

## WHAT A HARD DECISION: CAPITAL STRUCTURE OF REITS IN ISTANBUL STOCK EXCHANGE

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### Abstract

By examining the factors that determine the capital structure for Turkish Real Estate Investment Trusts (REITs) in Borsa Istanbul (BIST) over the period 2014-2020, we attempt to present a contribution to the capital structure literature. In our study, we use panel data analysis that provide us proofs about the impact of financial performance, stock performance, and corporate structure on capital structure decisions of REITS. Some of the findings are remarkably similar to those of prior studies in this array of literature while our independent variables and capital structure may seem to be connected differently from the leading capital structure theories (“pecking order theory and trade-off theory”). The prominent capital structure theories of pecking order and trade-off theory likewise receive mixed support, although the link between capital structure and our independent variables appears to be skewed. As a result, the theory’s assumptions indicate that capital structure changes are driven by survival.

**Keywords:** REIT, Debt ratio, ISE, Trade-off Theory, Pecking Order Theory, Capital Structure, Turkey

**JEL Classification:** C23, G17, G32

### 1. Introduction

One of the most important areas of the executives’ attention is capital structure decisions because these decisions not only affect the firm’s market value but also its survival. Capital structure can also be expressed as the financing structure that allows the companies to continue existing investments and/or make new ones.

Specifically, after the study of Modigliani & Miller published in 1958, there is a great increase in the number of empirical studies on this subject. In this prominent study, under the supposition that there is no market failure, it is contended that capital structure choices have no impact on business value. The data of 43 oil companies operating in the USA between 1947 and 1948 are

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analyzed by using cross-sectional regression analysis and it is found that changes in the capital structure have no effect on the company's profitability or value.

The Trade-off Theory argues that a company's capital structure strikes a balance between the expense of financial hardship from debt and the tax benefits of debt. Up to the optimal borrowing point, businesses gain from the tax benefits of debt, which raises the enterprise value. The risk of financial trouble and bankruptcy rises if the company continues to borrow more than is necessary, diminishing the tax benefits of the loan. (Damodaran, 2001). This explains why businesses cannot borrow continuously.

The Pecking Order Theory states that when businesses need money, they primarily rely on internal resources, which are free of any asymmetric information issues. Then, they use external sources and finally equity financing. Therefore, this theory suggests that profitable firms borrow less and this situation cannot be explained by the Trade-off Theory. As long as the firms' profitability is high, they do not need to use external resources.

The current article aims to determine which factors influence capital structure decisions by analyzing the effects of financial performance, stock performance, and corporate structure on book debt ratio. Determining the attitudes of real estate investment trusts regarding capital structure decisions will enable investors to make more effective decisions while investing in these businesses. In addition, it will shed light on the ability of real estate investment trusts, which have important effects on the economy in which they operate, to make strategic decisions in terms of the continuity of their activities. In the study, the methodology utilized rests upon panel data analysis with random effects.

This paper proceeds as follows: Firstly, literature review of theoretical and empirical studies about capital structure will be revealed. Then, data and methodology are discussed in order to present the details of the sample and the hypothesis of the study is revealed based on the corporate structure background given in previous studies. Finally, the results are presented and discussed.

## **2. Literature Review**

The theoretical background of capital structure has been debated since the seminal paper of Modigliani & Miller (1958). Two main theoretical models, designed for the determinants of capital structure, are Pecking Order Theory and Trade-off Theory.

The Pecking Order Theory suggests that there is a hierarchy in firms' sources of financing. Initially, internal funds are used but when firms need external funding, they prefer to borrow primarily and then issue corporate bonds. As a final preference, equity is issued because investors assume that managers issue stocks as long as the stock is highly priced and prefer to borrow money as long as the stock is low-priced. Therefore, investors will not buy shares before debt

capacity of a firm is exhausted and investors will force firms to follow a financial hierarchy. As a result, when there is asymmetric knowledge, issuing equity has a higher cost than borrowing.

The Trade-off Theory claims that the benefits and drawbacks of borrowing are balanced since the best debt-to-equity ratio can increase a firm's worth. The study of Kraus and Litzenger (1973) states that financing with debt has tax saving benefits and provides a financial discipline for managers but over-indebtedness can cause bankruptcy and huge agency costs. At that point, a firm should measure the costs and benefits of financing with debt and equity to find the optimal debt ratio. If the leverage ratio of a firm is determined by balance between tax advantages of debt, weighted costs of bankruptcy and agency costs, it is said that the firm is following the static trade-off model.

The finance literature also provides several empirical studies that explain that the capital structure patterns differ from one country to another or one sector to another. The empirical studies in developed markets cannot present fully supportive results for emerging markets and also the results for different sectors are not parallel. Therefore, there are several empirical studies for different countries and sectors in the literature.

The study, conducted with the data belonging to 123 manufacturing firms in ISE, focuses on the variables that identify the capital structure of firms (Sayilgan et al., 2006). The data between 1993 and 2002 is used to perform panel data analysis in which firm size, profitability, non-debt tax shield, growth rate and fixed asset ratio are employed to analyze capital structure. The analysis reveals a positive correlation between business size and leverage ratio, whereas profitability and borrowing rate show a negative correlation.

Li et al. (2009) investigate whether the capital structure is affected by the factors of governmental ownership, foreign ownership and institutional investor ownership by using dummy variables for data of Chinese firms. The study demonstrates that governmental ownership is positively associated with access to long-term financing sources and leverage while firms that are not publicly owned have significantly less short-term liabilities and total debt than publicly owned firms. Similarly, a study that analyzes the sector balance sheets of Central Bank of the Republic of Turkey between 1996 and 2008, reports a positive relationship between growth opportunities, size, profitability, asset structure and borrowing (Sayilgan & Uysal, 2011).

In the study of Bessler, Drobetz and Kazemih (2011), it is determined that factors such as market value-book value ratio and profitability have negative effects on corporate leverage. On the other hand, tangibility, size, expected inflation and average industry leverage ratio have positive effects on leverage ratio.

Titman and Wessels (1998) use tangibles, non-debt tax shields, growth, uniqueness of business, industry, size, volatility of income and profitability to explain leverage. As a result of this study, it is presented that long-term debt to equity and short-term debt to equity are negatively related to firm uniqueness. In addition, short-term debt has a bad impact on size and profitability.

However, long term debt and short-term debt are not significantly impacted by either volatility or asset structure.

In the study by Matias and Serrasqueiro (2017), the small and medium-sized companies operating in different regions of Portugal are examined for the period between 2007 and 2011 to identify the factors affecting capital structure. Financial leverage ratio represents the capital structure and the factors included in the study are firm size, profitability, growth and firm age. As a result of the analysis, there is a significantly positive relationship between leverage and not only firm size but also asset structure. It is found that the relationship between company age and leverage is strong and unfavorable. Contrarily, the relationship between growth and financial leverage is not statistically different. It is determined that there is a significant and negative relationship between firm age and leverage. On the other hand, there is no statistically significant relationship difference between growth and financial leverage.

Antoniou et al. (2008) focus on two different type of economies: capital market oriented (England and USA) and bank oriented (France, Germany and Japan). By using panel data analysis, the factors affecting the capital structures of companies are tried to be determined. In this study, financial leverage ratio represents the capital structure. Asset structure, firm size, profitability, growth opportunity and stock performance are used as independent variables within the scope of the analysis. As a result of the analysis, whereas firm size and asset structure are found to have significantly positive effects on leverage ratio, growth opportunity and stock performance are found to have significantly negative effects on leverage ratio.

### **3. Methodology**

This study employs panel data analysis since this methodology combines time series and cross – sectional observations; thus, enabling data variability, enhanced informativeness, and higher degrees of freedom. Accordingly, the model applied is regarded to be superior to the models that only utilize one of those dimensions. Furthermore, panel data controls for heterogeneity, whereas time-series and cross-sectional analysis can come up with biased results in the case of heterogeneity (Baltagi, 2001). Additionally, problem of multi-collinearity is also reduced (Wooldridge, 2002).

#### **3.1. Dataset**

In this study, the data set of the analysis rests upon 27 REITs traded in BIST between the years 2014 and 2020. For the 7 years' data period, the firms have to be listed in BIST uninterruptedly; thus, the dataset is strongly balanced. The empirical study is based on data attained from Finnet 2000 Plus: Financial Markets Data Terminal and the raw sample from 2014 to 2020 includes 35 REITs traded in BIST. The REITs, which do not have data as to the financial ratios utilized in the

study and are not traded uninterruptedly in BIST, are excluded from dataset in order to obtain a strongly balanced panel dataset.

### **3.2. Variable Selections**

In the literature, leverage ratios are widely used as variables defining capital structure. As in the literature, the dependent variable is selected to be the leverage ratio defined as the ratio of financial debt, short-term debt and long-term debt, to financial debt plus equity. Moreover, there are several leverage ratios used as a measure of leverage in numerous studies such as Total debt/Total Assets, Short Term Debt/Total Assets and Long-Term Debt/Total Assets (Wald, 1999; MacKay and Phillips, 2005; Mocnik, 2001; Prasad, Dheeria and Woodruff, 2002). This study covers specifically the capital structure of REITs which is one of the most levered sectors and prefers to grow with interest bearing debt instead of equity. Since, the debt-to-capital ratio includes interest-bearing debt while it excludes all other liabilities, unlike debt ratio defined as total debt to total assets, it measures the amount of asset financed with debt (Rajan and Zingales, 1995). This measure is the most appropriate one to the objective of the analysis.

Since previous studies have identified a number of factors that influence capital structure, the following eight variables are selected as independent variables of the study.

The first variable regarded to influence the capital structure of the firm is Market-to-Book value (MTB), a measure of growth opportunities, it is considered to be negatively related to DCR (debt to capital ratio). It is known that firms with high market to book value are more profitable companies and these companies are expected to issue less debt due to their greater growth potential and therefore have lower target leverage ratios (Rajan and Zingales, 1995; Chen and Zhau, 2004).

The size (SIZE) of the firm, which is calculated by taking the natural logarithm of the firm's total assets value, is an important factor in terms of firm's performance, operating capacity, and management structure. It is considered that large-scale companies may have more opportunity to access capital markets easily and to obtain funding sources so SIZE is positively related to DCR (Rajan and Zingales, 1995). It should be mentioned that the capital structure literature has a number of empirical studies that highlight the existence of a favorable link between size and capital structure. (Marsh, 1982; Titman and Wessels, 1988; Rajan and Zingales, 1995; Bevan and Danbolt, 2002; Mocnik, 2001). In these studies, the firm size is represented with either net sales or total assets.

Another variable to affect the capital structure is Tangibility (TAN), which is calculated as the ratio of PPE (Property Plant Equipment) to total assets. PPEs can be used as collateral so it can be effective to use this resource easily when there is a need for funds. The study of Bessler, Drobetz and Kazemieh (2011) indicates that high tangibility ratio triggers high leverage ratio.

Profitability (PRO) is measured by the ratio of net profit to net sales. It is stated that companies with high profitability ratios will no longer need to use high debt in their capital structures according to Pecking Order Theory. A large part of empirical studies also demonstrates the presence of a negative relationship between leverage ratio and profitability due to the fact that companies generally prefer internal sources in funding (Rajan and Zingales, 1995; Bevan and Danbolt, 2002; Huang and Song, 2006).

Some of the previous empirical studies have shown the presence of a negative relationship between market performance (RETURN) and DCR. The study of Antoniou et al. (2008), which rests upon panel data analysis performed with the data of firms in US, UK, France, Germany, and Japan, indicates that debt ratios move in significantly negative direction while stock returns are increasing.

Another variable is selected to be firm age (AGE) and it is considered to be negatively related to DCR because increased experience makes firms more risk averse to use external sources instead of internal sources. The study conducted by Matias ve Serrasqueiro (2017) with the data of small and medium size firms between 2007 and 2011 indicates that there is a significantly negative relationship between firm age and leverage ratio.

Free Float Rate (FFR) is found to be negatively related to DCR. The study of Guner (2016), conducted with 131 publicly traded Turkish firms, implies that the firms with %50-%75 free float rate tend to have lower leverage ratios because as firms become more transparent their investors can easily follow the financing decisions of the firms. This makes firms more conservative about leverage ratios.

Lastly, firms with government share (GOV) can easily reach the funding resources so DCR of these companies is higher than those firms that do not have any government share. Li et al. (2009) identify that firms with government share have higher leverage ratios.

As stated above, panel data analysis with strongly balanced panel data is utilized in the empirical part of the study. The regression analyses aim to compare the explanatory power of 8 independent variables on the dependent variable DCR to test the effect of three main focus groups: financial performance, market performance, and corporate structure. A summary of the variables utilized together with their abbreviations can be seen in Table 1 below.

**Table 1:** Variables

Abbreviation	Definition	Explanation
<b>Dependent Variables</b>		
DCR	Debt to capital ratio	The financial debt “(short-term and long-term debt)” to equity plus financial debt
<b>Independent Variables</b>		
MTB	Market-to-Book	Market value of equity to book value of equity”

SIZE	Firm size	Natural logarithm of total assets
TAN	Tangibility	PPE (Property Plant Equipment) to total assets
PRO	Profitability	Net income to total assets <sup>7</sup>
RETURN	Stock Performance	Change in the year-end stock close price
AGE	Firm age	The number of years that has passed since incorporation date
FFR	Free Float Rate	Rate of public shares
GOV	Government Effect	Equal to 1 if the firm has government share, otherwise 0

### 3.3. The Models Utilized

The model that tests the impact of financial performance on book debt ratio is demonstrated as in the Model (1) below.

Model (1): Financial performance

$$DCR_{it} = \beta_0 + \beta_1 MTB_{it} + \beta_2 SIZE_{it} + \beta_3 TAN_{it} + \beta_4 PRO_{it} + \varepsilon_{it}$$

Additionally, the analysis in Model (2) tests whether the market performance is significant while taking capital structure decisions:

Model (2): Market performance

$$DCR_{it} = \beta_0 + \beta_1 MTB_{it} + \beta_2 SIZE_{it} + \beta_3 TAN_{it} + \beta_4 PRO_{it} + RETURN_{it} + \varepsilon_{it}$$

Finally, we want to measure the contribution of REITs' corporate structure to capital structure as stated in Model (3).

Model (3): Corporate structure

$$DCR_{it} = \beta_0 + \beta_1 MTB_{it} + \beta_2 SIZE_{it} + \beta_3 TAN_{it} + \beta_4 PRO_{it} + \beta_5 RETURN_{it} + \beta_6 AGE_{it} + \beta_7 FFR_{it} + \beta_8 GOV_{it} + \varepsilon_{it}$$

where, subscript i represents the firms (i=1,2, ..., 27); t represents time (t=1,2, ..., 7) and  $\varepsilon_{it}$  is the error term.

In order to identify the most adequate estimator to our panel data analysis, we follow a series of statistical tests for three models stated in Equation (1), Equation (2), and Equation (3). At first, it has to be detected whether there is unit/time effect or the model is a classical model or not. We use Breusch Pagan LM Test, F-test, and Likelihood Ratio test and select the most adequate model according to the results consistent in all of these three tests. Then, the Hausman Specification Test helps us to determine the type of effect, either fixed or random. Finally, we

check the basic assumptions of panel regression model; multi-collinearity, cross-sectional dependence, autocorrelation, and heteroscedasticity. In order to reach the robust estimators, we have to eliminate these issues if there is any of them.

The issue of multi-collinearity is checked with the help of Variance Inflation Factor (VIF) and cross-sectional dependence is tested by Pesaran's, Friedman's, and Frees' tests. Bhargava, Franzini, Narendranathan Durbin Watson (DW) and Baltagi-Wu LBI tests are utilized to detect autocorrelation. Since the results suggest that all three models have random effects, we use the tests of Levene, Brown, and Forsythe to detect the issue of heteroscedasticity.

As a result of these statistical tests, all three models are determined to be one-way models with random time effect. After determining the adequate model, basic assumptions are checked. The concerns about multicollinearity are checked tested on the level of the variance inflation factors (VIFs), which are all below 10.0 in the regression models discussed. The issue of heteroscedasticity, autocorrelation, and cross-sectional dependence are fixed with Driscoll-Kraay standard errors to obtain the robust estimators (Tatoglu, 2012).

#### **4. Results and Discussion**

As can be seen in Equation (1), Equation (2), and Equation (3), three different models are created with three groups of variables to see the impact of financial performance, market performance, and corporate structure on capital structure decisions. Within this context and as stated above, 27 REIT companies traded in BIST from 2014 to 2020, whose data can be accessed, are included in this study. In addition, strongly balanced panel data is used and the above-mentioned statistical tests are run to obtain the best regression models.

According to the results of the study, the variable MTB used to evaluate the effect of growth opportunities on capital structure is found to have a significantly positive relation with DCR at %5 significant level. However, the literature indicates that the increase in growth opportunities makes firms more risk averse about debt so our results are not supportive of the previous studies (Chen & Zhao, 2006)

The size of the company is found to be positively related to DCR at 5% significance level in all three models as expected. Emerging market studies (Booth, Demirguc-Kunt and Maksimović (2001); Huang and Song (2006) and the study of Rajan and Zingales (1995) performed with G7 countries found a positive relationship between the leverage ratio and firm size.

The tangible assets make firms more willing to use financing resources because of their strong collateralized asset. However, our results indicate that the increase in tangibles do not trigger firms about using financing solutions. The hypothesis cannot be supported by the data of Turkish public REITs as this variable is not found to have any significant link with the selected dependent variable in all three models.



The Pecking Order Theory suggests that firms primarily choose to finance their investments from internal sources so profitable firms borrow less. Thus, firms go to the way of using debt in case that the amount of investment exceeds their profits (Myers 1984). In theory, it is stated that leverage and profitability should be in an inverse relationship. The significantly negative coefficient at 5% level in all three models supports what the theory says.

Better market performance triggers firms to use less debt because the investors observe that the firm's financial and operational situation is well enough to invest in and this causes the stock price to increase. Thus, the Pecking Order Theory supports this result.

It is expected that the older firms are less aggressive about growth opportunities so the use of debt becomes lower as the age increases. However, we obtain insignificant results about the age effect on capital structure.

As the free float rate increases, the firms tend to use more debt because the higher free float rate is a result of low operational performance and use of equity financing in previous years. This is supported by the findings of Model (3) as can be seen from the positive and significant coefficient.

Our empirical results suggest that there is a negative relationship between DCR and governmental dummy at %5 significance level so REITs with government shares tend to use less debt. There are several empirical studies that shed light to capital structure of firms from different countries so the literature presents different results for different countries. For example, the study of Deesomsak et al. (2004) indicates that the government involvement helps Canadian firms to borrow with lower rates because of the government guarantee. However, the results for Turkish public REITs are found to be the opposite during the selected observation period, like the study of Khaki and Akin (2020). The empirical results of this study state that there is negative relationship between government share and leverage for Gulf Cooperation Council (GCC) countries.

**Table 2:** Panel Data Analysis Results for 3 Models Designed to See the Impacts of Financial Performance, Stock Performance and Corporate Structure of ISE REITs on Book Debt Ratio

Variable	Financial Performance	Stock Performance	Corporate Structure
	Model 1	Model 2	Model 3
	DCR	DCR	DCR
MTB	8.969 (2.962)**	9.867 (2.625)**	9.994 (2.35)**
SIZE	2.388 (1.018)**	2.727 (0.94)**	2.992 (0.999)**
TAN	-6.580 (5.258)	-3.922 (5.103)	-4.447 (5.011)
PRO	-49.726 (18.585)**	-51.137 (18.727)**	-48.4 (15.6)**

RETURN		-5.412 (2.683)*	-5.343 (2.35)**
AGE			-0.099 (0.07)
FFR			0.17 (0.059)**
GOV			-4.899 (1.718)**
Constant	-47.546 (20.839)**	-53.99 (17.903)**	-60.531 (20.566)**
R <sup>2</sup>	0.65	0.746	0.783
Firm-years	189	189	189
legend	* p<0.10;	** p<0.05;	***p<0.01;

## 6. Conclusion

In this study, it is aimed to determine the debt utilization dynamics of REITs registered in BIST. Overall regression results of three models provide evidence that higher market-to-book ratio and size of the firm are associated with more book debt ratio. However, a statistically significant negative coefficient that is observed in profitability suggests that more profitability triggers less book debt ratio. These results are consistent with the expectations the study. On the other hand, tangibility is insignificant, which is contrary to what is expected because firms with more tangible assets can easily reach long-term debts. Nevertheless, the model designed to see the DCR behavior of Turkish REITs sample tells us that tangibility has a statistically insignificant effect on book debt ratio. In the third model, which is designed to measure the impact of corporate structure on book debt ratio, we have found significant results for the free float rate and government share but the result for government share is contrary to what is expected. Since the firms with government share are expected to reach external sources easily. In the regression results, the sign of the coefficient on FFR is positive and statistically significant which indicates that higher free float rate is linked with higher book debt ratio. However, the coefficient on AGE is found to be small and statistically insignificant.

In this study, the focus point is the REITs because of the importance in the Turkish economy and the different capital structure of REITs when compared to other sectors. Further studies can be performed for different periods to see the effects of different interest policies of Turkish government and inflation shocks on capital structure because REITs are sensitive to interest rate policies and inflation.

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