

Determinants of Capital Structure: An Application on BIST Transportation Index*

Ersin Fırat AKGÜL **
Seçil SİGALI***

ABSTRACT

This study examines the determinants of capital structure decisions for the firms operating in the transportation industry in Turkey. Firms listed on Borsa Istanbul Stock Exchange Transportation Index have been analyzed using panel data analysis for the period of 2002-2013. According to the findings “Tangibility” and “Size” are significantly and positively associated with long-term financing decisions, supporting trade-off theory. Additionally, results show the significant effects of corporate governance practices, specifically board size, board independence and institutional ownership on capital structure decisions.

Keywords: Capital Structure, Corporate Governance, Transportation Industry, Turkey.
Jel Classification: G32, G34.

Sermaye Yapısını Etkileyen Faktörler: BIST Ulaştırma Endeksinde Bir Uygulama ÖZET

Bu çalışmada, Türkiye’de faaliyet gösteren ulaştırma işletmelerinin sermaye yapısı kararlarını etkileyen faktörler incelenmektedir. Borsa İstanbul Ulaştırma Endeksinde işlem gören 11 adet ulaştırma işletmesi, 2002-2013 yıllarını kapsayacak şekilde panel veri analizi ile incelenmiştir. Çalışmanın bulgularına göre, “Varlık Yapısı” ve “İşletme Büyüklüğü” ile “Uzun Vadeli Borçlanma Oranı” arasında anlamlı ve pozitif bir ilişki bulunmuştur. Bu sonuç “Dengeleme Teorisini” desteklemektedir. Ayrıca elde edilen sonuçlar, kurumsal yönetim uygulamalarının, özellikle yönetim kurulu büyüklüğü, yönetim kurulu bağımsız üye sayısı ve kurumsal sahiplik oranının sermaye yapısı kararlarında anlamlı bir etkisi olduğunu göstermektedir.

Anahtar Kelimeler: Sermaye Yapısı, Kurumsal Yönetim, Ulaştırma Endeksi, Türkiye.
JEL Sınıflandırması: G32, G34.

* This study is a version of a master thesis titled as “Determinants of Capital Structure: An Application on Borsa Istanbul Transportation Index”, Dokuz Eylül University Graduate School of Social Sciences.

** Ersin Fırat Akgül, Bandırma Onyedil Eylül University, Maritime Faculty, eakgul@bandirma.edu.tr

*** Seçil Sigali, Dokuz Eylül University, Maritime Faculty, ,secil.varan@deu.edu.tr

1. INTRODUCTION

Transportation industry provides a remarkable contribution to national GDP considering the consumption of goods and services, employment of many people, and also the tax revenue for the governments (Sinha and Labi, 2007). Growing fleet age, higher insurance and maintenance costs of the older vehicles, technological developments, high quality standards, rivals with increasing numbers, thus tough competition, and expectations on increased demand, which is projected to nearly double to 37.2 billion tons by 2035 (Kaduwela and Inbasekaran, 2012), make the future projects and investments vital in transportation industry (Brauner, 1994). Therefore, firms operating in transportation industry need to continuously expand their current fleet, which might show up at a very high cost both environmentally and financially. In this respect, financing decisions of these investments bear importance not to face unexpected results.

Cost of capital can be decreased with effective capital structure decisions, resulting in more acceptable projects, and increasing the value of the firm accordingly (Gitman and Zutter, 2012). Considering the financial environment after the 2008 financial crisis, banks substantially turned off the credit taps (Gong et al. 2013) due to the BASEL III rules and Capital Requirements Regulation and Directive (CRR-CRD IV) as banks try to restructure the current loans and new loans are much more restricted due to their overloaded balance sheets (Mayer-Brown, 2014). This situation forced the firms to seek alternative financing sources. In this respect, capital markets became more popular for the transportation firms, specifically maritime firms, to acquire external funds for their capital needs (Grammenos et al., 2007; Merikas et al., 2009; Drobetz et al. 2013). However, the capital markets seek sound corporate governance practices to mitigate the agency problems (Andreou et al., 2014). Therefore, understanding the relationship between corporate governance practices and financing decisions in the transportation industry is vital. As demonstrated by the previous studies, sub-optimal investments can be mitigated by implementing sound corporate governance practices in the cross section of industrial firms (Masulis et al., 2007; Andreou et al. 2014).

There are many empirical studies worldwide investigating determinants of capital structure decisions that present contradictory findings (Toy et al., 1974; Titman and Wessels, 1988; Baskin, 1989; Rajan and Zingales, 1995; Chittenden et al., 1996; Wald, 1999; Booth et al., 2001; Ozkan, 2001; Hall et al., 2004), also for Turkish firms (Güloğlu and Bekçioğlu, 2001; Gönenç, 2003; Akyüz et al., 2004; Balsari and Kırkulak, 2008). Additionally, many empirical studies have attempted to analyze the impact of corporate governance practices on capital structure decisions (Friend and Lang, 1988; Berger et al., 1997; Mehran, 1992). However, capital structure of the transportation firms, substantially shipping and aviation, have rarely been investigated so far (Gritta, 1979; Capobianco and Fernandes, 2004; Arvanitis et al., 2012; Drobetz et al., 2013). In recent years, the relationship between corporate governance practices and performance of the shipping and aviation firms has also been investigated (Backx et al., 2002; Randoy et al., 2003; Syriopoulos and Tsatsaronis, 2011-2012; Tsionas et al., 2012; Lu et al., 2012; Andreou et al., 2014). However, as far as detected, no research to date has examined how the determinants of capital structure, including corporate governance practices, affect the financing decisions of the firms operating in transportation industry in Turkey. Thus this study aims to examine the determinants of capital structure decisions for the firms operating in the transportation industry in Turkey.

Turkey is located at the crossroads of Asia and Europe. The country is encircled by the Black Sea, the Marmara Sea, the Aegean Sea and the Mediterranean Sea. It is an emerging economy (World Bank, 2013), serving as a junction between the continents of Asia and Europe, and amount of freight transport reaches to USD 2 trillion, which make it a hub in the region. Thus, it is one of the most vibrant economies among emerging countries (Deloitte, 2013). Therefore, this study contributes to the literature by providing evidence on capital structure decisions from an emerging country's transportation industry.

The second part of this study presents the theoretical framework of capital structure and empirical studies on determinants of capital structure decisions of the firms operating in Turkey. Data, hypothesis development and research model are presented in the research design section. Results of the analyses are depicted and summarized in the fourth section. Implications and interpretations of the results are presented in the conclusion.

2. THEORETICAL FRAMEWORK OF CAPITAL STRUCTURE

2.1. Theories And Determinants Of Capital Structure

The tradeoff theory and the pecking order theory are the main theories of capital structure that are generally used to explain financing decisions of the firms (Drobetz et al, 2013; Chung et al., 2013). Trade off theory provides a model that optimal leverage represents a trade-off between the tax benefits of debt and the deadweight costs of bankruptcy (Kraus and Litzenberger, 1973). The benefits of using debt against higher interest rates and bankruptcy cost are evaluated by trade-off theory (Schneller, 1980; Baron, 1975; Scott, 1976; Turnbull, 1979; Nakamura and Nakamura, 1982; Bradley et al., 1984; Myers, 1984; Stulz and Johnson, 1985). On the other side, the pecking order theory derives from the information asymmetry (Myers, 1984; Myers and Majluf, 1984; Baskin, 1989) meaning that managers of the firms have information on the operations, and future prospects that is not known by investors or other parties. Thus, they cannot value current assets and newly issued securities correctly (Brealey et al., 2011). The pecking order works properly for large firms that rarely issue equity, and that have access to public bond markets that prefer internal financing until its limit. Smaller, younger, growth firms are more likely to rely on equity issues when external financing is required (Shyam-Sunder and Myers, 1999; Fama and French 2002; Lemmon and Zender, 2010).

Evidences obtained from previous empirical studies assert that there is no broad theory on all time series and cross sectional patterns of observed leverage (Graham and Leary, 2011). However, many studies detect some determinants that could help for explanation of firm leverage variations (Frank and Goyal 2009; Drobetz et al. 2013). In this study tangibility, size, profitability, liquidity, growth opportunities, non-debt tax shield, volatility (business risk) are used to evaluate how they affect the capital structure decisions of the transportation firms in Turkey. Additionally, since the seminal work of Jensen and Meckling (1976) in implementing a theory of the firm based upon conflicts of interest between related parties, which are shareholders, managers and debt holders; a great number of studies have been conducted by many researchers to analyze corporate governance practices effects on the capital structure decisions (Zwiebel, 1996; Berger et al., 1997; Harvey et al., 2004; Morellec, 2004; Wen et al., 2002; Jiraporn and Gleason, 2007; Suto, 2003; Sheikh and Wang, 2012). Therefore corporate governance practices are also considered as determinants of capital structure decisions. In

summary, Figure 1 shows the determinants of capital structure taken into consideration in this study.

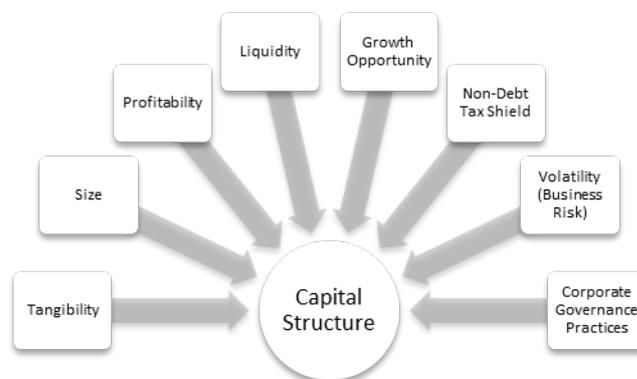


Figure 1: Determinants of capital structure
 Source: Adopted from the literature review by the authors

2.2. Empirical Studies On Determinants Of Capital Structure Decisions Of The Firms In Turkey

As indicated previously, there are many empirical studies on determinants of capital structure decisions worldwide. However, the explanatory variables used in these studies vary one another. Therefore, the study/variable matrix is generated in this context and depicted in Table 1.

Table 1. Study/Variable Matrix on Capital Structure Decisions

Study	LEV ₁	LEV ₂	TANG	MTB	PROF	SIZE	LIQ	NDTS	VOL
Toy et al. (1974)		+			+	+			+
Ferri and Jones (1979)		+				+			+
Titman and Wessels (1988)	+	+	+		+	+		+	+
Friend and Lang (1988)	+		+		+	+			+
Rajan and Zingales (1995)	+		+	+	+	+			
Booth et al. (2001)	+	+	+	+	+	+			+
Frank and Goyal (2009)	+	+	+		+	+			
Sibilkov (2009)		+		+	+	+	+		
Arvanitis et al. (2012)		+	+		+	+	+	+	
Oztekin and Flannery (2012)		+	+	+	+	+	+	+	
Drobetz et al. (2013)		+	+	+	+	+			

Additionally, as corporate governance practices are also considered as explanatory variables in this study, the same matrix are also adapted for the corporate governance variables as depicted in the Table 2. Abbreviations of the variables in these tables can be found in the hypotheses development section respectively.

Table 2. Study/Variable Matrix on Corporate Governance Variables

Study	CEODUAL	CEOWN	BODSIZE	INSIDE	INDEP	FOREIGN	INTOWN	MAJOR
Mehran (1992)		+			+			+
Berger et al. (1997)		+	+		+			
Randoy et al. (2003)	+			+	+			
Abor (2007)	+		+		+			
Syriopoulos and Tsatsaronis (2011)	+			+	+			
Sheikh and Wang (2011)	+	+	+	+	+			
Andreou et al. (2014)	+	+	+		+		+	
Veen et al. (2014)			+			+		

Considering the studies conducted on examining the determinants of capital structure decisions of Turkish firms, their sampling consist of the firms either listed on Borsa Istanbul Stock Exchange (BIST) or unlisted. The studies examined the capital structure decisions of the manufacturing firms (e.g. Gönenç, 2003; Doğukanlı and Acaravcı, 2004; Çağlayan, 2006; Sayılğan et al., 2006; Akkaya and Güler, 2008; Yıldız et al., 2009; Korkmaz et al., 2009), financial firms (e.g. Asarkaya and Özcan, 2007), the tourism firms (e.g. Özer and Yamak, 2000; Karadeniz et al., 2009), and some examined the firms without sectoral distinction (e.g. Akyüz et al., 2006; Kirkulak and Balsarı, 2007). Additionally, Turkish firms have been analyzed in some cross-country studies (Booth et al., 2001; Fan et al., 2012).

Because this study analyzes the transportation and logistics industries, which can also be referred as one of the service sectors, the results of the studies on tourism firms are considerably important due to benchmarking. In this context, Özer and Yamak (2000) conducted a survey to the 101 lodging firms, and their findings support pecking order theory for the firms evaluated as they use their retained earnings in the first place for their investments or current business activities. On the other side, Karadeniz et al. (2009) also investigated lodging firms for the period of 1994-2006 using panel data analysis, and they could not find any significant support to trade-off or pecking order theories.

3. RESEARCH DESIGN

3.1. Data

Companies listed on Borsa Istanbul Stock Exchange (BIST) Transportation Index have been used as a sampling for this study. To analyze the determinants of capital structure of the companies in BIST Transportation Index, a panel data analysis is applied for the period of 2002-2013. Financial data of the sampling firms have been gathered via using financial matrix of Finnet 2000 online database, which consists of broad data and news on the each firm listed on BIST and also the data regarding corporate governance practices have been hand-collected by using the publicly available annual reports of each firm. To reach the sufficient data, firstly the start point for collecting data was chosen from the end of the 1989. However, it is seen

that considering the start point either 1989 or 2002 does not affect the findings, since 45 of 144 observations belong to this period for 4 of 11 firms, and also corporate governance variables are publicly available since 2002. Therefore, the time span during the analyzing process covers the period of 2002-2013 instead of 1989-2013.

3.2. Hypotheses development

3.2.1. Tangibility

From the perspective of pecking order theory; firms with lower tangible assets show higher informational asymmetries, thus tend to use debt instead of equity as indicated by Harris and Raviv (1991), leading to a negative relationship between tangible assets and leverage. However, from the trade-off theory perspective; since tangible assets are considered as collateral, firms can easily obtain debt, because tangible assets provide financial security to the creditors against bankruptcy, leading to a positive relationship between tangible assets and leverage as indicated by Chen (2004), Frank and Goyal (2009), Long and Malitz (1985), Rajan and Zingales (1995), Drobetz and Fix (2003), Michaelas (1999). Following Titman and Wessels (1988), Friend and Lang (1988), Rajan and Zingales (1995); tangibility (TANG) is measured as the ratio of fixed to total assets, and the hypothesis below is developed:

H_1 = There is a positive relationship between tangibility and leverage

3.2.2 Size

From the trade-off perspective, larger firms have lower probability of default as a result of higher diversification as indicated by Heshmati (2001), and additionally as indicated by Chittenden et al. (1996), larger firms use more leverage due to the smaller costs of monitoring the firm and the reduced moral hazard and adverse selection, that is leading to the positive relationship between size and leverage. On the other side, as argued by Rajan and Zingales (1995), the larger the firm, the more level of transparency, and thus information asymmetry is lower between insiders and outsiders, therefore the probability of undervaluation of issuing new equity decreases. As also pointed out by Booth et al. (2001), size is associated with survival and the agency costs of both debt and equity. As a consequence, larger firms have easier access to equity markets due to low fixed costs, and thus are eager to use equity financing for the capital raising. From this perspective; there is negative relationship between size and leverage.

Following Berger et al. (1997), Wald (1999); size (SIZE) is measured as natural logarithm of total assets. There are contradicting empirical results regarding the effect of size on capital structure decisions, and neither of them presents results on the transportation firms. Therefore following hypothesis is developed:

H_2 = Firm size significantly affects capital structure decisions

3.2.3. Profitability

Firms prefer raising capital first from retained earnings, and then debt and equity as a last resort (Myers, 1984) due to the asymmetric information (Myers and Majluf, 1984) that is

the consequence of pecking order theory leading to the negative relationship between profitability and leverage. However, from the trade-off perspective, more profitable firms are eager to increase their debt capacity to take advantage of the tax shield. Thus firms lower their costs of financial distress as long as they are profitable (Frank and Goyal, 2009), leading to a positive relationship. In this study, following Andreou et al. (2014), Tsionas et al. (2012), Syriopoulos and Tsatsaronis (2011-2012), two separate variables are used to measure profitability as return on assets (ROA), and return on equity (ROE). As a result the hypothesis below is developed:

H_3 = Firm profitability significantly affects capital structure decisions

3.2.4. Liquidity

The effect of liquidity on the firm's capital structure decision is contradicting as well. From one side, as the firm's liquidity gets higher; the firm is willing to increase leverage level to meet its short-term debt meaning that there is a positive relationship between liquidity and leverage. On the other side, as indicated by Amihud and Mendelson (1986), if the firm holds liquid assets, these assets are used for funding investment projects or other capital needs of the firm meaning that there is a negative relationship between liquidity and leverage. Following Ozkan (2001), Sibilkov (2009), Oztekin and Flannery (2012), liquidity (LIQ) is measured as the ratio of current assets to current liabilities in this study and the hypothesis below is developed:

H_4 = Firm liquidity significantly affects capital structure decisions

3.2.5. Growth Opportunities

From the trade-off approach, firms with growing potential might face higher costs of financial distress since growth opportunities may reveal moral hazard issues that encourage the firms to take additional risks (Baskin, 1989) leading an inverse relationship between growth opportunities and leverage (Long and Malitz, 1985; Toy et al., 1974). The pecking order theory implies that the firm growth may cause depletion of the internal funding sources, and thus the lack of funding pushes the firms into finding external capital sources (Michaelas et al., 1999). To sum up, the effect of growth opportunities on capital structure decisions is contradicting as well. Following Ozkan (2001), Booth et al. (2001) and Frank and Goyal (2009), growth opportunities (MTB) is measured as the market-to-book ratio and hypothesis is developed as follows:

H_5 = Firm growth opportunities significantly affect capital structure decisions

3.2.6. Non-debt Tax Shield

The optimal capital structure model of DeAngelo and Masulis (1980) involves not only corporate taxes and personal taxes, but also non-debt related corporate tax shield such as depreciation expenses, depletion allowances, investment tax credits etc. that serve as a substitute for interest expenses that are deductible in calculation of the corporate tax and thus which lower firm's capacity of debt tax benefit. Therefore, it is expected that firms with high-level non-debt tax shields reduce their leverage, and as a result it can be claimed that there is a

negative relationship between non-debt tax shield and leverage as also proved by Bowen et al. (1982), and Kim and Sorensen (1986). On the other side, if securability is concerned, a direct relationship is expected as indicated by Bradley et al. (1984), and Wald (1999). Following Titman and Wessels (1988) and Oztekin and Flannery (2012), Non-debt tax shield (NDTS) is measured as ratio of annual depreciation expense to total assets, and hypothesis below is developed.

H_6 = There is a negative relationship between Non-Debt Tax Shield and Leverage

3.2.7. Volatility (Business Risk)

Volatility or business risk is a proxy for the probability of financial distress (Huang and Song, 2006), and the market determines the interest rates and debt amount to be provided to the firm in terms of the firm’s earning volatility (Ferri and Jones, 1979). Thus, it was indicated in several empirical studies such as Thies and Klock (1992), and Harris and Raviv (1991), Booth et al. (2001) that a firm’s optimal debt level is inversely related to the volatility of earnings. However, Hsia (1981) showed that the systematic risk of equity decreases when the variance of the value of the firm’s asset increases. Therefore, the positive relationship between these two variables is expected. Following Booth et al. (2001), Huang and Song (2006) volatility (VOL) is measured as standard deviation of ROA, and the hypothesis below is developed.

H_7 = Volatility (Business Risk) significantly affects firm’s capital structure decisions

3.2.8 Corporate Governance

Since the seminal work of Jensen and Meckling (1976) in implementing a theory of the firm based upon conflicts of interest between related parties, a great number of studies have been conducted by many researchers to explain these conflicts and to decrease agency costs. Corporate policy choices are suffered by the presence of agency conflicts between insiders, (managers and controlling shareholders) and outsiders (minority shareholders). Since managerial flexibility is limited by debt as indicated by Jensen (1986); self-interested managers do not make capital structure decisions, which maximize shareholder wealth. Therefore, leverage ratio of the firm is also affected by agency conflicts (Chang et al., 2014). In this study, corporate governance variables are measured in terms of the studies depicted on Table 3.

Table 3. Corporate Governance Variables

Variable	Calculation	Studies used same proxy
CEO Duality (CEODUAL)	A dummy variable, 1 if CEO is the Chairman, 0 otherwise	Randoy et al. (2003), Andreou et al. (2014)
CEO Ownership (CEOWN)	Ratio of shares held by CEO to total outstanding shares	Mehran (1992), Berger et al. (1997)
Board Size (BODSIZE)	Log(number of directors)	Berger et al. (1997), Wen et al. (2002)
Insider Ownership (INSIDE)	Percentage of ownership of all shares that are controlled directly or indirectly by	Randoy et al. (2003), Syriopoulos and Tsatsaronis (2011),

	members of the board	
Board Composition (INDEP)	Ratio of Independent Members to total BOD	Mehran (1992), Berger et al. (1997),
Foreign Members in BOD (FOREIGN)	Ratio of Foreign members to total BOD	Nielsen and Nielsen (2010), Veen et al. (2014)
Institutional Ownership (INTOWN)	Ratio of shares held by institutional investors	Huang and Song (2006), Andreou et al. (2014)
Major Ownership (MAJOR)	Percentage of the highest shareholder (either individual or institution)	Mehran (1992), Tsionas et al. (2012)

To sum up, following hypothesis is developed.

H_8 = Corporate governance practices significantly affect firms' capital structure decisions

3.3. Research Model Development

In light of the literature review, the determinants of capital structure are divided into 3 categories in the research model. The first category includes the conventional variables, namely; TANG, ROA, ROE, SIZE, LIQ, MTB, NDTs and RISK. The second category is made up of macroeconomic variables that are GDP and INF, and the last category is the corporate governance variables namely: CEODUAL, CEOWN, BODSIZE, INSIDE, INDEP, FOREIGN, INTOWN and MAJOR. Then, the determinants in the first and second categories are applied together within 6 sub-models. Fixed effects model and random effects model are applied to each sub-model of the analysis due to the Hausman test results. To analyze the relationships between the variables used in this study, firstly correlation matrix depicted on the Table 4 is produced. This table demonstrates the pair wise correlation coefficients of all variables. According to Table 4, TANG and SIZE are positively and significantly correlated with LEV_1 , whereas ROA, LIQ and RISK are negatively and significantly correlated with leverage. Considering total leverage, LEV_2 is found significantly and negatively associated with LIQ and ROA. It is also found that among the independent variables, there are some significant correlations as well, for instance ROA-RISK, ROA-ROE, and ROE-RISK. Additionally, it is found that ROA and RISK acts as if they are the same variables. These correlations between the independent variables may affect the models directly, and so does the consistency of the models. Therefore, during the model generation process, this factor is considered.

Table 4. Correlation Matrix

	LEV ₁	LEV ₂	TANG	ROA	ROE	SIZE	LIQ	NDTS	RISK	MTB
LEV ₁	1.0000									
LEV ₂	0.2180*	1.0000								
TANG	0.0120	0.1477	1.0000							
ROA	0.7566*	0.0911	-0.4706*	1.0000						
ROE	-0.3694*	-0.2744*	0.0000	0.5668*	1.0000					
SIZE	-0.1657	-0.1266	-0.2192*	0.0116	0.0000	1.0000				
LIQ	0.0576	0.1480	0.4547*	-0.3889*	-0.0956	0.0000	1.0000			
NDTS	0.5181*	0.0573	0.0000	0.0000	0.2756	-0.0161	-0.2165*	1.0000		
RISK	-0.2312*	-0.2327*	0.0082	0.0114	0.8480	0.0076	0.0003	0.9224	0.8971	
MTB	0.0076	0.0072	0.0003	0.9224	0.8971	0.8480	0.0076	0.0003	0.9224	0.8971
	0.0595	0.0457	0.2982*	-0.0448	-0.0660	-0.0089	-0.2165*	1.0000		
	0.5332	0.6324	0.0008	0.6214	0.4891	0.9220	0.0158	0.0158	1.0000	
	-0.3694*	-0.2744*	-0.4706*	1.0000*	0.5668*	-0.3889*	0.0082	-0.0448	0.0082	1.0000
	0.0000	0.0015	0.0000	0.0000	0.0000	0.0000	0.9224	0.6214	0.6214	1.0000
	-0.0690	0.0432	0.0076	0.0243	-0.0603	-0.1100	-0.0937	0.3742*	0.0243	0.0243
	0.4846	0.6617	0.9371	0.7999	0.5411	0.2506	0.3277	0.0001	0.7999	1.0000

Model development is conducted in terms of the previous studies. Leverage as a dependent variable is considered as long-term leverage (Titman and Wessels, 1988; Mehran, 1992; Chittenden et al., 1996; Michaelas, 1999; Wald, 1999; Booth et al., 2001; Hall et al., 2004), and total leverage (Drobetz et al., 2013; Toy et al., 1974; Ferri and Jones, 1979; Friend and Lang, 1988; Baskin, 1989; Berger et al., 1997; Ozkan, 2001). Likewise, definitions and calculations of the independent variables are identified in the next section respectively in terms of previous studies. Thus, two models are generated for both long-term and total leverage as depicted below.

$$\begin{aligned}
 (LEV_1)_{it} = & \alpha + \beta_1(TANG)_{it} + \beta_2(ROA)_{it} + \beta_3(ROE)_{it} + \beta_4(SIZE)_{it} + \beta_5(LIQ)_{it} + \beta_6(NDTS)_{it} \\
 & + \beta_7(RISK)_{it} + \beta_8(MTB)_{it} + \beta_9(CEODUAL)_{it} + \beta_{10}(CEOWN)_{it} + \beta_{11}(BODSIZE)_{it} \\
 & + \beta_{12}(INSIDE)_{it} + \beta_{13}(INDEP)_{it} + \beta_{14}(FOREIGN)_{it} + \beta_{15}(INTOWN)_{it} \\
 & + \beta_{16}(MAJOR)_{it} + \beta_{17}(GDP)_{it} + \beta_{18}(INF)_{it} + \varepsilon_{it}
 \end{aligned}$$

$$\begin{aligned}
(LEV_2)_{it} = & \alpha + \beta_1(TANG)_{it} + \beta_2(ROA)_{it} + \beta_3(ROE)_{it} + \beta_4(SIZE)_{it} + \beta_5(LIQ)_{it} + \beta_6(NDTS)_{it} \\
& + \beta_7(RISK)_{it} + \beta_8(MTB)_{it} + \beta_9(CEODUAL)_{it} + \beta_{10}(CEOWN)_{it} + \beta_{11}(BODSIZE)_{it} \\
& + \beta_{12}(INSIDE)_{it} + \beta_{13}(INDEP)_{it} + \beta_{14}(FOREIGN)_{it} + \beta_{15}(INTOWN)_{it} \\
& + \beta_{16}(MAJOR)_{it} + \beta_{17}(GDP)_{it} + \beta_{18}(INF)_{it} + \varepsilon_{it}
\end{aligned}$$

4. RESULTS

4.1. Descriptive Statistics

Table 5 shows the summary of the statistics of both dependent and independent variables. The mean dependent variable of the model LEV_1 that is the ratio of long-term liabilities to total assets is 24%. LEV_2 is also taken into consideration to highlight the ratio of total debt on total assets, and it is seen that the sum of short-term and long-term liabilities constitute approximately 64% of total assets. This shows that transportation firms use substantially short-term debt for their capital needs instead of long-term debt. This situation makes liquidity more significant for these firms.

Table 5. Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.
LEV_1	132	0.23981	0.18439
LEV_2	132	0.63579	0.48458
TANG	144	0.49324	0.26414
ROA	144	0.12577	0.23658
ROE	132	0.11390	1.21959
SIZE	144	18.39562	2.71487
LIQ	144	3.86131	15.19666
NDTS	124	0.32942	0.25479
RISK	144	-1.02e-09	1
MTB	111	3.03820	4.34657
CEODUAL	70	0.22857	0.42294
CEOWN	70	0.02781	0.06884
BODSIZE	70	6.75714	2.48144
INSIDE	70	0.10984	0.17602
INDEP	70	0.06888	0.12951
FOREIGN	70	0.10839	0.20394
INTOWN	73	0.47849	0.26282
MAJOR	75	0.47670	0.20065

4.2. Results of Panel Data Regressions

The results of the analysis as indicated in Table 6 demonstrate that tangibility and size are significantly and positively associated with the long-term leverage supporting trade off theory. Large firms with tangible assets encounter less costs of financial distress and may borrow more according to tradeoff approach, on the other side; the pecking order approach

defends the importance of profitability, arguing that profitable firms use less debt as they are financed internally. (Brealey et al., 2011) and this finding is consistent with Chittenden et al. (1996), Michaelas (1999), Wald (1999), Booth et al (2001), Hall et al. (2004), Huang and Song (2006), Frank and Goyal (2009), Kayo and Kimura (2011), Sheikh and Wang (2012). However, according to the results, no significant relationship is found between profitability and long-term leverage. Inconsistently, Drobetz et al. (2013), and Arvanitis et al. (2012) found that profitability is negatively and significantly correlated with leverage for the shipping firms. The finding of this study is also contradicting with Ozkan (2001), Kester (1986), Friend and Lang (1988), Shyam-Sunder and Myers (1999), and also Baskin (1989) with inverse relationship, and Bowen et al. (1982), Dammon and Senbet (1988) and Givoly et al. (1992)'s positive relationship between profitability and leverage.

From corporate governance perspective, as depicted in Table 7, solely Board Size has a weak positive significance on leverage consistent with Lu et al. (2012), Abor (2007) and Sheikh and Wang (2012).

Table 6. Results Of The Panel Data Analysis

Variables	Pred.	Dependent Variable: LEV_t					
		Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
TANG	+	0.5133359 (0.000)****	0.5430905 (0.000)****	0.5133359 (0.000)****	0.522311 (0.000)****	0.522311 (0.000)****	0.5414166 (0.000)****
ROA	-	0.0439006 (0.410)				-0.0494708 (0.451)	
ROE	-		0.0163259 (0.198)				0.0093703 (0.486)
SIZE	+/-	0.0241633 (0.000)****	0.0200522 (0.000)****	0.0241633 (0.000)****	0.0343172 (0.000)****	0.0343172 (0.000)****	0.030431 (0.001)***
LIQ	+/-	-0.0002805 (0.646)	-0.0002678 (0.638)	-0.0002805 (0.646)	-0.0004308 (0.482)	-0.0004308 (0.482)	-0.0002133 (0.714)
NDS	-	-0.0500499 (0.292)	-0.0407895 (0.406)	-0.0500499 (0.292)	-0.0802224 (0.123)	-0.0802224 (0.123)	-0.0599212 (0.237)
RISK	+/-			0.0103861 (0.410)	-0.0117039 (0.451)		
MTB	+/-	0.0003935 (0.868)	-4.98e-06 (0.998)	0.0003935 (0.868)	-0.0010663 (0.658)	-0.0010663 (0.658)	-0.0003622 (0.879)
GDP	+/-				0.236125 (0.240)	0.236125 (0.240)	0.2049044 (0.309)
INF	+/-				0.1262707 (0,063)*	0.1262707 (0,063)*	0.0859383 (0.167)
_Cons		-0.470738 (0.000)****	-0.4099603 (0.000)****	-0.4652168 (0.000)****	-0.6970871 (0.000)****	-0.6908653 (0.000)****	-0.6316305 (0.001)***
Obs.		99	99	99	99	99	99
R ² (within)		0.5224	0.5374	0.5224	0.5518	0.5518	0.5514
Random or Fixed		Random	Fixed	Random	Fixed	Fixed	Fixed
VIF		1.42	1.36	1.42	1.79	1.79	1.76

* Statistical significance at 10% level (p<0.1) ** Statistical significance at 5% level (p<0.05) *** Statistical significance at 1% level (p<0.01) **** Statistical significance at 0.1% level (p<0.001)

Table 7. Results Of The Panel Data Analysis (Continued)

Variables	Pred.	Dependent Variable: LEV_t				
		Model 1	Model 2	Model 3	Model 4	Model 5
TANG	+	0.3529852 (0.000)****	0.3472327 (0.000)****	0.2872296 (0.001)***	0.3475423 (0.000)****	0.3609192 (0.000)****
ROA	-			-0.1794241 (0.118)	-0.1884464 (0.107)	-0.1845176 (0.105)
ROE	-	-0.0283773 (0.644)	-0.0161133 (0.802)			
SIZE	+/-	0.0801798 (0.000)****	0.0920458 (0.000)****	0.0849478 (0.000)****	0.053832 (0.001)***	0.0548204 (0.000)****
INTOWN	+/-	0.0428313 (0.669)	0.1043923 (0.430)	0.0890465 (0.493)		
MAJOR	+/-	0.1809799 (0.131)	0.1852969 (0.209)	0.1940572 (0.162)		
CEODUAL	+/-		-0.0193686 (0.640)	-0.0226239 (0.576)		
CEOWN	+/-		0.3842748 (0.543)	0.3625297 (0.564)		-0.3549522 (0.349)
BODSIZE	+/-				0.0922398 (0.055)*	0.0993039 (0.025)**
INDEP	+/-				0.0315928 (0.782)	
FOREIGN	+/-				0.0445607 (0.657)	
INSIDE	+/-					0.0392945 (0.757)
_cons		-1.608406 (0.000)****	-1.890234 (0.000)****	-1.701119 (0.000)****	-1.152167 (0.000)****	-1.177649 (0.000)****
Obs.		68	65	65	65	65
R² (within)		0.5830	0.6082	0.6157	0.5457	0.5364
Random or Fixed		Random	Random	Random	Random	Random
VIF		1.87	2.29	2.26	1.76	1.71

* Statistical significance at 10% level (p<0.1) ** Statistical significance at 5% level (p<0.05) *** Statistical significance at 1% level (p<0.01) **** Statistical significance at 0.1% level (p<0.001)

The findings above hold when the dependent variable is taken as long-term leverage. However, as indicated in the Table 8, Tangibility is no longer consistent with total leverage, which also includes short-term debt. This shows that tangible assets are funded by using long-term debt. Furthermore, considering total leverage instead of long-term leverage as dependent variable, significant relationships are found between; ROA, SIZE, LIQ as firm level, GDP and INF as country-level, and CEOWN, INDEP and INTOWN as corporate governance variables and total leverage.

Table 8. Results Of The Panel Data Analysis (Continued)

Variables	Pred.	Dependent Variable: LEV_{it}					
		Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
TANG	+	-0.3495002 (0.260)	-0.0399551 (0.798)	0.1376774 (0.418)	0.2717504 (0.086)*	0.2544014 (0.115)	0.2095881 (0.112)
ROA	-	-0.8033583 (0.003)***	-0.299802 (0.337)	-0.1226929 (0.694)			-0.3367338 (0.064)*
ROE	-				0.179931 (0.207)	0.1514067 (0.305)	
SIZE	+/-	0.0615119 (0.089)*	0.1633223 (0.000)****	0.2039758 (0.000)****	0.1944619 (0.000)****	0.2094073 (0.000)****	0.0589838 (0.006)***
LIQ	+/-	-0.0083903 (0.005)***	-0.0019414 (0.054)*	-0.0017479 (0.076)*	-0.0018174 (0.061)*	-0.0017048 (0.102)	-0.0024904 (0.009)***
GDP	+/-	1.73097 (0.051)*	-0.197078 (0.592)	-0.2171775 (0.561)	-0.0162022 (0.965)	-0.1002591 (0.790)	
INF	+/-	0.4971186 (0.067)*	0.1140443 (0.592)	0.1202047 (0.711)	-0.2210789 (0.463)	-0.1559577 (0.610)	
INTOWN	+/-		0.5455633 (0.001)***	0.5729257 (0.001)***	0.5996856 (0.000)****	0.5925702 (0.000)****	
CEODUAL	+/-		-0.017099 (0.802)	-0.0034499 (0.959)	0.0011028 (0.987)		
CEOWN	+/-		3.525641 (0.149)	3.682863 (0.128)	4.073113 (0.086)*		
BODSIZE	+/-			0.0529055 (0.554)	0.0811447 (0.361)	0.0379583 (0.703)	0.0767326 (0.269)
INDEP	+/-			-0.4325979 (0.040)**	-0.4773758 (0.021)**	-0.5053459 (0.018)**	
FOREIGN	+/-					0.0271929 (0.901)	
_cons		-0.4240084 (0.567)	-3.057917 (0.000)****	-4.085014 (0.000)****	-4.056979 (0.000)****	-4.144597 (0.000)****	-0.8400039 (0.034)**
Obs.		132	65	65	65	65	65
R² (within)		0.1352	0.5228	0.5742	0.5881	0.5583	0.3311
Random or Fixed		Fixed	Fixed	Fixed	Fixed	Fixed	Random
VIF		1.68	2.17	2.46	2.59	2.12	1.41

* Statistical significance at 10% level (p<0.1) ** Statistical significance at 5% level (p<0.05) *** Statistical significance at 1% level (p<0.01) **** Statistical significance at 0.1% level (p<0.001)

Hypotheses tests and results are depicted as follows.

Table 9. Hypotheses Tests And Results

Relationship	Hypothesis	Finding	Comment
Tangibility – Leverage	+	+	Confirmed for long-term leverage. But, not significant with total leverage.
Size – Leverage	+/-	+	Confirmed for both.
Profitability – Leverage	+/-	?	Rejected for long-term leverage. But, confirmed for total leverage.
Liquidity	+/-	?	Rejected for long-term leverage. But, confirmed for total leverage.
Growth opportunities	+/-	?	Rejected for both
Non-debt tax shield	-	?	Rejected for both
Volatility	+/-	?	Rejected for both
		Board Size (+)	
Corporate Governance	+/-	Board Composition (-) Institutional Ownership (+)	Confirmed for both

5. CONCLUSION

Transportation industry is one of the vital components of global economy. Since the new regulations and quality standards, tough competition among the rivals, increasing insurance and maintenance costs with older vehicles, technological developments and also increasing demand; firms in this capital-intensive industry need to continuously conduct new investments where financing may generate difficulties.

For the transportation industry, especially ship owners and airlines are highly capital intensive compared to the other industries; thus size might be considered one of the main determinants of the financing decisions of this industry.

The results of this study show that profitability is not a significant determinant of capital structure decision, however tangibility and size variables are. This may suggest that, as a bank based emerging economy, in Turkey, bigger firms with more collateral have more creditability.

Results differ if total leverage is considered as dependent variable instead of long-term leverage. It is seen that when total leverage is dependent, the significance of tangibility is no longer consistent. Furthermore, negative relationship between total leverage and liquidity and profitability occurs. This can be interpreted as that the tangible assets are funded by using long-term debt, instead of short-term debt in the transportation firms in Turkey. However, considering the higher proportion of short-term debt, these firms initially use short-term debt instead of long-term debt for their other capital needs. Thus, to meet the obligations, these firms need to be more profitable, and liquid accordingly. Furthermore, corporate governance

variables are found significant in both models. However, if the total leverage is concerned, the level of significance of these variables increases.

The main limitation of this study is the sample size. As the financial reports of the firms in this industry are generally not publicly available, it is hard to hand-collect the financial data for unlisted firms. Thus studies with the wider range of data may generate different results.

For the future research, more evidence is needed to understand the determinants of capital structure for transportation industry with larger samples in Turkey. The effects of financial crises might be examined as well. Additionally, subsectors of the industry can be analyzed separately.

REFERENCES

- Abor, J. (2007), "Corporate Governance and Financing Decisions of Ghanaian Listed Firms", *Corporate Governance: An International Review*, 7(1), pp.83-92.
- Akkaya, G. C. - Güler, S. (2008), "Capital Structure, Assets and Profitability: An Application on Manufacturing Firms", *İktisat, İşletme ve Finans*, 23(263), pp.41-52.
- Akyüz, K.C. - Akyüz, İ. - Serin, H. - Cindik, H. (2006), "The Financing Preferences and Capital Structure of Micro, Small and Medium Sized Firm Owners in Forest Products Industry in Turkey", *Forest Policy and Economics*, 8(3), pp.301-311.
- Amihud, Y. - Mendelson, H. (1986), "Asset Pricing and the Bid-Ask Spread", *Journal of Financial Economics*, 17(2), pp.223-249.
- Andreou, P. C. – Louca C. - Panayides P.M. (2014), "Corporate Governance, Financial Management Decisions and Firm Performance: Evidence from the Maritime Industry", *Transportation Research Part E*, 63, pp.59-78.
- Arvanitis, S. - Tzigkounaki, I.S. - Stamatopoulos, T.V. – Thalassinos E.I. (2012), "Dynamic Approach of Capital Structure of European Shipping Companies" *International Journal of Economic Sciences and Applied Research*, 5(3), pp.33-63.
- Asarkaya, Y. - Özcan, S. (2007), "Determinants of Capital Structure in Financial Institutions: The Case of Turkey", *Journal of Banking and Financial Markets*, 1(1), pp.91-109.
- Backx, M. - Carney, M.- Gedajlovic, E. (2002), "Public, Private and Mixed Ownership and the Performance of International Airlines" *Journal of Air Transport Management*, 8(4), pp. 213-220.
- Baron, D.P. (1975), "Firm Valuation, Corporate Taxes, and Default Risk". *The Journal of Finance*, 30(5), pp.1251-1264.
- Baskin, J. (1989), "An Empirical Investigation of the Pecking Order Hypothesis", *Financial Management*, 18(1), pp. 26-35.

- Berger, P.G. - Ofek, E. - Yermack D.L. (1997), "Managerial Entrenchment and Capital Structure Decisions", *The Journal of Finance*, 52(4), pp.1411-1438.
- Booth, L. - Aivazian, V. - Demirguc-Kunt, A. - Maksimovic V. (2001), "Capital Structures in Developing Countries", *The Journal of Finance.*, 56(1), pp. 87-130.
- Bowen, R.M. - Daley, L.A. - Huber J.J. (1982), "Evidence on the Existence and Determinants of Inter-Industry Differences in Leverage", *Financial Management*, 11(4), pp.10-20.
- Bradley, M. - Jarrell, G.A. - Kim, E.H. (1984), "On the Existence of an Optimal Capital Structure: Theory and Evidence", *The Journal of Finance*, 39(3), pp.857-878.
- Brauner, A. (1994), "Shipping Finance: A Current View of the Availability of Finance and Financiers Requirements for Vessel Quality", *International Conference on Maritime Safety*, Istanbul: Chamber of Shipping Publications, 1994, pp.109-143.
- Brealey, R.A. - Myers, S.C. - Allen, F. (2011), *Principles of Corporate Finance*, New York : McGraw-Hill.
- Capobianco, H.M.P. - Fernandes, E. (2004), "Capital Structure in the World Airline Industry", *Transportation Research Part A: Policy and Practice*, 38(6), pp.421-434.
- Chen, C.C. (2004), "Determinants of Capital Structure of Chinese-Listed Companies", *Journal of Business Research*, 57(12), pp.1341-1351.
- Chang, YK. - Chou, R.K. - Huang TH. (2014), "Corporate Governance and the Dynamics of Capital Structure: A New Evidence", *Journal of Banking and Finance*, 48, pp.374-385.
- Chittenden, F. - Hall, G. - Hutchinson, P. (1996), "Small Firm Growth, Access to Capital Markets and Financial Structure: Review of Issues and Empirical Investigation", *Small Business Economics*, 8(1), pp.59-67.
- Chung, Y.P. - Na, H.S. - Smith R. (2013), "How Important is Capital Structure Policy to Firm Survival?", *Journal of Corporate Finance*, 22, pp.83-103.
- Çağlayan, E. (2006), "Sermaye Yapısı Bileşenleri: Kantil Regresyon Modeli", *İktisat, İşletme ve Finans*, 21(248), ss.66-76.
- Dammon, R.M. - Senbet, L.W. (1988), "The Effect of Taxes and Depreciation on Corporate Investment and Financial Leverage", *The Journal of Finance*, 43(2), pp.357-353.
- De Angelo, H. - Masulis, R.W. (1980), "Optimal Capital Structure Under Corporate and Personal Taxation", *Journal of Financial Economics*, 8(1), pp.3-29.
- Delcours, N. (2007), "The Determinants of Capital Structure in Transitional Economies. *International Review of Economics & Finance*, 16(3), pp.400-415.

- Deloitte (2013), "The Logistics Industry in Turkey", <http://www.invest.gov.tr/en-US/infocenter/publications/Documents/TRANSPORTATION-LOGISTICS-INDUSTRY.pdf>, (15.07.2014)
- Doğukanlı, H. - Acaravcı, S. (2004), "Türkiye'de Sermaye Yapısını Etkileyen Faktörlerin İmalat Sanayinde Sınanması", *İktisat İşletme ve Finans*, 19(225), pp.43-57.
- Drobetz, W. - Fix, R. (2003), "What are the Determinants of Capital Structure? Some Evidence for Switzerland", <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.199.1335&rep=rep1&type=pdf>, (15.02.2014)
- Drobetz, W. - Gounopoulos, D. - Merikas, A. - Schröder, H. (2013), "Capital Structure Decisions of Globally-Listed Shipping Companies", *Transportation Research Part E*, 52, pp.49-76.
- Fama, E. F. - French, K. R. (2002), "Testing Trade-Off and Pecking Order Predictions About Dividends and Debt", *Review of Financial Studies*, 15(1), pp.1-33.
- Fan, J.P.H. - Titman, S. - Twite, G. (2012), "An International Comparison of Capital Structure and Debt Maturity Choices", *Journal of Financial and Quantitative Analysis*, 47(1), pp:23-56.
- Ferri, M.G. - Jones, W.H. (1979), "Determinants of Financial Structure: A New Methodological Approach", *The Journal of Finance*, 34(3), pp.631-644.
- Frank, M.Z. - Goyal, V.K. (2009), "Capital Structure Decisions: Which Factors Are Reliably Important?", *Financial Management*, 38(1), pp.1-37.
- Friend, I. - Lang, L.H.P. (1988), "An Empirical Test of the Impact of Managerial Self-Interest on Corporate Capital Structure", *The Journal of Finance*, 43(2), pp.271-281.
- Gitman, L.J. - Zutter, C.J. (2012), *Principles of Managerial Finance*, Boston, MA, The Princeton Hall.
- Givoly, D. - Hayn C. - Ofer, A.R. - Sarig, O. (1992), "Taxes and Capital Structure: Evidence from Firms' Response to the Tax Reform Act of 1986", *The Review of Financial Studies*, 5(2), pp.331-355.
- Gong, S.X. - Ye, HQ. - Zeng, Y.Y. (2013), "Impacts of the Recent Financial Crisis on Ship Financing in Hong Kong: A Research Note", *Maritime Policy and Management: The Flagship Journal of International Shipping and Port Research*, 40(1), pp.1-9.
- Gönenç, H. (2003), "Capital Structure Decisions Under Micro Institutional Settings: The Case of Turkey", *Journal of Emerging Market Finance*, 2(1), pp.57-82.
- Graham, J.G. - Leary, M.T. (2011), "A Review of Empirical Capital Structure Research and Directions for the Future", *Annual Review of Financial Economics*, 3, pp.309-345.

- Grammenos, C. - Alizadeh, A.H. - Papapostolou, N.C. (2007), "Factors Affecting the Dynamics of Yield Premia on Shipping Seasoned High Yield Bonds", *Transportation Research Part E: Logistics and Transportation Review*, 43, pp.549–564.
- Gritta, R.D. (1979), "Bankruptcy Risks Facing the Major U.S. Airlines", *Journal of Air Law and Commerce*, 48, pp.89-108.
- Hall, G.C. - Hutchinson, P.J. - Michaelas, N. (2004), "Determinants of Capital Structures of European SMEs", *Journal of Business Finance & Accounting*, 31(5-6), pp.711-728.
- Harris, M. - Raviv, A. (1991), "The Theory of Capital Structure", *The Journal of Finance*, 46(1), pp.297-355.
- Harvey, C.R. - Lins, K.V. - Roper, A.H. (2004), "The Effect of Capital Structure When Expected Agency Costs Are Extreme", *Journal of Financial Economics*, 74(1), pp.3-30.
- Heshmati, A. (2001), "The Dynamics of Capital Structure: Evidence from Swedish Micro and Small Firms", *Research in Banking and Finance*, 2, pp.199-241.
- Hsia, C. (1981), "Coherence of the Modern Theories of Finance", *Financial Review*, Winter, pp: 27-42.
- Huang, G. - Song, F.M. (2006), "The Determinants of Capital Structure: Evidence from China", *China Economic Review*, 17(1), pp.14-36.
- Jensen, M.C. (1986), "Agency Costs of Free Cash Flow, Corporate Finance and Takeovers", *American Economic Review*, 76(2), pp.323-329.
- Jensen, M.C. - Meckling, W.H. (1976), "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure", *Journal of Financial Economics*, 3(4), pp.305-360.
- Jiraporn, P. - Gleason, K.C. (2007), "Capital Structure, Shareholder Rights and Corporate Governance", *The Journal of Financial Research*, 30(1), pp.21-33.
- Kaduwela, V. - Inbasekaran, R. (2012), "Leveraging Analytics in Transportation to Create Business Value", <http://support.sas.com/resources/papers/proceedings12/383-2012.pdf>, (14.06.2014).
- Karadeniz, E. - Kandır, S.Y. - Balcılar, M. - Onal Y.B. (2009), "Determinants of Capital Structure: Evidence from Turkish Lodging Companies", *International Journal of Contemporary Hospitality Management*, 21(5), pp:594-609.
- Kayo, E.K. - Kimura, H. (2011), "Hierarchical Determinants of Capital Structure", *Journal of Banking & Finance*, 35(2), pp:358-371.
- Kester, W.C. (1986), "Capital and Ownership Structure: A Comparison of United States and Japanese Manufacturing Corporations", *Financial Management*, 15(1), pp.5-16.

- Kirkulak, B. - Balsarı, C.K. (2007), “Türk Firmalarının İşletme Sermayesi Yönetimi Uygulaması: 2001 Ekonomik Krizi Sonrası”, *İktisat İşletme ve Finans*, 22(260), ss.102-119.
- Kim, W.S. - Sorensen, E.H. (1986), “Evidence on the Impact of the Agency Costs of Debt and Corporate Debt Policy”, *Journal of Financial and Quantitative Analysis*, 21(2), pp.131-144.
- Korkmaz, T. - Başaran, Ü. - Gökbulut, R.İ. (2009), “İMKB’de İşlem Gören Otomotiv ve Otomotiv Yan Sanayi İşletmelerinin Sermaye Yapısı Kararlarını Etkileyen Faktörler: Panel Veri Analizi”, *İktisat İşletme ve Finans*, 24(277), ss.29-60.
- Kraus, A. - Litzenberger, R.H. (1973), “A State-Preference Model of Optimal Financial Leverage”, *The Journal of Finance*, 28(4), pp.911-922.
- Lemmon, M.L. - Zender, J.F. (2010), “Debt Capacity and Tests of Capital Structure Theories”, *Journal of Financial and Quantitative Analysis*, 45(5), pp.1161-1187.
- Long, M.S., - Malitz, I.B. (1985), “Investment Patterns and Financial Leverage”, *Corporate Capital Structures in the United States*. (pp. 325-352). Editor Benjamin M. Friedman. Chicago: University of Chicago Press.
- Lu, W.M. - Wang, W.K. - Hung, S.W. - Lu E.T. (2012), “The Effects of Corporate Governance on Airline Performance: Production and Marketing Efficiency Perspectives”, *Transportation Research Part E: Logistics and Transportation Review*, 48(2), pp.529-544.
- Masulis, R.W. - Wang, C. - Xie, F. (2007), “Corporate Governance and Acquirer Returns”, *Journal of Finance*, 62, pp.1851-1889.
- Mayer-Brown (2014). “The Restructuring of Non-Performing Shipping Loans: Learning from Experience in the Real Estate Crisis”, <http://www.mayerbrown.com/files/Publication/baaefb92-d2d9-4dc2-b248-26ad2556cfab/Presentation/PublicationAttachment/1854f2fd-307c-411e-98ab-286d8f780488/140226-FRK-Ship-Loans.pdf> (17.07.2014)
- Mehran, H. (1992), “Executive Incentive Plans, Corporate Control, and Capital Structure”, *Journal of Financial and Quantitative Analysis*, 27(4), pp.539-560.
- Merikas, A. G. - Sigalas, C. - Drobetz, W. (2011), “The Shipping Corporate Risk Trade-Off Hypothesis” <http://marinemoneyoffshore.kovidadev.com/node/6861>. (10.06.2014).
- Michaelas, N. - Chittenden, F. - Poutziouris, P. (1999), “Financial Policy and Capital Structure Choice in UK SMEs: Empirical Evidence from Company Panel Data”, *Small Business Economics*, 12(2), pp.113-130.
- Morellec, E. (2004), “Can Managerial Discretion Explain Observed Leverage Ratios?” *Review of Financial Studies*, 17, pp.257–294.

- Myers, S.C. (1984), "The Capital Structure Puzzle", *The Journal of Finance*, 39(3), pp.575-592.
- Myers, S.C. - Majluf, N.S. (1984), "Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have", *Journal of Financial Economics*. 13(2), pp.187-221.
- Nakamura, A. - Nakamura, M. (1982), "On the Firm's Production, Capital Structure and Demand for Debt", *The Review of Economics and Statistics*, 64(3), pp.384-393.
- Nielsen, S. - Nielsen, B.B. (2010), "Why Do Firms Employ Foreigners on Their Top Management Team? An Exploration of Strategic Fit, Human Capital and Attraction-Selection-Attrition Perspectives", *International Journal of Cross Cultural Management*, 10(2), pp.195-209.
- Özkan, A. (2001), "Determinants of Capital Structure and Adjustment to Long Run Target: Evidence from UK Company Panel Data", *Journal of Business Finance & Accounting*, 28(1-2), pp.175-198.
- Özer, B. - Yamak, S. (2000), "Self-Sustaining Pattern of Finance in Small Business: Evidence from Turkey", *International Journal of Hospitality Management*, 19(3), pp. 261-273
- Öztekin, Ö. - Flannery, M.J. (2012), "Institutional Determinants of Capital Structure Adjustment Speeds", *Journal of Financial Economics*, 103(1), pp.88-112.
- Rajan, R.G. - Zingales, L. (1995), "What Do We Know About Capital Structure? Some Evidence from International Data", *The Journal of Finance*, 50(5), pp.1421-1460.
- Randoy, T. - Down, J. - Jenssen, J. (2003), "Corporate Governance and Board Effectiveness in Maritime Firms", *Maritime Economics & Logistics*, 5, pp.40-54.
- Sayilgan, G. - Karabacak, H. - Küçükkoçaoğlu, G. (2006), "The Firm-Specific Determinants of Corporate Capital Structure: Evidence from Turkish Panel Data", *Investment Management and Financial Innovations*, 3(3), pp.125-139.
- Schneller, M.I. (1980), "Taxes and the Optimal Capital Structure of the Firm", *The Journal of Finance*, 35(1), pp.119-127.
- Scott, J.H. (1976), "A Theory of Optimal Capital Structure", *Bell Journal of Economics*, 7(1), pp:33-54.
- Sheikh, N.A. - Wang, Z. (2012), "Effects of Corporate Governance on Capital Structure: Empirical Evidence from Pakistan", *Corporate Governance: An International Review*, 12(5), pp.629-641.
- Shyam-Sunder, L. - Myers, S.C. (1999), "Testing Static Tradeoff Against Pecking Order Models of Capital Structure", *Journal of Financial Economics*, 51(2), pp.219-244.

- Sibilkov, V. (2009), "Asset Liquidity and Capital Structure", *Journal of Financial and Quantitative Analysis*, 44(5), pp.1173-1196.
- Sinha, K.C. - Labi, S. (2007), *Transportation Decision Making*, Hoboken/NJ, John Wiley and Sons.
- Stulz, R.M. - Johnson, H. (1985), "An Analysis of Secured Debt", *Journal of Financial Economics*, 14(4), pp.501-521.
- Suto, M. (2003), "Capital Structure and Investment Behaviour of Malaysian Firms in The 1990s: A Study of Corporate Governance Before the Crisis", *Corporate Governance: An International Review*, 11(1), pp.25-39.
- Syriopoulos, T. - Tsatsaronis, M. (2011), "The Corporate Governance Model of Shipping Firms: Financial Performance Implications", *Maritime Policy and Management: The Flagship Journal of International Shipping and Port Research*, 38(6), pp.585-604.
- Syriopoulos, T. - Tsatsaronis, M. (2012), "Corporate Governance Mechanisms and Financial Performance: CEO Duality in Shipping Firms", *Eurasian Business Review*, 2(1), pp.1-30.
- Thies, C. F. - Klock, M. S. (1992), "Determinants of Capital Structure", *Review of Financial Economics*, 1(2): 40-53.
- Titman, S. - Wessels, R. (1988). "The Determinants of Capital Structure Choice", *The Journal of Finance*, 43(1), pp.1-19.
- Toy, N. - Stonehill, A. - Remmers, L. - Wright, R. - Beekhuisen, T. (1974), "A Comparative International Study of Growth, Profitability, and Risk as Determinants of Corporate Debt Ratios in Manufacturing Sector", *Journal of Financial and Quantitative Analysis*, 9(5), pp.875-886.
- Tsionas, M.G. - Merikas, A.G. - Merika, A.A. (2012), "Concentrated Ownership and Corporate Performance Revisited: The Case of Shipping", *Transportation Research Part E: Logistics and Transportation Review*, 48(4), pp.843-852.
- Turnbull, S.M. (1979), "Debt Capacity", *The Journal of Finance*, 34(4), pp.931-940.
- Veen, K. - Sahib, P.R. - Aangeenbrug, E. (2014), "Where Do International Board Member Come From? Country-Level Antecedents of International Board Member Selection in European Boards", *International Business Review*, 23, pp.407-417.
- Wald, J.K. (1999), "How Firm Characteristics Affect Capital Structure: An International Comparison", *The Journal of Financial Research*, 22(2), pp.161-187.
- Warner, J.B. (1977), "Bankruptcy Costs: Some Evidence", *The Journal of Finance*, 32(2), pp.337-347.

Wen, Y. - Rwegasira, K. - Bilderbeek, J. (2002), "Corporate Governance and Capital Structure Decisions of the Chinese Listed Firms", *Corporate Governance: An International Review*, 10(2), pp.75-83.

World Bank (2013), "Turkey", <http://data.worldbank.org/country/turkey>. (29.01.2014).

Yıldız, M. E. - Yalama, A. - Sevil, G. (2009), "Sermaye Yapısı Teorilerinin Geçerliliğinin Test Edilmesi: Panel Veri Analizi Kullanılarak İMKB-İmalat Sektörü Üzerinde Ampirik Bir Uygulama, *İktisat İşletme ve Finans*, 24(278), ss.25-45.

Zwiebel, J. (1996) "Dynamic Capital Structure Under Managerial Entrenchment", *American Economic Review*, 86(5), pp.1197-1215.