with the findings of the present analysis.

Al-Najjar (2013) who analyzed some emerging and developed economies, reported average cash holding ratios of 5% for Russia, 3% for India and China, 2% for Brazil, 8% for the United States, and 10% for the United Kingdom. The relatively low cash holding ratios in these countries may be due to easier access to liquid assets in the periods (pre-crisis periods) examined. On the other hand, Ferreira and Vilela (2004) reported an average cash holding ratio of 14.8% for EMU nations. Compared to this finding, the dataset used in this study appears to suggests lower cash holdings than those observed in advanced European countries. However, it is important to note that some studies in literature, calculate the cash holding ratio by dividing cash by net assets (excluding cash), rather than by total assets. This methodological difference hinders direct comparison across studies.

Cash holding ratios of all the selected countries in the dataset, including Türkiye, South Africa, European countries and American countries, from 2009 to 2022, are shown in Appendix G. The figure also displays the average cash holdings based on technological classification as ratios of low and high technology firms. It shows that cash holding levels have fluctuated stable between 2009 and 2019 until the COVID-19 pandemic. Cash holding levels escalated to the top level in 2020 and 2021. By 2022, the average cash holding ratio dropped sharply, returning to pre-pandemic values. The figure suggests the companies hold cash during the COVID-19 pandemic because of an uncertain environment thus a precautionary motive.

Firm-specific variables also provide insights into corporate financial behavior. The average firm size, measured as the natural logarithm of total assets, was 17.17, with a standard deviation of 1.56. The minimum and maximum values were 10.40 and 23.72, respectively. Leverage had a mean value of 0.22 and a standard deviation of 0.22, with a range from 0 to 1.28. Net working capital averaged 13%, ranging from -85% to 67%. Cash flow had a mean of 0.07, with values changing from minimum -0.49 to maximum 0.44. The market-to-book ratio averaged 9.00, but with a high standard deviation of 52.14, and extreme values ranging from -4.38 to 464.99. Return on equity variable had a mean of 0.04 and a standard deviation of 0.45, with values extending from -2.74 to 1.59. Capital expenditure as a percentage of total assets indicated a mean of 4%, with a standard deviation of 5%, suggesting relatively consistent investment behavior among companies with values ranging from 0 and 30%. The last firm-specific variable was R&D expenditure which was measured as a dummy variable.

Among these variables, when the standard deviations are examined, it is observed that the market-to-book ratio exhibited the greatest variability. This is largely due to the volatility in firms' market values, which tend to fluctuate as market risks and perceived growth opportunities change.

In terms of macroeconomic variables, the average inflation rate across all countries during the analysis period was 6%, indicating a generally low inflationary environment in developing nations. Türkiye,

however, with an average inflation rate of 15% and peaking at 72%, is among the countries with the lowest price stability. The average annual growth rate of GDP across countries was found to be 3% with a 4% standard deviation. Considering this rate, it can be said that there is a moderately slow growth trend among developing countries during the time frame analyzed. Inflation and GDP trends for each country over the analyzed period are provided in Appendices H and I, respectively.

5.3.2. Empirical Findings and Interpretations

This chapter presents the panel data analyses conducted using a static fixed effects model (FEM). The primary objective is to identify the determinants of corporate cash holdings and net lending respectively, as well as to assess the direction and strength of these relationships. For this purpose, financial ratios and indicators obtained from the year-end financial statements of non-financial firms listed on stock exchanges between 2009 and 2022 across ten emerging countries from different regions were used, together with the relevant macroeconomic variables for each country. Appendix E provides a detailed breakdown of the cash holding and net lending analyses based on geographical and technological classifications.

5.3.2.1. Empirical Findings of Cash Holdings

Table 12: FEM Results of Cash Holdings

Dep. Var.	CASH	
Variables	Coef.	P>t
SIZE	0.0087	0.000 ***
LEV	-0.0558	0.000 ***
NWC	-0.1104	0.000 ***
CF	0.0794	0.000 ***
MB	0.0001	0.0109**
ROE	0.0086	0.000 ***
RD	0.0006	0.931
CAPEX	-0.0713	0.003 ***
GDP	-0.0074	0.684
INF	-0.0025	0.824
Constant	-0.0393	0.000 ***
R-squared (within)	0.1265	
R-squared (between)	0.0248	
R-squared (overall)	0.0564	
Prob > F	0.0000	
# of Companies	1276	

***, ** and * shows levels of significance at the 1%, 5% and 10%, respectively.

Firstly, this chapter presents the empirical findings of the relationship between corporate cash holdings and independent determinants. Table 12 demonstrates the results of the cash holding analysis regarding the entire dataset. The findings highlight the importance of size, leverage, working capital, investment opportunities, profitability, cash flow, and capital expenditure in explaining variations in cash holdings.

The findings show a positive and statistically significant relationship between size and cash holding at 1% in line with the underlying hypothesis and existing literature (Guizani, 2017; Al-Najjar & Clark, 2017; Aftab et al., 2018; Batuman et al., 2021). The relationship holds across all regions and different technological levels. As the size of the companies increases, they are more likely to retain higher levels of cash, likely due to better access to investment opportunities and their ability to achieve higher returns on their investments, in line with both free cash flow and pecking order theories. The coefficient of 0.0087 suggests that a 100% increase in firm size corresponds to a 0.87% increase in cash holdings.

With a coefficient of -0.0558, the link between cash holding and leverage is significantly unfavorable at 1%, supporting the aforementioned hypothesis in this study and prior empirical studies (Ozkan & Ozkan, 2004; Al-Naijar & Clark, 2017; Uyar & Kuzey, 2014; Guizani, 2017; Batuman et al., 2021; Alves et al., 2022). The coefficient of -0.0558 implies that a 100% increase in leverage results in a 5.6% decline in cash holdings. Moreover, technological differences among companies and regions where the company is located have been observed to have no impact on findings. According to the theories mentioned in literature review and hypotheses development sections that explain cash holding dynamics, the results are compatible with them. This finding supports the notion that firms with greater access to external financing tend to hold less cash.

Net working capital is negatively associated with cash holdings at the 1% significance level, compatible with the trade-off theory and prior research (D'Mello et al., 2008; Uyar & Kuzey, 2014; Kim et al., 2011; Alnori et al., 2022; Gül & Şahin, 2022). These results hold regardless of regional and technological differences. Accordingly, companies with more net liquid assets, except cash, tend to hold less cash, because these assets can be converted into cash when needed. The coefficient of -0.1104 means that a 100% increase in net working capital leads to an 11% decrease in cash holdings.

Cash flow exhibits a positive relationship at 1% significant level, consistent with pecking order theory and previous empirical findings (Uyar & Kuzey, 2014; Drobetz & Grüninger, 2007; Opler et al., 1999; Alnori et al., 2022; Gül & Şahin, 2022). A company with a high cash inflow chooses primarily to benefit from the liquid resources it has, in order to carry out its operations or exploit possible investment opportunities. The coefficient of 0.0794 means that cash holdings increase by 8% when the cash flows of the company increase by 100%.

Growth opportunities are positively correlated with cash holdings at 5% significance level, in accordance with both trade-off and pecking order theories and prior studies (Ferreira & Vilela, 2004; Dittmar et al., 2003; Chen, 2008; Kim et al., 2011; Al-Naijar & Belghitar, 2011; Dao & Maggi, 2018; Alves et al., 2022). This relationship suggests that firms with high market value or growth potential keep more cash on hand to capitalize on potential opportunities. However, the overall effect size is minimal, with a coefficient of 0.0001, makes it difficult to support the aforementioned hypothesis and previous studies suggesting positive relationship.

Profitability is also positively and significantly correlated with cash holdings at the 1% level, in line with theoretical expectations and empirical findings (Akben-Selcuk & Yılmaz, 2017 Al-Naijar & Clark, 2017; Dao & Maggi, 2018; Özcan, 2024). Accordingly, less profitable companies rely more on debt financing and hold less cash. The findings show that cash goes up by 0.8% when the profitability of the company increases by 100%. However, this relationship is not significant for firms located in American countries and South Africa. Additionally, cash holdings of high and low technology firms show a positive and significant correlation with profitability, too.

The relationship between capital expenditures and cash holdings is found to be negative and statistically significant at the 1% level, compatible with the expectations of pecking order theory and supported by previous studies (Kim et al., 2011; Akben-Selcuk & Yılmaz, 2017; Guizani, 2017; Diaw, 2021; Gül & Şahin, 2022). Since companies primarily use the resources they have and choose external funding as a last option when making their investments, the cash they hold decreases as they invest. The results indicate that cash decreases by 7.1% when capital expenditures increase by 100%. This finding supports the aforementioned hypothesis and previous studies. This relationship holds across companies in European countries and Türkiye, although it is not significant for high-technology firms, or for companies in American countries and South Africa.

R&D expenditures, inflation and GDP growth were not found to have a significant impact on cash holdings across the full dataset. However, regional variations exist for firms in American countries, inflation is positively and significantly related to cash holdings at the 1% level, whereas in Türkiye, the relationship is negative.

In summary, the results suggest that firms with greater size, profitability, and internal cash flow tend to hold more cash. These companies are also characterized by lower leverage and working capital levels, higher growth opportunities and lower fixed asset levels, all of which assist to enhanced cash holdings. The observed relationships regarding capital expenditures, growth opportunities, cash flow, leverage, profitability, and size are consistent with the pecking order theory, while those concerning growth opportunities and working capital align with trade-off theory. Additionally, findings regarding leverage and firm size support the assumptions of free cash flow theory.

5.3.2.2. Empirical Findings of Net Lending

After presenting the findings of corporate cash holdings, this chapter will show the empirical results of the relationship between net lending and independent determinants. Table 13 shows the findings of the net lending analysis regarding all datasets. The findings indicate that firm size, leverage, working capital, profitability, cash flow, and GDP growth are key factors influencing corporate net lending.

Table 13: FEM Results of Net Lending

Dep. Var.	NL	
Variables	Coef.	P>t
SIZE	-0.0520	0.000 ***
LEV	-0.4510	0.085 *
NWC	0.4500	0.068 *
CF	3.3911	0.000 ***
MB	0.0004	0.552
ROE	0.2826	0.000 ***
RD	0.1136	0.210
CAPEX	-0.3488	0.530
GDP	-0.9428	0.010 ***
INF	-0.0654	0.570
Constant	0.4964	0.000 ***
R-squared (within)	0.0733	
R-squared (between)	0.1577	
R-squared (overall)	0.0962	
Prob > F	0.0000	
# of Companies	1276	

***, ** and * shows levels of significance at the 1%, 5% and 10%, respectively.

Firm size exhibits a significant and negative correlation with net lending at the 1% significance level in all emerging markets included in the analysis. When the findings examined separately based on technological intensity, the negative relationship remains consistent. The coefficient of -0.052 suggests that a 100% increase in a firm's total assets corresponds to a 5.2% decline in net lending.

This finding is consistent with the transaction motive, which posits that larger companies tend to maintain lower levels of savings because they tend to have cheaper and less financially constrained access to external financing. This result supports the study of Demircan and Öz (2018), and the hypothesis mentioned before. However, for firms based in Türkiye, South Africa and America, the relationship is not statistically significant.

With respect to leverage, it is found to be negatively associated with net lending at the 10% significance level across all developing countries examined. The coefficient of -0.4510 indicates that 100% increase in leverage results in a 45% decline in net lending. A similar negative relationship is also observed in firms located in European countries and Türkiye. The high-level borrowing and accompanying interest obligations could result in a debt burden for the indebted companies. The corporate savings will be significantly diminished by these borrowing payments. Thus, the thesis supports most of the previous literature (Özmen et al., 2012; Brufman et al., 2013; Dao & Maggi, 2018; Demircan & Öz, 2018) and the aforementioned hypothesis in this study. However, the relationship is not statistically significant for firms with low and high technological intensity.

Net working capital is positively related with net lending at the 10% significance level across the10 emerging economies in this study. Firms need liquid assets in order to maintain their operations. So, if the requirements for liquid assets rise, companies need to save to meet these requirements. A coefficient of 0.45 means that net lending rises by 45 % when the liquidity of the company increases by 100%. This finding supports the hypothesis and aligns with the results reported in previous research (Dao & Maggi, 2018). However, the relationship loses significance when analysis is conducted based on regional and technological classifications.

The findings reveal that cash flow is positively and significantly related to net lending at 1% significance level across all ten developing markets. Furthermore, the results are unaffected by technological and regional differences. A higher cash flow allows companies to create more opportunities for saving, while reduce their reliance on external financing. The result is consistent with both the earlier hypothesis developed and the findings of Dao and Maggi's (2018).

Regarding profitability variable, the evidence indicates that it also shows a significant and positive correlation with net lending at 1% level in the overall sample of 10 emerging economies. Technological differences do not change the result. European countries support a positive and significant relationship however other regions do not show a significant correlation. Strong profitability increases a company's ability to save. The results show that net lending goes up by 28% when the profitability of the company increases by 100%. This supports the proposed hypothesis and is consistent with previous literature (Özmen et al., 2012; Dao & Maggi, 2018).

GDP growth is found to be negatively correlated to net lending at 1% significance level in developing countries analyzed. However, when the analysis was conducted by taking into consideration the regional classification and technological intensity, the relationship is found to be no longer statistically significant. During periods of strong economic growth, which is characterized by stable revenues and

reduced uncertainty, firms may reduce their savings. The finding supports the aforementioned hypothesis outlined in this study.

Growth opportunity, R&D expenses, capital expenditures and inflation do not show a significant relationship with net lending in datasets that were analyzed in 10 developing economies. Nonetheless, the evidence depicts that in the case of Türkiye, both inflation and capital expenditures exhibit a positive correlation with net lending.

In contrast, among European countries, the results show that inflation is negatively correlated with net lending which imply that high inflation erodes the real value of savings, incentivizing firms to invest excess savings rather than retain it.

In summary, the findings suggest that firms which are more profitable, smaller in size and generate higher cash flows are more likely to maintain higher levels of corporate savings. Such companies also tend to have lower leverage but hold higher working capital levels to increase excess savings. Additionally, the companies located in rapidly growing countries appear more inclined to accumulate corporate savings.

6. CONCLUSION

The cash holding decisions of firms represent a critical issue in corporate finance. Companies need to hold cash to sustain their routine operations. Although academic interest in corporate cash holding policies dates back to Keynes (1936), the topic has remained a central theme in the corporate finance literature. This is due to the essential role of cash in enabling firms to meet their debt obligations and tax liabilities, maintain liquidity, finance future investments, achieve their operational goals and enhance financial performance. As a result, the cash holding behaviors and its evaluation over time have drawn considerable academic attention, resulting in extensive research on the determinants of cash holding ratios in both advanced and developing economies. Empirical research on corporate saving also has gained increasing attention in recent years because of the global rise in the corporate saving rate of non-financial corporations. This thesis examines the primary determinants of corporate cash holdings and corporate saving, and explores the underlying macroeconomic and firm-specific factors driving these patterns.

The notable increase in corporate saving has become a prominent macroeconomic trend in developed economies in recent decades. This development reflects a shift in corporate financial behavior, with firms moving from being net borrowers to net lenders. To investigate whether this pattern of rising excess corporate saving or net lending is also observed in developing countries, the thesis conducts a descriptive analysis using sectoral gross savings and capital expenditure data derived from national accounts.

The rising trend of corporate saving glut observed in developed economies, widely discussed in the literature, has not been similarly reflected in the national balance sheets of the developing countries examined in this study. In contrast to developed economies, the non-financial corporations (NFC) sector in these countries generally remained in a net borrowing position between 2009 and 2022. Nevertheless, the fact that the movements in net lending or net borrowing by NFCs largely mirror the trends in their cash holdings suggests that the factors influencing cash holdings are also likely to affect net lending or borrowing in a similar manner. Therefore, analyzing the determinants of cash holdings, extensively studied in the literature using firm-level data, alongside excess corporate saving or net lending will help explain this observed co-movement. Up to this point, the thesis has provided a descriptive analysis of the changes in net lending or borrowing by NFCs using national balance sheet data and examined relevant macroeconomic indicators. From this point forward, the study adopts a top-down approach, transitioning into corporate finance through the use of firm-level balance sheet and income statement data, complemented by econometric modeling.

This thesis investigates the factors influencing cash holdings and net lending, as well as the direction and strength of these relationships, in publicly traded non-financial firms across ten emerging economies over the period 2009–2022. To achieve this, a fixed effects panel data model is employed, utilizing financial ratios and indicators derived from the year-end financial statements of these firms, in conjunction with relevant macroeconomic variables from their respective countries. The dataset is compiled from the S&P Capital IQ platform, supplemented with data from the OECD and IMF databases. Empirical analysis is conducted using STATA 13 software. The study covers a sample of 1,276 publicly traded firms, with further analyses conducted to account for regional differences and variations in technological intensity.

The findings reveal that, on average, companies hold cash amounting to approximately 9% of their total assets during the analyzed period. This result is consistent with prior studies in the literature (Ozkan & Ozkan, 2004; Uyar & Kuzey, 2014; Akben-Selçuk & Yılmaz, 2017). The analysis of cash holdings indicates that larger and more profitable firms with higher cash flows tend to maintain higher levels of cash. These firms are also typically characterized by lower leverage, lower working capital levels, greater growth opportunities, and lower levels of fixed assets, all of which contribute to increased cash holdings. The findings related to capital expenditures, growth opportunities, cash flow, profitability, leverage and firm size align with the assumptions of the pecking order theory, whereas the results for growth opportunities and net working capital are compatible with the predictions of the trade-off theory. Additionally, the findings regarding leverage and firm size support the assumptions of the free cash flow theory.

The evidence indicates a positive correlation between firm size and cash holdings. As firms grow in size, they tend to hold more cash, which can be attributed to their greater investment success. This is consistent with the predictions of both the free cash flow theory and the pecking order theory. Similarly, cash flow is found to be positively associated with cash holdings, aligning with the pecking order theory. Firms with higher cash inflows are more likely to use their internal funds to support operations or seize potential opportunities, thereby retaining a larger share of these resources as cash. Furthermore, the significant positive effect of growth opportunities on cash holdings suggests that firms with high market value or growth potential maintain larger cash reserves to exploit future investment opportunities, in line with the pecking order theory and the trade-off theory. Profitability, another firm-specific determinant, is also found to be positively correlated with cash holdings. Less profitable firms are more dependent on external debt financing, which may lead to lower levels of cash reserves.

On the other hand, the results indicate that leverage, working capital, and capital expenditures are negatively correlated with cash holdings. Firms with higher debt levels tend to hold less cash, which is consistent with the pecking order theory and the free cash flow theory, as such firms may have easier

access to external financing. The negative relationship between net working capital and cash holdings supports the trade-off theory. Firms with higher levels of liquid assets other than cash may prefer to hold less cash, given their ability to convert these assets into cash when needed. In addition, the negative association between capital expenditures and cash holdings aligns with the pecking order theory. This finding suggests that firms prioritize internal financing for investments and only seek external funds as a last resort, thereby depleting cash reserves as capital expenditures increase.

Finally, among the firm-specific variables, R&D expenditures are found to have no significant impact on cash holdings. Similarly, the macroeconomic variables, GDP growth and inflation rate, also show no significant relationship with the cash holdings of the firms analyzed.

The findings from the net lending analysis suggest that more profitable, smaller firms with higher cash flows tend to accumulate greater corporate saving. These firms are generally characterized by lower leverage and higher levels of working capital, both of which contribute to increased excess savings. Moreover, firms operating in countries experiencing economic growth are also more likely to maintain higher levels of corporate saving.

Firm size is found to be negatively correlated with net lending. This finding aligns with the transaction motive, suggesting that larger firms tend to hold fewer savings due to their easier and less constrained access to external financing. Similarly, leverage also exhibits a negative relationship with net lending. High borrowing costs and interest payments may impose a significant financial burden on indebted firms, reducing their capacity to save. Likewise, the gross domestic product demonstrates a negative relationship with net lending. During periods of economic expansion, marked by rising GDP, firms often experience stable revenues and reduced uncertainty, which may lead them to hold lower levels of savings.

On the contrary, net working capital is positively associated with net lending, indicating that firms with greater liquidity needs tend to accumulate savings to ensure the continuity of operations. Likewise, cash flow shows a positive relationship with net lending; higher cash flow enhances a firm's ability to save and reduces dependence on external funding. Profitability is also positively correlated with net lending, as higher profitability strengthens a firm’s saving capacity. Lastly, no significant relationship is found between net lending and growth opportunities, R&D expenditures, capital expenditures, or inflation rate.

This study contributes to the existing literature by providing new evidence on the determinants of cash holdings and corporate savings in publicly traded non-financial firms in developing countries. It employs a broader sample, a more recent time frame, updated firm-specific variables, and a fresh perspective on macroeconomic factors. The findings of the study enhance an understanding of how macroeconomic factors have influenced on cash holding and saving decisions of companies in developing countries. The

paper provides evidence that the trade-off theory, pecking order theory and free cash flow theory play a significant role in explaining financial decisions regarding savings and cash holdings in developing economies.

Furthermore, this thesis adds to the macroeconomic literature on corporate saving and the evolving net lending or borrowing positions of the non-financial corporate sector in developing economies. This strand of research primarily relies on macro-level data derived from national accounts, which corresponds to the first part of the thesis. While the empirical literature regarding this topic predominantly focuses on developed economies, studies addressing developing countries remain limited. Accordingly, this thesis offers a fresh outlook by shedding light on the dynamics within developing markets. In addition, the study relates to the extensive body of corporate finance literature that investigates cash holdings and net lending at the firm level in developing economies. This body of research is largely empirical and utilizes firm-level balance sheet data to identify the determinants of cash holdings and net lending, as undertaken in the second part of the analysis. A key contribution of this thesis lies in its effort to integrate the firm-level analyses of cash holdings with the macro-level examinations of the aggregate non-financial corporate sector. By integrating these two perspectives, the study provides a consistent top-down framework for understanding the key trends shaping corporate saving behavior and cash holding practices.

In recent years, there has been a growing body of research on the increasing trends in corporate saving within advanced economies. However, a comprehensive analysis reveals that the literature remains limited, particularly concerning developing countries and Türkiye. Although there is a body of work focusing on cash holdings, the majority of these studies focus on firm-specific variables and do not establish a connection with corporate saving and macroeconomic factors. Therefore, the thesis contributes to the literature from a perspective by addressing this gap in both subject matter and analytical approaches. Consequently, it enhances the understanding of corporate finance decisions in selected firms while incorporating the relevant theories discussed throughout the study.

This paper provides both academic and practical implications. By offering insights into the dynamics and decision-making process of cash holdings and savings in emerging economies, it provides valuable perspectives for creditors, shareholders, and managers. It proposes a comprehensive analytical framework that can support the formulation of effective cash and savings management strategies, especially under economic uncertainty. In this regard, the findings of this study, alongside future comparative studies on cash holding and saving policies, are expected to inform more resilient financial planning among firms. The empirical results guide shareholder expectations, support more effective internal financial planning, enhance credit assessments.

For shareholders, the thesis offers insights into capital returns and liquidity policies by exploring the links between cash holding behavior and variables such as growth opportunities, profitability, and capital expenditures which are the factors especially relevant for the timing of investment decisions. These insights help shareholders better evaluate investment opportunities and assess corporate governance risks.

From a managerial perspective, the thesis provides actionable guidance for financial strategy, cash management, and risk mitigation. It identifies the conditions under which maintaining higher cash reserves is rational and outlines the key factors influencing cash holding decisions. This enables managers to make more informed, data-driven decisions about optimal cash levels. In developing economies, where access to external financing is often limited, the study offers practical recommendations for managing internal financial resources efficiently.

Finally, the findings may assist creditors in refining their credit evaluation models by offering a deeper understanding of firm behavior, thereby improving credit conditions in emerging markets.

Due to the limited availability of macroeconomic data prior to 2009, this thesis utilizes a balanced panel dataset covering publicly traded non-financial firms in the selected ten emerging economies over the period 2009–2022.

Future research involving larger sample groups, particularly by considering more developing countries, may help to gain a deeper understanding of the dynamics of cash and saving management. Moreover, studies that examine the effects of other macroeconomic variables, beyond inflation and GDP growth, as well as firm-specific variables on cash holdings and net lending would also contribute to the literature.

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APPENDICES

Appendix A – Technology Classification

Primary Industry of High Tech Firms (*)
Industrial Machinery and Supplies and Components
Commodity Chemicals
Health Care Facilities
Pharmaceuticals
Health Care Equipment
Communications Equipment
Health Care Technology
Automotive Parts and Equipment
Health Care Services
Health Care Supplies
Biotechnology
Specialty Chemicals
Aerospace and Defense
Heavy Electrical Equipment
Health Care Distributors
Electrical Components and Equipment
Household Appliances
Automobile Manufacturers
Electronic Equipment and Instruments
Electronic Components

(*) According to SIC Classification

Appendix B – Descriptive Statistics by Regional and Technological Classification

Descriptive Statistics - Türkiye

Variable	Mean	Std. Dev.	Min.	Max.	Obs.
CASH	0.09	0.12	0.00	0.60	3430
NL	-0.02	0.84	-14.41	1.35	3430
SIZE	17.68	3.88	0.00	23.07	3430
LEV	0.23	0.22	0.00	1.28	3430
NWC	0.18	0.22	-0.85	0.67	3430
CF	0.08	0.10	-0.49	0.44	3430
MB	3.61	18.81	-4.38	464.99	3430
ROE	0.07	0.39	-2.74	1.59	3430
RD	0.37	0.48	0.00	1.00	3430
CAPEX	0.04	0.05	0.00	0.30	3430
GDP	0.05	0.04	-0.05	0.11	3430
INF	0.15	0.16	0.06	0.72	3430

Std. Dev. : Standard Deviation, Obs. : Observation, N: 245 Companies

Descriptive Statistics - South Africa

Variable	Mean	Std. Dev.	Min.	Max.	Obs.
CASH	0.10	0.10	0.00	0.60	1694
NL	-0.04	1.14	-14.41	1.35	1694
SIZE	18.53	5.12	0.00	23.72	1694
LEV	0.20	0.18	0.00	1.19	1694
NWC	0.14	0.18	-0.74	0.67	1694
CF	0.12	0.11	-0.49	0.44	1694
MB	3.15	8.75	-4.38	230.82	1694
ROE	0.09	0.37	-2.74	1.59	1694
RD	0.02	0.14	0.00	1.00	1694
CAPEX	0.05	0.04	0.00	0.30	1694
GDP	0.01	0.02	-0.06	0.05	1694
INF	0.05	0.01	0.03	0.07	1694

Std. Dev. : Standard Deviation, Obs. : Observation, N: 121 Companies

Descriptive Statistics - Europe

Variable	Mean	Std. Dev.	Min.	Max.	Obs.
CASH	0.09	0.12	0.00	0.60	8204
NL	-0.38	2.15	-14.41	1.35	8204
SIZE	15.30	5.49	0.00	23.72	8204
LEV	0.20	0.23	0.00	1.28	8204
NWC	0.13	0.23	-0.85	0.67	8204
CF	0.05	0.14	-0.49	0.44	8204
MB	3.74	24.41	-4.38	464.99	8204
ROE	-0.01	0.52	-2.74	1.59	8204
RD	0.05	0.22	0.00	1.00	8204
CAPEX	0.04	0.06	0.00	0.30	8204
GDP	0.03	0.04	-0.10	0.08	8204
INF	0.03	0.04	-0.02	0.15	8204

Std. Dev.: Standard Deviation, Obs.: Observation, N: 586 Companies

Descriptive Statistics - America

Variable	Mean	Std. Dev.	Min.	Max.	Obs.
CASH	0.07	0.08	0.00	0.60	4536
NL	-0.10	1.15	-14.41	1.35	4536
SIZE	19.66	3.45	0.00	23.72	4536
LEV	0.28	0.22	0.00	1.28	4536
NWC	0.10	0.21	-0.85	0.67	4536
CF	0.08	0.09	-0.49	0.44	4536
MB	24.77	94.87	-4.38	464.99	4536
ROE	0.07	0.38	-2.74	1.59	4536
RD	0.03	0.16	0.00	1.00	4536
CAPEX	0.04	0.04	0.00	0.30	4536
GDP	0.02	0.04	-0.09	0.12	4536
INF	0.05	0.02	0.00	0.12	4536

Std. Dev.: Standard Deviation, Obs.: Observation, N: 324 Companies

Descriptive Statistics - Low Tech.

Variable	Mean	Std. Dev.	Min.	Max.	Obs.
CASH	0.09	0.11	0.00	0.60	14742
NL	-0.16	1.46	-14.41	1.35	14742
SIZE	17.28	5.05	0.00	23.72	14742
LEV	0.22	0.22	0.00	1.28	14742
NWC	0.13	0.22	-0.85	0.67	14742
CF	0.07	0.12	-0.49	0.44	14742
MB	9.66	54.87	-4.38	464.99	14742
ROE	0.04	0.44	-2.74	1.59	14742
RD	0.08	0.27	0.00	1.00	14742
CAPEX	0.04	0.05	0.00	0.30	14742
GDP	0.03	0.04	-0.10	0.12	14742
INF	0.06	0.09	-0.02	0.72	14742

Std. Dev.: Standard Deviation, Obs.: Observation, N: 1053 Companies

Descriptive Statistics - High Tech.

Variable	Mean	Std. Dev.	Min.	Max.	Obs.
CASH	0.09	0.12	0.00	0.60	3122
NL	-0.44	2.34	-14.41	1.35	3122
SIZE	16.65	5.07	0.00	23.72	3122
LEV	0.22	0.23	0.00	1.28	3122
NWC	0.14	0.23	-0.85	0.67	3122
CF	0.06	0.14	-0.49	0.44	3122
MB	5.86	36.43	-4.38	464.99	3122
ROE	0.02	0.50	-2.74	1.59	3122
RD	0.21	0.41	0.00	1.00	3122
CAPEX	0.04	0.05	0.00	0.30	3122
GDP	0.03	0.04	-0.10	0.12	3122
INF	0.06	0.10	-0.02	0.72	3122

Std. Dev.: Standard Deviation, Obs.: Observation, N: 223 Companies

Appendix C – OLS Results of All Dataset

All Dataset OLS Results

Dep. Var.	CASH		NL	
Variables	Coef.	P>t	Coef.	P>t
SIZE	0.0035	0.000 ***	-0.0002	0.944
LEV	-0.1047	0.000 ***	-0.3396	0.000 ***
NWC	-0.0837	0.000 ***	0.4609	0.000 ***
CF	0.1182	0.000 ***	4.0911	0.000 ***
MB	0.0000	0.990	0.0003	0.165
ROE	0.0086	0.000 ***	0.2978	0.000 ***
RD	0.0269	0.000 ***	0.0645	0.12
CAPEX	-0.0079	0.632	-1.1894	0.000 ***
GDP	-0.0552	0.018 **	-0.8888	0.01 ***
INF	0.0051	0.684	0.0840	0.655
Constant	0.0528	0.000 ***	-0.4481	0.000 ***
R-squared	0.0969		0.1227	
Adj. R-squared	0.0963		0.1222	
Prob > F	0.0000		0.0000	
# of Companies	1276		1276	

***, ** and * shows levels of significance at the 1%, 5% and 10%, respectively.

Appendix D – REM Results of All Dataset

All Dataset REM Results

Dep. Var.	CASH		NL	
Variables	Coef.	P>t	Coef.	P>t
SIZE	0.0078	0.000 ***	-0.0240	0.000 ***
LEV	-0.0657	0.000 ***	-0.3816	0.000 ***
NWC	-0.1033	0.000 ***	0.4342	0.000 ***
CF	0.0818	0.000 ***	3.7457	0.000 ***
MB	0.0000	0.197	0.0004	0.225
ROE	0.0085	0.000 ***	0.2914	0.000 ***
RD	0.0092	0.029 **	0.1020	0.084 *
CAPEX	-0.0578	0.000 ***	-0.7704	0.003***
GDP	-0.0074	0.692	-0.9844	0.005 ***
INF	-0.0010	0.913	-0.0362	0.836
Constant	-0.0234	0.000 ***	-0.0118	0.846
R-squared (within)	0.1251		0.0696	
R-squared (between)	0.0366		0.2535	
R-squared (overall)	0.0661		0.1175	
Prob > F	0.0000		0.0000	
# of Companies	1276		1276	

***, ** and * shows levels of significance at the 1%, 5% and 10%, respectively.

Appendix E – FEM Results by Regional and Technological Classification

Europe FEM Results

Dep. Var.	CASH		NL	
Variables	Coef.	P>t	Coef.	P>t
SIZE	0.0097	0.000 ***	-0.0646	0.000 ***
LEV	-0.0519	0.000 ***	-0.7715	0.094 *
NWC	-0.1099	0.000 ***	0.3578	0.3060
CF	0.0748	0.000 ***	3.7817	0.000 ***
MB	0.0001	0.292	0.0016	0.391
ROE	0.0093	0.000 ***	0.4498	0.000 ***
RD	-0.0040	0.774	0.2073	0.538
CAPEX	-0.0604	0.073 *	-0.6752	0.370
GDP	-0.0639	0.052 *	-0.7864	0.289
INF	0.1120	0.012 **	-2.0362	0.029 **
Constant	-0.0350	0.000 ***	0.5548	0.000 ***
R-squared (within)	0.1484		0.0965	
R-squared (between)	0.0246		0.1934	
R-squared (overall)	0.0714		0.1222	
Prob > F	0.0000		0.0000	
# of Companies	586		586	

***, ** and * shows levels of significance at the 1%, 5% and 10%, respectively.

America FEM Results

Dep. Var.	CASH		NL	
Variables	Coef.	P>t	Coef.	P>t
SIZE	0.0054	0.000 ***	-0.0154	0.176
LEV	-0.0574	0.000 ***	-0.1156	0.691
NWC	-0.0925	0.000 ***	1.3897	0.034
CF	0.0742	0.005 ***	2.7467	0.002 ***
MB	0.0000	0.856	-0.0003	0.191
ROE	0.0039	0.188	0.0570	0.411
RD	0.0439	0.000 ***	-0.0623	0.156
CAPEX	-0.0528	0.2710	1.5422	0.151
GDP	-0.0313	0.208	-0.8435	0.089 *
INF	0.0834	0.018 **	0.0816	0.927
Constant	-0.0117	0.339	-0.1620	0.143
R-squared (within)	0.0717		0.0677	
R-squared (between)	0.0138		0.1919	
R-squared (overall)	0.0278		0.1025	
Prob > F	0.0000		0.0000	
# of Companies	324		324	

***, ** and * shows levels of significance at the 1%, 5% and 10%, respectively.

Türkiye FEM Results

Dep. Var.	CASH		NL	
Variables	Coef.	P>t	Coef.	P>t
SIZE	0.0068	0.000 ***	-0.0015	0.747
LEV	-0.0332	0.063 *	-0.4271	0.000 ***
NWC	-0.1086	0.000 ***	0.1439	0.524
CF	0.1229	0.000 ***	1.3857	0.000 ***
MB	0.0003	0.000 ***	-0.0002	0.781
ROE	0.0164	0.000 ***	-0.0454	0.737
RD	0.0041	0.649	0.0194	0.527
CAPEX	-0.1209	0.000 ***	0.9882	0.015 **
GDP	0.0141	0.745	0.6747	0.192
INF	-0.0233	0.044 **	0.3744	0.000 ***
Constant	-0.0081	0.630	-0.1407	0.083 *
R-squared (within)	0.1088		0.0344	
R-squared (between)	0.1645		0.1800	
R-squared (overall)	0.1393		0.0520	
Prob > F	0.0000		0.0000	
# of Companies	245		245	

***, ** and * shows levels of significance at the 1%, 5% and 10%, respectively.

South Africa FEM Results

Dep. Var.	CASH		NL	
Variables	Coef.	P>t	Coef.	P>t
SIZE	0.0092	0.000 ***	-0.0200	0.385
LEV	-0.1114	0.000 ***	0.0334	0.885
NWC	-0.2186	0.000 ***	-0.2874	0.421
CF	0.0686	0.148	2.1933	0.073 *
MB	0.0001	0.680	-0.0017	0.655
ROE	0.0057	0.422	0.1053	0.318
RD	0.0100	0.630	0.1377	0.065 *
CAPEX	-0.0717	0.464	-6.4133	0.164
GDP	-0.0166	0.805	-0.3785	0.667
INF	0.1076	0.192	0.9753	0.623
Constant	-0.0275	0.382	0.4011	0.349
R-squared (within)	0.1734		0.0664	
R-squared (between)	0.1364		0.0526	
R-squared (overall)	0.1427		0.0584	
Prob > F	0.0000		0.0000	
# of Companies	121		121	

***, ** and * shows levels of significance at the 1%, 5% and 10%, respectively.

High Technology FEM Results

Dep. Var.	CASH		NL	
Variables	Coef.	P>t	Coef.	P>t
SIZE	0.0110	0.000 ***	-0.1220	0.000 ***
LEV	-0.0743	0.011 **	-1.3889	0.116
NWC	-0.1256	0.000 ***	0.3570	0.604
CF	0.0281	0.412	4.4574	0.000 ***
MB	0.0001	0.493	0.0009	0.856
ROE	0.0166	0.004 ***	0.3497	0.076 *
RD	-0.0061	0.713	0.2882	0.295
CAPEX	-0.0173	0.743	-0.1196	0.932
GDP	-0.0347	0.480	-1.2002	0.198
INF	-0.0269	0.243	-0.2627	0.426
Constant	-0.0599	0.024 **	1.5503	0.002 ***
R-squared (within)	0.1465		0.1196	
R-squared (between)	0.0000		0.1157	
R-squared (overall)	0.0327		0.1159	
Prob > F	0.0000		0.0000	
# of Companies	223		223	

***, ** and * shows levels of significance at the 1%, 5% and 10%, respectively.

Low Technology FEM Results

Dep. Var.	CASH		NL	
Variables	Coef.	P>t	Coef.	P>t
SIZE	0.0082	0.000 ***	-0.0361	0.000 ***
LEV	-0.0516	0.000 ***	-0.2741	0.252
NWC	-0.1064	0.000 ***	0.4438	0.087 *
CF	0.0954	0.000 ***	2.9979	0.000 ***
MB	0.0000	0.122	0.0004	0.382
ROE	0.0070	0.000 ***	0.2664	0.000 ***
RD	0.0019	0.790	0.0901	0.082 *
CAPEX	-0.0889	0.000 ***	-0.3451	0.555
GDP	-0.0024	0.903	-0.8543	0.033 **
INF	0.0026	0.833	0.0182	0.878
Constant	-0.0341	0.000 ***	0.2591	0.029 **
R-squared (within)	0.1248		0.0634	
R-squared (between)	0.0368		0.1452	
R-squared (overall)	0.0653		0.0827	
Prob > F	0.0000		0.0000	
# of Companies	1053		1053	

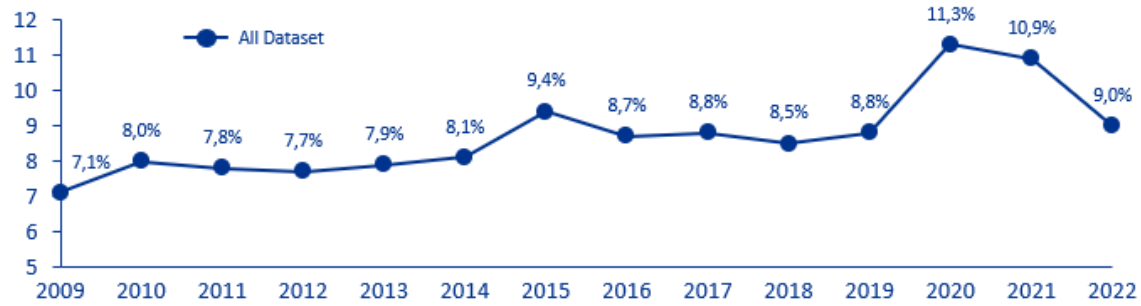
***, ** and * shows levels of significance at the 1%, 5% and 10%, respectively.

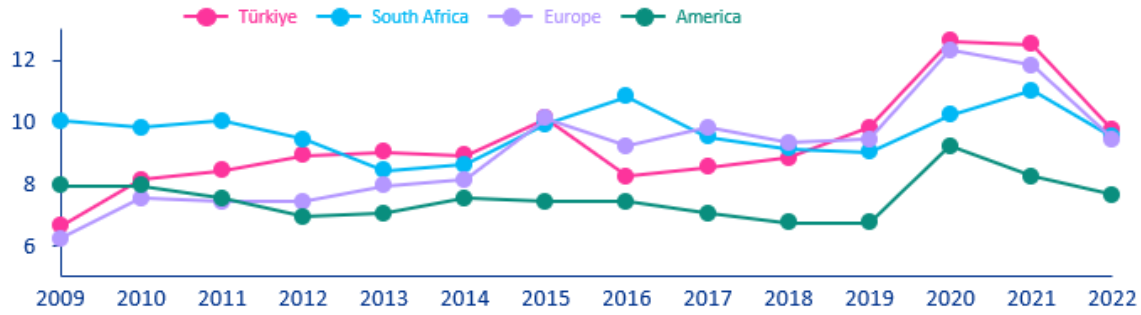
Appendix F – Breusch-Pagen Test Results

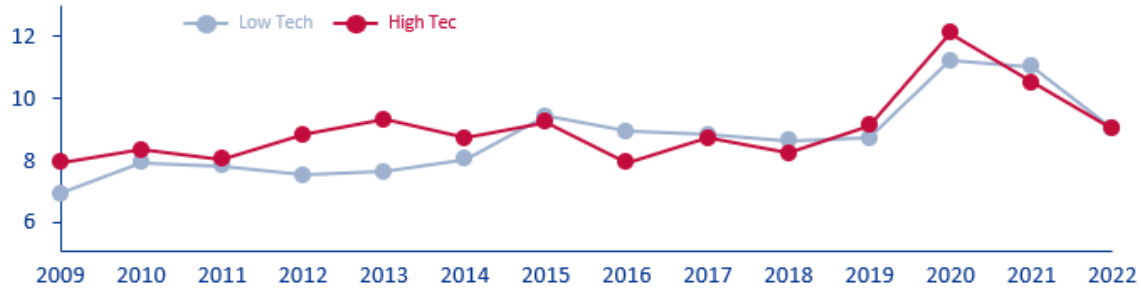
Breusch - Pagan Test (CASH)	
Dep. Var.	CASH
Breusch - Pagan Value	22626
p-value	0.0000

Breusch - Pagan Test (NL)	
Dep. Var.	NL
Breusch - Pagan Value	2323
p-value	0.0000

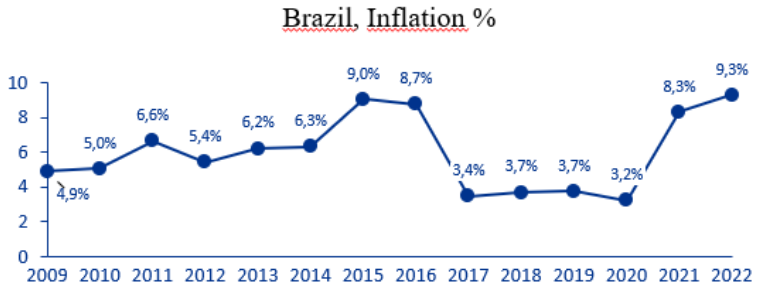
Appendix G – Cash Holding Ratios (%), by year

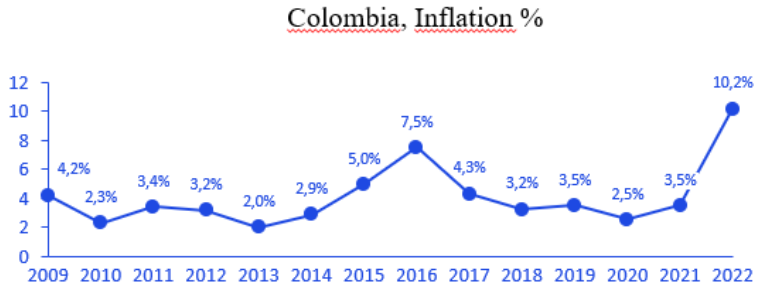


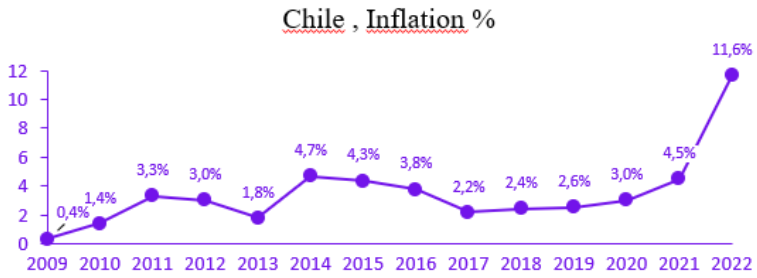


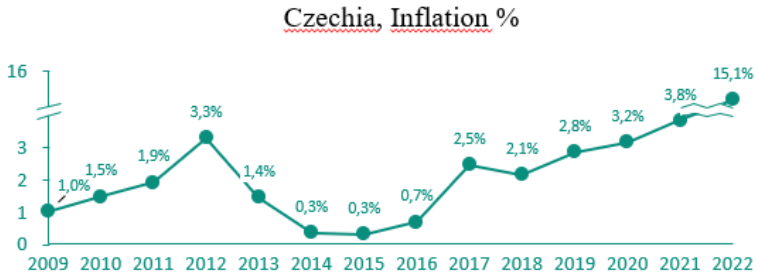


Appendix H – Inflation Rates (%), by year

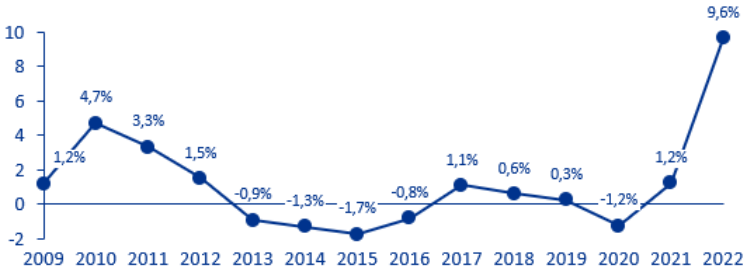




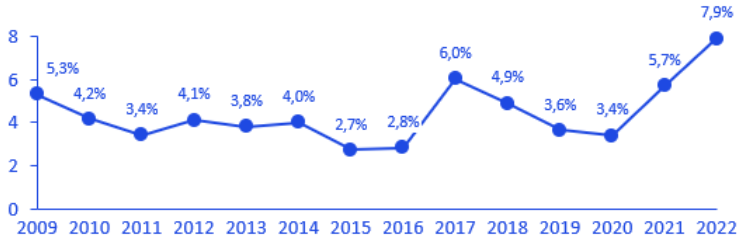




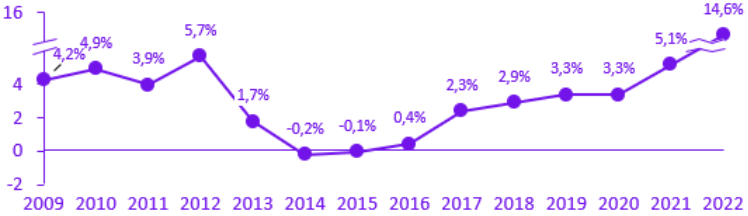
Greece, Inflation %



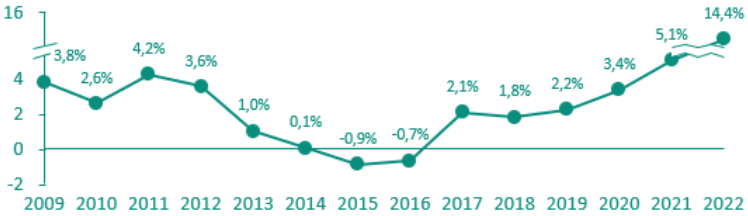
Mexico, Inflation %

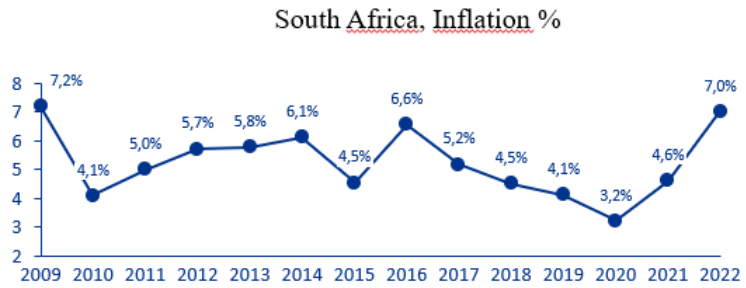


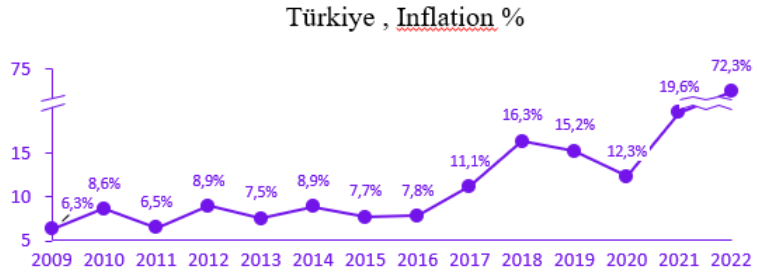
Hungary , Inflation %



Poland, Inflation %

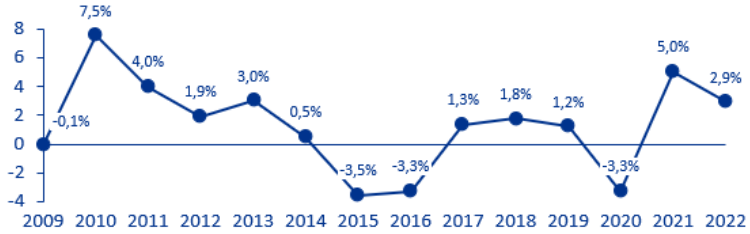



South Africa, Inflation %
8
7
6
5
4
3
2
7,2%
4,1%
5,0%
5,7%
5,8%
6,1%
4,5%
6,6%
5,2%
4,5%
4,1%
3,2%
4,6%
7,0%
2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022

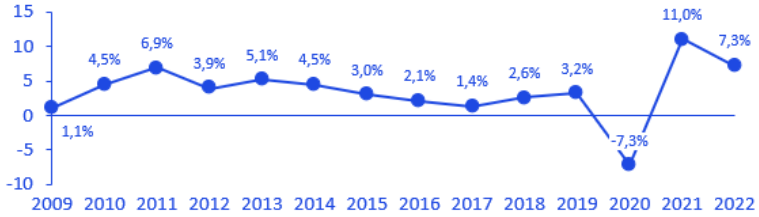

Türkiye , Inflation %
75
15
10
5
6,3%
8,6%
6,5%
8,9%
7,5%
8,9%
7,7%
7,8%
11,1%
16,3%
15,2%
12,3%
19,6%
72,3%
2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022

Appendix I – GDP Growth Rate (%), by year

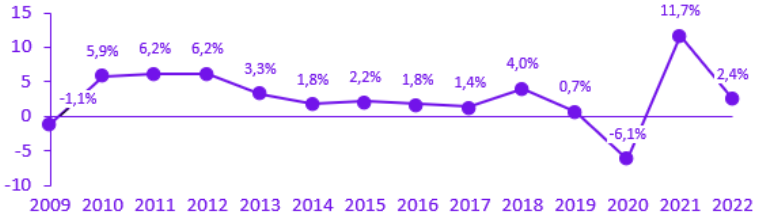
Brazil, GDP %



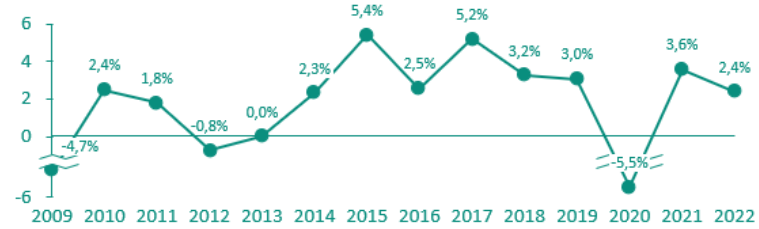
Colombia, GDP %



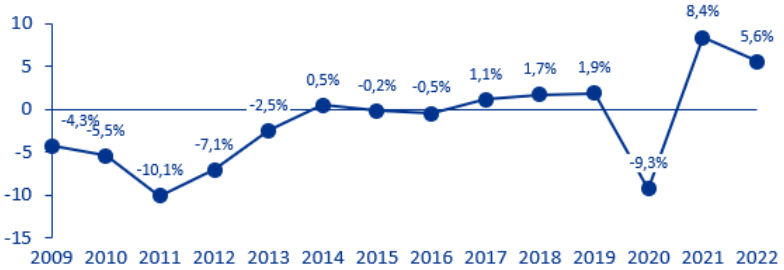
Chile , GDP %



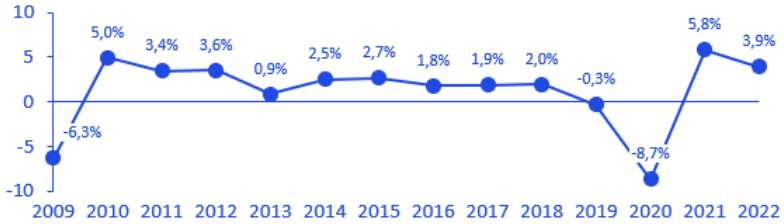
Czechia, GDP %



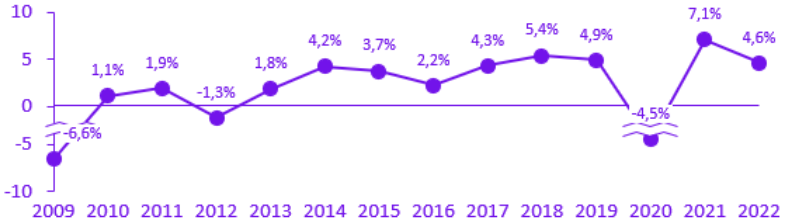
Greece, GDP %



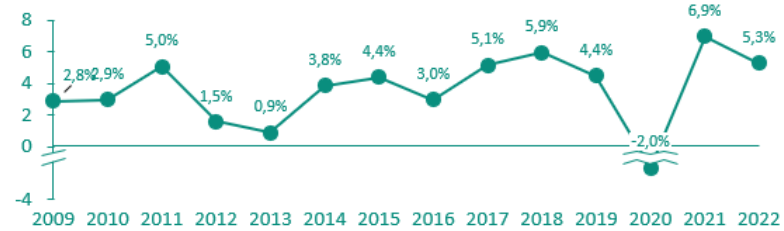
Mexico, GDP %



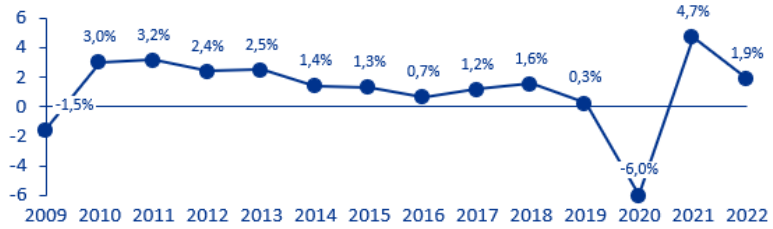
Hungary , GDP %



Poland, GDP %



South Africa, GDP %



Türkiye , GDP %

