

ESSAYS ON CAPITAL STRUCTURE IN TURKEY

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ABSTRACT

ESSAYS ON CAPITAL STRUCTURE IN TURKEY

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This dissertation attempts to find answers to three research questions related to Turkish firms' capital structure. Employing a relatively more comprehensive data set, possible factors that characterize capital structures of Turkish firms are explored. In the first essay, pooled panel and fixed effect estimation results provide evidence supporting the pecking order theory as a better fit for Turkish firms. In the second essay, debt ratios of private firms have been reported higher than public firms. Moreover, it is observed that the sensitivity effect cannot be validated in the present dissertation. In the last essay, evidence supports that Turkish firms rebalance their financial structure to a target level. Moreover, the private firms finance their deficits through more debt issuance compared to the public firms.

Keywords: Capital structure, trade-off, pecking order, rebalancing behavior.

ÖZ

TÜRKİYE’DE SERMAYE YAPISI ÜZERİNE DENEMELER

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Bu tez, Türkiye’de faaliyet gösteren firmaların sermaye yapısı ile ilgili üç araştırma sorusuna cevap bulmaya çalışmaktadır. Önceki çalışmalara göre daha kapsamlı bir veri seti kullanılarak, Türk firmalarının sermaye yapılarını karakterize eden olası faktörler araştırılmıştır. İlk denemede, panel veri ve sabit etki tahmin sonuçları, finansal hiyerarşi (pecking-order) teorisinin ödünleşme (trade-off) teorisine kıyasla Türk firmalarının sermaye yapısını daha iyi açıkladığını göstermektedir. İkinci denemede, özel firmaların halka açık firmalardan daha yüksek borç oranlarına sahip oldukları ortaya konmuştur. Ayrıca, duyarlılık etkisinin mevcut tezde doğrulanamadığı görülmektedir. Son denemede, ampirik bulgular Türk firmalarının mali yapılarını hedef seviyeye yeniden dengelediğini göstermiştir. Ayrıca, halka açık firmalarla karşılaştırıldığında, özel firmaların finansal açıklarını daha fazla borçlanma yoluyla finanse ettiği tespit edilmiştir.

Anahtar Kelimeler: Sermaye yapısı, ödünleşme teorisi, hiyerarşi teorisi, yeniden dengeleme davranışı.

... to my beloved family

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CHAPTER 1

INTRODUCTION

The capital structure is a leading firm characteristic showing how and through which channels firms raise their capital in order to set up and expand business activities. Theoretical and empirical investigations of capital structure and funding behavior of firms have been of great interest to corporate finance scholars especially after the seminal study of Modigliani and Miller (1957).

The theoretical models concerned with the determinants of capital structure provide certain predictions about firms' debt-equity holdings. Modigliani and Miller (1957) introduce the "irrelevance proposition" to the literature, which implies that a firm's market value is independent of the firm's capital structure. However, due to the underlying assumptions of complete and perfect capital markets they used in their model, the results of their study have not been deemed very realistic/applicable to firms in real life.

As an extension to their existing model, Modigliani and Miller (1963) modify their existing proposition by introducing the corporate tax in a later study. Through their modified model, they reach the conclusion that once the assumptions of Modigliani and Miller (1957) are relaxed, the "irrelevance proposition" is falsified because the value of a company rises as its debt increases. Modigliani and Miller (1963) endorse that a firm's value is in direct relation to the amount of debt issued by that company.

Moreover, Miller (1977) extends the model of Modigliani and Miller (1963) by considering not only corporate but also personal taxes. In this study, firms are “assumed to continue to employ debt until the marginal investor’s personal tax rate becomes equal to the corporate tax rate”. This proposition holds since every additional debt increases the interest rate until the tax benefits are equalized through higher interest rates. Afterwards, DeAngelo and Masulis (1980) extend the personal tax model of Miller (1977) by considering accounting depreciation and tax credits of investment. In their study, it is concluded that market equilibrium can be reached through non-debt tax shields. This result has been derived from the proposition suggesting that companies that do not generate profit also cannot benefit from the tax shield.

By the early 1980s, there emerged two principal theoretical models of capital structure, which still dominate the corporate finance literature. First, the static trade-off theory proposed by Kraus and Litzenberger (1973) states companies make “a balance between the deadweight costs of a likely bankruptcy and tax-saving benefits of debt”. Second, the pecking order theory of Jensen & Meckling (1976) and Myers (1977) posits finance cost rises with asymmetric information and, therefore, companies choose internal over external capital as a result of this adverse selection problem.

These aforementioned theories lead to the emergence of an empirical literature of the capital structure of firms. This strand of studies aims at comparing the strengths and weaknesses of the two theories by using country-specific data. While the earliest empirical studies focus on the capital structure of the firms located in the United States (US), the subsequent studies investigate firms’ capital structure choices in other countries.

Rajan and Zingales (1995) is the pioneering empirical study investigating determinants of the corporate capital structure by making an analysis of funding behavior of public companies in the G7 countries. In this study, they find that four fundamental factors are correlated with firm leverage across G7 countries: (i) Growth, (ii) size, (iii) profitability, and (iv) tangibility. A detailed investigation of the empirical evidence in

this paper shows that the theoretical backings of these determinants still remain unresolved.

Booth, Alivazian, Demircuc-Kunt and Maksimovic (2001) explore the capital structure determinants in emerging economies. Their findings imply that variables deemed significant in explaining firms' capital structures in the US and Europe are also valid for the emerging countries. They also conclude that the empirical average tax rate does not affect funding behavior, except as a proxy for the profitability of a corporation.

Antoniou, Guney and Paudyal (2008) explored the capital structure determinants in five major market-oriented and bank-oriented economies. Positive effect of size, and inverse effect of growth on leverage are reported for all countries. However, the impact of tangibility and profitability varies, suggesting institutional infrastructure, regulations and business practices contribution to the capital structure decisions.

Frank and Goyal (2009) investigate possible effects of 36 factors on the capital structure of public American companies for 1953-2003 period. They find that industry leverage, tangibility, profits, size, market-to-book ratio, and expected inflation are the most significant explanatory variables determining leverage. Their findings suggest that tangibility and firm size possess greater explanatory power for the firms that have low M/B ratios than the firms that have high M/B ratios. Their results are generally in line with the trade-off theory.

Fan, Titman & Twite (2012) investigated a large set of firm and country level determinants for 39 economies during the 1991-2006 period. They found that country level determinants have a major influence, suggesting the importance of the institutional environment. Specifically, they found that legal and taxation mechanism, corruption level, and the banks' preferences explain a significant part of the variation in leverage and debt maturity. Regarding firm-level determinants, profitability and growth found inversely related, and size and tangibility found positively correlated to

leverage for developed and developing economies. Moreover, they reported that the debt maturity structure tends to be shorter in countries with larger banking sectors.

Öztekin (2015) explores capital structure determinants for 37 countries during 1991-2006 period. She found positive effect of firm size, tangibility, and industry mean on leverage, whereas profitability and inflation are inversely related to leverage. She also reported some differences across weak and strong institutional settings. Tangibility (+) and inflation (-) were found as core factors for both country groups. Profits (-) are effective only in countries where institutions are weak. On the other hand, size (+) and industry leverage (+) are effective only in countries where institutions are strong. Size was reported as an unreliable factor since it positively affects leverage in strong institutional settings, but negatively affects in weak institutional settings.

In a more recent study conducted for 85 countries, Öztekin (2020) also found that leverage varies counter-cyclically, and debt maturity varies pro-cyclically for the average firm. During crises, external financing diminishes substantially, with the larger reductions in equity. Consequently, leverage increases and debt maturity decreases. She concludes that “the degree of counter-cyclicality in leverage varies substantially across bank regulatory settings, leverage counter-cyclicality is more pronounced in countries with weaker private monitoring and supervision”.

Similarly, Demirgüç-Kunt et al. (2020) found a decline in firm leverage and debt maturity after the global crisis both in developed and in developing countries. Using a dataset covering around 277 thousand firms from 75 countries over the period 2004-2011, the deleveraging and the maturity reduction were found to be effective for non-listed companies. For SMEs, this impact is higher in markets with inefficient legal systems, information sharing weaknesses, underdeveloped financial systems, and with bank entry barriers. The coefficients on the firm level determinants were also examined within this study. Higher tangibility was associated with a higher leverage. They found that firms that profitability and growth reduce leverage and debt maturities, whereas size increases leverage and debt maturities.

Moradi and Paulet (2019) also reported a similar pattern for six European countries after the Euro crisis. They reported a negative impact of Euro crisis on European firms' indebtedness. Moreover, they found positive impact of size and tangibility, and negative impact of growth and profitability on debt levels.

Herwadkar (2017) concentrated on 10 major emerging markets examining the robustness of capital structure determinants after the global financial crisis (GFC). He reported that "profitability was significantly negative for both before and after the crisis. Tangibility was significantly negative for the whole period and for the period before the crisis, supporting the pecking order theory". After the crisis, tangibility loses its significance showing that debt conditions were similar for all firms irrespective of their levels of tangible assets. Moreover, market-to-book value and firm size are found significantly positive in these emerging markets.

In a very recent study, Czerwonka and Jaworski (2021) investigated the capital structure determinants of SMEs in six Central and Eastern Europe countries. They reported firm-specific factors as the dominant factor, where country specific determinants only explain 4% of the debt level. Moreover, they found that the firm-level determinants follow the pecking order theory, where tangibility and profitability are negatively related, and growth and size are positively correlated to the debt ratio.

Despite the studies focusing on various developing countries, relatively limited is known about the funding behavior and capital structure of firms operating in Turkey. Most of the studies focus on publicly traded companies or suffered severe data limitations. Recently some new studies have been published using the Turkish Central Bank's (CBRT) database (Cakova 2011, Köksal and Orman 2015, Yarba and Güner 2019a). Although these studies helped us understand Turkish firms' capital structure, still not much known about it. While some of these studies argue that the trade-off theory better explains the capital structure " , other studies "lend support to the pecking order hypothesis". The debate of which theory best explains the empirical data remain unresolved for the Turkish firms as well.

In this dissertation, my fundamental aim is to contribute to the literature on the capital structure of Turkish firms by establishing a new comprehensive dataset linking variables from various sources. Taking advantage of the detailed dataset of firms located in Turkey, this dissertation contributes to the empirical corporate finance literature related to Turkey with three essays, each focusing on a different aspects of the capital structure of Turkish firms.

In the first essay, my main objective is to answer two crucial research questions about the capital structure determinants in Turkey which have remained partially answered in the existing literature: (i) Which factors characterize the capital structures and financing behavior of Turkish companies? (ii) Do available theories related to capital structure ensure a convenient explanation of the funding behavior of Turkish firms?

I attempt to find an answer to these questions by designing a pooled panel regression using size, profitability, tangibility, and growth as explanatory variables that possibly determine the firms' debt ratios. Also, to understand two other important dynamics, I include the size and the maturity composition of debt (as a proxy for contracting problems) in my model. In this first essay, I found strong evidence supporting the pecking order theory for Turkish firms.

In the second essay, I pursue an investigation to better understand the capital structure differences between the Turkish private and public firms. Brav (2009) is a pioneering study that goes through the dissimilarities between the financing behavior of public and private firms. Utilizing a database of the UK firms, he determines the existence of two different effects of access to equity markets on the financial structure choice and funding policy of corporations, the *level effect*, and the *sensitivity effect*.

In the second essay, by following Brav (2009), I try to find an answer to the following question: Does the capital structure of Turkish private firms differ from their public counterparts? As it is done in the first essay, I investigate this research question by using pooled panel regression methods. Testing the research hypotheses in the second

essay provides very crucial insights about the capital structure differences among Turkish private and public firms.

First, consistent with the literature, I obtain that in Turkey private companies have higher leverage ratios compared to public companies, which validates the level effect. Second, the sensitivity effect, which predicts that “private firms’ leverage is more sensitive to operational performance (profitability) and less sensitive to other variables relative to public companies is tested”. The findings of the analysis for Turkey does not lend support to the existence of any sensitivity effect. In sum, I conclude that private Turkish firms have higher leverage compared to public ones, but capital structure determinants affect public and private firms’ capital structure decisions similarly.

The last essay focuses on the capital structure rebalancing behavior of Turkish firms, which is not explored in detail before. In this essay, I attempt to answer the following research questions: Do Turkish firms adjust their debt ratios to a target debt ratio? Do the leverages of Turkish private firms exhibit greater persistence and lower adjustment speed? First, I answer these questions for Turkish firms without making any classification of firms. Then, I revisit these questions by distinguishing between the Turkish private and public firms in to capture any possible differentiation in their rebalancing behaviors.

Following Shyam-Sunder and Myers (1999), I utilize a partial adjustment model to test the hypotheses of the third essay. First, I conclude that Turkish corporations rely on debt in financing their financial deficit. Second, I reach the conclusion that Turkish firms rebalance their financial structure to an optimal target level. Third, I find evidence supporting that private firms rely on debt more than public firms do in financing their deficit. Fourth, findings report that public and private firms rebalance their debt ratios pretty much at the same pace, which is in contradiction to the common empirical evidence about the rebalancing behavior of the firms.

This dissertation contributed to the literature in five important ways:

- First, a new and comprehensive dataset has been established in order to understand Turkish capital structure dynamics better. Most of the datasets utilized in the previous studies suffer severe data limitations and possible risk of self-selection bias. On the other hand, since the sample in this study is randomly selected from an audited and cleaned private financial intelligence database, we may expect lower exposure to dataset problems.
- Secondly, robust results for the firm-level determinants of capital structure in Turkey and their theoretical implications have been reported for the first time. Though previous studies reported mixed results, I found strong support for the pecking order theory. Sales growth, growth opportunities and size found to be positively related with leverage. On the other hand, profitability, tangibility, age, and maturity composition of debt reported as negatively related factors determining the leverage ratio. Moreover, I find strong evidence regarding the rebalancing behavior of Turkish firms after controlling for deficit financing, which is also supporting the pecking order theory.
- Third, this study provides ample evidence regarding the capital structure differences among private and public Turkish companies, and their rebalancing behavior. Private firms found to have higher leverage ratios and rely on debt more in order to finance their financial deficits compared to their public counterparts. Moreover, it is found that higher leverage level is only valid for short-term debt, while there is no significant difference in long-term debt levels of public and private firms.
- Fourth, lack of sensitivity among public and private firms to determinants of capital structure may be an indication of inefficient nature of Turkish capital markets. This may indicate that cost of accessing capital markets is not significantly different between public and private firms. Thus, Turkish public firms would not be able to enjoy the benefits of going public properly.
- Finally, all these results give important insights regarding the financial architecture and financial development level in Turkey. Turkish firms, on average, have higher

leverage than their developed market counterparts. Moreover, more than 80 percent of leverage is short-term, and nearly all of the financial debt is bank loans. Given the low levels of private credit (% of GDP) levels (52-70% during the research period) compared to OECD countries (144.7%) or EU states (%86.6%), these results show us that access to finance might be an important impediment to Turkish firms' growth.

The rest of the dissertation proceeds as follows. Chapter 2 describes the data sources and elaborates on the sample used. Chapter 3 presents the first essay and explores the capital structure determinants in Turkey. Chapter 4 presents the second essay and investigates the capital structure differences among the private and publicly held firms in Turkey. Chapter 5, as the last essay of this dissertation, presents evidence about the capital structure rebalancing behavior of Turkish firms. The dissertation concludes with Chapter 6.

CHAPTER 2

DATA

2.1.Private and Public Firms in Turkey

In Turkey, incorporated firms are classified as public and private. According to the Capital Markets Law in Turkey, all firms listed in a stock exchange and joint-stock corporations having more than 250 stockholders are considered to be public, and public firms are reported at the Public Disclosure Platform (KAP). The most crucial difference among Turkish public and private firms is related to the fundraising capacity from external markets. A public company is a company that has a right to offer securities to the public. In Turkey, shares of public firms are traded on the Istanbul stock exchange (BIST). Although the shares initially offered to the public are small compared to the shares in total, once a private firm becomes a public firm the stock market determines the value of the whole firm thereafter. However, as opposed to public firms, private firms are not allowed to offer shares to the public.

Considering the information above, the firms in my dataset are classified according to their access to the public equity market. Thus, I characterize a company as a public company if it is quoted on the stock exchange. Based on this classification, private companies are companies that are not eligible to be quoted.

The Commercial Code of 2012 focuses on the notion of corporate governance. According to the Code, preparing financial statements and filing with the tax

authorities is mandatory for all firms in Turkey whether they are listed on the stock exchange or not. Any structural change or equity injection occurring in the firm must be reported to the Trade Register in Turkey. Moreover, reporting to the Trade Registry is a must in case of a division or a stock-split.

According to the Turkish tax law, there is no distinction of corporate tax rates between public and private firms. The corporate income tax rate for all Turkish firms is 22% for tax periods beginning on 1 January 2018, and 20% beforehand. Moreover, any firm that is listed as a “public company” is obliged to use the Turkish Financial Reporting Standards, which is an adapted version of the International Financial Reporting Standards (IFRS), in their financial statements.

2.2. Sources

This dissertation makes use of one of the most comprehensive datasets of Turkish firms collected from various sources. This dataset contains balance sheets, income statement items, outstanding loan and credibility measures, number of partners, years of establishments, total capital amounts, trade credibility (cheque) reports, and NACE (Nomenclature of Economic Activities) codes of companies.

First, the balance sheet and income statements are randomly selected from the CRIF Turkey database comprised of 150 thousand Turkish companies. CRIF is a global company that provides business information and credit management services with its extensive database of more than 400 million firms from 220 countries. CRIF collects business and financial intelligence about the companies directly or indirectly to give end-to-end risk and credit management services to their clients. The financial statements are audited and standardized according to international standards.

Second, the trade credibility (cheque) reports of both private and public firms were obtained from the Credit Registry Bureau (CRB), an establishment founded jointly by nine big Turkish banks in 1995. Moreover, the total loan risks of Turkish firms including credit limits and risks at the banks were also gathered from the CRB.

Third, the number of partners, years of establishment, and total capital amount of these Turkish firms were extracted from the Turkish Trade Registry Gazette database. The Turkish Trade Registry Gazette publishes announcements related to relevant acts, court judgments, structural changes, investor actions of the firms in Turkey. Moreover, the Gazette also declares the decisions of the Trade Registrar about bankruptcies.

Lastly, two and four-digit NACE Codes of all firms come from the Turkish Revenue Administration. NACE is the European statistical classification system, which identifies the economic activities of firms accordingly. The first two digits of the NACE code gives information about the division. The third one identifies the group of the economic activity. Lastly, the fourth digit identifies the class. The Revenue Administration, established in 1946, is the main government agency to collect taxes and other revenues and aims to implement revenue policies to increase voluntary tax compliance among firms in order to protect the rights of the Turkish taxpayers.

The firms are classified according to the information provided by the KAP. Since June 1, 2009, announcements of all notifications of quoted firms have been carried out by the KAP. As an electronic system, the KAP discloses information that is necessary to be made public. Central Securities Depository (MKK) is the government agency responsible for the KAP operations under the capital market and the stock exchange regulations enforced by the Capital Markets Board (CMB) and the BIST. Firms that own capital market instruments and being traded at the BIST are required to fulfill their obligations to disclose firm-related information to the public via the KAP.

2.3.Sample

The sample is composed of a total of 3,236 firms operating in Turkey between 2012 and 2018, comprising a panel dataset of 16,630 firm-year data. Most of the missing data stemming from the missed observations from the first or last years. The sample firms are retrieved from the CRIF database with random sampling according to industry and size strata.

According to the listing status, 2,764 firms (13,638 firm-year observations) are private, and 472 firms (2,992 firm-year observations) are public. In other words, approximately 82% of the panel dataset consists of private firms.

In all three essays, different measures of leverage are used as the dependent variable in econometric analyses. Explanatory variables used are, the listing status of the firm, return on assets, growth, capital expenditure, tangibility, size, short term to long term debt, log age, deficit, change in working capital, profit, and TMA (Target-minus-Actual) leverage. Variable definitions are given in the appendix.

CHAPTER 3

DETERMINANTS OF CAPITAL STRUCTURE FOR TURKISH FIRMS

3.1.Introduction

Factors determining Turkish firms' capital structure have remained debatable due to data limitations and the limited number of empirical studies related to Turkish firms. However, some recent studies in the last decade, which utilizes the CBRT database, gave us more hints about capital structure in Turkey.

Among these studies, Cakova (2011), found "strong evidence in favor of the pecking order theory", whereas Köksal and Orman (2015) stated that "the trade-off theory provides a better description of the capital structure for all firm types". A recent study of Yarba and Güner (2019) utilized the same database, and they found only one factor (profitability) supporting the pecking order theory, and other factors consistent with the trade-off theory. Moreover, we should keep in mind that the CBRT database utilized in these studies is widely criticized for the possibility of a self-selection bias since firms provide their data in a non-binding voluntary way.

Although there is a growing literature on Turkish firms' capital structure, there is much to explore due to data limitations or restricted coverage. This essay has an aim to answer two research questions about the determinants of the firms' capital structure in Turkey:

1. What characterizes the capital structure and the financing behavior of Turkish firms?
2. Do existing theories of the capital structure explain the funding behavior of the Turkish firms? If so, predictions of which theory better fit the Turkish data?

I seek an answer to both questions by analyzing all Turkish firm categories: SMEs and large firms, public and private firms, manufacturing and non-manufacturing firms, financial and non-financial firms. The comprehensive panel dataset contains a total of 3236 firms, covering the period of 2012-2018, with 16,630 firm-year observations. As an econometric method, I first use pooled panel regression. Then, to account for unobservable firm dynamics, I conduct a fixed effect estimation.

In order to answer the first question, following Rajan and Zingales (1995), I choose four main factors to investigate the determinants of the capital structure of Turkish firms: Growth, CAPEX (as a proxy for growth prospects), size, profitability, and tangibility. By following Faulkender and Petersen (2006) and Brav (2009), maturity composition of the firm's debt is utilized as a proxy for contracting problems, which means firms with shorter debt maturity have higher contracting problems limiting their ability to increase debt level. Lastly, by following Berger and Udell (1995), and Peterson and Rajan (2002), the age of the firm is included as a factor to explain the capital structure. To determine the composition of the capital structure, I use leverage as the dependent variable in my main model. I also utilized long-term (LT) and short-term (ST) leverage ratios in separate models to understand more about firms' capital structure dynamics.

The most important results derived from the analyses are as follows. First, in line with the literature, I find a negative correlation between leverage and profitability, which means profitable firms are less reliant on debt since they can use earnings for their investment. Second, I found a positive relation between size and leverage, which

indicates large firms, which are more diversified and have lower default risk, could raise leverage easily. Thirdly, growth and Capex are found to have a positive relation with leverage, which means growth firms need more debt to finance new investments. Fourth, leverage and tangibility are found to have an inverse relation, which means higher tangibility decreases the cost of equity issuance. Next, I find an negative relationship between the age and the leverage of the firm as in line with the literature. Lastly, I find that shorter maturity of debt negatively affects the leverage of the firm, since shorter maturity signals firms' contracting problems hampering their capacity to raise leverage.

Moreover, in the detailed analysis of LT and ST debt dynamics, it is found that profitability, growth, and Capex have robust signs for both LT and ST leverage, whereas signs of tangibility and size differ with LT and ST leverage. Tangibility is positively correlated with LT leverage and negatively related with ST leverage. Similarly, size has a positive sign for LT leverage, and inverse relation is valid for ST dependent variable.

To evaluate the second question, I assess two fundamental theories among the existing theories: Trade-off theory and pecking order theory. Trade-off theory states that "optimal capital structure reflects a single period trade-off between the tax benefits of debt financing and the deadweight costs of bankruptcy". According to this theory, firms' size, profitability, and tangibility should be positively and growth should be negatively related to leverage. The competing pecking order theory points out that, "firms follow a financing hierarchy to minimize the problem of asymmetric information between the firm's insiders and outsiders". Compared to the trade-off theory, this theory reveals the opposite relationship between the determinants with leverage.

By employing the comprehensive dataset, I manage to carry out a comparison of the trade-off and the pecking order theories, which better explain the capital structure and the financing behavior of the Turkish firms than the existing studies in the literature. Specifically, my analyses show that the pecking order theory provides a better

description of the capital structures of Turkish firms than the trade-off theory does. Especially for ST leverage, which composes more than 80 percent of Turkish firms leverage, all determinants support the pecking order theory.

This chapter is organized as follows. Section 3.2 lists three remarkable capital structure theories and discusses their implications. Capital structure hypotheses and their relations to the trade-off and the pecking order theories are presented in Section 3.3. A summary of previous empirical studies about Turkish firms' capital structure is given in Section 3.4. Data, methodology, and findings are given in Section 3.5. Finally, Section 3.6 concludes.

3.2. Capital Structure Theories

One of the fundamental issues that firms need to determine is what their capital structure will be. This challenging problem has attracted much attention over the years. Three major capital structure theories stand out among others in the corporate finance literature, which seek to explain the capital structure and the funding decisions of the firms: (i) the Modigliani-Miller Theorem, (ii) the trade-off theory, and (iii) the pecking order theory. In the next three subsections, I briefly discuss these theories.

3.2.1. The Modigliani-Miller Theorem

The cornerstone theorem in this strand of literature was introduced by Modigliani and Miller (1958) and is often pointed out as the birth of finance as a separate field/area of science. This theorem is considered to be the first serious attempt to explain the funding behavior of firms. Modigliani and Miller (1958) construct their theorem based on the perfect market assumptions, where there are no taxes, no bankruptcy costs, no agency costs, and there is perfect information. The theorem states that the market value of a firm is independent of the capital structure but rather dependent on the cash flows of its investments and other activities, and the corresponding risk of these cash flows.

In the theoretical world of Modigliani and Miller (1958), the debt ratio can be used only to make a distinction between the cash flows of equity holders and the lenders. No tax and other assumptions discussed above imply that cash flows are independent of the funding behavior. Therefore, the theorem points out that there is a “capital structure irrelevance” for firms. Notwithstanding its unrealistic assumptions, Modigliani and Miller’s (1958) study has been considered as a cornerstone since it paved the way for a new strand of literature about the capital structure of firms.

3.2.2. The Trade-off Theory

Based on criticisms of Modigliani and Miller (1958) towards its unrealistic assumptions, Modigliani and Miller (1963) added a corporate tax component to their original model. Their result indicates that “the value of a levered firm is higher than the value of an unlevered firm due to the tax shield of debt”. In this study, they introduce the homemade leverage theorem, which states that “as long as individuals borrow (or lend) on the same terms as the firm, they can duplicate the effects of corporate leverage on their own”. In the augmented model, the assumptions exclude the bankruptcy cost. Miller (1977) finds that with both corporate and personal income taxes, tax advantages may diminish, and irrelevancy may still hold. This paper also points out that increasing the stress of bankruptcy decreases the usage of debt. As a result, bankruptcy can be the balancing factor. Moreover, DeAngelo and Masulis (1980) assert that “non-debt corporate tax shields (depreciated deductions, tax credits, etc.) might also offset the tax shield of debt”.

Kraus and Litzenberger (1973) introduce a classic statement of the trade-off theory that the optimal level of capital structure implies “a single period trade-off between tax returns of debt and the deadweight costs of bankruptcy”. Myers (1984) defines this approach as “the static trade-off theory and hypothesizes that bankruptcy and taxes are the key factors determining leverage”. The static trade-off theory states that firms tend to limit tax payments, which further motivates them to use debt financing. There is a certain shortcoming of the static trade-off theory. According to the theory, firms seek to optimally combine outside debt and equity to form their capital with an

intention to minimize total agency costs and to get rid of needless financial slack. However, this can lead to overinvestment.

It is stated in Myers (1984) that firms first determine their optimal target leverage and optimize their decisions of funding structure accordingly. If the debt proportion of the financial structure rises as a first response, the value of the firm rises. This is a result of the rise in the present value of the marginal tax shield. Nevertheless, high levels of leverage ratio result in an increase in the present value of financial distress. As a result, this distress offsets the gains captured by the rise in the marginal returns and decreases the value of the firm. This trade-off forces firms to be debt optimizers.

The trade-off theory is built upon certain assumptions. First, investors display risk-neutral behavior. Second, while investors pay an individual tax on income obtained from debt instruments, firms are obliged to pay a tax on their corporate income. Third, dividends and capital benefits are also subject to a constant tax rate. The fourth assumption is the existence of non-debt tax shields. Lastly, firms that cannot fulfill their debt obligations face the cost of financial distress that reduces the value of the firms.

Finally, Bradley et al. (1984) provides the standard presentation of the static trade-off theory. In their paper, the fundamental outcomes of the trade-off theory are stated as follows: “(a) As the cost of financial distress increases, the optimal debt level decreases. (b) As the non-debt tax shield increases, the optimal debt level increases. (c) The personal tax rate on equity income is positively related to the optimal debt level. (d) At the optimal debt level, as the marginal bondholder tax increases, the optimal debt level decreases”.

3.2.3. Pecking Order Theory

Another perspective on corporate debt is offered by the pecking order theory which is also a milestone on the corporate finance literature. Initially, the pecking order theory was proposed by Donaldson (1961). The idea of Donaldson (1961) was further modified by Myers and Majluf (1984) with the help of the studies of “the agency theory

of Jensen and Meckling (1976)” and “the signaling theory of Ross (1977)”. Myers and Majluf (1984) use the insight of Myers (1977) that overhang of debt could be an efficient dissuasive to new financing and investment.

Jensen and Meckling (1976) introduced the agency theory based on “moral hazard and conflict of interest between principal and agent”. This theory states that agents prefer to take individual actions and decisions, which may not be optimal for the firm. This kind of actions and decisions are chosen basically because the expected returns are higher than the costs. The logic behind this thinking is that while benefits are to the individual, costs are shared between shareholders.

Jensen and Meckling (1976) proposed the adverse selection model based on “asymmetric information between purchasers and suppliers”. If there is a situation that purchasers and suppliers do not have access to the same information, then “unwanted” products are more likely to be selected. Thus, as opposed to Modigliani and Miller (1958), firms actually prefer to obtain financing from sources that would minimize their information asymmetry problems. Thus, they would prefer “internal funds to external sources, and debt to equity”.

According to the traditional pecking order theory, firms follow “a financing hierarchy in order to minimize the problem of asymmetric information between the firm’s insiders and the outsiders”. The pecking order theory states that there are four sources of corporate financing: (i) Internal funds, (ii) debt, (iii) convertible bonds, and (iv) equity. Firms make a prioritization of their sources of financing. First, they prefer to use internal financing. When the internal source is depleted, then these firms issue debt and use convertible bonds. When these are not sensible, as a last resort, the firm issues equity.

In the modified pecking order hypothesis of Myers (1984), financing hierarchy is as follows: internal funds (target dividend payout ratio), riskless debt, risky debt, convertibles, and equity. Myers and Majluf (1984) argue that “equity is the least preferred choice to increase capital. Therefore, when managers issue new equity, as a

result of asymmetric information between investors and the firm, investors perceive issuing new equity as a signal for overvalued stocks”. Thus, new equity issuance is valued as a last choice.

3.3. Hypotheses of Capital Structure

Frank and Goyal (2009) states that “both the trade-off theory and the pecking order theory do not provide explicit mathematical models to coherently explain the funding behavior of firms”. Notwithstanding, intuitively both theories are very successful in explaining the relation between capital structure and its determinants. Therefore, various empirical studies have been developed and tested the predictions of these two theories.

In this section, I explore the main hypotheses about the determinants of the capital structure of Turkish firms by using my comprehensive dataset. I develop these hypotheses about the relationships between leverage measures and various determinants with the help of the trade-off and the pecking order theories. Following Rajan and Zingales (1995), in the following sections, I define the measures of leverage and the possible determinants, namely growth, size, profitability, tangibility, contracting problem, and age.

The traditional trade-off theory and the pecking order theory expects opposite signs of the same determinants on firm leverage. First, in terms of size, the trade-off theory states that larger firms are more diversified and thus have lower default risk, which means they would have the capacity for higher leverage ratios. On the other hand, the pecking order theory predicts that “larger firms face lower adverse selection problems and thus can issue equity more easily than smaller firms do, so the larger the firm the lower the leverage ratio”. An alternative explanation for the pecking order theory states that “information asymmetries will be less severe at larger firms, so they can borrow easily”. Thus, we have sound explanation for both signs according to the pecking order theory.

The next predictions are about profitability. According to the trade-off theory, bankruptcy risk is lower and tax shields are more important for profitable firms, so they should have higher leverage ratios. The pecking order theory, on the other hand, states that “profitable firms can use earnings for investment, and hence they have less need for debt”.

Third, in terms of tangibility, the trade-off theory predicts that tangible assets are easier to collateralize and decrease distress costs, which means there is a direct relation between tangibility and leverage. As opposed to the prediction of the trade-off theory, the pecking order theory predicts that “low levels of information asymmetry (associated with high tangibility) make the issuance of equity less costly” (Harris and Raviv, 1991), which paves the way for lower leverage ratios.

The last predictions are about growth. Trade-off theory predicts that “growth firms lose more of their value in the event of financial distress, so there should be an inverse relationship between growth and leverage”. The pecking order theory points out that “internal funds are unlikely to be sufficient to support investment opportunities”, which means the higher the growth higher the leverage of the firm.

These relationships are summarized in Table 1 below. In this essay, I aim to determine whether the financing behavior and the capital structure of Turkish firms are in line with the traditional trade-off theory or the pecking order theory.

Table 1: Expected Signs of the Determinants

	Trade-off Theory	Pecking Order Theory
Size	+	-/+
Profitability	+	-
Tangibility	+	-
Growth	-	+

3.3.1. Measure of Leverage

The two capital structure theories discussed in the previous section generate predictions on market debt ratios. I calculate firm leverage through firms' book values. By following Brav (2009), I select the ratio of short-term debt plus long-term liabilities to total assets as a measure for firm leverage for the main model. LT leverage to total assets and ST debt to total assets are also utilized as a dependent variable for auxiliary models.

3.3.2. Determinants of Leverage

As determinants of leverage, I follow Rajan and Zingales (1995) and use four firm-specific explanatory variables: (i) Size, (ii) profitability, (iii) growth, and (iv) tangibility. Moreover, by following Faulkender and Peterson (2006), I also include the short-term to total debt ratio as a proxy to account for any possible contracting problems. Lastly, I extend the explanatory variables by also including the age of the firms.

3.3.2.1. Size

The trade-off theory predicts that firm size and leverage are positively related. As stated before, the pecking order theory has sound explanations for both signs. In most studies, the results support the trade-off theory. Following Titman and Wessels (1988) and Rajan and Zingales (1995), the natural logarithm of total sales is used to measure the firm size.

3.3.2.2. Profitability

As stated above, the trade-off (positive) and the pecking order (negative) theories provide contradictory predictions about the effects of profitability on the debt ratio. Following Brav (2009), return on assets (ROA) is used to account for profitability.

3.3.2.3. Tangibility

Following Rajan and Zingales (1995), fixed to total assets ratio is used as a proxy for tangibility in this study. Using this factor as a determinant, I tested whether the sign of this variable is positive (trade-off theory) or negative (pecking-order theory).

3.3.2.4. Growth

Growth is measured by the ratio of sales at a time (t) over sales at a time ($t - 1$). Following Brav (2009), another measure of growth utilized in the study is the ratio of capital expenditures to total assets as a proxy for growth prospects. While trade-off theory expects negative signs for both variables, pecking-order theory expects the opposite.

3.3.2.5. Age

Following Berger and Udell (1995) and Petersen and Rajan (2002), age is also used as a determinant of the leverage ratio in the empirical analysis. As firms age, they become known to the market, which can expand their access to capital. Therefore, I expect that age and leverage ratio are negatively related. I use the natural log of age as an explanatory variable.

3.3.2.6 Contracting Problems

Lastly, following Faulkender and Peterson (2006), I include the contracting problem as a determinant for debt ratio. According to their study, imperfect financial contracting increases the costs of debt for the firms, and thereby decreases their leverages. Therefore, a negative effect of contracting problems on leverage ratio is expected. Contracting problems are measured by the ratio of short-term debt to total debt, since the contracting problem can be understood from shorter-term debt issuance of the firms.

3.4. Empirical Studies for Turkish firms' capital structure

Before going into details of my model and findings, it might be good to explore the findings of previous studies on Turkish firms' capital structure. Although early studies

(Aydın et al., 2006; Sayılğan et al., 2006; Yıldız et al., 2009; Demirhan, 2009; Okuyan and Taşçı, 2010) mostly focused on public and manufacturing firms suffering from data limitations, studies in the last decade gave us more hints about capital structure in Turkey.

Bayrakdaroğlu (2011) tested the capital structure theories using data of 242 Turkish public firms listed in BİST for the period between 2000 and 2009. Panel data regressions over a total of six different model specifications show that Turkish firms' financing behavior mostly follows the pecking order theory. Bayrakdaroğlu's findings also indicate that Turkish public firms do not have a target leverage ratio.

Cakova (2011), investigated the capital structure choices of Turkish SMEs operating in the manufacturing sector for the years between 1998 and 2008 to assess the validity of the theories in the Turkish economy. Using a two-way fixed effects model, and a dataset of 44 thousand firm-year observations, he found strong evidence in favor of the pecking order theory. Notwithstanding, he acknowledged the limitation of his study concerning the possibility of a self-selection bias in the dataset since the data used in his study was provided to CBRT by Turkish SMEs in a non-binding voluntary way.

Employing a panel data method, Acaravcı (2015) attempted to determine the factors for Turkish public firms listed in BİST. Using data of 79 manufacturing firms for the period 1993-2010, she found that growth opportunities, size, profitability, and tangibility are significant factors in explaining leverage variables. Again, Acaravcı also reached "mixed results regarding the validity of the trade-off and the pecking order theories", since she found evidence that partially support both theories.

Köksal and Orman (2015) utilized the CBRT database considering both public and private firms operating in manufacturing as well as non-manufacturing sectors of Turkey for the period 1996-2009 with an average of 9,000 firms each year. Estimating a fixed-effects panel data model, though they faced robustness problems, they

conclude that “the trade-off theory provides a better description of the capital structures of all firm types than the pecking order theory” (Köksal and Orman, 2015).

Güner (2016) examined a total of 131 Turkish non-financial public firms for the period 2008-2014 to compare the predictions posed by the trade-off and the pecking order theories. Her balanced panel data regressions results indicate that “although pecking order theory better describes the capital structure of Turkish firms, some of the capital structure determinants are in accordance with trade-off theory” (Güner, 2016).

Karaşahin and Küçüksaraç (2016) also investigated non-financial public firms for 1994-2014 period and found a positive relation of size and tangibility, and negative impact of profitability and liquidity on debt ratios.

In order to assess the trade-off and the pecking order theories, Demirci (2017) analyzed publicly listed Turkish manufacturing firms for the period 2001-2015. He concludes that while the financing behavior of the Turkish manufacturing firms mainly “in line with the predictions of the pecking order theory”, there is still some evidence supporting the trade-off theory.

Terzioğlu (2017) attempted to analyze the capital structure and financial behavior of the firms operating in the Turkish banking sector between 2005 and 2013. Using the GMM approach, Terzioğlu concluded that both of the capital structure theories can only partially explain the financing behavior of the Turkish banks since only the size variable supports the trade-off theory and only the profitability and the asset structure variables provide evidence toward the validity of the pecking order theory.

Sahin (2018) investigated the funding behavior of public firms operating in non-financial sectors during the 2004-2013 period in the Fragile Five countries including Turkey. Based on panel data analysis, he identified that while GDP growth rate and firm size pose a positive effect, market price to book value has a negative relation to firms' debt ratio in Turkey.

Öcal and Akin (2018) analyzed the eight subsectors of the Turkish manufacturing sector for the period between 2002-2016. Linear regression analysis with CBRT data revealed that while the GDP and the interest rate are determining factors of the capital structure of firms for all eight sub-sectors, the exchange rate and the inflation rate play a determining role only in two and one subsectors, respectively.

Yarba and Güner (2019a) utilized CBRT's dataset to analyze the impact of financial development and government indebtedness on firm-level leverage dynamics. Their results give mixed signals: "While profitability (negative impact) is consistent with the pecking order theory, size (positive impact), growth (negative impact), and tangibility (positive (negative) impact on LT (ST) debt ratios are consistent with the trade-off theory". In a follow-up study, Yarba and Güner (2019b) investigated "the impact of macroprudential policies and persistence of uncertainty on leverage dynamics". They found that "macroprudential policy and persistence of uncertainty indices are significantly negatively associated with leverage of SMEs", but not for the large ones.

3.5. Data, Methodology, and Findings

3.5.1. Data and Summary Statistics

In this essay, the sample is composed of a total of 3,236 randomly selected firms operating in Turkey between 2012 and 2018, comprising a panel dataset of 16,630 firm-year data. All firm sizes (small, medium, and large), public and private firms, manufacturing and services industries, financial and non-financial firms are included in the sample.

Table A-I contains sample summary statistics for leverage and other variables utilized in the study. Average figures for each variable are given in the third column of Table A-I. The fourth, fifth, and sixth columns give us more detail about the distribution of each variable. The last two columns, on the other hand, present mean values for the smallest 25% and the largest 25% of the firms.

Table A-I: Summary Statistics

The mean and median values are reported at the 3rd and 5th columns. The fourth column is the the first quartile, and the sixth column is the third quartile. All firms were divided into 25% slices according to their size and the last columns report average values for smallest and largest size categories. * reports statistically significant difference at 5% level among smallest and largest firms.

	# Obs.	Mean	1st Quartile	Median	3rd Quartile	Smallest %25	Largest %25
Leverage	16630	0.628	0.478	0.674	0.806	0.630	0.628
Short/Total Lev.	16627	0.814	0.684	0.911	1.000	0.860*	0.749*
Net Leverage	16624	0.545	0.385	0.601	0.753	0.542	0.538
Total Assets (mn TL)	16630	32.48	7.89	20.69	91.42	5.54*	405.65*
Sales (mn TL)	16473	39.86	12.07	26.94	98.05	6.52*	459.66*
ROA	12863	0.09	0.032	0.069	0.125	0.082*	0.092*
CAPEX/Total Assets	12751	0.049	0.002	0.021	0.070	0.063	0.061
Growth (Turnover)	12267	0.283	0.025	0.170	0.353	0.278	0.277
Cash/Total Assets	16630	0.084	0.011	0.038	0.109	0.088	0.091
Age	16630	19.3	11	18	24	13.7*	22.8*

First, from Table A-I, we can see that Turkish firms on average have higher leverage, and their leverage is heavily short-term. Mean and median values for leverage are 62.8% and 67.4%, respectively. These figures are, on average, higher than the developed countries (Rajan and Zingales 1998, Brav 2009). Moreover, the mean and median figures for the short-term leverage ratio are 81.4% and 91.1% respectively, which means Turkish firms are mainly financing their operations via short-term loans. Interestingly there seems to be no difference between small and large firms regarding leverage ratio, however, small firms have higher short-term leverage than large firms on average. Regarding net leverage (leverage minus cash), the mean and median figures are 54.5% and 60.1% respectively, and there seems to be no difference among small and large firms.

Secondly, the mean and median profitability (ROA) figures are 9.0% and 6.9% percent, respectively. And smallest firms, on average, are less profitable than the largest firms. Third, when we have a look at sales growth, mean and median growths are 28.3% and 17.0% respectively, and there seems to be no difference among small and large firms regarding growth performance.

Lastly, notice that cash ratio means for the full sample, smallest firms, and the largest firms are 8.4%, 8.8%, 9.1% respectively. One can expect that, as firms grow, their tendency to hold cash decrease, since it is easier to convert their cash to various investment opportunities. However, this seems to be not valid for Turkish firms.

3.5.2. Empirical Model and Methodology

For empirical analysis, firm leverage is modeled as a function of the aforementioned possible determinants discussed in the previous section:

$$L_i = \beta_0 + \sum_k \beta_k F_{k,i} + \varepsilon_i$$

where L_i is the leverage ratio of firm i , F is the vector of leverage determinants and ε_i is the error term. In this setting, three different models are tested. *Model 1* includes four major possible determinants of leverage ratio: (i) Size, (ii) asset tangibility, (iii) growth, and (iv) profitability. Following Faulkender and Peterson (2006), *Model 2* is constructed to depict contracting problems: “The maturity composition of a firm’s debt is used as a proxy for contracting problems”. Following Berger and Udell (1995) and Petersen and Rajan (2002), *Model 2* also incorporates a firm’s age into the model as a determinant of the leverage ratio.

Finally, following Hovakimian et al. (2001) *Model 3* excludes the profitability variable from the regression. The reason behind this exclusion is the fact that “it passively moves the firm’s leverage away from its optimal target level”. Regarding the econometric method, pooled panel regression is employed based on Rajan and Zingales (1995) and Brav (2009). All explanatory variables are lagged one period in

order to address possible endogeneity problems. The models also include year dummies and two-digit NACE code dummies to control the results for time and industry. Moreover, to learn more about long-term and short-term debt dynamics, Model 1 is replicated for long-term leverage (Model 1L) and short-term leverage (Model 1S) as dependent variables.

As a robustness check, to exclude the possibility that the estimation results are affected by an omitted endogenous time-invariant feature of the firms, next, fixed effects regressions are run as follows:

$$L_{it} = \beta_0 + \sum_k \beta_k F_{k,it} + \mu_i + \varepsilon_{it}$$

where L_{it} is leverage ratio for firm i in year t , F is the vector of leverage determinants, μ_i are time-invariant unobservable firm-specific effect, and ε_{it} is the error term. All three models are also analyzed using fixed-effect estimation method as Model 1F, Model 2F, and Model 3F.

3.5.3. Estimation Results

The estimation results of the pooled panel and fixed effects regressions of the capital structure for Turkish firms are analyzed in this section. The estimation results of pooled panel regression are presented in Table A-II. Model results exploring long-term and short-term debt dynamics are given in Table A-III. The fixed effect estimation results are presented in Table A-IV.

First, take a look at pooled panel regression results reported in Table A-II. In Model 1, all variables are significant at the 5% significance level. Economically, it can be seen that the effect of the ROA on the leverage ratio for Turkish firms is negative. As the ROA is used for a measure of profitability, this result can be interpreted that higher profitability firms use their profits for investment opportunities, and therefore, rely less on debt capital.

Table A- II: Determinants of Leverage: Pooled Panel Regressions

Table reports the results of the pooled panel OLS. The dependent variable is Leverage.

	Model 1		Model 2		Model 3	
ROA	-0.770***	(0.0415)	-0.758***	(0.0419)		
Growth	0.044***	(0.0054)	0.037***	(0.0051)	0.023***	(0.0046)
Capex	0.148***	(0.0309)	0.130***	(0.0335)	0.087**	(0.0337)
Tangibility	-0.168***	(0.0166)	-0.178***	(0.0174)	-0.126***	(0.0175)
Size	0.004**	(0.0016)	0.010***	(0.0018)	0.010***	(0.0019)
Short/Total Debt			-0.093***	(0.0126)	-0.107***	(0.0131)
Age			-0.047***	(0.0041)	-0.0478***	(0.0042)
Constant	0.551***	(0.0399)	0.682***	(0.0432)	0.601***	(0.0475)
Observations	8,092		7,999		7,999	
R-squared	0.226		0.242		0.161	
*** 1%, ** 5%, * 10%						

Next, have a look at the impact of growth variables on leverage. As the growth rates of Turkish firms increase, their leverage ratios also increase. Thus, it is observed that as Turkish firms grow, their internal financing opportunities become less sufficient to make new investment decisions. Moreover, it should be noted that there is a positive coefficient for capital expenditures after controlling for growth rates. This shows that growth prospects have an additional positive impact on leverage ratios.

Model 1 also predicts a negative correlation between tangibility and leverage ratio. This result can be interpreted as follows. High information asymmetry (low tangibility) leads to high-cost issuance of equity for Turkish firms. Therefore, firms do not prefer equity, and finance their operations through debt instruments.

Finally, take a look at the size determinant. It is observed that the relationship between size and leverage ratio is positive. This implies that larger the Turkish firms lower the

information asymmetry and debt can be issued more easily. Therefore, their debt ratios are higher compared to smaller firms.

Next, consider the estimation results of Model 2 and Model 3 of pooled panel OLS regression. It is observed that there is an inverse relationship between the contracting problems (Short-to-Total Leverage ratio) of the Turkish firms and their leverage ratios. Consistent with the literature, for Turkish firms that have contracting problems, costs of debt capital increase. As a result, they decrease their debt ratios.

Moreover, the regression result suggests that as Turkish firms age, debt ratios decrease. This is again an expected result since they become recognized in the market and their funding becomes easier. As a result, their leverage ratios decline. The signs of other variables do not change with the introduction of these two explanatory variables, which strengthens the robustness of the empirical findings. Next, consider Model 3. Here by following Hovakamian et al. (2001), excluding profitability does not alter the estimation results, which means our previous model findings are robust.

Before evaluating these results from the theoretical consistency perspective, it might be better to learn more about long-term and short-term leverage dynamics. Table A-III presents pooled panel estimation results using LT leverage and ST leverage as dependent variables. As you see, for profitability and growth variables, the results are robust and there is no sign change in coefficients between Model 1LT and Model 1ST.

However, for tangibility and size, results should be examined in detail. As you remember from Table A-II, tangibility has a negative sign, and size has a positive sign when total leverage is the dependent variable. For the disaggregated models, tangibility has a positive relation with LT debt, whereas there is a negative correlation with ST debt, which is the main borrowing channel for Turkish firms. This can be interpreted as follows: Since tangible assets are easier to collateralize, this will lead to an increase in LT debt. On the other hand, low information asymmetry stemming from higher tangibility decreases the cost of issuing equity, lowering both ST debt level and firms' overall leverage ratio. Vo (2017) found a similar pattern for the impact of

tangibility on leverage for the Vietnamese firms. This may show us the importance of tangible assets and loan collateralization for access to credit in emerging markets.

Table A-III: Determinants of Leverage: LT and ST Leverage

Model 1 in Table A-II is replicated with long-term leverage and short-term leverage as dependent variables. Pooled panel OLS coefficients are reported below.

VARIABLES	Model 1LT		Model 1ST	
ROA	-0.153***	(0.0181)	-0.616***	(0.0343)
Growth	0.008**	(0.00315)	0.036***	(0.00505)
Capex	0.049***	(0.0154)	0.100***	(0.0274)
Tangibility	0.182***	(0.0114)	-0.350***	(0.0158)
Size	0.018***	(0.00117)	-0.014***	(0.00167)
Constant	-0.232***	(0.0307)	0.783***	(0.0387)
Observations	8,092		8,094	
R-squared	0.190		0.229	
*** 1%, ** 5%, * 10%				

I found a similar pattern for the size variable. Although we have a slightly positive sign for size in Model 1, I found a positive relation with LT debt and a negative sign for ST debt. This can also be interpreted as follows: Larger firms face lower adverse selection and can more easily issue equity instead of costly ST debt. On the other hand, since they are more diversified and have lower default risk, they can raise more LT debt and increase their overall leverage ratio.

Lastly, Table A-IV reports the results of the fixed effect regression. I utilized this model as a robustness check in order to control the risk of any an omitted endogenous time-invariant characteristic of the firm. As can be seen, the effects of profitability (ROA) and growth (Growth and Capex) variables are robust to any omitted time-

invariant endogenous variable. On the other hand, tangibility loses its significance and size changes its sign, which may also reflect the difference in LT-ST debt dynamics.

Table A- IV: Determinants of Leverage: Fixed Effect Regression

Fixed effects model coefficients are reported at the below table. The dependent variable is Leverage.

VARIABLES	Model 1F	
ROA	-0.212***	(0.0196)
Growth	0.010***	(0.0026)
Capex	0.034***	(0.0112)
Tangibility	0.020	(0.0201)
Size	-0.022***	(0.0054)
Constant	0.997***	(0.0923)
Observations	8,224	
R-squared	0.040	
Number of id	2,909	
*** 1%, ** 5%, * 10%		

To sum up, I can say that Turkish firms are said to follow the Pecking Order Theory. Although the size was also consistent with the prediction of the Trade-off Theory in Table A-II, its sign also supports the information asymmetry argument of the Pecking Order Theory. Moreover, for short-term debt, which comprises more than 80 percent of firms' leverage, all explanatory variables supports the predictions of the Pecking Order Theory.

3.5.4. Capital Structure in Turkish Industries

Although it is not in the scope of this study, it might be good to examine industry-specific capital structure dynamics. Table A-V reports mean, median and quartile distributions of leverage for each industry. Moreover, the model prediction of each industry is also given to understand more about industry leverage level after controlling for the independent variables.

As it is seen from Table A-V, the mean industry leverage deviates between 29.4% and 73.0%. Most leveraged industries are construction (F), electricity-gas supply (D), manufacture of food products (C10), manufacture of fabricated metal products (C25), wholesale and retail trade (G), and transporting-storage (H). Even after controlling for the explanatory variables of Model 1, these six industries are the most leveraged ones in the Turkish economy. At the lower end, mining and quarrying (B), the manufacture of basic pharmaceuticals (C21), the manufacture of coke and refined petroleum products (C19), and the real estate activities (L) industries have the lowest leverage ratios, even after controlling for the Model 1 variables.

3.6. Conclusion

In this essay, I have investigated the determinants of the capital structure of Turkish firms. This essay can be considered as a novel contribution to the empirical literature of corporate finance since I have analyzed a new comprehensive dataset obtained from various sources compared to previous studies focusing on Turkey. With the help of this new dataset, I have answered two research questions related to the determinants of capital structure of Turkish firms and their relation to two principal the capital structure theories.

Table A-V: Leverage Dynamics: Industry Characteristics

Fourth column reports mean leverage, and fifth, sixth and seventh columns gives more details about its distribution. Model Coefficient (constant plus industry dummy coefficient) column reports un-reported coefficients of Model 1 in Table A-II.

NACE Code	Explanation	Obs.	Mean	1st quartile	Median	3rd quartile	Model Coefficient
A	Agric., fores. and fishing	141	0.588	0.391	0.635	0.786	0.575
B	Mining and quar.	82	0.294	0.105	0.175	0.419	0.381
C	Manufacturing	6004	0.597	0.441	0.629	0.775	0.661
C 10	M. of food products	562	0.677	0.500	0.675	0.787	0.696
C 11	M. of beverages	51	0.522	0.376	0.488	0.720	0.600
C 13	M. of textiles	532	0.597	0.455	0.613	0.763	0.633
C 14	M. of wearing apparel	338	0.652	0.517	0.678	0.812	0.655
C 15	M. of leather and related products	56	0.570	0.442	0.590	0.687	0.564
C 16	M. of wood and products of wood	49	0.646	0.494	0.694	0.803	0.669
C 17	M. of paper and paper products	218	0.594	0.421	0.646	0.786	0.638
C 18	Printing and repr. of recorded media	125	0.556	0.457	0.596	0.730	0.612
C 19	M. of coke and ref. petroleum products	36	0.410	0.201	0.404	0.604	0.408
C 20	M. of chemicals and products	516	0.556	0.423	0.596	0.746	0.601
C 21	M. of basic pharmaceutical products	37	0.377	0.261	0.405	0.495	0.437
C 22	M. of rubber and plastic products	590	0.608	0.450	0.645	0.800	0.658
C 23	M. of non-metallic mineral products	355	0.491	0.296	0.486	0.672	0.562
C 24	M. of basic metals	382	0.580	0.397	0.610	0.793	0.634
C 25	M. of fabricated metal products	537	0.662	0.556	0.705	0.815	0.693
C 26	M. of computer, electronic and optical	107	0.552	0.437	0.589	0.727	0.529
C 27	M. of electrical equipment	408	0.613	0.497	0.654	0.770	0.670
C 28	M. of machinery and equipment	383	0.573	0.379	0.608	0.760	0.625
C 29	M. of motor vehicles, trailers	354	0.601	0.445	0.632	0.798	0.665
C 30	M. of other transport equipment	35	0.615	0.490	0.625	0.791	0.631
C 31	M. of furniture	132	0.544	0.296	0.549	0.766	0.585
C 32	Other M.	101	0.610	0.468	0.635	0.783	0.634
C 33	Repair and inst. of machinery	93	0.561	0.441	0.575	0.708	0.588
D	Electricity, gas, steam and air cond.	97	0.680	0.598	0.707	0.834	0.768
F	Construction	660	0.730	0.617	0.762	0.853	0.708
G	Wholesale and retail trade	7077	0.659	0.537	0.706	0.816	0.69
H	Transporting and storage	484	0.655	0.534	0.688	0.827	0.713
I	Accommodation and food service act.	102	0.516	0.295	0.551	0.758	0.584
J	Information and communication	232	0.551	0.321	0.577	0.788	0.604
K	Financial and insurance activities	850	0.529	0.195	0.591	0.853	0.466
L	Real estate activities	58	0.437	0.179	0.522	0.694	0.442
M	Professional, scientific and technical act.	271	0.587	0.418	0.624	0.770	0.637
N	Administrative and support service act.	180	0.642	0.467	0.649	0.843	0.662
Q	Human health and social work activities	51	0.579	0.436	0.562	0.759	0.669

Concerning Turkish firms funding behavior, the following results are obtained. First, profitable firms use profits for investment and rely on less debt. Second, as firms grow, internal funds could not be sufficient for potential investments, and firms rely on more debt. These two properties are valid for both short-term and long-term leverage.

Thirdly, tangibility has a positive relation with LT debt, whereas there is a negative correlation with ST debt. Since tangible assets are easily collateralizable, this will lead to an increase in LT debt. On the other hand, higher tangibility leads to low information asymmetry which decreases the cost of issuing equity, lowering both ST debt level and firms' overall leverage ratio.

Fourth, larger firms have lower adverse selection, so they can increase equity instead of costly ST debt. On the other hand, since large firms' default risk is lower with higher diversification, they can raise more LT debt and increase their overall leverage ratio.

Fifth, a firm's age and leverage ratio are negatively related since as firms get older, they become familiar to the investors in the equity market. Last, the contracting problem, proxied by the maturity composition of debt, negatively affects the leverage of a firm.

With respect to the validity of the trade-off and the pecking order theories in the Turkish case, evidence obtained from different models is collected. The results provide evidence that the pecking order theory maintains better framework than trade-off theory in explaining the financing behavior of Turkish firms. That is, it can be concluded that Turkish firms prioritize their strategy of funding relying on the path of the least resistance. The first preferred method is internal financing. This is followed by debt. As a last resort, Turkish firms use equity financing.

CHAPTER 4

DIFFERENCES OF THE CAPITAL STRUCTURES BETWEEN TURKISH PRIVATE AND PUBLIC FIRMS

4.1. Introduction

Privately held firms possess a large share in the industrial activities of the Turkish economy. Yet very little is known about the difference in funding behavior between Turkish private and public firms. Most of the empirical studies that have investigated the capital structures of the Turkish firms focus on publicly traded firms due to data availability.

Köksal and Orman (2015) and Yarba and Güner (2019) are the only two studies that gave some insight into differences in Turkish public and private firms' capital structure behavior. Köksal and Orman (2015) found that “though growth is not a significant determinant of leverage for private firms, it is positively correlated with short-term leverage for public firms”. Moreover, they found a much larger impact of profitability for public firms. Yarba and Güner (2019) found similar results for both public and private firms, but positive tangibility impact for private firms turned out to be insignificant for public firms. Therefore, it is crucial to explore the differences in the financing behavior between Turkish private and public companies.

Brav (2009) is one of the seminal papers that have documented systematic distinctions between the funding behavior of public and private firms. He bases his study on a

dataset of public and private firms (around 350 thousand firm-year observations) operating in the United Kingdom (UK). In his study, Brav concludes that “private firms place more reliance on debt financing when compared to their public counterparts. Accordingly, the private firms have higher leverage ratios and refrain from engaging in external capital markets (either to raise or to retire capital). Therefore, the capital structures of private firms become more sensitive to the fluctuations in performance”.

Huynh et al. (2018) also investigated the capital structure differences of public and private firms in Canada from 2000 to 2008. They found that “private firms have higher leverage ratios, and stronger reliance on short-term debt”. Moreover, they reported that “private firms shift towards short-term debt in downturns, and private firms’ both leverage and debt maturity are procyclical”.

On the other hand, Cole (2013) found that privately held firms employ less leverage relative to small publicly traded firms for the US market. As one of the first studies focusing on the capital structure of the privately held US firms, profitability, age, and size are reported as negatively related, whereas growth and tangibility are positively related to leverage ratio. As most of the determinants support the pecking order theory for private firms, this is a clear distinction from the public firms where there are many studies supporting the trade-off theory. Similarly, McCumber (2015) found private firm capital structure is more heterogenous both in terms of the level of leverage and the number of specific debt instruments.

The trade-off theory and the pecking order hypothesis can be utilized to explain differences in capital structures and financial policies between privately held and public firms. Following Brav (2009), in this essay, I make a classification about the predictions of these theories and group them into two categories: (i) The level effect and (ii) the sensitivity effect. These two categories form the base of the present study.

In particular, the level effect is defined as the outcomes arising from private firms’ higher relative cost of equity to debt capital. The sensitivity effect stems from private

firms' higher absolute cost of accessing capital markets compared to public firms. Therefore, private firms are predicted to visit external capital markets less often than public firms do.

In this essay, I perform empirical analysis to test each of the aforementioned outcomes of the level and the sensitivity effect. With both pooled OLS and fixed effect estimation methods, I find that private firms have higher leverage ratios than public firms in Turkey. This result is consistent with the level effect explained in Brav (2009). Next, analysis of the sensitivity effect for Turkish firms does not support the findings of Brav (2009). The hypothesis that public firms' leverage is more sensitive to operational performance or other variables fails to hold under the sample used in this study. Hence, the sensitivity effect is not supported by Turkish firms.

The rest of the essay is organized as follows. Section 4.2 introduces the cost of capital and financial policy hypotheses and presents the level and the sensitivity effects. Section 4.3 tests the hypotheses presented in Section 4.2. In this section, summary statistics and estimation results are given and interpreted. Section 4.4 concludes.

4.2. Cost of Capital and Financial Policy Hypotheses

In the corporate finance theory, it is a common fact that the most considerable reason for private firms to go public is to secure cheaper and better attainment to external equity capital. Brav (2009) explains the implications of this on capital structure choices. He categorizes these implications into two: (i) The level effect and (ii) the sensitivity effect. The level effect states that "since the relative cost of equity to debt is higher for private firms, private firms will rely on debt financing more relative to public firms". This effect has an outcome that private firms' level of leverage is higher than their public counterparts.

The sensitivity effect arises from the absolute cost of accessing external capital market differences between private and public companies. This effect has an outcome that private firms have a lower likelihood to visit external capital markets compared to

public firms. Another outcome of the sensitivity effect is the difference of financial policy sensitivities of public and private firms against possible firm-specific variables.

4.2.1. The Level Effect

While raising equity capital, privately held firms face greater transaction costs compared to public ones. This situation creates a level effect, in which privately held firms place more reliance on debt financing than public firms do. This result is in line with the implications of Hennessy and Whited (2003). In their paper, the authors construct a dynamic trade-off model and perform a simulation study to validate the theoretical model. Simulation results of their model include the cases for zero and proportional floatation costs of equity issuance. As an important result drawn from their simulation study, they found that when the floatation cost of the equity rises, firms tend to rely more on debt and less on equity to finance the deficit. Particularly, as the equity issuance possibility declines, the equity issuance size also goes down.

Fischer et al. (1989) are among the studies that lend support to the level effect hypothesis. In their study, they analyze recapitalization costs of debt issuance in a theoretical dynamic trade-off model. They present the comparative statics of these costs. The striking result in Fischer et al. (1989) is that when the costs of debt issuance go up, the debt ratios of firms decline. In the context of this essay, the fundamental difference between public and privately held firms lies in the cost of equity issuance. Therefore, considering that privately held firms have higher leverage ratios, the theoretical structure of Fischer et al. (1989) can be used to support the existence of the level effect

In light of the above discussion about the level effect, the first empirically testable hypothesis for public and private Turkish firms is constructed as follows:

B1: Private Turkish firms have higher debt ratios than public Turkish firms do.

4.2.2. The Sensitivity Effect

Brav (2009) argues that “if the cost of issuing private equity is higher than the cost of issuing public equity, then it is more likely for private firms to have a higher absolute cost of accessing the external equity markets compared to public firms”. As it is stated in the previous section, the level effect implies that, since the private firms’ equity issuance is higher than their public counterparts, private firms’ reliance on debt is also much higher. Nevertheless, as a result of an increase in leverage, the probability of bankruptcy can also increase for private firms. According to the trade-off theory, “firms tend to increase indebtedness until the marginal costs of debt and equity are equal”. Herewith, when the company is at the optimal leverage ratio, private firms face higher costs while raising capital. As a result, they prefer to engage in internal financing methods. Moreover, if private firms’ leverage ratios get higher, their leverage becomes riskier and more sensitive to information. Therefore, the pecking order hypothesis predicts that privately held firms prefer “internal capital over external capital compared to their public counterparts”.

As a result of the higher absolute cost, private firms are predicted to visit capital markets less often. This capital structure behavior has an outcome that private firms might display a sensitivity effect. This is the effect that private firms’ leverage will be “more sensitive to operational performance (profitability) and less sensitive to other determinants of capital structure (capital expenditures, growth, asset tangibility) that are predicted by traditional trade-off theory”.

In this section, to test the existence of a sensitivity effect for Turkish firms, two empirically testable hypotheses are constructed as follows:

B2: Compared to public firms, private firms’ leverage is more sensitive to operational performance (profitability) in Turkey.

B3: Compared to public firms, private firms’ leverage is less sensitive to other variables (CAPEX, growth, tangibility) in Turkey.

4.3.Data, Empirical Method and Findings

4.3.1. Data and Summary Statistics

Table B-I depicts summary statistics for the entire sample consisting of public and private firms operating in Turkey. The sample includes a total number 3,236 firms of which 2,764 are private and 472 are public firms from 2012 to 2018. Panel dataset comprised of 13,638 private, 2,992 public firm-year observations. As previously discussed, 82% of the observations in our sample are private.

The summary statistics present remarkable differences in the capital structure and financial policies of public and private firms in Turkey. First, take a closer look at the debt-equity composition of the firms. Consistent with the level effect, there is a large difference in debt ratios. Private firms have a debt ratio of 64.5% on average, while the debt ratio of public firms is averaged at 55.3%. It is important to note that public firms' debt ratio is also considerably high. There is also a significant difference in net leverage ratios. Private firms have a net leverage ratio of 56.4% on average, while the net leverage ratio of public firms is 45.4% on average.

There is also a difference between private and public firms concerning their short-term to total debt ratio. Private firms' average and median short-term debt ratios are 83.4% and 94%, respectively. The corresponding values for public firms are 72.2% and 77.4%.

In terms of total assets, the average and median values of public firms are larger than those of private firms. There is also a significant difference in sales turnover of public and private firms. Private firms' average and median log sales turnovers are 17.1 and 16.9 respectively. The corresponding values for public firms are 19.2 and 19.2. It can be inferred that public firms are larger than private firms on average.

Next, take a closer look at average and median growth rates and capital expenditures of public and private firms. The average capital expenditure of private firms is higher than that of public firms. In terms of growth performance, figures for private and public

firms are very similar. Private firms' average and median growth rates are 28.6% and 17.4%, respectively. The corresponding values for public firms are 27.2% and 15.7%.

Table B- I: Summary Statistics – Private vs. Public

The mean and median value of each variable are presented at the 3rd and 5th columns. All firms in the last four columns were divided into 25% slices according to their size and these columns report average values for these size categories. * reports statistically significant difference among public and private firms at 5% level.

		# Obs.	Mean	1st quartile	Median	3rd quartile	Smallest %25	Largest %25
Leverage*	Private	13638	0.645	0.514	0.691	0.810	0.650	0.646
	Public	2992	0.553	0.310	0.552	0.774	0.371	0.608
Short/Total Leverage*	Private	13635	0.834	0.721	0.94	1.000	0.872	0.764
	Public	2992	0.722	0.558	0.774	0.94	0.708	0.732
Net Leverage*	Private	13638	0.564	0.425	0.622	0.761	0.561	0.569
	Public	2986	0.454	0.217	0.457	0.693	0.292	0.501
Total Assets (mn TL)*	Private	13638	18.26	6.60	14.95	41.87	4.73	178.48
	Public	3007	438.99	88.99	381.64	1762.50	40.23	1047.84
Turnover (mn TL)*	Private	13568	27.51	10.93	22.30	54.84	6.78	277.13
	Public	2905	222.39	48.54	222.42	1006.76	3.91	832.55
ROA*	Private	10371	0.094	0.036	0.071	0.125	0.089	0.101
	Public	2492	0.074	0.014	0.059	0.121	0.011	0.082
CAPEX/Total Assets*	Private	10344	0.052	0.003	0.022	0.070	0.065	0.060
	Public	2407	0.037	0.000	0.013	0.068	0.044	0.061
Growth	Private	9874	0.286	0.030	0.174	0.362	0.290	0.276
	Public	2393	0.272	0.009	0.157	0.321	0.141	0.278
Cash/Total Assets	Private	13638	0.08	0.011	0.036	0.102	0.089	0.076
	Public	2992	0.1	0.011	0.049	0.137	0.080	0.107
Age*	Private	13638	17.6	10	17	23	13.2	19.9
	Public	2992	29.2	17	26	42	20.3	31.9

Next, notice that profitability measure, return on asset (ROA), is larger for private firms. Private firms' average and median ROA ratios are 9.4% and 7.1%, respectively. The corresponding values for public firms are 7.4% and 5.9%. These values imply that private firms are more efficient to convert the money used to purchase assets into profit.

In terms of cash holdings, while private firms' average and median cash to total assets ratios are 8% and 3.6%, the corresponding figures for public firms are 10% and 4.9%. These results contradict scale impact in cash management, which predicts less cash holdings for public firms as a share of total assets. Lastly, as expected, public firms are older than private firms.

4.3.2. Empirical Model and Methodology

In this section, I answer my research question by interacting with the independent variables, i.e. determinants of leverage, with a dummy variable equal to one (zero) if the firm is public and zero (one) if the firm is private. With the help of this interaction, one can identify the differences in the effects of the determinants on the leverages between private and public firms. The explanatory variables are the same as in the previous chapter. In the first model, profitability, growth, capital expenditure, tangibility, and size are included in the model as the main determinants of leverage. In the second model, variables capturing contracting problems (short-to-total debt ratio) and firms' age are added to the first model. In the third model, with similar reasoning explained in the previous chapter, profitability is excluded from the model. Also, a public dummy variable is included in all three models as an explanatory variable to identify the average differences of the leverage ratios between public and private firms.

First, a cross-sectional (pooled panel) regression is used to investigate the determinants of leverage ratios for private and public companies operating in Turkey. Following Brav (2009), all variables are scaled by the total assets, which allows to have control over scale effect and to deal with any possible heteroscedasticity problem. In order to

cope with endogeneity, all independent variables are lagged one period. The models also include year dummies and two-digit NACE code dummies to control the results for time and industry. The results are reported in Table B-II. Moreover, disaggregated models with LT leverage and ST leverage as dependent variables are reported in Table B-III.

Secondly, an important conjecture in panel data analysis is tested. The status of a firm can be a proxy for unobserved friction of the market. In this situation, the intensity of the market can alter, when the intensity of the firm alters its status. As a result, the within-company status effect becomes analogous to the between-company status effect. In the literature, this conjecture is tested by fixed effects estimation. Therefore, a fixed effect methodology is also employed to estimate Model 1. This model identifies the effect of firm status on leverage ratios. The underlying logic behind this model is that shifts in leverage ratios might occur due to a shifting in the status of a firm. This analysis has the advantage of mitigating the omitted endogenous time-invariant attributes of the firm. The fixed effects estimation results are reported in Table B-IV.

4.3.3. Empirical Results

In this Section, the pooled panel regression results presented in Table B-II are analyzed first. Here, the effect of the public dummy variable on the debt ratio is of importance to capture differences in the capital structure of public and private firms operating in Turkey, which can be seen in Panel A of Table B-II. The public dummy variable is incorporated into the model to test the first hypothesis, i.e. hypothesis B1, empirically. In all models, the coefficient for the public dummy variable is negative and significant at the 1% level, which in turn lends support to validate hypothesis B1. Thus, it can be concluded that private firms, on average, have higher leverage ratios than public firms in Turkey.

One should be careful in evaluating the partial effect of the status of a firm when the status interacts with other independent variables. Because of this reason, the predicted leverage for each private (public) firm as well as its predicted leverage if it were public

(private) was computed. This computation gives more reliable results compared to the coefficient of the public dummy variable. The averages of the aforementioned predicted values for Model 1-3 are reported in Panel C of Table B-II. The result of such computation suggests that for Turkish private firms, the average predicted debt ratio is 65.4%. The ratio is 56.3% for the public firms.

These predictions are approximately the same through Model 1 to Model 3. Moreover, the predicted debt ratio if the firms were private is greater than the predicted debt ratio if the firms were public in 86.6% of the firm-year observations for Model 1. For Model 2 and Model 3, this ratio is 84.9% and 91% respectively. All these findings in Panel C also support hypothesis B1, where private firms, on average, have higher leverage ratios than public firms in Turkey. So, the level effect is validated for Turkish firms.

Next, to explore the sensitivity effect and test hypotheses B2 and B3, we have to look at the determinants closer. The effects of the determinants for both private and public firms are consistent with the results reached in the previous essay in terms of their sign according to the pooled panel regression results. Profitability and tangibility are negatively related, whereas growth, CAPEX, and size variables are positively related to the leverages of the firms. However, CAPEX and tangibility lose their significance for public firms, which means these two variables are not relevant determinants for public firms' leverage. These results, more or less, again provide support for the pecking order theory for the Turkish firms.

First, take a closer look at the effect of profitability on debt ratios. Here, it can be seen that the returns on assets are negatively related to the leverage for both types of firms.

This result is highly significant for the first two models. In terms of magnitudes, the results are mixed for Model 1 and Model 2. Results derived from Model 1 and 2 suggest that returns on assets for private firms seem more sensitive than the ones for public firms. The statistical significance of the difference is presented in Panel B of Table B-II. Here, it can be seen that p-values are 0.137 and 0.181 for Model 1 and Model 2, respectively. This implies that this difference is not statistically significant.

Table B- II: Determinants of Leverage: Public vs. Private

Pooled panel OLS results are reported at Panel A. Leverage is the dependent variable is Leverage. Each X determinant interacted with public (and private) dummy are reported as Pub X (Priv X). Probability values of the test Priv X = Pub X are reported in Panel B. Total partial effect of the status of the firm on predicted leverage ratios are reported in Panel C.

Panel A	Model 1		Model 2		Model 3	
Public	-1.071***	(0.1140)	-1.331***	(0.1250)	-1.196***	(0.124)
Priv ROA	-0.835***	(0.0377)	-0.816***	(0.0379)		
Pub ROA	-0.616***	(0.1440)	-0.617***	(0.145)		
Priv Growth	0.044***	(0.0055)	0.035***	(0.0052)	0.021***	(0.0048)
Pub Growth	0.033***	(0.0119)	0.034***	(0.0119)	0.023**	(0.0105)
Priv Capex	0.212***	(0.0267)	0.188***	(0.0260)	0.136***	(0.0274)
Pub Capex	0.009	(0.0588)	-0.011	(0.0690)	-0.036	(0.0691)
Priv Tangibility	-0.177***	(0.0166)	-0.200***	(0.0169)	-0.149***	(0.0175)
Pub Tangibility	-0.039	(0.0360)	-0.004	(0.0433)	0.054	(0.0432)
Priv Size	0.004**	(0.0018)	0.007***	(0.0020)	0.009***	(0.00210)
Pub Size	0.052***	(0.0058)	0.052***	(0.0067)	0.047***	(0.00638)
Priv Short/Total			-0.127***	(0.0123)	-0.144***	(0.0131)
Pub Short/Total			0.062	(0.0416)	0.055	(0.0423)
Priv Age			-0.047***	(0.0039)	-0.049***	(0.0040)
Pub Age			0.008	(0.0137)	0.008	(0.0141)
Constant	0.558***	(0.0414)	0.745***	(0.0451)	0.643***	(0.0495)
Observations	8,092		7,999		7,999	
R-squared	0.256		0.274		0.188	
*** 1%, ** 5%, * 10%						
Panel B						
ROA	0.137		0.181			
Growth	0.424		0.908		0.849	
CPX	0.002		0.007		0.021	
Tng	0.000		0.000		0.000	
Size	0.000		0.000		0.000	
Sht to Long			0.000		0.000	
Log age			0.000		0.000	
Panel C						
Predicted Lev(Priv)	0.654		0.655		0.655	
Predicted Lev(Pub)	0.563		0.564		0.560	
Lev(Priv)>Lev(Pub)	86.6%		84.9%		91.0%	

Thus, hypothesis B2 cannot be supported by the results of the pooled OLS results. In other words, the statement “Turkish private firms’ leverage is more sensitive to operational performance when compared to public firms” cannot be accepted for the Turkish sample at hand.

Next, other variables suggested by Rajan and Zingales (1995) are focused on in the pooled panel regression. First, the coefficients of the growth variables- growth in sales and capital expenditure- are positive throughout all models. Capital expenditure is statistically significant for private firms. However, it is not significant for public firms in none of the models. In terms of coefficient magnitude, public firms’ growth in sales is higher than private firms’ growth in sales and private firms’ capital expenditures are higher compared to their public counterparts.

The statistical significance of these differences is given in Panel B. While the difference for growth in sales variable is not significant, it is significant for capital expenditures. Moreover, the statistically significant difference in capital expenditure is contrary to hypothesis B3. In summary, the pooled panel regression provides mixed results in terms of growth prospects.

Second, tangibility has a negative impact on leverage for both public and private firms in all models. As stated earlier, this result is consistent with the pecking order theory. In terms of magnitudes, the tangibility effect on leverage is more for private firms than public firms. As can be seen in Panel B of Table B-II, this difference is statistically significant. Lastly, size is positively related to both types of firms, and this relation statistically significant for all models. This is the only result that is in line with the trade-off theory for public firms. The effect of size is more sensitive for public firms and it is highly significant.

Table B- III: Determinants of Leverage: LT/ST and Public/Private

Pooled panel OLS results are reported at Panel A. Long-term leverage is the dependent variable for the first model, and short-term leverage is the dependent variable for the second one. Each X determinant interacted with public (and private) dummy are reported as Pub X (Priv X). Probability values of the test Priv X = Pub X are reported in Panel B. Total partial impact of the firm status are reported in Panel C.

	Model1LT		Model1ST	
Public	-0.012	(0.0556)	-1.060***	(0.0983)
Priv ROA	-0.170***	(0.0179)	-0.665***	(0.0340)
Pub ROA	-0.0913*	(0.0543)	-0.525***	(0.1060)
Priv Growth	0.006*	(0.0037)	0.037***	(0.0055)
Pub Growth	0.010*	(0.0052)	0.023**	(0.0107)
Priv Capex	0.075***	(0.0230)	0.137***	(0.0256)
Pub Capex	0.009	(0.0191)	0.009	(0.0504)
Priv Tangibility	0.190***	(0.0137)	-0.367***	(0.0169)
Pub Tangibility	0.194***	(0.0199)	-0.233***	(0.0329)
Priv Size	0.023***	(0.0015)	-0.019***	(0.0020)
Pub Size	0.021***	(0.0028)	0.032***	(0.0049)
Constant	-0.315***	(0.0340)	0.873***	(0.0424)
Observations	8,092		8,094	
R-squared	0.200		0.249	
*** 1%, ** 5%, * 10%				
Panel B				
ROA	0.161		0.205	
Growth	0.573		0.235	
CPX	0.014		0.024	
Tng	0.860		0.000	
Size	0.408		0.000	
Panel C				
Predicted Lev^Priv	0.121		0.530	
Predicted Lev^Pub	0.153		0.410	
Lev^Priv>Lev^Pub	27.0%		88.2%	

Overall, the results regarding growth, tangibility, and size do not give sufficient results to support hypothesis B3. It can not be concluded that private Turkish firms are less sensitive to other variables (e.g. capital expenditure, growth, and tangibility) compared to public firms. In other words, the results do not provide evidence about the sensitivity effect suggested by Brav (2009).

Lastly, coefficients of the composition of debt, as a proxy for contracting problems and age are only significant for private firms in Model 2 and 3. In other words, short-to-total debt ratio proposed by Faulkender and Petersen (2006), and the age proposed by Berger and Udell (1995) and Petersen and Rajan (2002) are not relevant factors for public firms' leverage.

Next, I established disaggregated models to understand long-term and short-term debt dynamics better. Results are given in Table B-III. First, we see an important change in level effect. In Model1ST, the public dummy is negative and highly significant.

Moreover, in Panel C, private firms' predicted short-term leverage is higher than public firms' ones more than 88.2%. So, the level effect is valid for short-term leverage. But this does not hold for long term debt. The public dummy is not significant, and values in Panel C do not exhibit a significant difference. In other words, there is no level effect in long term-leverage among public and private firms.

Lastly, I performed another robustness check for the level effect. The pooled panel regressions may experience an endogeneity problem. I aim to address endogeneity due to some unobserved time-invariant firm-specific features and perform fixed effects estimation. The results of fixed effects regressions are placed in Table B-IV.

The first column depicts the results for the entire sample. For sake of completeness, I include the results of between-firm regression in the second column. In this type of regression, only average figures over the years is included for each firm. As it is seen, both models support the level effect and hypothesis B1, thus private firms, on average, have higher leverage than their public counterparts. It can be concluded that the effect

of firm status is robust to an omitted time-invariant endogenous variable. The results again lend support to the first hypothesis about the level effect. However, there is again no support to sensitivity effect, and hypotheses B2 and B3. It cannot be stated that private firms have more sensitivity to operational performance or less sensitivity to other determinants (growth, tangibility, size).

Table B-IV: Determinants of Leverage: Fixed Effects

The coefficients in the second column are estimated based on fixed-effect estimators, and coefficients in the fourth column are between-groups estimators. Leverage is the dependent variable.

	Fixed Effect		Entire Sample Firm Specific Means	
Public	-0.499***	(0.1900)	-1.180***	(0.1450)
Priv ROA	-0.164***	(0.0232)	-1.014***	(0.0482)
Pub ROA	-0.346***	(0.0371)	-0.978***	(0.1190)
Priv Growth	0.011***	(0.0030)	0.052***	(0.0088)
Pub Growth	0.008	(0.0047)	0.087***	(0.0265)
Priv Capex	0.0267	(0.0182)	0.338***	(0.0605)
Pub Capex	0.039***	(0.0142)	-0.113	(0.1350)
Priv Tangibility	0.017	(0.0257)	-0.243***	(0.0286)
Pub Tangibility	0.026	(0.0364)	-0.038	(0.0536)
Priv Size	-0.025***	(0.0056)	-0.000	(0.0032)
Pub Size	0.005	(0.0106)	0.053***	(0.0068)
Constant	1.035***	(0.0961)	0.737***	(0.0546)
Observations	8,224		8,224	
R-squared	0.044		0.200	
Number of id	2,909		2,909	
*** 1%, ** 5%, * 10%				

4.4. Conclusions

In this essay, the systematic distinctions in capital structure choice between Turkish private and public firms are analyzed. Using relatively more up-to-date and comprehensive dataset of Turkish firms, panel data analyses are conducted with both pooled OLS and fixed effects regression techniques.

First, it is investigated whether the level effect hypothesis of Brav (2009) suits Turkish firms. According to this hypothesis, private firms have higher debt ratios than public firms do. The results derived in the present study are in support of this hypothesis. It can be concluded that Turkish private firms rely more on debt financing, have higher leverage ratios, and avoid engaging in external capital markets. Moreover, in the detailed analysis, it is found that this level effect is only valid for short-term debt, while there is no statistical difference in long-term debt levels of public and private firms.

Next, the applicability of the sensitivity effect of Brav (2009) is investigated in the context of Turkish firms' funding behavior. The first hypothesis tested states that "private firms' leverage is more sensitive to operational performance compared to public firms". The second hypothesis tested states that "private firms' leverage is less sensitive to other major determinants of leverage such as capital expenditure, growth, and tangibility". The results derived in the present study provides no supportive evidence toward either hypothesis of the sensitivity effect.

This may be an indication of the limited capacity of Turkish capital markets. Although only 485 firms (which are less than %0,1 of Turkish companies) are listed at the Borsa Istanbul, secondary offering and bond issuance activity is also very limited. Annual secondary offering and non-bank bond issuance capacity are 0,9% and 2,3% of the stock market capitalization throughout the research period. Since secondary equity offering and bond markets are not active, this may lead to lack of sensitivity effect among Turkish public firms.

Stamou et al. (2020) found supporting evidence to this argument. While comparing the financing structure of single and serial secondary equity offerings (SEOs) in the UK market, they found that “only serial SEO issuers change their debt positions when cash flow increases”. Moreover, they found that “serial SEO firms have higher leverage ratios and growth rates, but lower short-to-total debt ratios relative to single issuers”. This shows us that being a listed company is not enough to benefit from the advantages of the capital markets including the sensitivity effect, but also one should be active in secondary offerings and bond markets.

CHAPTER 5

DO TURKISH FIRMS REBALANCE THEIR CAPITAL STRUCTURE?

5.1.Introduction

In the corporate finance literature, there is a traditional opinion that “firms endeavor to sustain optimal capital structure which equilibrates the costs and returns associated with various degrees of financial leverage”. When firms have deviated from this optimum, they need to rebalance their leverage to the optimal debt ratio back again. Latest empirical studies in the capital structure framework suggest that firms essentially dynamically pursue such a financial rebalancing.

The pioneering study of Fama and French (2002), among many other studies, point out that firms’ leverage ratios adjust slowly toward target levels. In other words, a general observation about firms is that “it takes a long time to return their debt ratio to its long-run mean”. This long-run mean is referred to as the optimal level. Furthermore, Baker and Wurgler (2002) state that “historical endeavors to time equity issuances create a long-lasting effect on the capital structures of the firms”. Therefore, they reach the conclusion that “capital structures are the cumulative consequence of historical market timing endeavors”. They also defend that capital structure is not an outcome of “a dynamic optimization strategy”. Another impactful study on capital structure rebalancing by Welch (2004) finds that “shocks of equity prices have a persistent

impact on the financial structures of firms”. He concludes that stock returns are a fundamental decisive factor shaping financial structures. Overall, most of the previous studies state that shocks coming to firms’ financial structures have a long-lasting impact on their debt ratios. Baker and Wurgler (2002) and Welch (2004) interpret this finding as “evidence against firms rebalancing their debt ratios to a target debt ratio”.

Several papers have contributed to the literature providing evidence on whether trade-off or pecking-order theory explains firms’ capital structure policies. Although most studies support the trade-off theory, studies like Shyam-Sunder and Myers (1999) and Denis and McKeon (2012) suggested the pecking-order theory, where “the capital structure of the firms is determined by the firms’ financial deficit”. Firms increase their debt level in case of a financial deficit even though they are above their target levels.

There are two prominent studies that specifically focus on answering the fundamental question: “Do firms rebalance their capital structure at all?” Leary and Roberts (2005) state that “firms make an effort to return to their financial structure toward a long-run optimum once adjustment costs are taken into account”. On the other side, Chen and Zhao (2005) points out that to the detriment of which theory better designates funding decisions, rebalancing to some optimal debt ratio is a result of an accounting identity in leverage changes.

Antoniou, Güney and Paudyal (2008), being one of the first studies exploring the cross-country differences, found considerable variance of the speed of adjustment in market-based and bank-based countries. The results revealed “the presence of dynamism in the capital structure decisions in the G5 countries. Managers assess the trade-off between the cost of adjustment and the cost of being off target. Thus, the speed at which they adjust their capital structure may crucially depend on the financial systems and corporate governance traditions of each country”.

Öztekin and Flannery (2012) evaluated the adjustment speeds for 37 countries for a 16-year period. They found that “in countries with weaker institutions (impeded access to capital markets, higher information asymmetry and distress costs, limited financial

flexibility), issuing either debt or equity is more difficult, and adjustment speeds are correspondingly lower”. They concluded that “firms from countries with sound legal infrastructure, efficient capital markets, and well-established financial systems adjust to their targets as much as 50% more rapidly”.

DeAngelo and Roll (2015) investigated the long-term variation in corporate leverage ratios in a large sample of US firms. They found that “firms’ mean leverage ratios differ significantly from each other, and there is a likelihood that the mean leverage ratios themselves have time-series variation”, and they concluded that “capital structure stability is the exception, not the rule” (p. 374).

Following DeAngelo and Roll (2015), Frank and Shen (2019) found a considerable amount of variance among leverage targets in the long run. They reported that since the target is measured with significant error in the previous studies, the estimated speed of adjustment is likely to be biased toward zero. They found that “on average firms adjust their target much faster than generally understood, closing about half of the leverage gap in a year”.

He et al. (2021) extended the evidence in DeAngelo and Roll (2015) and documented “significant time-series variation in leverage ratios” in 42 developed and emerging markets over the 1998-2018 period. They concluded that “capital structure instability is the norm not only in the US, but also all around the world”. They found that “firms could have a relatively stable leverage target to pursue although the target can change over time”.

Brav (2009) is one of the few studies investigating the rebalancing of the capital structures of public and privately held firms in the UK. His study aims to present distinctions in rebalancing strategies of public and private firms. To this end, Brav (2009) tests his hypothesis by using the partial adjustment model of Shyam-Sunder and Myers (1999). He obtains two significant results: “First, private firms rely on debt much more than public firms when financing their deficit. Second, public firms adjust their leverage to a target level more quickly”.

Rabbani (2020) also found supporting evidence to Brav (2009) in the Japanese market. He found that “private firms exhibit greater persistence than public firms, and their adjustment speed is lower than public firms, reflecting the high adjustment costs of the private firms”.

Although there is a considerable number of studies about the rebalancing behavior of firms for developed markets, studies analyzing the rebalancing behavior of Turkish firms are very limited. Arioglu and Tuan (2014), Yıldız (2018) and Korkmaz and Erkol (2021) are the only three studies, which investigated the rebalancing behavior and the adjustment speed of public firms in Turkey. Supporting the trade-off theory, they all found that publicly traded firms in Turkey adjust their capital structure towards a target level. To shed light on this issue, with a comprehensive sample of both public and private Turkish firms, I aim to answer two crucial research questions related to the rebalancing behavior of Turkish companies in this essay:

1. Do Turkish firms rebalance their debt ratios to a target debt ratio?
2. Does the leverage of private firms exhibit greater persistence and lower adjustment speed?

Thus, this essay aims to test whether the results of previous studies mentioned above have an applicable account for Turkish firms as well. To answer these two research questions, a partial adjustment model is estimated following Shyam-Sunder and Myers (1999), Hovakimian et al. (2001), and Brav (2009). The econometric analysis conducted over a comprehensive Turkish firm data provides salient results about the financing and rebalancing behavior of the Turkish firms. First, it is found that Turkish firms mostly rely on debt to finance their deficits. Second, the results also indicate that Turkish firms are successful in rebalancing their financial structure to an optimal target level. Third, it is shown that private firms place much more reliance on debt compared to public firms in financing their deficits. Fourth, in contrast to Brav (2009), econometric findings suggest that Turkish public firms rebalance their debt ratios to an optimal level more slowly and exhibit more persistence compared to Turkish private

firms. Lastly, it is also found that Turkish private firms finance their deficits through increasing their short-term debt issuance while Turkish public firms do not.

The remainder of this essay proceeds as follows. Section 5.2 presents the partial adjustment model employed and introduces the empirical model and the hypotheses which are helpful in answering the research questions of this essay. Section 5.3 presents the empirical findings and discusses the results. Section 5.4 concludes.

5.2. The Partial Adjustment Model and the Empirical Methodology

The partial adjustment model is a very attractive theoretical model used by various studies in the capital structure literature (see Jalilvand and Harris (1984), Roberts (2001), Roper (2002) for explicit partial adjustment models). Following previous studies, a partial adjustment model is employed to test the hypotheses stated in the previous section.

The emergence of the partial adjustment model is a result of the violation of the “frictionless assumption”. In a frictionless world, firms always maintain their target debt level. Nevertheless, there are adjustment costs in the real world, which do not allow immediate adjustment to a firm’s target. There is a regression specification that is used to test trade-off leverage behavior that should allow each firm’s target leverage ratio to change over time and should perceive that deviations from target leverage are not coercively offset quickly. These requirements are fulfilled in a model with partial (incomplete) adjustment to a target debt ratio which relies on the characteristics of the firm at hand. It is crucial to state that if the optimum debt ratio is stable, then we would see a mean-reverting behavior.

In the present study, specifically, the partial adjustment model of Shyam-Sunder and Myers (1999) is used. The basic form of the partial adjustment model predicts that variations in the debt ratio can be explained by deviations of the current ratio from the optimal target level.

The regression specification can be written as follows:

$$\Delta D_{it} = a + b_{TA}(D_{it} - D_{it}^*) + \varepsilon_{it}$$

where D_{it}^* is the optimal target debt level for firm i at time t . b_{TA} is taken to be the target adjustment coefficient. This coefficient is a sample-wide constant. According to this simple specification, the hypothesis to be tested is $b_{TA} > 0$. This hypothesis indicates that there is an adjustment toward the target debt level. There is also an additional assumption that there are positive adjustment costs, which can be formulized as $b_{TA} < 1$.

It is stated in Shyam-Sunder and Myers (1999) that the target is not observable. There are several solutions to this problem in the literature. The first one is the most common which suggests “using the multiplication of the historical mean of the debt ratio and total capital for each firm as an estimated target debt level”. There are alternative solutions that “include a rolling target for each firm, using only historical information and an adjustment process with lags of more than one year”. In Jalivand and Harris (1994), it is stated that “the usage of a three-year moving average does not change the estimation results”.

To analyze the rebalancing behavior of Turkish firms four partial adjustment models are created. The first model is the most general one which does not take the status (private/public) and debt maturities (long/short term) of the firms into the account. The second model includes all firms with a change of long-term and short-term debt as two separate dependent variables. The third one is a more specified model, which presents the partial adjustment model by including the leverage behavior of public and private firms separately. The fourth model is the most comprehensive model, in which private and public firms’ short-term and long-term debt behaviors are investigated.

Following Brav (2009), the deficit is included as an independent variable in all four models. The main aim here is to explore how much of debt or surplus is balanced after controlling the difference between the actual and the target debt level. Moreover,

following Frank and Goyal (2003) and Brav (2009), the deficit is disaggregated to its components (Capex, Working Capital, Profit) in order to perform better tests for the hypotheses developed.

Shyam-Sunder and Myers (1999) point out that the target debt level is not observable. Therefore, this level should be estimated first. Following Hovakimian et al. (2001), target debt ratios are estimated using the predicted debt ratios (target) from the regressions provided in Chapter 3 and Chapter 4. TMA debt utilized in the models is the target-minus-actual debt normalized by total assets.

To answer the research questions mentioned above, four hypotheses are constructed and tested within the empirical models described:

C1: Turkish firms rely on debt in financing their deficits.

C2: Turkish firms rebalance their capital structure to a target level.

C3: Private firms rely on debt much more than public firms in financing their deficit.

C4: Private firms are expected to rebalance their debt ratios more slowly and show greater persistence.

5.3. Estimation Results

First, take a look at the estimation results in Table C-I. There are two regressions, where their results are placed in each column, respectively. In the first regression, the dependent variable is the change in debt ratio, and explanatory variables are deficit and TMA (target-minus-actual) debt. In the second regression, the dependent variable is again the change in debt ratio, and explanatory variables are disaggregated components of the deficit (Capex, Δ Working Capital, Profit) and the TMA debt.

In the first regression, the coefficient for the deficit is positive and highly statistically significant. This result validates the first hypothesis, i.e. hypothesis C1, which states that Turkish firms finance their deficit through debt. According to the first regression,

21.9 percent of the deficit is offset by a change in debt ratio, after controlling for the deviation between the actual and the target debt. The second regression results predict expected signs for the change in working capital and profit components of the deficit, but Capex has a negative sign which means Capex deficit is not financed through total debt.

Table C- I: Rebalancing Behavior

Partial adjustment model results are presented at the table. Change in debt ratio is the dependent variable. Deficit is capital expenditures plus change in working capital minus profits normalized by total assets. In the second column, deficit is disaggregated into its components.

	Change in Debt Ratio	Change in Debt Ratio
Deficit	0.219***	
	(0.0169)	
Capex		-0.0593***
		(0.0169)
Δ Working Capital		0.324***
		(0.0161)
Profit		-0.371***
		(0.0307)
TMA Debt	0.130***	0.122***
	(0.0138)	(0.0108)
Constant	0.004	0.033***
	(0.0095)	(0.0096)
Observations	7,973	7,973
R-squared	0.138	0.379
*** 1%, ** 5%, * 10%		

Coefficients of TMA debt in both regressions are positive and significant. This result implies that Turkish firms rebalance their capital structure to a target level. As a result, the second hypothesis, i.e. hypothesis C2, is also supported by the regression analysis.

Table C- II: Rebalancing Behavior: LT vs. ST

The dependent variable in Table C-I is decomposed into its long-term and short-term variants. The dependent variable in the first and second columns is change in the long-term debt ratio, and in the third and fourth columns it is change in the short term debt ratio. Deficit is capital expenditures plus change in working capital minus profits normalized by total assets. In the second column, deficit is disaggregated into its components.

	Change in LT Debt Ratio	Change in LT Debt Ratio	Change in ST Debt Ratio	Change in ST Debt Ratio
Deficit	0.102***		0.135***	
	(0.0113)		(0.0218)	
Capex		0.298***		-0.358***
		(0.0212)		(0.0210)
Δ Working Capital		-0.425***		0.749***
		(0.0182)		(0.0145)
Profit		-0.310***		-0.065***
		(0.0304)		(0.0247)
TMA Debt	0.027***	0.0864***	0.107***	0.036***
	(0.0103)	(0.0106)	(0.0163)	(0.0067)
Constant	0.010	0.009	-0.006	0.025***
	(0.0150)	(0.0106)	(0.0175)	(0.0081)
Observations	7,973	7,973	7,974	7,974
R-squared	0.031	0.351	0.053	0.692
*** 1%, ** 5%, * 10%				

Decomposition of deficit gives more insights about rebalancing behavior. Profit is negative and significant for both LT and ST debt, but implications for capex and working capital are different for both LT and ST debt. CAPEX deficit has a positive sign for LT debt, and a negative sign for ST debt, which means Turkish firms finance their CAPEX deficit through LT debt. On the contrary, the working capital deficit has a negative sign for LT debt, and a positive sign for ST debt, which means Turkish firms finance their working capital deficit through ST debt.

Moreover, these regressions give prominent results about the differences in speed of adjustments between short-term and long-term debts. Turkish firms' short-term debt levels adjust to their target levels much more rapidly compared to long-term debt.

Next, the regression results exploring differences among public and private firms are given in Table C-III. In this table, the last two hypotheses are tested by using the interactions of the explanatory variables in Model 1 with a dummy variable regarding the status (public/private) of the firm. Thus, one can understand the differences in rebalancing behaviors between public and private firms using these models.

To test the third hypothesis, i.e. hypothesis C3, that private firms rely on debt much more than public firms in financing their deficit, one can examine the first two regressions in the first two columns of Table C-II. Panel A shows that the coefficients for both private and public deficit variables are positive and highly statistically significant. Both types of firms rely on debt in financing their deficits. Magnitudes of the coefficients indicate that private firms use debt more than public firms when they need to fund their deficits.

This difference is tested in Panel B and found to be statistically significant at the 10% level. As a result, the significance of the third hypothesis is supported by these regressions both economically and statistically. The third column reports the results after disaggregation of deficit into its components. But, results for the disaggregated components do not support the hypothesis that private firms rely more on debt in financing their deficits.

The results in Table C-III regarding the speed of adjustment to a target level of debt are striking. According to the results, private firms' adjustment speed to a target debt level is not significantly different from public firms' adjustment speed. This result is in contradiction to the fourth hypothesis, i.e. hypothesis C4.

Table C- III: Rebalancing Behavior: Public vs. Private

Panel A reports regression coefficients from the partial adjustment model for leverage. The dependent variable is change in debt ratio. Each X determinant interacted with public (and private) dummy are reported as Pub X (Priv X). Deficit is capital expenditures plus change in working capital minus profits normalized by total assets. In the second column, deficit is disaggregated into its components.

Panel A		
	Change in Debt Ratio	Change in Debt Ratio
Priv Deficit	0.243***	
Pub Deficit	0.160***	
Priv Capex		-0.042**
Pub Capex		-0.090***
Priv Δ Working Capital		0.304***
Pub Δ Working Capital		0.414***
Priv Profit		-0.377***
Pub Profit		-0.346***
Priv TMA Debt	0.145***	0.126***
Pub TMA Debt	0.102**	0.122***
Constant	0.004	0.033***
Observations	7,973	7,973
R-squared	0.142	0.383
*** 1%, ** 5%, * 10%		
Panel B		
Deficit	0.053	
CPX		0.197
Δ Working Capital		0.048
Profit		0.681
TMA Lev.	0.294	

According to Brav (2009), private firms in the UK have lower adjustment speed and greater persistence in rebalancing their financial structure. Also, Leary and Robert (2005) draw attention that the adjustment costs faced by private firms are larger compared to public firms. Brav (2009) states that the larger the adjustment costs are the lower the adjustment speed is. Results of this current study for Turkey might be driven by the fact that Turkish private firms face similar adjustment costs compared to their public counterparts, so their adjustment speed is similar to public firms.

This, in turn, striking result relates to the results of the second essay of the present dissertation. In the second essay, it is shown that there is not any evidence supporting the existence of the sensitivity effect for the Turkish firms examined. One can say that private firms in Turkey do not rebalance their debt ratios less actively than public firms do. These two results also might be an indication of the inefficient nature of Turkish capital markets.

5.4. Conclusion

This essay investigates the rebalancing behavior of Turkish firms towards a target level of debt. To this end, the following research questions are answered:

- (i) Do Turkish firms rely on debt in financing their deficits?
- (ii) Do Turkish firms rebalance their capital structure to a target level?
- (iii) Do Turkish firms use LT or ST debt in rebalancing their capital?
- (iv) Do private firms rely on debt much more than public firms in financing their deficit?
- (v) Do private firms rebalance their debt ratios more slowly and show greater persistence?

Following Brav (2009), a partial adjustment model is constructed to provide answers to the questions empirically. The results can be summarized as follows. First, Turkish firms rely on debt in financing their deficit. Second, Turkish firms rebalance their capital structure to a target level.

Third, after controlling for the deviation between the actual and the target leverage, as the deficit of a firm increases, the amount of issued long-term (short-term) debt decreases (increases). Moreover, Turkish firms rebalance their LT and ST debt to target debt levels. In other words, there is no major difference in rebalancing behavior for LT and ST debt. Fourth, private firms' reliance on debt is higher than public firms in financing their deficits. Fifth, there is no difference in rebalancing behavior among public and private firms.

As I found strong supporting evidence for the level effect, none for the sensitivity effect in the second essay of this dissertation, in this essay I have found support for private firms' higher reliance on debt in financing their deficit, but no evidence found in support of a difference in rebalancing behavior of public and private firms.

In other words, as the pecking order theory predicts, Turkish firms rely on debt to finance their deficit, and this reliance is more for private firms. Rebalancing behavior, which is a prediction of the trade-off theory, is only valid after controlling for deficit financing, and there is no behavioral difference among public and private firms at this front.

CHAPTER 6

CONCLUSION

This dissertation has drawn on a new database of Turkish firms to investigate the determinants of capital structure and funding strategies of private and public firms. For this purpose, crucial research questions that have remained inconclusive within the previous empirical literature are answered in three consecutive essays.

In the first essay, the possible firm-level capital structure determinants of Turkish firms are explored. It is obtained that higher profitability and lower information asymmetry enable firms to be less debt oriented. Moreover, it is concluded that growth and capital expenditure of the Turkish firms, and size are positively related to their debt ratio. Additional results obtained through empirical analysis suggest that age and contracting problems negatively affect the financial indebtedness of Turkish firms. Next, the first essay also aims to build a bridge between the capital structure theories and the empirical results. In this regard, the consistency of the empirical results with trade-off and pecking order theories are tested. The empirical evidence reveals that the pecking order theory fits better to the Turkish firms in explaining the capital structure compared to trade-off theory.

In the second essay, the systematic capital structure differences among Turkish private and public firms are studied. The empirical results imply that Turkish private firms rely more on debt financing, have higher leverage ratios, and avoid engaging in external capital markets compared to their public counterparts. This result is consistent

with the level effect hypothesis of Brav (2009). Next, to validate the sensitivity effect hypothesis of Brav (2009) two hypotheses are constructed. The first hypothesis that private firms are more sensitive to operational performance (profitability) is not supported by the present empirical analysis. Also, the empirical evidence for Turkish firms does not support the second hypothesis which suggests that private firms' debt ratio is less sensitive to other major determinants of leverage such as capital expenditure, growth, and tangibility. Lack of sensitivity effect might be regarded as a by-product of a lack of support for trade-off theory for Turkish firms. Alternatively, the inefficiency of Turkish capital markets to reach external capital markets might be a reason for the lack of sensitivity effect.

In the third essay, it is investigated whether Turkish firms rebalance their leverage towards a target debt level. The empirical evidence leads that Turkish firms prefer debt in financing their deficit and are able to rebalance their capital structure to a target level. Next, in financing their deficit, private firms' reliance on debt is much higher than public firms. However, contrary to the previous literature for developed countries, there is no significant difference in the adjustment speed of public and private firms in rebalancing their debt ratios.

In addition to these empirical findings this dissertation has made a decent contribution to the empirical corporate finance literature by establishing a new and comprehensive dataset in order to understand Turkish capital structure dynamics better. Most of the datasets utilized in the previous studies suffer severe data limitations and possible risk of self-selection bias. On the other hand, since the sample in this study is randomly selected from an audited and cleaned private financial intelligence database, we may expect lower exposure to dataset problems.

Moreover, lack of sensitivity among public and private firms to the firm-level determinants of capital structure may be an indication of inefficient nature of Turkish capital markets. This may indicate that absolute cost of accessing to external capital markets are not significantly different between public and private firms. Thus, Turkish public firms would not be able to enjoy the benefits of going public properly.

Finally, all these results give important insights regarding the financial architecture and financial development level in Turkey. Turkish firms, on average, have higher leverage than their developed market counterparts. Moreover, more than 80 percent of leverage is short-term, and nearly all of the financial debt is bank loans. Given the low levels of private credit compared to OECD or EU states, these results show us that access to finance might be an important impediment to Turkish firms' growth.

To sum up, this dissertation has made one of the most generic analyses to learn more about the capital structure of Turkish firms. The results obtained in this dissertation are not only essential for the owners and managers of the Turkish public and private firms, but also for the policymakers and investors in Turkey. Considerably short time frame of dataset and lack of cross-country comparisons exploring the country-level determinants of capital structure can be named as the major limitations of this study. Further studies may explore the structural and regulatory reasons behind the capital structure differences among Turkish private and public firms.

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APPENDICES

APPENDIX A – DEFINITIONS OF THE VARIABLES

- $\text{Leverage} = \text{Total Liabilities} / \text{Total assets}$
- $\text{Short-to-Total} = \text{Short Leverage} / \text{Leverage}$.
- $\text{Net Leverage} = (\text{Leverage} - \text{Cash}) / \text{Total assets}$
- $\text{ROA}_t = \text{EBIT}_t / ((\text{Total assets}_t + \text{Total assets}_{t-1}) / 2)$.
- $\text{Growth}_t = \text{Sales}_t / \text{Sales}_{t-1}$.
- $\text{Capex} = \text{CAPEX} / \text{Total assets}$.
- $\text{Tangibility} = \text{Fixed assets} / \text{Total assets}$.
- $\text{Size} = \text{Log of total assets}$
- $\text{Net working capital} = (\text{Current Assets} - \text{Trade creditors}) / \text{Total assets}$.
- $\text{Deficit} = (\text{CAPEX} + \text{Change in Net working capital} - \text{Profits})$
- TMA Debt is the target-minus-actual debt ratio

APPENDIX B - CURRICULUM VITAE

PERSONAL INFORMATION

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EDUCATION

PhD in Finance METU Department of Business Administration, 2021
MBA METU Department of Business Administration, 2005
BS METU Department of Economics, 2003
High School Ankara Atatürk Anatolian High School, 1999

WORK EXPERIENCE

2011 – present TOBB, Deputy Secretary General
2018 – present TOGG, Finance and Investment Committee Member
2018 – present TÜRİB, Chair of the Board of Directors
2014 – 2015 G20 Turkey, B20 Sherpa
2005 – 2011 TEPAV, Economic Policy Analyst

FOREIGN LANGUAGES

English - Advanced

APPENDIX C - TURKISH SUMMARY (TÜRKÇE ÖZET)

1. Giriş

Sermaye yapısı, firmaların kuruluş aşamasında ve faaliyetlerini genişletmek için sermayelerini nasıl ve hangi kaynaklardan sağladıklarını gösteren önemli bir firma özelliğidir. Firmaların sermaye yapısı ve finansman davranışının belirleyicileri ile ilgili teorik modeller, firmaların borç-öz sermaye varlıkları hakkında belirli tahminler sağlamaktadır. Firmaların sermaye yapısı ve finansman davranışının teorik ve ampirik araştırmaları, özellikle Modigliani ve Miller'ın (1957) çalışmasından sonra kurumsal finans bilimcileri için büyük ilgi uyandırmıştır.

Literatürde yer alan çalışmalar sonucunda 1980'lerin başında, kurumsal finans literatürüne hakim olan iki temel sermaye yapısı teorik modeli ortaya çıkmıştır. Birincisi, Kraus ve Litzenberger (1973) tarafından önerilen ödünleşme teorisi, şirketlerin borcun vergi tasarrufu sağlayan faydaları ile muhtemel bir iflasın ölü ağırlık maliyetleri arasında bir denge kurduğunu belirtir. İkincisi, Jensen ve Meckling (1976) ve Myers (1977) tarafından geliştirilen finansal hiyerarşi teorisi, finansman maliyetinin asimetrik bilgi ile arttığını ve bu nedenle şirketlerin bu olumsuz seçim probleminin bir sonucu olarak dış finansmana tercih ettiğini öne sürmektedir.

Bahsedilen bu teoriler üzerine firmaların sermaye yapısı ile ilgili ampirik bir literatür ortaya çıkmıştır. Bu literatür, özetle, ülkeye özgü verileri kullanarak iki sermaye yapısı teorisinin güçlü ve zayıf yönlerini karşılaştırmayı ve karşılaştırmayı amaçlamaktadır. En eski ampirik çalışmalar Amerika Birleşik Devletleri'nde (ABD) bulunan şirketlerin sermaye yapısına odaklanırken, sonraki çalışmalar firmaların diğer ekonomilerdeki sermaye yapısı seçimlerini incelemektedir. G7 ülkeleri, Avrupa Birliği – ABD karşılaştırması, bazı gelişmekte olan ülkeler, Doğu Avrupa ülkeleri bu tür araştırmalara konu olmuştur.

Bahsedilen çeşitli ülkelere odaklanan çalışmalara rağmen, Türkiye'de faaliyet gösteren şirketlerin fonlama davranışları ve sermaye yapısı hakkında görece az şey

bilinmektedir. Çalışmaların çoğu halka açık şirketlere odaklanmakta veya ciddi veri sınırlamaları yaşamaktadır. Son zamanlarda Türkiye Merkez Bankası (TCMB) veri tabanı kullanılarak bazı yeni çalışmalar yayınlanmıştır (Çakova 2011, Köksal ve Orman 2015, Yarba ve Güner 2019a). Bu çalışmalar Türk firmalarının sermaye yapısını anlamamıza yardımcı olmasına rağmen, bu konuda hala nispeten az şey bilinmektedir. Bu çalışmalardan bazıları, ödünleşme teorisinin firmaların sermaye yapısını ve fonlama davranışını daha iyi açıkladığını iddia ederken, diğer çalışmalar finansal hiyerarşi teorisini desteklemektedir. Hangi teorisinin ampirik verileri en iyi açıkladığı tartışması Türk firmaları için de çözülmemiş durumdadır.

Bu tezde temel amacım, çeşitli kaynaklardan değişkenleri birbirine bağlayan yeni ve kapsamlı bir veri seti oluşturarak Türk firmalarının sermaye yapısı hakkındaki literatüre katkıda bulunmaktır. Türkiye'de bulunan firmaların detaylı veri setinden yararlanan bu tez, her biri Türk firmalarının sermaye yapısının farklı bir yönüne odaklanan üç denemeye Türkiye ile ilgili ampirik kurumsal finans literatürüne katkıda bulunmaktadır.

İlk denemede temel amacım, Türkiye'deki sermaye yapısının belirleyicileri hakkında mevcut literatürde kısmen yanıtlanmış olan iki önemli araştırma sorusunu yanıtlamaktır: (i) Türk şirketlerinin sermaye yapılarını ve finansman davranışını hangi faktörler belirler? (ii) Sermaye yapısıyla ilgili mevcut teoriler, Türk firmalarının finansman davranışının uygun bir açıklamasını sağlıyor mu?

Denemede, firmaların borç oranlarını büyük olasılıkla belirleyen açıklayıcı değişkenler olarak büyüklük, karlılık, somutluk (tangibility) ve büyümeyi kullanan bir panel regresyonu tasarlayarak bu sorulara bir cevap bulmaya çalışılmaktadır. Ayrıca, diğer iki önemli dinamiği anlamak için, modele borcun boyutunu ve vade kompozisyonunu (sözleşme sorunlarının bir göstergesi olarak) dahil edilmektedir. Bu ilk denemede, Türk firmaları için finansal hiyerarşi teorisini destekleyen güçlü kanıtlar bulunmuştur.

İkinci denemede, özel firmalar ile halka açık firmalar arasındaki sermaye yapısı tercihlerindeki farklılıkları daha iyi anlamak için bir araştırma yapılmaktadır. Brav (2009), halka açık ve özel firmaların finansman davranışları arasındaki farklılıkları gözden geçiren öncü bir çalışmadır. Birleşik Krallık'taki firmaların veritabanını kullanarak, hisse senedi piyasalarına erişimin, şirketlerin mali yapı seçimi ve fonlama politikası üzerindeki iki farklı etkisinin, seviye etkisinin ve duyarlılık etkisinin varlığını tespit ediyor.

İkinci denemede, halka açık ve özel firmaların finansman davranışları arasındaki farklılıkları gözden geçiren öncü bir çalışma olan, Birleşik Krallık'taki firma veritabanını kullanarak, hisse senedi piyasalarına erişimin, şirketlerin mali yapı seçimi ve fonlama politikası üzerindeki iki farklı etkisinin, seviye etkisinin ve duyarlılık etkisinin varlığını eden çalışmalar yapan Brav (2009)'u izleyerek şu soruya bir cevap vermeye çalışıyorum: Türk özel şirketlerinin sermaye yapıları ve bunlara karşılık gelen mali politikaları, halka açık muadillerinden farklı mı? İlk denemede yapıldığı gibi, bu araştırma sorusunu panel regresyon yöntemini kullanarak araştırıyorum. İkinci denemede araştırma hipotezlerini test etmek, halka açık ve özel firmalar arasındaki sermaye yapısı seçim farklılıkları hakkında çok önemli bilgiler sağlıyor.

Birincisi, literatüre paralel olarak, Türkiye'de özel şirketlerin halka açık şirketlere göre daha yüksek kaldıraç oranlarına sahip olduğu ve bu da seviye etkisini (level effect) doğruladığı görülmektedir. İkinci olarak, özel şirketlerin kaldıraç oranlarının operasyonel performans (karlılığa) daha duyarlı olduğunu ve diğer değişkenlere halka açık şirketlere göre daha az duyarlı olduğunu öngören duyarlılık etkisi test edilmektedir. Türkiye için bulgular, herhangi bir duyarlılık etkisinin varlığına destek vermemektedir. Özetle, özel firmaların halka açık firmalara göre daha yüksek kaldıraç oranlarına sahip olduğu, ancak sermaye yapısının belirleyicilerinin halka açık ve özel firmaların sermaye yapısı kararlarını benzer şekilde etkilediği sonucuna varılmaktadır.

Son deneme, daha önce detaylı olarak araştırılmayan Türk firmalarının sermaye yapısını yeniden dengeleme (capital structure rebalancing) davranışına odaklanıyor. Bu denemede, aşağıdaki soruları yanıtlanmaya çalışılıyor: Türk firmaları borç

oranlarını belirlenmiş bir hedef borç oranına göre ayarlıyor mu? Özel firmaların kaldıraçları daha fazla atalet (persistence) ve daha düşük adaptasyon hızı (lower adjustment speed) sergiliyor mu? Öncelikle bu sorular hiçbir firma sınıflandırması yapmadan Türk firmaları için cevaplanıyor. Ardından, yeniden dengeleme davranışlarındaki olası farklılıkları yakalamak için özel ve halka açık firmalarını birbirinden ayırarak bu sorular yeniden ele alınıyor.

Üçüncü denemenin hipotezlerini test etmek için Shyam-Sunder ve Myers'ın (1999) kısmi uyum modeli kullanılmaktadır. İlk olarak, Türk şirketlerinin mali açıklarını finanse etmek için borca başvurdukları sonucuna varılmaktadır. İkinci olarak, Türk firmalarının mali yapılarını optimal bir hedef seviyeye yeniden dengeledikleri sonucuna ulaşılmaktadır. Üçüncü olarak, özel firmaların borçlarını finanse etmede halka açık firmaların daha fazla borca başvurduklarını destekleyen kanıtlar bulunmaktadır. Dördüncüsü, bulgular, halka açık ve özel firmaların borç oranlarını hemen hemen aynı hızda yeniden dengelediklerini ileri sürüyor ki bu, firmaların yeniden dengeleme davranışları hakkındaki ortak ampirik kanıtlarla çelişiyor.

Bu tez, literatüre beş önemli şekilde katkıda bulunmuştur:

- Öncelikle, Türk sermaye yapısı dinamiklerini daha iyi anlamak için yeni ve kapsamlı bir veri seti oluşturulmuştur. Önceki çalışmalarda kullanılan veri setlerinin çoğu, ciddi veri sınırlamaları ve olası seçim ön yargısı (self-selection bias) riskiyle karşı karşıyadır. Öte yandan, bu çalışmadaki örneklem denetlenmiş ve ayıklanmış bir özel finansal istihbarat veri tabanından rastgele seçildiği için, veri seti sorunlarına daha az maruz kalmayı bekleyebiliriz.
- İkinci olarak, Türk sermaye yapısının firma düzeyindeki belirleyicileri ve bunların teorik çıkarımlarına ilişkin sağlam sonuçlar ilk kez rapor edilmiştir. Önceki çalışmalar karışık sonuçlar bildirmesine rağmen, finansal hiyerarşi teorisi için güçlü güçlü bulgular sunmaktadır. Satış büyümesi, büyüme fırsatları ve büyüklüğünün kaldıraç oranı ile olumlu yönde ilişkili olduğu tespit edilmektedir. Borcun karlılığı, somutluğu (tangibility), yaş (age) ve vade kompozisyonu ise kaldıraç oranını belirleyen olumsuz ilişkili faktörler olarak

rapor edilmiştir. Dahası, mali açık kontrol altına alındıktan sonra Türk firmalarının yeniden dengeleme davranışına ilişkin güçlü kanıtlar bulunmaktadır, bu da finansal hiyerarşi teorisini desteklemektedir.

- Üçüncüsü, bu çalışma özel ve halka açık Türk şirketleri arasındaki sermaye yapısı farklılıkları ve yeniden dengeleme davranışları hakkında bol miktarda kanıt sunmaktadır. Özel firmaların daha yüksek kaldıraç oranlarına sahip oldukları ve mali açıklarını finanse etmek için halka açık muadillerine kıyasla daha çok borca bel bağladıkları görülmüştür. Ayrıca, yüksek kaldıraç seviyesinin sadece kısa vadeli borçlar için geçerli olduğu, halka açık ve özel firmaların uzun vadeli borç seviyelerinde önemli bir fark olmadığı tespit edilmiştir.
- Dördüncüsü, halka açık ve özel firmalar arasında sermaye yapısının firma düzeyindeki belirleyicilere karşı duyarlılık eksikliği, Türk sermaye piyasalarının verimsiz doğasının bir göstergesi olabilir. Bu, dış sermaye piyasalarına erişimin mutlak maliyetinin halka açık ve özel firmalar arasında önemli ölçüde farklı olmadığını gösterebilir. Bu nedenle, halka açık firmalar, halka arzın faydalarından gerektiği gibi yararlanamayabilecektir.
- Son olarak, tüm bu sonuçlar Türkiye'deki finansal mimari ve finansal gelişmişlik düzeyi ile ilgili önemli bilgiler vermektedir. Ortalama olarak Türk firmaları, gelişmiş piyasalardaki emsallerinden daha yüksek kaldıraç oranına sahiptir. Ayrıca, kaldıraç oranının yüzde 80'inden fazlası kısa vadeli ve finansal borcun neredeyse tamamı banka kredisidir. OECD ülkelerine (% 144,7) veya AB ülkelerine (% 86,6) kıyasla düşük özel kredi seviyeleri (GSYİH'nin % 'si) (araştırma döneminde % 52-70) göz önüne alındığında, bu sonuçlar bize finansmana erişimin Türk firmalarının büyümesine önemli bir engel olduğunu göstermektedir.

Tez 6 bölümden oluşmaktadır. 2. bölüm, veri kaynaklarını açıklar ve kullanılan örnekleme detaylandırır. 3. bölüm, ilk denemeyi sunar ve Türk firmaları için sermaye yapısının belirleyicilerini araştırır. 4. bölüm, ikinci denemeyi sunar ve Türkiye'deki özel ve halka açık firmalar arasındaki sermaye yapısı farklılıklarını araştırır. Bu tezin

son denemesi olan 5. bölüm, Türk firmalarının sermaye yapısını yeniden dengeleme davranışına ilişkin kanıtlar sunar. Tez, 6. bölüm ile sona ermektedir.

2. İkinci Bölüm

2.1 Türkiye'deki özel ve halka açık firmalar

Türkiye'de anonim şirketler halka açık ve özel sektör olarak sınıflandırılmaktadır. Sermaye Piyasası Kanunu'na göre, borsada işlem gören tüm firmalar ve 250'den fazla hissedarı bulunan anonim şirketler halka açık kabul edilir ve halka açık firmalar Kamuyu Aydınlatma Platformunda (KAP) raporlanır. Halka açık ve özel firmaları arasındaki en önemli fark, dış pazarlardan kaynak yaratma kapasitesiyle ilgilidir. Halka açık bir şirket, menkul kıymet ihraç etme hakkına sahiptir. Türkiye'de halka açık firmaların hisseleri Borsa İstanbul'da (BİST) işlem görmektedir. Başlangıçta halka arz edilen hisseler, toplam hisselerle karşılaştırıldığında küçük olsa da, özel bir firma bir kez halka açık bir şirket haline geldiğinde, borsa daha sonra tüm firmanın değerini belirler. Ancak, halka açık firmaların aksine, özel firmaların halka hisse teklif etmesine izin verilmez.

Yukarıdaki bilgiler göz önünde bulundurularak, veri setindeki firmalar sermaye piyasasına erişimlerine göre sınıflandırılmaktadır. Bu nedenle, bir şirket borsaya kote ise halka açık bir şirket olarak nitelendirilir. Bu sınıflandırmaya göre, özel şirketler kote edilmeye uygun olmayan şirketlerdir.

2.2 Veri Kaynakları

Bu tez, Türk firmalarının çeşitli kaynaklardan toplanan en kapsamlı veri setlerinden birini kullanmaktadır. Bu veri seti, şirketlerin bilançolarını, gelir tablosu kalemlerini, ödenmemiş kredi ve kredibilite ölçülerini, ortak sayısını, kuruluş yıllarını, toplam sermaye tutarlarını, ticari kredibilite (çek) raporlarını ve NACE (Ekonomik Faaliyetlerin İsimlendirilmesi) kodlarını içermektedir.

İlk olarak bilanço ve gelir tabloları, 150 bin Türk şirketinden oluşan CRIF Türkiye veri tabanından rastgele seçilmiştir. Doğrudan veya dolaylı olarak şirketler hakkında finansal istihbarat toplayan CRIF, 220 ülkeden 400 milyondan fazla firmadan oluşan kapsamlı veri tabanıyla kredi risk yönetimi hizmetleri sunan küresel bir şirkettir.

İkinci olarak, hem özel hem de halka açık firmaların ticari kredibilite (çek) raporları, 1995 yılında dokuz büyük Türk bankasının ortaklaşa kurduğu Kredi Kayıt Bürosu'ndan (KKB) alınmıştır. Ayrıca, Türk firmalarının kredi limitleri dahil toplam kredi riskleri bankalardaki riskler de KKB'den alınmıştır.

Üçüncü olarak, bu Türk firmalarının ortak sayısı, kuruluş yılları ve toplam sermaye tutarı Türkiye Ticaret Sicili Gazetesi veri tabanından çıkarılmıştır. Türkiye Ticaret Sicili Gazetesi, Türkiye'deki firmaların ilgili işlemlerine, mahkeme kararlarına, yapısal değişikliklerine, yatırımcı eylemlerine ilişkin ilan ve duyuruları yayımlamaktadır. Gazete ayrıca iflaslarla ilgili kararları da içermektedir.

Son olarak, tüm firmaların iki ve dört haneli NACE Kodları Gelir İdaresi Başkanlığı'ndan alınmaktadır. NACE, firmaların ekonomik faaliyetlerini buna göre tanımlayan Avrupa istatistiksel sınıflandırma sistemidir. NACE kodunun ilk iki rakamı bölüm hakkında bilgi verir. Üçüncüsü, ekonomik faaliyetin grubunu tanımlar. Son olarak, dördüncü rakam sınıfı tanımlar. Firmalar KAP tarafından verilen bilgilere göre sınıflandırılmıştır.

2.3 Örneklem

Örneklem, 2012-2018 yılları arasında Türkiye'de faaliyet gösteren toplam 3.236 firmadan oluşmaktadır ve 16.630 firma-yılı verisinden oluşan bir panel veri setini içermektedir. Eksik verilerin çoğu, ilk veya son yıllardaki kaçırılan gözlemlerden kaynaklanmaktadır. Örnek firmalar, sektör ve büyüklük katmanlarına göre rastgele örnekleme ile CRIF veri tabanından alınmıştır.

2.764 firma (13.638 firma-yıllık gözlem) özeldir ve 472 firma (2.992 firma-yıllık gözlem) halka açıktır. Diğer bir deyişle, panel veri setinin yaklaşık % 82'si özel firmalardan oluşmaktadır.

Her üç makalede de ekonometrik analizlerde bağımlı değişken olarak çeşitli kaldıraç ölçüleri kullanılmıştır. Kullanılan açıklayıcı değişkenler, firmanın türü (halka açık - özel), aktif karlılığı, büyüme, sermaye harcaması, somutluk, (tangibility) büyüklük, kısa vadeli - uzun vadeli borç, firma yaşı (log age), mali açık (deficit), işletme sermayesindeki değişim, kar ve HEG'dır (Hedef-eksi -Gerçekleşen) kaldıraç (TMA (Target-minus-Actual) leverage).

3. Üçüncü Bölüm

3.1 Giriş

Bu makale, Türkiye'deki firmaların sermaye yapısının belirleyicileri hakkında iki araştırma sorusunu yanıtlamayı amaçlamaktadır:

- i) Türk şirketlerinin sermaye yapılarını ve finansman davranışını hangi faktörler belirler?
- ii) Sermaye yapısıyla ilgili mevcut teoriler, Türk firmalarının finansman davranışının uygun bir açıklamasını sağlıyor mu?

Araştırmada KOBİ'ler ve büyük firmalar, halka açık ve özel firmalar, imalat ve imalat dışı firmalar, finans ve finans dışı firmalar dahil tüm firma türlerini analiz ederek her iki soruya da cevap aranmaktadır. Yöntem olarak, ilk olarak panel regresyonunu kullanılmaktadır. Ardından, gözlemlenemeyen firma dinamiklerini hesaba katmak için sabit etki tahmini yapılmaktadır.

İlk soruyu cevaplamak için dört ana faktör seçilmiştir: Büyüme, CAPEX (büyüme beklentilerinin temsilcisi olarak), büyüklük, karlılık ve somutluk, (tangibility). Ayrıca firmanın borcunun vade kompozisyonunu sözleşme problemlerinin bir göstergesi olarak kullanılmaktadır. Son olarak, firmanın yaşını sermaye yapısını açıklayan bir faktör olarak dahil edilmektedir. Sermaye yapısının bileşimini belirlemek için, ana

modelde bağımlı değişken olarak kaldıraç kullanılmıştır. Firmaların sermaye yapısı dinamikleri hakkında daha fazla bilgi edinmek için ayrı modellerde uzun vadeli kısa vadeli kaldıraç oranlarını da dahil edilmiştir.

Birinci bulgu, literatüre uygun olarak, kaldıraç ve karlılık arasında negatif bir ilişki bulunması, bu da karlı firmaların kazançlarını yatırımları için kullanabildikleri için borca daha az bağımlı oldukları anlamına geliyor. İkinci bulgu, kaldıraç ve büyüklük arasında pozitif bir korelasyon bulunması; bu, daha çeşitli ve daha düşük temerrüt riskine sahip büyük firmaların kaldıracı kolayca artırabileceğini gösteriyor. Üçüncü bulgu, büyüme ve sermaye harcamasının kaldıraç ile pozitif bir korelasyona sahip olması, bu da büyüme firmalarının daha fazla borca ihtiyaç duyduğu anlamına gelir çünkü iç fonların yatırım fırsatlarını desteklemek için yeterli olma olasılığı düşüktür. Dördüncü olarak, kaldıraç ve somutluğun ters bir ilişkiye sahip olduğu bulunmuştur, bu da daha yüksek somutluğun öz sermaye ihracı maliyetini düşürdüğü anlamına gelir. Daha sonra literatürde olduğu gibi firmanın yaşı ile kaldıracı arasında ters bir ilişki tespit edilmektedir. Son olarak, daha kısa vadenin firmanın kaldıraç oranını olumsuz etkilediğini görülmektedir, çünkü daha kısa vade, firmaların kaldıraç artırma kapasitelerini engellediğini gösteriyor.

İkinci soruyu değerlendirmek için, mevcut sermaye yapısı teorileri arasındaki iki temel teori kullanılmıştır: Ödünleşme teorisi ve finansal hiyerarşi teorisi. Veri setini kullanarak, Türk firmalarının sermaye yapısını ve finansman davranışını anlamak üzere ödünleşme ve finansal hiyerarşi teorisinin bir karşılaştırması yapılmaktadır. Bulgular gösteriyor ki, finansal hiyerarşi teorisi, Türk firmalarının sermaye yapılarının ödünleşme teorisinden daha iyi bir tanım sağlıyor. Özellikle Türk firmalarının kaldıraç oranının yüzde 80'den fazlasını oluşturan kısa vade kaldıracı için tüm belirleyiciler finansal hiyerarşi teorisini desteklemektedir.

3.2 Sermaye Yapısı Teorileri

Firmaların belirlemesi gereken temel konulardan biri, sermaye yapılarının nasıl olacağıdır. Bu zorlu soru yıllar içinde büyük ilgi görmüştür. Kurumsal finans

literatüründe, şirketlerin sermaye yapısını ve finansman kararlarını açıklamaya çalışan üç ana sermaye yapısı teorisi öne çıkmaktadır: (i) Modigliani-Miller Teoremi, (ii) Ödünleşme teorisi ve (iii) Finansal Hiyerarşi Teorisi. Bu kısımda teorilere ilişkin detaylı bilgilere yer verilmektedir.

3.3 Sermaye Yapısı Hipotezleri

Bu bölümde, veri seti kullanılarak firmaların sermaye yapısının belirleyicileri hakkındaki ana hipotezleri araştırılmaktadır. Kaldıraç ölçüleri ile çeşitli belirleyiciler arasındaki ilişkiler hakkındaki hipotezler, ödünleşme ve finansal hiyerarşi teorilerinin yardımıyla geliştirilmiştir.

Bu kısımda, Türk firmalarının finansman davranışının ve sermaye yapısının ödünleşme teorisine mi yoksa finansal hiyerarşi teorisine mi uygun olduğunu belirlemeye çalışılmıştır.

3.4 Türk Firmalarının Sermaye Yapısına İlişkin Ampirik Çalışmalar

İlk çalışmalar (Aydın vd., 2006; Sayılğan vd., 2006; Yıldız vd., 2009; Demirhan, 2009; Okuyan ve Taşçı, 2010) daha çok halka açık firmalara ve veri kısıtlamaları olan imalatçı firmalara odaklanmış olsa da, geçen on yıl bize Türkiye'deki sermaye yapısı hakkında daha fazla ipucu vermiştir.

Bayrakdaroğlu (2011), 2000-2009 yılları arasında BİST'te listelenen 242 halka açık firmanın verilerini kullanarak test etmiş ve Türk firmalarının finansman davranışının çoğunlukla ödünleşme teorisinden ziyade finansal hiyerarşi teorisini izlediğini tespit etmiştir. Bayrakdaroğlu'nun bulguları ayrıca halka açık firmaların bir hedef kaldıraç oranına sahip olmadığını da göstermektedir.

Cakova (2011), 1998-2008 yılları arasında imalat sektöründe faaliyet gösteren Türk KOBİ'lerinin sermaye yapısı tercihlerini 44.029 firma yılı gözlemiyle inceleyerek finansal hiyerarşi teorisi lehine güçlü kanıtlar bulmuştur.

Acaravcı (2015) 1993-2010 döneminde imalat sektöründe faaliyet gösteren 79 firmanın verilerini kullanarak, kaldıraç değişkenlerini açıklamada büyüme fırsatları, büyüklük, karlılık ve somutluğun önemli faktörler olduğunu bulmuştur. Yine Acaravcı, her iki teoriyi de kısmen destekleyen kanıtlar bulduğu için, ödünleşmenin geçerliliği ve finansal hiyerarşi teorilerinin geçerliliği konusunda da karışık sonuçlara ulaşmıştır.

Köksal ve Orman (2015), 1996-2009 döneminde Türkiye'de hem imalat hem de imalat dışı sektörlerde faaliyet gösteren halka açık ve özel şirketleri dikkate alarak TCMB veri tabanını her yıl ortalama 9.000 firma ile kullanarak “ödünleşme teorisinin, tüm firma türlerinin sermaye yapıları için finansal hiyerarşi teorisinden daha iyi bir tanımını sağladığı” sonucuna varmışlardır (Köksal ve Orman, 2015).

Güner (2016), ödünleşme ve finansal hiyerarşi teorilerinin ortaya koyduğu öngörülerini karşılaştırmak için 2008-2014 dönemine ait toplam 131 Türk finansal olmayan halka açık şirketin firma düzeyindeki verilerini incelemiş ve “finansal hiyerarşi teorisi Türk firmalarının sermaye yapısını daha iyi tanımlasa da bazı sermaye yapısı belirleyicilerinin ödünleşme teorisine uygun olduğunu” belirtmiştir. (Güner, 2016).

Konu üzerinde daha fazla literatür bulunmakta olup 3.4 nolu bölümde detaylara yer verilmektedir.

3.5 Veri, Yöntem ve Bulgular

Bu yazıda, örneklem, 2012-2018 yılları arasında Türkiye'de faaliyet gösteren rastgele seçilmiş toplam 3.236 firmadan oluşmakta olup, 16.630 firma-yılı verisinden oluşan bir panel veri setini içermektedir. Tüm firma büyüklükleri (küçük, orta ve büyük), halka açık ve özel şirketler, imalat ve imalat dışı sektörler, mali ve mali olmayan firmalar örnekleme yer almaktadır.

Firmalar hakkında özet istatistiklere bakacak olursak; Türk firmaları ortalama olarak yüksek kaldıraç oranına sahiptir ve kaldıraç oranları çok kısa vadelidir. Kaldıraç için

ortalama ve medyan deęerleri sırasıyla % 62,8 ve % 67,4'tür. Bu rakamlar ortalama olarak gelişmiş ülkelerden daha yüksektir (Rajan ve Zingales 1998, Brav 2009).

Ayrıca, kısa vadeli kaldıraç oranının ortalama ve medyan rakamları sırasıyla % 81,4 ve % 91,1'dir, bu da Türk firmalarının faaliyetlerini ağırlıklı olarak kısa vadeli kredilerle finanse ettikleri anlamına gelmektedir. İlginçtir ki, kaldıraç oranı açısından küçük ve büyük firmalar arasında bir fark yok gibi görünse de, küçük firmalar ortalama olarak büyük firmalardan daha yüksek kısa vadeli kaldırıca sahiptir. Net kaldıraç (kaldıraç eksi nakit) ile ilgili olarak, ortalama ve medyan rakamlar sırasıyla % 54,5 ve % 60,1'dir ve küçük ve büyük firmalar arasında fark yok gibi görünmektedir.

İkinci olarak, ortalama ve medyan karlılık (ROA) rakamları sırasıyla % 9.0 ve % 6.9'dur. ortalama olarak en küçük firmalar, en büyük firmalardan daha az kârlıdır. Üçüncüsü, satış büyümesine baktığımızda, ortalama ve medyan büyümeler sırasıyla % 28,3 ve % 17,0 ve büyüme performansı açısından küçük ve büyük firmalar arasında bir fark görünmemektedir.

Son olarak, tüm örneklem, en küçük firmalar ve en büyük firmalar için ortalama nakit oranının sırasıyla % 8,4, % 8,8 ve % 9,1 olduğuna dikkat edilmelidir. Firmalar büyüdükçe, nakitlerini çeşitli yatırım fırsatlarına dönüştürmek daha kolay olduğundan, nakit tutma eğilimlerinin azalması beklenebilir. Ancak bu Türk firmaları için geçerli görünmemektedir.

Yöntem olarak üç model kullanılmıştır. Model 1, sermaye yapısı literatüründe yaygın olarak kullanılan dört ana olası kaldıraç oranı belirleyicisini içermektedir: (i) Büyüklük, (ii) Somutluk (Tangibility), (iii) büyüme ve (iv) karlılık. Model 2, sözleşme sorunlarını (contracting problems) değerlendirebilmek için oluşturulmuştur. Bir firmanın borcunun vade bileşimi, sözleşme sorunları için bir araç olarak kullanılmıştır. Model 2, ayrıca, kaldıraç oranının bir belirleyicisi olarak bir firmanın yaşını da modele dahil eder. Son olarak Model 3, karlılık değişkenini regresyondan hariç tutmaktadır. Bu dışlamanın sebebi, firmanın kaldıraç oranını pasif bir şekilde optimum hedef seviyesinden uzaklaştırmasıdır. Modeller ayrıca, zaman ve endüstri için sonuçları

kontrol etmek için yıl ve iki basamaklı NACE kodu kukla değişkenlerini içerir. Ayrıca, uzun vadeli ve kısa vadeli borç dinamikleri hakkında daha fazla bilgi edinmek için, Model 1, bağımlı değişkenler olarak uzun vadeli kaldıraç (Model 1L) ve kısa vadeli kaldıraç (Model 1S) için ayrıca oluşturulmuştur.

Sonuç olarak, firmalarının Finansal Hiyerarşi Teorisini izlediklerini söylenebilmektedir. Büyüklük, aynı zamanda Ödünleşme Teorisi ile tutarlı olmasına rağmen, aynı zamanda Finansal Hiyerarşi Teorisinin bilgi asimetrisi argümanını da desteklemektedir. Ayrıca, firmaların kaldıraç oranının yüzde 80'inden fazlasını tehlikeye atan kısa vadeli borçlar için, tüm açıklayıcı değişkenler Finansal Hiyerarşi Teorisinin tahminleriyle tutarlıdır.

3.6 Sonuç

Bu bölümde Türk firmalarının sermaye yapısının belirleyicileri araştırılmıştır. Türkiye odaklı önceki çalışmalara kıyasla çeşitli kaynaklardan elde edilen yeni ve kapsamlı veri setinin yardımıyla, Türk firmalarının sermaye yapısının belirleyicileri ve bunların iki temel sermaye yapısı teorileriyle ilişkisi ile ilgili iki araştırma sorusunu yanıtlanmıştır.

Türk firmalarının sermaye yapısının belirleyicileri ile ilgili olarak aşağıdaki sonuçlar elde edilmiştir. Birincisi, karlı firmalar kazançlarını yatırım için kullanırlar ve borca daha az güvenirler. İkincisi, firmalar büyüdükçe, iç fonlar yatırım fırsatlarını desteklemek için yeterli olamayacak ve firmalar daha fazla borca bel bağlayacaktır. Bu iki özellik hem kısa vadeli hem de uzun vadeli borç dinamikleri için geçerlidir.

Üçüncüsü, somutluğun (tangibility) uzun vade borcu ile pozitif bir ilişkisi varken, kısa vade borcu ile negatif bir korelasyon vardır. Maddi varlıkların teminatlandırılması daha kolay olduğundan, bu uzun vade borcunda bir artışa yol açacaktır. Öte yandan, daha yüksek somutlukla (tangibility) ilişkili düşük bilgi asimetrisi, hisse senedi ihraç etme maliyetini düşürerek hem kısa vade borç seviyesini hem de firmaların genel kaldıraç oranını düşürür.

Dördüncüsü, daha büyük firmalar daha düşük olumsuz seçimle karşı karşıyadır ve maliyetli kısa vade borcu yerine daha kolay öz sermaye çıkarabilir. Öte yandan, daha çeşitli olduklarından ve daha düşük temerrüt riskine sahip olduklarından, daha fazla uzun vade borcunu artırabilir ve genel kaldıraç oranlarını artırabilirler.

Beşincisi, bir firmanın yaşı ve kaldıraç oranı, firmalar yaşlandıkça, hisse senedi piyasasındaki yatırımcılara aşına hale geldiklerinden, negatif olarak ilişkilidir. Son olarak, borcun vade kompozisyonu tarafından temsil edilen sözleşme sorunu, bir firmanın kaldıraç oranını olumsuz yönde etkiler.

Türkiye örneğindeki ödünleşmenin geçerliliği ve finansal hiyerarşi teorileri ile ilgili olarak, farklı modellerden elde edilen kanıtlar toplanmıştır. Sonuçlar, finansal hiyerarşi teorisinin, Türk firmalarının finansman davranışını açıklamada ödünleşme teorisinden daha uygun bir çerçeve koruduğuna dair kanıt sağlamaktadır. Yani, Türk firmalarının en az direniş yolunu kullanarak finansman stratejilerine öncelik verdiği sonucuna varılabilir. İlk tercih edilen yöntem iç finansmandır. Bunu borç takip eder. Son çare olarak, Türk firmaları öz sermaye finansmanını kullanıyor.

4. Dördüncü Bölüm

4.1 Giriş

Özel şirketler, Türkiye ekonomisinde sınai faaliyet alanında büyük bir paya sahiptir. Yine de özel ve halka açık firmalar arasındaki finansman davranışındaki farklılık hakkında çok az şey bilinmektedir. Türk firmalarının sermaye yapılarını araştıran ampirik çalışmaların çoğu, veri mevcudiyeti nedeniyle halka açık firmalara odaklanmaktadır.

Brav (2009)'a paralel olarak, bu denemede, ödünleşme teorisi ve finansal hiyerarşi teorisi öngörülleri hakkında bir sınıflandırma yapılmakta ve bunlar iki kategoriye ayrılmaktadır: (i) *Seviye Etkisi* ve (ii) *Duyarlılık Etkisi*. Bu iki kategori, bu çalışmanın temelini oluşturmaktadır.

Özellikle, seviye etkisi, özel firmaların öz sermaye maliyetinin halka açık firmalarına kıyasla borç sermayesine göre daha yüksek olmasından kaynaklanan sonuçlar olarak tanımlanır. Duyarlılık etkisi, özel firmaların halka açık firmalara kıyasla dış sermaye piyasalarına erişiminin daha yüksek mutlak maliyetinden kaynaklanan sonuçları ifade eder. Bu nedenle, özel firmaların dış sermaye piyasalarını (sermayeyi artırmak veya emekliye ayırmak için) halka açık firmalardan daha az ziyaret etmesi beklenmektedir.

Bu yazıda, seviye etkisinin yukarıda bahsedilen sonuçlarının her birini ve duyarlılık etkisini test etmek için ampirik analiz yapılmaktadır. Sonuç olarak Türkiye'deki özel firmaların halka açık firmalardan daha yüksek kaldıraç oranlarına sahip olduğunu görülmektedir. Sonuç Brav (2009)'da yer alan seviye etkisi ile tutarlıdır. Ancak, Türk firmaları için duyarlılık etkisinin analizi, Brav (2009) 'un bulgularını desteklememektedir. Halka açık firmalarının kaldıraç oranının operasyonel performansa veya diğer değişkenlere daha duyarlı olduğu hipotezi, bu çalışmada kullanılan örneklemin altında tutulmamaktadır. Dolayısıyla duyarlılık etkisi Türk firmaları tarafından desteklenmemektedir.

4.2 Sermaye Maliyeti ve Finans Politikası Hipotezleri

Seviye etkisi, öz sermayenin borca göre nispi maliyetinin özel firmalar için halka açık firmalardan daha yüksek olması nedeniyle, özel firmaların halka açık firmalara göre borç finansmanına daha fazla güveneceğini belirtir. Bu etki, özel firmaların kaldıraç seviyesinin halka açık şirketlere göre daha yüksek olduğu sonucuna sahiptir.

Duyarlılık etkisi, özel ve halka açık şirketleri arasındaki dış sermaye piyasası farklılıklarına erişimin mutlak maliyetinden kaynaklanmaktadır. Bu etki, özel firmaların, halka açık firmalara kıyasla dış sermaye piyasalarını ziyaret etme olasılıklarının daha düşük olduğu sonucuna sahiptir. Duyarlılık etkisinin bir başka sonucu da, halka açık ve özel firmaların finansal politika hassasiyetlerinin firmaya özgü olası değişkenlere karşı farklılığıdır.

Seviye etkisi ile ilgili hipotez aşağıdaki gibi oluşturulmuştur:

B1: Özel Türk firmalarının halka açık Türk firmalarından daha yüksek borç oranları var.

Duyarlılık etkisinin varlığını test etmek için iki hipotez aşağıdaki gibi oluşturulmuştur:

B2: Halka açık firmalarla karşılaştırıldığında, Türkiye'de özel firmaların kaldıraç gücü operasyonel performansa (karlılık) karşı daha hassastır.

B3: Halka açık firmalarla karşılaştırıldığında, özel firmaların kaldıraç oranları diğer değişkenlere (CAPEX, büyüme, somutluk) daha az duyarlıdır.

4.3 Veri, Yöntem ve Bulgular

Örneklem, 2012'den 2018'e kadar 2.764'ü özel ve 472'si halka açık olmak üzere toplam 3.236 firma içermektedir. Panel veri seti 13.638 özel, 2.992 halka açık firma yılı gözleminden oluşmaktadır. Daha önce bahsedildiği gibi, örneklemimizdeki gözlemlerin % 82'si özeldir.

Özet istatistiklere bakacak olursak; Türkiye'deki halka açık ve özel firmaların sermaye yapısı ve mali politikalarında dikkate değer farklılıklar ortaya koymaktadır. İlk olarak, firmaların borç-öz sermaye bileşimine daha yakından bakın. Seviye etkisiyle tutarlı olarak, borç oranlarında büyük bir fark vardır. Özel firmaların borç oranı ortalama % 64,5 iken, halka açık firmaların borç oranı ortalama % 55,3'tür. Halka açık firmaların borç oranının da oldukça yüksek olduğuna dikkat etmek önemlidir. Net kaldıraç oranlarında da önemli bir fark var. Özel firmaların net kaldıraç oranı ortalama % 56,4 iken, halka açık firmaların net kaldıraç oranı ortalama % 45,4'tür.

Özel ve halka açık firmalar arasında kısa vadeli toplam borç oranlarına ilişkin olarak da bir fark vardır. Özel firmaların ortalama ve medyan kısa vadeli borç oranları sırasıyla % 83,4 ve % 94'tür. halka açık firmalara karşılık gelen değerler % 72,2 ve % 77,4'tür.

Toplam varlıklar açısından, halka açık firmaların ortalama ve medyan değerleri özel firmalarınkinden daha büyüktür. Halka açık firmalar ve özel firmaların satış cirosunda

da önemli bir fark var. Özel firmaların ortalama ve medyan log satış ciroları sırasıyla 17,1 ve 16,9'dur. Halka açık firmalara karşılık gelen değerler 19,2 ve 19,2'dir. Halka açık firmaların ortalama olarak özel firmalardan daha büyük olduğu sonucuna varılabilir.

Özel firmaların ortalama sermaye harcaması, halka açık firmalarınkinden daha yüksektir. Büyüme performansı açısından, özel ve halka açık firmalar için rakamlar çok benzer. Özel firmaların ortalama ve medyan büyüme oranları sırasıyla % 28,6 ve % 17,4'tür. Halka açık firmalara karşılık gelen değerler % 27,2 ve % 15,7'dir.

Daha sonra, karlılık ölçüsü olan varlık getirisinin (ROA) özel firmalar için daha büyük olduğuna dikkat edilmelidir. Özel firmaların ortalama ve medyan ROA oranları sırasıyla % 9,4 ve % 7,1'dir. Halka açık firmalara karşılık gelen değerler % 7,4 ve % 5,9'dur. Bu değerler, özel firmaların varlıkları satın almak için kullanılan parayı kara dönüştürmek için daha verimli olduklarını ifade eder.

Nakit varlıkları açısından, özel firmaların ortalama ve medyan nakit toplam aktiflere oranı % 8 ve % 3,6 iken, halka açık firmalara karşılık gelen rakamlar % 10 ve % 4,9'dur. Bu sonuçlar, nakit yönetimindeki ölçek ekonomileriyle çelişmekte ve bu da halka açık firmaların toplam varlıklarının bir yüzdesi olarak daha az nakit tutma eğiliminde olduklarını öngörüyor. Son olarak, beklendiği gibi, halka açık firmalar özel firmalardan daha yaşlıdır.

Yöntem olarak, açıklayıcı değişkenler, önceki bölümdeki ile aynıdır. İlk modelde, kârlılık, büyüme, sermaye harcaması, somutluk (tangibility) ve büyüklük, kaldıraç ana belirleyicileri olarak modele dahil edilmiştir. İkinci modelde, ilk modele sözleşme sorunlarını (kısa-toplam borç oranı) ve firmaların yaşını yakalayan değişkenler eklenmiştir. Üçüncü modelde, önceki bölümde açıklanan benzer mantıkla karlılık modelin dışında tutulmuştur. Ayrıca, halka açık ve özel firmalar arasındaki kaldıraç oranlarının ortalama farklılıklarını belirlemek için her üç modele de açıklayıcı bir değişken olarak halka açık kukla değişkeni dahil edilmiştir.

4.4 Sonuç

Çalışmada elde edilen sonuçlar “Özel Türk firmalarının halka açık Türk firmalarından daha yüksek borç oranları var.” hipotezini desteklemektedir. Türk özel firmalarının borç finansmanına daha çok güvendikleri, daha yüksek kaldıraç oranlarına sahip oldukları ve dış sermaye piyasalarına girmekten kaçındıkları sonucuna varılabilir. Ayrıca detaylı analizde, bu seviye etkisinin sadece kısa vadeli borçlar için geçerli olduğu, halka açık ve özel firmaların uzun vadeli borç düzeylerinde istatistiksel bir fark olmadığı ortaya çıkmıştır.

Çalışmada elde edilen sonuçlar “Halka açık firmalarla karşılaştırıldığında, Türkiye’de özel firmaların kaldıraç gücü operasyonel performansa (karlılık) karşı daha hassastır.” ve “Halka açık firmalarla karşılaştırıldığında, özel firmaların kaldıraç oranları diğer değişkenlere (CAPEX, büyüme, somutluk) daha az duyarlıdır.” hipotezlerini desteklememektedir. Bu, Türk sermaye piyasalarının sınırlı kapasitesinin bir göstergesi olabilir. Borsa İstanbul’da sadece 485 firma (Türk şirketlerinin % 0,1’inden az) işlem görmesine rağmen ikincil halka arz ve tahvil ihraç faaliyeti de oldukça sınırlıdır. Araştırma dönemi boyunca yıllık ikincil arz ve banka dışı tahvil ihraç kapasitesi hisse senedi piyasası kapitalizasyonunun % 0,9’u ve % 2,3’üdür. İkincil hisse senedi arzı ve tahvil piyasaları aktif olmadığından, bu halka açık firmalar arasında hassasiyet etkisinin olmamasına yol açabilir. Stamou vd. (2020) bu argümanı destekleyici kanıtlar bulmuştur. İngiltere pazarındaki tek ve seri ikincil hisse senedi arzlarının (İHSA’lar) finansman yapısını karşılaştırırken, nakit akışı arttığında yalnızca seri İHSA ihraççıların borç pozisyonlarını değiştirdiğini buldular. Dahası, seri İHSA firmalarının daha yüksek kaldıraç oranlarına ve büyüme oranlarına sahip olduğunu, ancak tek ihraççılara göre kısa-toplam borç oranlarının daha düşük olduğunu bulmuşlardır. Bu da bize gösteriyor ki, sermaye piyasalarının duyarlılık etkisi dahil avantajlarından yararlanmak için borsaya kote bir şirket olmak yeterli değil, aynı zamanda ikincil arzlar ve tahvil piyasalarında da aktif olunması gerekiyor.

5. Beşinci Bölüm

5.1 Giriş

Kurumsal finans literatüründe, firmaların çeşitli derecelerde finansal kaldıraçla ilişkili maliyetleri ve getirileri dengeleyen optimal sermaye yapısını sürdürmeye çalıştıklarına dair geleneksel bir görüş vardır. Firmalar bu optimumdan saptığında, kaldıraçlarını tekrar optimum borç oranına yeniden dengelemeleri gerekir. Sermaye yapısı çerçevesindeki en son ampirik araştırmalar, firmaların esasen dinamik olarak bu tür bir finansal yeniden dengeleme peşinde koştuğunu göstermektedir.

Firmaların gelişmiş pazarlar için yeniden dengeleme davranışları ile ilgili önemli sayıda çalışma olmasına rağmen, Türk firmalarının yeniden dengeleme davranışını analiz eden çalışmalar oldukça sınırlıdır. Türkiye'deki halka açık firmaların yeniden dengeleme davranışını ve uyum hızını araştıran sadece üç çalışma vardır. (Arioğlu ve Tuan (2014), Yıldız (2018) ve Korkmaz ve Erkol (2021)). Ödünleşme teorisini destekleyerek, hepsi Türkiye'de halka açık firmaların sermaye yapılarını bir hedef düzeye ayarladığını tespit etmişlerdir. Bu çalışmada konuya ışık tutmak için, hem halka açık hem de özel Türk firmalarından oluşan kapsamlı bir örnekleme, bu yazıda Türk şirketlerinin yeniden dengeleme davranışına ilişkin iki önemli araştırma sorusunu yanıtlamayı hedefliyorum:

1. Türk firmaları borç oranlarını hedef borç oranına göre yeniden dengeliyor mu?
2. Özel firmaların kaldıraçları daha fazla kalıcılık ve daha düşük uyum hızı sergiliyor mu?

Bu nedenle, bu makale yukarıda bahsedilen önceki çalışmaların sonuçlarının Türk firmaları için de geçerli bir sonuca sahip olup olmadığını test etmeyi amaçlamaktadır. Kapsamlı bir veri seti üzerinden yaptığım analiz, Türk firmalarının finansmanı ve yeniden dengeleme davranışları hakkında çarpıcı sonuçlar vermektedir.

Birinci olarak, Türk firmalarının açıklarını finanse etmek için çoğunlukla borca güvendikleri bulunmuştur. İkinci olarak, sonuçlar Türk firmalarının mali yapılarını optimal bir hedef seviyeye yeniden dengelemede başarılı olduklarını da göstermektedir. Üçüncü olarak, özel firmaların açıklarını finanse etmede halka açık firmalara kıyasla borca çok daha fazla bel bağladıkları gösterilmiştir. Dördüncü olarak, Brav (2009)'un aksine, bulgular Türk halka açık firmaların borç oranlarını daha yavaş bir şekilde optimal seviyeye yeniden dengelediğini ve Türk özel firmalarına kıyasla daha fazla ısrarlı olduklarını göstermektedir. Son olarak, özel firmaların açıklarını kısa vadeli borç ihraçlarını artırarak finanse ettikleri, halka açık firmaların ise finanse etmediği tespit edilmiştir.

5.2 Kısmi Uyum Modeli ve Ampirik Yöntem

Kısmi uyum modeli, sermaye yapısı literatüründe çeşitli çalışmalar tarafından kullanılan bir teorik modeldir (açık kısmi uyum modelleri için bkz. Jalilvand ve Harris (1984), Roberts (2001), Roper (2002)). Önceki çalışmaları takiben, bir önceki bölümde belirtilen hipotezleri test etmek için kısmi uyum modeli kullanılmıştır.

Türk firmalarının yeniden dengeleme davranışını analiz etmek için dört kısmi uyum modeli oluşturulmuştur. İlk model, firmaların statülerini (özel / halka açık) ve borç vadelerini (uzun / kısa vadeli) hesaba katmayan en genel modeldir. İkinci model, iki ayrı bağımlı değişken olarak uzun vadeli ve kısa vadeli borçları değişen tüm firmaları içerir. Üçüncüsü, halka açık ve özel firmaların kaldıraç davranışlarını ayrı ayrı dahil ederek kısmi uyum modelini sunan daha spesifik bir modeldir. Dördüncü model, özel ve halka açık firmaların kısa vadeli ve uzun vadeli borç davranışlarının incelendiği en kapsamlı modeldir.

Yukarıda bahsedilen araştırma sorularını cevaplamak için dört hipotez oluşturulmuş ve test edilmiştir:

C1: Türk firmaları açıklarını finanse ederken borca güvenir.

C2: Türk firmaları sermaye yapılarını hedef seviyeye yeniden dengeliyor.

C3: Özel şirketler, açıklarını finanse etmede halka açık şirketlerden çok borca güveniyorlar.

C4: Özel firmaların borç oranlarını daha yavaş yeniden dengelemeleri ve daha fazla ısrar göstermeleri bekleniyor.

5.3 Tahmin Sonuçları

Bu kısımda tahmin sonuçları tablolarda detaylıca belirtilmiştir. (Tablo C-I, C-II, C-III)

Sonuçlar “Türk firmaları açıklarını finanse ederken borca güvenir.” hipotezini desteklemektedir.

Sonuçlar “Türk firmaları sermaye yapılarını hedef seviyeye yeniden dengeliyor.” hipotezini desteklemektedir.

Sonuçlar “Özel şirketlerin finansal açıklarını finanse ederken halka açık şirketlere göre daha çok borç aldıkları” hipotezini desteklemektedir. Ayrıca, bulgular “Türk firmaları sermaye yapılarını hedef seviyeye yeniden dengeliyor.” hipotezini desteklememektedir.

5.4 Sonuç

Bu araştırma, Türk firmalarının hedeflenen bir borç düzeyine doğru yeniden dengeleme davranışını incelemektedir. Bu amaçla aşağıdaki araştırma soruları yanıtlanmaktadır:

- (i) Türk firmaları açıklarını finanse ederken borca mı güveniyor?
- (ii) Türk firmaları sermaye yapılarını hedef seviyeye yeniden dengeliyor mu?
- (iii) Türk firmaları sermayelerini yeniden dengelemek için uzun vadeli veya kısa vadeli borç kullanıyor mu?
- (iv) Özel şirketler, açıklarını finanse etmede halka açık şirketlerden daha mı çok borca güveniyor?
- (v) Özel firmalar borç oranlarını daha yavaş yeniden dengeliyor mu ve daha fazla ısrar mı gösteriyor?

Brav (2009)'ı takip ederek, sorulara ampirik olarak cevap vermek için kısmi bir uyum modeli oluşturulmuştur. Sonuçlar aşağıdaki gibi özetlenebilir. Birincisi, Türk firmaları açıklarını finanse etmek için borca güvenmektedirler. İkincisi, Türk firmaları sermaye yapılarını hedef seviyeye göre yeniden dengelemektedir.

Üçüncüsü, fiili ve hedef kaldıraç arasındaki sapmayı kontrol ettikten sonra, bir firmanın açığı arttıkça, ihraç edilen uzun vadeli (kısa vadeli) borç miktarı azalır (artar). Dahası, Türk firmaları uzun vade ve kısa vade borçlarını borç seviyelerini hedefleyecek şekilde yeniden dengelemektedir. Diğer bir deyişle, uzun vade ve kısa vade borcu için yeniden dengeleme davranışında büyük bir fark yoktur. Dördüncüsü, açıklarını finanse etmede özel firmaların borca bel bağlaması halka açık firmalardan daha yüksektir. Beşinci olarak, halka açık ve özel firmalar arasında yeniden dengeleme davranışında bir fark yoktur.

Seviye etkisi için güçlü destekleyici kanıtlar bulduğum için, bu tezin ikinci denemesinde duyarlılık etkisi için hiçbir şey bulunamamıştır, bu denemede özel firmaların açıklarını finanse etmede borca daha fazla güvenmeleri için bulgulara ulaşılmıştır. Ancak özel ve halka açık firmaların yeniden dengeleme davranışındaki farklılığı destekleyecek bulguya ulaşamamıştır.

Diğer bir deyişle, finansal hiyerarşi teorisinin öngördüğü gibi, Türk firmaları açıklarını finanse etmek için borca güvenmekte ve bu güven daha çok özel firmalarda daha fazla olmaktadır. Ödünleşme teorisinin bir öngörüsü olan yeniden dengeleme davranışı, ancak açık finansmanı kontrol edildikten sonra geçerli olmaktadır ve bu tarafta halka açık ve özel firmalar arasında davranışsal fark yoktur.

6. Altıncı Bölüm

Sonuç

Bu tez, özel ve halka açık firmaların sermaye yapısı ve finansman stratejilerinin belirleyicilerini araştırmak için Türk firmalarının yeni bir veri tabanından

yararlanmaktadır. Bu amaçla, önceki ampirik literatürde sonuçsuz kalan önemli araştırma soruları, birbirini izleyen üç denemede yanıtlanmıştır.

İlk denemede, Türk firmalarının olası firma düzeyinde sermaye yapısı belirleyicileri incelenmiştir. Daha yüksek karlılık ve daha düşük bilgi asimetrisinin firmaların daha az borç yönelimli olmalarını sağladığı ortaya çıkmıştır. Ayrıca, Türk firmalarının büyüme ve sermaye harcamaları ve büyüklüklerinin borç oranları ile pozitif yönde ilişkili olduğu sonucuna varılmıştır. Ampirik analiz yoluyla elde edilen ek sonuçlar, yaş ve sözleşme sorunlarının Türk firmalarının finansal borçlarını olumsuz etkilediğini göstermektedir. İlaveten, ilk makale aynı zamanda sermaye yapısı teorileri ile ampirik sonuçlar arasında bir köprü kurmayı da amaçlamaktadır. Bu bağlamda, ampirik sonuçların ödünleşme ve finansal hiyerarşi teorileriyle tutarlılığı test edilmektedir. Ampirik kanıtlar, finansal hiyerarşi teorisinin sermaye yapısını açıklamada ödünleşme teorisine kıyasla Türk firmalarına daha iyi uyduğunu ortaya koymaktadır.

İkinci denemede, özel ve halka açık firmalar arasındaki sistematik sermaye yapısı farklılıkları incelenmiştir. Ampirik sonuçlar, Türk özel firmalarının halka açık muadillerine kıyasla borç finansmanına daha fazla güvendikleri, daha yüksek kaldıraç oranlarına sahip oldukları ve dış sermaye piyasalarına girmekten kaçındıkları anlamına gelmektedir. Bu sonuç, Brav (2009) 'un seviye etkisi hipotezi ile uyumludur. Ardından, Brav'ın (2009) duyarlılık etkisi hipotezini doğrulamak için iki hipotez oluşturulmuştur. Özel firmaların operasyonel performans (karlılık) daha duyarlı olduğuna dair ilk hipotez, mevcut ampirik analiz tarafından desteklenmemektedir. Ayrıca, Türk firmalarına ilişkin ampirik kanıtlar, özel firmaların borç oranının sermaye harcamaları, büyüme ve somutluk gibi diğer ana kaldıraç belirleyicilerine daha az duyarlı olduğunu öne süren ikinci hipotezi desteklenmemektedir. Duyarlılık etkisinin olmaması, Türk firmaları için ödünleşme teorisine destek eksikliğinin bir yan ürünü olarak kabul edilebilir. Alternatif olarak, Türk sermaye piyasalarının dış sermaye piyasalarına ulaşmadaki yetersizliği, duyarlılık etkisinin olmamasının bir nedeni olabilir.

Üçüncü makalede, Türk firmalarının kaldıraçlarını hedef bir borç seviyesine doğru yeniden dengeleyip dengelemediği araştırılmaktadır. Ampirik kanıtlar, Türk

firmalarının açıklarını finanse ederken borcu tercih ettiklerini ve sermaye yapılarını hedef seviyeye yeniden dengeleyebildiklerini göstermektedir. Daha sonra, açıklarını finanse ederken, özel firmaların borca olan güvenleri halka açık firmalardan çok daha fazladır. Ancak, gelişmiş ülkeler için önceki literatürün aksine, halka açık ve özel firmaların borç oranlarını yeniden dengeleme hızlarında önemli bir fark yoktur.

Halka açık ve özel sektör firmaları arasında sermaye yapısının firma düzeyindeki belirleyicilerine duyarlılık eksikliği, Türk sermaye piyasalarının verimsiz doğasının bir göstergesi olabilir. Bu, dış sermaye piyasalarına erişimin mutlak maliyetinin halka açık ve özel firmalar arasında önemli ölçüde farklı olmadığını gösterebilir. Bu nedenle, Türkiye’de halka açılan firmalar, halka açılmanın faydalarından gerektiği gibi yararlanamayacaktır.

Son olarak, tüm bu sonuçlar Türkiye'deki finansal mimari ve finansal gelişmişlik düzeyi ile ilgili önemli bilgiler vermektedir. Ortalama olarak Türk firmaları, gelişmiş piyasalardaki emsallerinden daha yüksek kaldıraç oranına sahiptir. Ayrıca, kaldıraç oranının yüzde 80'inden fazlası kısa vadeli ve finansal borcun neredeyse tamamı banka kredisidir. OECD veya AB ülkelerine kıyasla düşük özel kredi seviyeleri göz önüne alındığında, bu sonuçlar bize finansmana erişimin Türk firmalarının büyümesinde önemli bir engel olabileceğini gösteriyor.

Özetle, bu tez Türk firmalarının sermaye yapısı hakkında daha fazla bilgi edinmek için en genel analizlerden birini yapmıştır. Bu tezde elde edilen sonuçlar sadece halka açık ve özel şirketlerinin sahipleri ve yöneticileri için değil, aynı zamanda Türkiye'deki politika yapıcılar ve yatırımcılar için de önemlidir. Veri setinin oldukça kısa bir zaman çerçevesi ve sermaye yapısının ülke düzeyindeki belirleyicilerini araştıran ülkeler arası karşılaştırmaların olmaması, bu çalışmanın ana kısıtlamaları olarak adlandırılabilir. Daha detaylı çalışmalar, Türk özel ve halka açık firmalar arasındaki sermaye yapısı farklılıklarının arkasındaki yapısal ve düzenleyici nedenleri araştırabilir.

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