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Firm-Specific and Macroeconomic Factors Affecting Capital Structure *

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Abstract

One of the primary objectives of financial managers is to ensure the optimal capital structure that maximizes firm value. Since the early 1950s, many theories have been developed to explain the optimal capital structure. However, due to the variable nature of the capital structure, no consensus has yet been reached on the optimal capital structure allocation. This situation makes the capital structure issue one of the most intensely debated topics in the finance literature. Accordingly, this study investigates the endogenous and exogenous factors affecting the capital structure of firms traded on Borsa İstanbul (BIST) from 2005 to 2020 using Dynamic Panel Regression Analysis. The dependent variable of the study is the financial leverage ratio. Return on assets, firm size, asset structure, growth opportunities, liquidity ratio, non-debt tax shield, GDP growth, inflation rate, interest rate, and stock market development were chosen as independent variables. As a result of the analysis, it was observed that the lagged value of financial leverage, size, growth opportunities, GDP growth, and inflation have a positive effect on financial leverage. On the other hand, the effect of profitability, asset structure, liquidity ratio, and stock market development on financial leverage was observed as negative. When the findings are evaluated together, it is seen that the Pecking Order Theory is the best theory to explain the capital structure behavior of the firms traded at BIST in the 2005-2020 period..

Keywords: Capital Structure, Financial Leverage, Pecking Order Theory.

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1. INTRODUCTION

While borders between countries are gradually disappearing and interaction is intensifying, technological and financial innovations provide firms with many advantages, such as access to alternative financing options and rapid access to financing sources. On the other hand, as a result of this deep interaction, firms have to continue their activities in an internationally competitive environment rather than at the local and national levels. In this intensely competitive environment, firm managers must act cautiously to achieve objectives. Accordingly, they need to develop flexible decision mechanisms to adapt to constantly changing firm, sector, and market conditions.

In today's world, where competition has reached global dimensions, firms must demonstrate good financial performance to ensure their continuity and maximize firm value. In the past, the primary objective of firms was considered to be profit maximization. However, over time, it has been revealed that profitability is not a goal but a necessity for the sustainability of firms. Profitability is a vital accounting indicator that summarizes the financial position of firms. However, from an accounting perspective, profitability can be misleading in some cases since it is accrual-based. Because what is essential for firms is the ability to convert profit into cash rather than accruals. This is because firms with high profitability in accounting terms may not be able to convert their accrued profits into cash due to problems such as collection problem of receivables and economic fluctuations. Therefore, the comments about firm profitability may be misleading in such cases. For these reasons, the primary objective of firms has evolved from maximization of profitability to maximization of firm value. Unlike profitability, the objective of increasing firm value, which is based on a cash basis rather than an accrual basis, maximizes the welfare of shareholders. Therefore, maximization of firm value is considered a more rational objective for firms today.

Firms constantly need resources while continuing their activities. To maximize firm value, the resources needed by the firm should be provided at minimum cost and transferred to investments that provide maximum benefit. This issue gives strategic importance to the cost of resources. Firms obtain the resources they need in two ways: equity and debt. The structure that shows the distribution of the resources the firm needs is referred to as the Capital Structure in the literature. Finance managers constantly aim to create the optimal capital structure that creates the minimum cost for the firm. Because the creation of a capital allocation that imposes a minimum cost on the firm and the investment of resources in projects that provides returns above the cost ensure that the value of the firm reaches the maximum level.

In the literature review on capital structure, a significant portion of the studies has been devoted to firm-specific factors influencing capital structures. Many of these studies typically focus on specific sectors such as banking and manufacturing. In the context of Türkiye, no study has been found that investigates both firm-specific and macroeconomic factors. In this regard, this study aims to fill this gap in the literature by exploring the dynamics of capital structures in all firms, excluding

financial sector companies and holdings listed on BIST, during the period of 2005-2020. The goal is to contribute to the literature by examining unique factors that comprehensively affect capital structure. In addition, this study eliminates sector effects by first regressing the variables on sectors in the first place. That is to say, firstly, seven sectors with a sufficient number of observations in the relevant period were identified within the framework of BIST sector classification. Then, a dummy variable was created for each sector to eliminate sectoral differences in capital structure decisions. These dummy variables were then regressed on financial leverage to obtain residual values. These residual values were used as dependent variables in the analyses since they indicate effects other than the sector effect on financial leverage. Subsequently, the factors affecting capital structure were analyzed using the Two-Step System Generalized Method of Moments (Two-Step System GMM). This method of eliminating the sector effects also separates the current study from the previous ones in the literature.

2. THEORETICAL BACKGROUND AND LITERATURE REVIEW

Discussions on capital structure in the finance literature started in the 1950s. The first studies on this issue focused on whether capital structure has an impact on firm value. Several theories have been developed in line with the findings of these studies. These theories are categorized under two headings as *Classical Capital Structure Theories* and *Modern Capital Structure Theories*. The classical capital structure theories consist of the Net Income Theory, Net Operating Income Theory and Traditional Theory. According to the Net Income Theory, the cost of borrowing is lower than the cost of equity, so emphasizing borrowing can increase the firm's value. In the Net Operating Income Theory, the weighted average cost of capital is constant, and there is no relationship between the debt-equity distribution and the firm's value. According to the Traditional Theory, there is an optimal capital structure for each firm. Borrowing up to the optimal point has a reducing effect on the weighted average cost of capital, but borrowing beyond the optimal point can decrease the firm's value due to increased risk (Durand, 1952; Solomon, 1955). However, Classical Capital Structure Theories are not popular due to their assumptions and arguments that do not reflect today's market conditions.

"The Cost of Capital Corporation Finance and the Theory of Investment", published by Modigliani and Miller in 1958, is of great importance in the development of modern capital structure theories. According to Modigliani and Miller, capital structure has no effect on firm value under perfect market conditions in the absence of market imperfections such as taxes, financial distress, and agency problems. The main determinants of firm value are the firm's riskiness and future cash flows. In this theory, firms are categorized according to their riskiness. It is argued that firms in the same risk category with equal net operating income have equal firm values (Modigliani and Miller, 1958).

In 1963, Modigliani and Miller revised their previous work by including the corporate tax factor. According to Modigliani and Miller, interest paid as a result of borrowing has the advantage of

being deductible from the tax base. They referred to this advantage as the tax shield effect of debt. They argued that due to the tax shield effect of debt, the market value of debt-heavy firms would be higher than the value of debt-free firms by the product of the amount of debt and the corporate tax rate (Modigliani and Miller, 1963).

In his individual study titled "Debt and Tax" in 1977, Miller added the Individual Income Tax factor in addition to the work he published with Modigliani in 1963. According to Miller, there is a tax advantage provided by borrowing. However, this advantage is substantially reduced, if not completely eliminated, by the individual income taxes paid (Miller, 1977). The studies by Modigliani and Miller have been criticized by many theorists for their assumptions and ideas. These criticisms of Modigliani and Miller led to the development of Modern Capital Structure Theories.

For instance, Robichek and Myers (1966), in their study titled "Problems in the Theory of Optimal Capital Structure", argued that markets do not function perfectly as in the M.M. Theory and that there are costs of financial distress in the market (Robichek and Myers, 1966). According to Robichek and Myers, the optimal capital structure that maximizes firm value occurs at the point where the present value of the tax benefits of leverage equals the costs of leverage. Therefore, the capital structure should be established by taking into account the advantages and disadvantages of borrowing (Robichek and Myers, 1966).

One of the critics of Modigliani and Miller is Baxter (1967). According to Baxter, in real market conditions, creditors are reluctant to lend to firms that are not considered to have sufficient equity capital due to the risk of bankruptcy. Thus, a balance should be struck between the tax-saving effect of borrowing and the bankruptcy costs of borrowing (Baxter, 1967). Similarly, according to Stiglitz (1969), the interest burden increases the risks of firms and the possibility of financial distress. Hence, the interest rate applied to firms with low indebtedness is not equal to the interest rate applied to firms with high indebtedness. Therefore, financial distress costs should be taken into account in capital structure decisions (Stiglitz, 1969).

According to Kraus and Litzenberger (1973), borrowing increases firms' earnings by easing their tax burden. However, borrowing also leads to a fixed payment obligation for firms. If these obligations arising from borrowing cannot be fulfilled, a process leading to the bankruptcy of firms begins (Kraus and Litzenberger, 1973).

One of the criticisms against Modigliani and Miller is that they ignore the agency problem in firms. Agency problem refers to the conflicts of interest between firm managers and other stakeholders (shareholders, creditors, etc.), while agency costs refer to the costs arising from monitoring, auditing, etc., due to these problems (Harris and Raviv, 1991). In their study, Jensen and Meckling (1976) examined the agency problems that arise in firms and the impact of these problems on the cost of capital. According to them, borrowing up to the optimal capital structure reduces the agency costs of

equity capital. However, if borrowing continues beyond this point, conflicts between creditors and managers and the agency costs of borrowing increase. Therefore, the optimal capital structure and maximum firm value occur when the agency costs of debt and equity are balanced.

Trade-off Theory, which is considered one of the most popular capital structure theories, has been put forward by evaluating the tax advantage of borrowing together with the financial distress and agency costs it causes. Trade-off Theory is divided into two categories, Dynamic Trade-off Theory and Static Trade-off Theory, according to whether the time factor is taken into account or not. According to the Static Trade-off Theory, firms have a target borrowing rate. At this point, the marginal benefit and marginal cost of borrowing become equal, and the maximum firm value is reached. However, if borrowing continues beyond this point, the costs of borrowing increase, leading to a decrease in firm value (Myers, 1984). According to the Dynamic Trade-off Theory, the target leverage level is not fixed, as argued by the Static Trade-off Theory. Firms' internal conditions, the state of the sector in which they operate, and the macroeconomic environment cause the target leverage to change over time (Fischer et al., 1989). According to this theory, firms that move away from the target leverage level compare the costs of deviating from target leverage with the costs of returning to target leverage and act accordingly.

The foundations of the Pecking Order Theory, which is considered to be one of the most valid capital structure theories today, were laid by Donaldson in his study published in 1961 and titled "Corporate Debt Capacity: A Study of Corporate Debt Policy and the Determination of Corporate Debt Capacity". Myers and Majluf (1984) developed the Pecking Order Theory by comparing the financing hierarchy idea proposed by Donaldson with the Trade-off Theory. According to Myers and Majluf, parties in firms do not have equal information about the firm. This leads to the problem of asymmetric information among them. Therefore, according to the Pecking Order Theory, financing options should be determined according to the degree of asymmetric information contained in the resources. Accordingly, internal resources should be used first, and borrowing should be resorted to if internal resources are insufficient. If both options are inadequate, hybrid securities (e.g. convertible bonds) should be issued first, and stock issuance should be the last method to be resorted to (Myers, 1984). After introducing the Pecking Order Theory, Fama and French (2005) published a study on the asymmetric information problem. With the findings of their analyses, the authors reported that if firms overcome the asymmetric information problem, stock issuance would not be the last resort. This idea added a different dimension to the Pecking Order Theory (Fama and French, 2005).

According to the Life Cycle Theory pioneered by Diamond (1989) and Berger and Udel (1998), firms' capital structure varies depending on the life cycle stage in which the firm is located. Newly established and small firms that are not yet well respected in the market have very limited financing options. As these firms grow and gain a reputation in the market, their financing options increase, and their capital structures change.

Baker and Wurgler, on the other hand, developed the Market Timing Theory by demonstrating that the capital structure changes depending on market conditions by issuing shares at different times. The views of Myers (1984) were very influential in putting forward this theory. According to Myers, firms form their capital structures by following the financing hierarchy under normal market conditions. However, if the cost of financing and equity is lower than the cost of borrowing, equity may move from the last stage to the first stage in the financing hierarchy (Myers, 1984: 587). According to the Market Timing Theory, managers prefer to issue equity when stocks are overvalued, and borrowing costs are high. On the contrary, managers tend to borrow when stocks are priced below their real value and borrowing costs are low (Baker and Wurgler, 2002). Therefore, this theory opposes the views of the Trade-off Theory and the Pecking Order Theory. Hence, according to the Market Timing Theory, the capital structure is formed according to the cost-benefit analysis made in line with the conditions in the credit and stock markets.

As explained above, capital structure is not fixed and unchangeable. Depending on the firm, sector, and market conditions, this structure may change over time. For this reason, there is still no consensus on the optimal capital structure in the finance literature. In this context, there is no theory that best explains the optimal capital structure for all firms.

In many of the studies conducted in light of the theories put forward to explain capital structure, it has been proven that capital structure has an impact on firm value. Thereby, many studies have been conducted worldwide and in Turkiye (i.e.Masulis (1983), Barbee et al (1996), Birgili and Düzer (2010),and Bui et al (2023))to determine the factors affecting the capital structure and continue to be conducted today. Table 1 summarizes the studies conducted in the world and Turkiye to explain the capital structure.

Table 1. Summary of the Literature

AUTHOR(S)	SAMPLE	CONCLUSIONS
Rajan&Zingales (1995)	1987-1991 2583 Companies from G-7 Countries	Factors affecting capital structure do not differ significantly across G-7 countries. Asset structure and firm size have a positive effect on financial leverage, while market capitalization/book value ratio and profitability have a negative effect.
Demirgüç-Kunt&Maksimovic (1996)	1980-1991 9379 Companies from 31 Countries	While capital market development has a positive effect on the use of financial leverage by large firms in developing countries, it has a negative effect in countries with well-developed capital markets.
Hall et al. (2000)	3500 SMEs from the UK in 1995	Asset structure, profitability, size, and firm age affect short-term leverage negatively. The effect of asset structure and firm size on long-term leverage is negative.

Table 1 (continued)

AUTHOR(S)	SAMPLE	CONCLUSIONS
Booth et al. (2001)	1980-1990 The 100 Largest Publicly Traded Companies in 10 Developing Countries	Profitability has a negative effect on total financial leverage. Asset structure has a positive effect on long-term leverage and a negative effect on short-term leverage. Moreover, the impact of macroeconomic factors on capital structure varies across countries.
Chen (2004)	1995-2000 Companies in the Dow-China 88 Index	Profitability has a negative effect on total leverage, while asset growth and financial distress costs (earnings volatility) have a positive effect. Profitability and size positively affect long-term financial leverage, while asset growth and asset tangibility have a negative effect. It was also emphasized that the factors affecting capital structure may vary depending on the analysis method used.
Shah & Hijzazi (2004)	1997-2001 445 Non-Financial Pakistani Firms	Firm size has a positive effect on financial leverage, while the effect of profitability on leverage is negative.
Gaud et al. (2005)	1991-2000 104 Companies from Switzerland	Asset structure, bankruptcy risk, and growth opportunities positively affect financial leverage, while size and profitability affect it negatively. Moreover, according to the dynamic panel data analysis results, Swiss firms comply with a target debt ratio. However, compliance with the target leverage is slower than in other countries.
Gajurel (2006)	1995-2004 About 100 Companies Operating in Nepal Stock Exchange	GDP growth and inflation have a negative impact on total financial leverage and short-term financial leverage. On the other hand, inflation has a positive impact on long-term financial leverage. Moreover, market capitalization positively affects both short and long-term financial leverage.
Sayılgan et al. (2006)	1993-2002 123 Manufacturing Industry Firms Traded on the Istanbul Stock Exchange (ISE)	Prior period leverage, size, and growth opportunities positively affect financial leverage, while profitability, non-debt tax shield, and asset structure have a negative impact.
Frank & Goyal (2009)	1950-2003 Publicly Traded Companies in the US, Excluding the Financial Sector	Market capitalization/book value and profitability have a negative effect on financial leverage, while asset structure, median industry leverage, size, and expected inflation rate have a positive effect. Furthermore, dividend-paying firms tend to borrow less.
Bokpin (2009)	1990-2006 Firms from 34 Developing Countries	There is a negative relationship between GDP growth rate and capital structure. The inflation rate positively affects the short-term debt/equity ratio. Moreover, interest rates and the development of the banking sector also positively affect the capital structure.
Gülşen & Ülkütaş (2012	1990-2005 143 Companies in the ISE Industrial Index	Profitability and size negatively affect financial leverage, and the most valid theory for the firms concerned is the Pecking Order Theory.

Table 1 (continued)

AUTHOR(S)	SAMPLE	CONCLUSIONS
Cekrezi (2013)	2008-2011 53 Companies from Albania	Size, liquidity ratio, asset structure, firm risk, and economic growth positively impact leverage, while profitability and inflation have a negative impact.
Mokhova & Zinecker (2014)	2006-2011 Companies from 7 Countries	Public debt has a positive effect on borrowing in developing countries and a negative effect on developed countries. The inflation rate has a positive effect on borrowing in France and Greece but a negative effect in other countries. Short- and long-term interest rates positively affect borrowing in Germany and France.
Akman et al. (2015)	2003-2011 79 Companies Traded on BIST	Profitability and market timing have a negative effect on financial leverage, while growth opportunities have a positive effect.
Demirci (2017)	2001-2015 Manufacturing Industry Firms Operating in Türkiye	Profitability, liquidity ratio, asset structure, and growth rate have a negative effect on financial leverage, while size has a positive effect on it.
Vintila et al. (2019)	2005-2018 51 Technology Companies listed on the New York Stock Exchange	Size, asset structure, liquidity, and profitability significantly impact leverage ratios. In terms of macroeconomic factors, interest rate, and inflation rate have a positive impact on leverage, while GDP growth has a negative impact.
Yilmaz & Aslan (2020	2005-2016 Firms from 9 Sectors Other than Manufacturing Industry in Türkiye	In most sectors, economic growth and exchange rate positively affect financial leverage, while interest rate has a negative effect on it in some sectors. There is no significant relationship between inflation and financial leverage in any sector.
Zaheer et al. (2021)	2010-2018 10 Companies Listed on the Pakistan Stock Exchange	Profitability and non-debt tax shield have a negative effect on financial leverage, while growth opportunities have a positive effect.

When summary of the literature on capital structure presented in Table 1 is evaluated together, it is seen that the factors affecting capital structure vary according to the country, the period of the study, and the sector that constitutes the sample. Therefore, this study investigates both firm-specific and exogenous factors affecting the capital structure of firms traded in Borsa Istanbul during the period of 2005-2020.

3. METHODOLOGY

3.1. Data Set

This study aims to identify firm-specific and exogenous factors affecting the capital structure of non-financial sector firms traded on BIST during the period of 2005-2020. In 2005, the Capital Markets Board of Türkiye (CMB) imposed an obligation on companies listed on Borsa Istanbul to comply with International Financial Reporting Standards (IFRS) in preparing their financial statements (Communiqué Series: XI, No: 25). For this reason, the starting year of the study was set as

2005 to avoid being affected by reporting differences. Due to the potential impact of sectoral differences on capital structure, firms were grouped according to the sectors in which they operate based on the Public Disclosure Platform (PDP) sector classification. Finally, the study sample was formed with 105 firms from 7 different sectors, which were considered to have enough observations to reflect the sector effect between 2005 and 2020. The sample firms and their weights in the sample are presented in Table 2.

Table 2. The Firms Composing the Sample

	Sectors	Number of Companies	Weight (%)
1	Food, Beverages, and Tobacco	18	17.14
2	Textiles, Clothing, and Leather	13	12.38
3	Chemical, Pharmaceutical, Petroleum, Rubber and Plastic Products	15	14.29
4	Stone and Soil Based	16	15.24
5	Basic Metal Industry	12	11.43
6	Metal Goods Machinery, Electrical Equipment, and Transportation Vehicles	21	20.00
7	Informatics	10	9.52
	TOTAL	**105**	**100.00**

Financial data on the firms analyzed in this study were compiled from the Finnet Analysis Expert program, while data on exogenous factors were compiled from the Central Bank of the Republic of Türkiye, the World Bank, and the International Monetary Fund (IMF) databases.

Table 3. Variables Used in the Study and Calculation Methods

Variable Codes	Variables	Calculation Method
TLEV	Financial Leverage	Total Debt/Total Assets
ROA	Profitability	Net Profit for the Period/Total Assets
LNSIZE	Size	The Logarithm of Total Assets
TANG	Asset Structure	Net Fixed Assets/Total Assets
LIQ	Liquidity	Liquid Assets/Short-Term Liabilities
GROWTH	Growth Opportunities	((Total Assets of Year T) − (Total Assets of Year T-1)) / (Total Assets of Year T-1)
NDTS	Non-Debt Tax Shield	Depreciation/Total Assets
GDP	GDP Growth	Change between GDP in the Current Year and GDP in the Previous Year
INTEREST	Interest	Weighted Average Interest Rate Applied to Loans Extended by Banks (TL-Commercial)
INFLATION	Inflation	Annual Change in Consumer Price Index
MCAPITAL	Market Development	Market Capitalization/GDP

In studies investigating the factors affecting capital structure, the variables used and the calculation methods of these variables may differ. Thus, the variables used in the study were selected among the widely preferred variables in the literature and whose impact on capital structure has been proven in numerous studies.

Table 4. Descriptive Statistics of the Variables

Variable	Number of Observations	Mean	Std. Deviation	Minimum	Maximum
TLEV	1680	0.5012	0.2569	0.0191	2.9855
ROA	1680	0.0427	0.1067	-1.2893	0.7227
LNSIZE	1680	0.1969	0.0166	0.1548	0.2483
TANG	1680	0.4615	0.2037	0.0019	0.9797
LIQ	1680	0.0216	0.0243	0.0003	0.4796
GROWTH	1680	0.1541	0.2942	-0.9411	4.6080
NDTS	1680	0.0325	0.0238	-0.0134	0.5486
GDP	1680	0.0483	0.0385	-0.0482	0.1120
INTEREST	1680	0.1575	0.0409	0.0891	0.2408
INFLATION	1680	0.0961	0.0278	0.0625	0.1633
MCAPITAL	1680	0.2748	0.0759	0.1526	0.4176

Descriptive statistics of the variables used in the study are presented in Table 4. According to the data in Table 4, the average financial leverage, which was used as the dependent variable in the analysis, is approximately 50%. This result shows that more than half of the capital structure of the firms analyzed in the 2005-2020 period consists of debt. In this period, the return on assets of the firms was realized as 4.2% on average.

3.2. Research Method and Econometric Model

The use of financial leverage in firms may be affected by past experiences. For this reason, the Two-Step System GMM, which is a dynamic panel data analysis method that includes the lagged value of the dependent variable as an explanatory variable in the model, was preferred in this study. This method is a very robust estimator against the problems of heteroscedasticity and autocorrelation and also takes into account the endogeneity problem among variables. Thereby, it has been widely used in recent years. The capital structure may differ significantly across sectors. Hence, to eliminate sectoral effects, following Barth et al. (2008), firstly, one dummy variable for each of the seven sectors in the sample was determined, and these variables were regressed on the dependent variable of the study ($TLEV_{it}$). The residual values obtained as a result of the analyses ($TLEV_{it}^{*}$) was used as the dependent variable in the study when it referred to effects other than sector effects on financial leverage. Finally, the analysis model determined in light of empirical and theoretical literature is as follows;

Model:

$$TLEV_{it}^{*} = \alpha_0 + \beta_1 TLEV_{it-1}^{*} + \beta_2 ROA_{it} + \beta_3 LNSIZE_{it} + \beta_4 TANG_{it} + \beta_5 LIQ_{it} + \beta_6 GROWTH_{it} + \beta_7 NDTS_{it} + \beta_8 GDP_{it} + \beta_9 INTEREST_{it} + \beta_{10} INFLATION_{it} + \beta_{11} MCAPITAL_{it} + u_{it}$$

In the model, $TLEV_{it}^{*}$ is the dependent variable (financial leverage ratio), $TLEV_{it-1}^{*}$ is the lagged value of the financial leverage ratio, ROA_{it} is the return on assets, $LNSIZE_{it}$ is the logarithm of the asset size, $TANG_{it}$isthe concreteness of being, LIQ_{it} is the current ratio, $GROWTH_{it}$ is the rate of growth in assets, $NDTS_{it}$ is the non-debt tax shield, GDP_{it} is the rate of economic growth, $INTEREST_{it}$is the interest rate, $INFLATION_{it}$ is the inflation rate, and $MCAPITAL_{it}$ is the stock market development.

4. ANALYSIS RESULTS

The constructed research model was analyzed with the Two-Step System GMM method. The findings obtained as a result of the analysis are presented in Table 5.

Table 5. Analysis Results

Dependent Variable: TLEV*				
Number of Observations: 1575				
Independent Variables	**Coefficient**	**Std. Dev.**	**Z-score**	**Prob.**
TLEV*(-1)	0.773	0.079	9.78	0.000*
ROA	-0.477	0.091	-5.25	0.000*
LNSIZE	0.706	0.427	1.65	0.098***
TANG	-0.088	0.032	-2.77	0.006*
LIQ	-0.838	0.487	-1.72	0.085***
GROWTH	0.059	0.022	2.68	0.007*
NDTS	0.128	0.112	1.15	0.250
GDP	0.271	0.059	4.57	0.000*
INTEREST	0.005	0.104	0.05	0.958
INFLATION	0.281	0.147	1.91	0.056***
MCAPITAL	-0.139	0.034	-4.05	0.000*
Wald Test		0,000		
AR(1)		0.098		
AR(2)		0.207		
Hansen Test		0.449		
Number of Instrumental Variables		22		

*, **, and *** denote 1%, 5%, and 10% significance level, respectively.

In the analyses conducted with this method, some diagnostic tests were performed for the reliability/validity of the estimates obtained. According to the results of the WALD test the independent variables in the model have the power to explain the dependent variable, and the model as a whole was significant. According to the AR (2) test there was no second-order autocorrelation, and the estimators were consistent. According to the Hansen test there was no correlation between the instrumental variables and the error term. Moreover, the variables were exogenous and valid. Furthermore, the forecasts obtained according to the diagnostic test results were valid.

Table 6. Comparison of Analysis Results and Predictions of Related Theories

Variable	Pecking Order Theory (POT)	Trade-off Theory (TOT)	Study Results	Theory Consistent with Results
Return on Assets	(-)	(+)	(-)	POT
Asset Size	(-)	(+)	(+)	TOT
Asset Structure	(-)	(+)	(-)	POT
Liquidity Ratio	(-)	(+)	(-)	POT
Growth Opportunities	(+)	(-)	(+)	POT
Non-Debt Tax Shield	(-)	(-)	X	X
Economic Growth	(+)	(-)	(+)	POT
Inflation Rate	(-)	(+)	(+)	TOT
Stock Market Development	(-)	(+)	(-)	POT
Interest Rate	(X)	(+)	X	X

In the table, "+" indicates a positive relationship, "-" indicates a negative relationship and “X” indicates no relationship with any theory.

As seen in Table 6, as a result of the analysis, a statistically significant relationship was determined between financial leverage and T-1 financial leverage, profitability, size, growth opportunities, liquidity, asset structure, economic growth, inflation, and capital market development. According to the analysis, the lagged value of financial leverage, asset size, growth opportunities, economic growth, and inflation have statistically significant positive effects on leverage. Moreover, it was observed that profitability, asset tangibility, liquidity, and stock market development have a significant and negative effect on leverage. However, non-debt tax shield and interest rate do not statistically have a significant impact on leverage.

5. CONCLUSION AND DISCUSSION

As a result of the analyses conducted to investigate the firm-specific and exogenous dynamics of capital structure, a positive relationship was determined between current period financial leverage and the lagged value of financial leverage. This finding indicates that financial leverage has a dynamic structure, and borrowing behavior in the past periods positively affects the level of indebtedness in the current period. This result also proves the accuracy of the analysis method used and the analysis model created. This result is consistent with the findings of Sayılgan et al. (2006) and Gaud et al. (2005).

Accordingly, it can be said that the capital structure has a dynamic structure, and borrowing behavior can be affected by past borrowing behavior. Profitability has a negative effect on financial leverage. This result is consistent with the findings of Rajan & Zingales (1995), Chen (2004) Shah & Hijazi (2004), Sayılgan et al. (2006), Frank & Goyal (2009), Gülşen & Ülkütaş (2012), Çekrezi (2013), Akman (2015), Demirci (2017), and Zaheer et al. (2021). The negative effect of profitability on financial leverage is consistent with the ideas put forward by the Pecking Order Theory. According to this theory, since borrowing is a financing method to be used in case of insufficient internal resources, it can be said that firms with high profitability have less need for borrowing.

It was determined that asset structure has a negative effect on financial leverage. This finding is consistent with the findings of Hall et al. (2000), Sayılgan et al. (2006), and Demirci (2017). This result is also consistent with the ideas of the Pecking Order Theory. According to the Trade-off Theory, tangible assets positively affect borrowing since they can be used as assurance. On the other hand, the Pecking Order Theory argues that firms with high levels of tangible assets do not need to borrow and meet their financing needs with internal resources.

Liquidity ratio was found to be negatively affecting financial leverage. This result is consistent with the findings of Demirci (2017) and Czervonka & Jaworski (2022). Moreover, this result is consistent with the Pecking Order Theory. According to this theory, firms with high liquidity may not need to borrow since they have sufficient internal resources for financing. Firm size is determined to have a positive effect on financial leverage. This result is consistent with the findings of Rajan & Zingales (1995), Chen (2004), Shah & Hijazi (2004), Sayılgan et al. (2006), Frank and Goyal (2009), Çekrezi (2013) and Demirci (2017). According to the Trade-off Theory, since firms with high asset sizes have a low level of bankruptcy risk, creditors provide these firms with more favorable credit conditions. This opportunity, in turn, may trigger firms' borrowing behavior. Thus, the positive effect of size on financial leverage is consistent with the Trade-off Theory.

Growth opportunities in firms were observed to have a positive effect on financial leverage. This result is consistent with the findings of Chen (2004), Sayılgan et al. (2006), Akman (2015), and Zaheer et al. (2021). Moreover, this result is consistent with the Pecking Order Theory. According to this theory, the positive effect of growth opportunities on leverage means that internal resources may be insufficient to finance investments when firms have high growth opportunities. In this case, it triggers borrowing.

The inflation rate was determined to have a positive effect on financial leverage. This finding is consistent with Bokpin (2009), Frank & Goyal (2009), Cekrezi (2013), Mokhova & Zinecker (2014), and Vintila et al. (2019). From the perspective of Trade-off Theory, firms may focus on borrowing when inflation is high to benefit more from the tax shield of borrowing. In addition, since the real cost of borrowing decreases during inflationary periods, the real value of the tax-saving effect may increase. Therefore, an increase in inflation may increase the use of financial leverage.

Another macroeconomic variable, GDP growth, was also observed to have a positive effect on financial leverage. This finding is consistent with Cekrezi (2013) and Yılmaz & Aslan (2020). Furthermore, this result is consistent with the views of the Pecking Order Theory. According to this theory, firms also tend to grow during periods of economic growth. Hence, the need for borrowing to finance investments in firms may increase significantly. Furthermore, stock market development has a negative effect on leverage. Stock market development reduces transaction costs and reduces the asymmetric information problem. This increases investors' appetite to become shareholders in firms. Accordingly, stock issuances increase, and the demand for borrowing may decrease. Since interest constitutes the cost of borrowing, a negative relationship is generally expected between interest rates and leverage. However, according to the Trade-off Theory, a positive relationship is anticipated up to the target leverage level due to the tax shield provided by borrowing. In the Pecking Order Theory, there is no clear relationship expected between interest rates and capital structure. This theory posits that the fundamental determinants of capital structure are not factors such as interest rates or financial distress costs but rather the adequacy of a firm's internal resources. Therefore, the result that interest rates do not have a significant impact on leverage, as indicated by the conducted analyses, is consistent with this theory, which argues that firms with sufficient internal resources and profitability may not resort to different alternatives.

When the findings obtained as a result of the analyses are evaluated together, it is seen that the capital allocation has a dynamic structure, and the capital structure behavior of the firms operating in Borsa Istanbul in the 2005-2020 period is generally explained by the Pecking Order Theory.

Excessive borrowing may cause firms to default on their obligations and even bankruptcy. In general, the use of financial leverage in Türkiye is at high levels. Thus, according to the findings of this study, firms are advised to limit their use of financial leverage and to be more cautious about borrowing. On the other hand, creditors are advised to be more selective in lending and avoid lending to firms that do not have sufficient equity. This is because lending to firms with weak equity may lead to bankruptcy and cause serious problems in the financial system. Disruptions in the financial system, in turn, disturb the balance in the macroeconomic dynamics of the country. Therefore, firms' borrowing behavior affects not only firms and creditors but also the macroeconomic balance in general. In line with the negative impact of stock market development on financial leverage, policymakers are advised to develop policies that will increase the development of stock markets and ensure that the lending process is carried out more efficiently to prevent excessive borrowing tendencies in countries. In future studies, the capital structure of firms can be investigated comparatively across sectors by adding different indicators.

The study does not necessitate Ethics Committee permission.

The study has been crafted in adherence to the principles of research and publication ethics.

The authors declare that there exists no financial conflict of interest involving any institution, organization, or individual(s) associated with the article. Furthermore, there are no conflicts of interest among the authors themselves.

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