

The Effects of Capital Structure Decisions on Firm Performance: Evidence from Turkey

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Abstract

The aim of this study is to investigate the effects of capital structure decisions on firms' profitability in manufacturing sector in Turkey. The data used in this research corresponds to the financial statements of manufacturing companies collected between 2005 and 2011. Regression analysis was employed by using financial ratios obtained from financial statements of firms within the scope of analysis. According to results, short term liabilities to total assets and long term liabilities to total assets have a negative relationship with the ROA indicator. There is a positive relationship between operating income to financial expenditures and financial performance.

Keywords: Capital Structure, Firm Performance, Optimal Capital Structure, Profitability, Financial Leverage, Regression Analysis

I. Introduction

Capital structure decisions of firms have a crucial importance on firms' financial performance. The capital structure concept is generally described as the combination of debt and equity that make up the total capital of firms. Enterprises supply their liabilities from outside the company (e.g. short term and long term liabilities), whereas equity can be obtained either from the company itself (e.g. retained earnings and provisions) or from outside the company (e.g. capital increase and obtaining new partners). The selection of capital components and use of these components play an important role during the determination of financial strategies. Therefore, it is difficult to choose an ideal proportion for debt and equity. A good equilibrium of debt and equity can affect the financial performance and the value of company. The profitability of an enterprise is directly affected by capital structure decisions.

Capital structure decisions are among the most significant finance decisions companies encounter. It has been long debated whether capital structures are influential on costs of capital and firm values. Modigliani and Miller (1958) claim that optimal capital structure does not affect firm value, which is an argument commonly mentioned in studies of capital structure. There have been four main approaches dealing with the effect of total liabilities to equity ratio, or financial leverage, on cost of capital and firm value (Akgüç, 2010):

- i. Net Income Approach (NIA)
- ii. Net Operating Income Approach (NOIA)

- iii. Traditional Approach (TA)
- iv. Modigliani-Miller (MM) Approach

Net Income Approach was proposed by David Durand in 1952. According to this approach, the market value and total cost of capital of an enterprise are correlated with the capital structure of it. The perspective that places the most emphasis on leverage factor in the determination of the firm value is the NIA (Aydın et al., 2010). According to this approach, enterprises reduce their weighted average cost of capital by choosing financing with debts which has a lower cost over equity which has a higher cost. The decrease in the cost of capital increases the profitability of the company and its market value.

Unlike NIA, Net Operating Income Approach claims that there is no relationship between the capital structure of a company and its market value and that a change in the capital structure of a company does not create a change in its firm value (Durand, 1952). According to NOIA, the financial leverage level of a company is independent of both its cost of capital and value. In other words, weighted average cost of capital is stable no matter how much debt is used. Along with this, the market value of the company is also stable (Okka, 2009). An important disadvantage of NOIA is its defense of the idea that financial risk level of a company does not change in accordance with borrowing. This argument seems to contradict real life. In real life, as the level of borrowing increases, companies borrow with higher interest rates and their cost of capital increases (Aydın et al., 2010).

According to Traditional Approach, capital structure affects the cost of capital and market value of a firm. This approach defends the fact that there is a single optimal capital structure for companies (Demirhan, 2009). According to NIA, the cost of debt for a company is always lower than the cost of equity. Therefore, a company can reduce its WACC by combining its low-cost liabilities with high-cost equity. However, this decrease can go on up to a specific extent. The reason is that as the use of liabilities increases, creditors will start demanding higher interest rates from the company due to increasing financial risks. Hence, WACC will fall up to a certain point and rise again in view of the increase in the cost of borrowing. This point, where WACC is the lowest, is called optimal capital structure (Okka, 2009).

In their studies analyzing the relationship between capital structure and cost of capital, Modigliani and Miller (1958) claimed that firm value is independent of capital structure under certain assumptions. According to this approach, there is no significant relationship between companies' leverage levels and their costs of capital or market values. Modigliani and Miller based this argument on the assumption that capital markets function in a thoroughly organized and perfect fashion. Modigliani and Miller (1963) corrected their previous model by inserting corporate tax. According to this new model, debt becomes more advantageous than equity together with the effect of tax saving (Yakar, 2011).

MM approach has been widely criticized due to its unrealistic assumptions. Therefore, taking into accounts factors such as tax, bankruptcy costs, asymmetric information or agency costs, researchers have attempted to explain companies' capital structure decisions based on more realistic theories.

For instance, Merton Miller formed his model considering corporate tax and income tax together, unlike MM approach. This model asserts that companies prefer borrowing, since taxes due to borrowing create tax advantage for them (Miller, 1977).

Bankruptcy costs approach proposed by Haugen and Senbet (1978) claims that the tax advantage companies obtain from the use of liabilities will increase the risk that they will not be able to fulfill their liabilities parallel to the increase of leverage level and will lead to the companies to bankruptcy.

Trade-off theory is based on the balancing of the tax advantage brought about by equity use with bankruptcy costs. Studies by Kraus and Litzenberg, Scott and Kim created the Trade-off theory. These studies suggest that companies reach an optimal ratio between liabilities and equity. According to the studies, to increase the tax advantage obtained from the discount of the financial load on debts from the tax assessment, high-profit companies must use more liabilities. However, it should not be forgotten that excess borrowing will increase the risk of bankruptcy. These two diverse points of view concerning conservative or excessive borrowing have led companies into inquiries to reach an optimal debt level by maximizing tax advantage and minimizing bankruptcy risks (Nunes and Serrasquerio, 2007).

Agency costs mean costs arising of conflicts of interest between either stockholders and managers or stockholders and bond holders (Jensen and Meckling, 1976). In the finance theory, agency relations play an important role in the construction of capital structure. Agency relations which affect capital structure are categorized under three groups (Ata and Ağ, 2010):

- Relations between stockholders and managers who represent them in business management
- Relations between creditors and stockholders who use their funds in the company
- Relations between current and potential stockholders

Current stockholders have more information on company than potential stockholders and keep this information confidential in order to use for their own interests. Margaritis and Psillaki (2010) obtained results that support Jensen and Meckling's (1976) hypothesis on agency costs in their studies conducted on manufacturing companies in France using non-parametric data envelopment analysis. The findings of Adekunle and Sunday (2010) also buttress Jensen and Meckling's results.

Another of the assumptions by Modigliani and Miller is that rules of perfect competition operate in capital markets. Nevertheless, investors do not have equal information in the real life. Asymmetric information theory, proposed by Ross (1977) along with Myers and Majluf (1984), is based on the difference between the information possessed by managers and stakeholders.

Changes done by managers in the capital structure of an enterprise deliver messages to stakeholders about the enterprise's future. This situation is called 'signaling approach' in the finance literature. The study conducted by Ross (1977) is based on this approach. According to the approach, managers want to improve the firm's market value and benefit stockholders from this situation by sending messages to potential investors outside the firm.

Myers and Majluf (1984) proposed a new theory called 'Pecking Order' in the field of finance. According to this theory, investors who would like to finance new investments, apply to internal finance first, debts second, and finally stock issue while constructing the capital structure. In line with this, there is no optimal debt to equity ratio that firms can

determine. The debt level of each firm cumulatively reflects its need for external finance. The debt level varies according to the level of the internal sources and investment expenditures. Pecking Order Theory explains why high-profit companies tend to use fewer debts (Ata & Ağ, 2010).

II. Literature Review

A number of studies exist in the finance literature concerning the relationship between capital structure and firm performance. Modigliani and Miller (1958) reached the conclusion that firm value and capital structure are independent of one another in the studies conducted on the assumption that capital markets are perfect. That this assumption is unrealistic led researchers into analyzing the relationship between capital structure and firm value with limited assumptions. Modigliani and Miller (1963), when they incorporated tax factor in their models, stated that companies should utilize as many debts as they can to be able to reach the optimal capital structure.

Doğan (2013), who analyzed the relationship between capital structure and firm profitability, conducted an empirical analysis on insurance companies listed in Borsa Istanbul. A positive correlation was detected between size of assets and profitability as a result of this study. Moreover, it was observed that leverage level and short term ability to pay reduced profitability.

Demir and Baştürk (2009), who analyzed the effect of capital structures on profitability with 129 firms listed in Borsa Istanbul, concluded that any change in capital structure has a negative impact on net income and earnings per share in Turkish-invested companies.

Velampy and Niresh (2012), who looked into the relationship between capital structure and profitability for Sri-Lankan banks, found a negative association between capital structure and profitability except the association between debt to equity and return on equity.

Shubita and Alsawalhah (2012) detected a negative correlation between debts and profitability in their study conducted in Amman Stock Exchange.

Kabakçı (2008), who analyzed the relationship between capital structure and performance, looked into the relationship between debts and return on equity and investigated companies' financial performance. According to the obtained findings, a negative correlation was detected between capital structure and ROE. It was inferred that low debt level results in high profitability.

In their study on Brazilian firms, Mesquita and Lara (2003) found a positive correlation between short term debts and ROE and a negative correlation between long term debts and equity.

Salim and Yadav (2012), who used ROA, ROE, EPS and Tobin's Q variables to measure firm performance, conducted their study on 237 Malaysian companies listed in Bursa Malaysia Stock Exchange. Obtained findings displayed a negative correlation between ROA, ROE, EPS and LTD, STD and total debts. However, the findings put forward a positive correlation between Tobin's Q and LTD, STD. In a study by Saeedi and Mahmoodi (2011), which used the same variables, took a sample of 320 companies listed

in Tehran Stock Exchange. According to the findings of the study, EPS and Tobin's Q are positively correlated to capital structure, whereas there is negative relationship between ROA and capital structure.

Saeed et al. (2013), who used ROA, ROE and EPS as performance indicators, employed long term debt to capital ratio, short term debt to capital ratio and total debt to capital ratio as indicators of capital structure. A positive correlation was found between capital structure and firm performance.

Adekunle and Sunday (2010), who analyzed the effect of capital structure on financial performance in companies listed in Nigerian Stock Exchange, did estimations using Ordinary Least Squares method. As a result of their study, they found a negative relationship between debt ratio and financial performance.

In their study conducted on textile companies operating in Pakistan, Nawaz et al. (2011) concluded that debt to equity ratio has a significant positive impact on ROA and ROE.

Skopljak and Luo (2012) found a positive correlation between capital structure and financial performance in their study on Authorised Deposit-taking Institutions in Australia. Increases in borrowing improve profitability in low leverage level, yet decrease it in high leverage level.

In accordance with Modigliani and Miller (1958), Ebaid (2009) was not able to find any relationship between capital structure decisions and financial performance in a study conducted in Egypt.

III. Data and Methodology

In this section, specifics of data and methodology are going to be elaborated.

Data Collection

The dataset used in this study is obtained from Borsa Istanbul database and covers two industries: Basic Metal Industries and Fabricated Metal Products, Machinery and Equipment. The financial ratios used in the analysis were obtained from the balance sheets and income statements of the companies between the years 2005 and 2011. This selection ensures that the data sample is both recent and sufficiently large for robust empirical testing. Companies which did not have regular data between the mentioned years were excluded from the study. As a result, 28 companies which operate in the sectors of basic metal industries and fabricated metal products, machinery and equipment were included in the study.

In our study, four capital structure ratios were used as independent variables:

- i. Short Term Liabilities to Total Assets (STLtoTA)
- ii. Long Term Liabilities to Total Assets (LTLtoTA)
- iii. Operating Income to Financial Expenditures (OItoFEX)
- iv. Total Debt to Equity (TDtoEQ)

Return on Assets (ROA) was used as the dependent variable. Dependent and independent variables were chosen having analyzed studies in the literature (Doğan, 2013; Demirhan, 2009; Mesquita and Lara, 2003; Adekunle A and Sunday O, 2010).

Research Hypotheses

H₀₁: There is no relationship between ‘short term liabilities to total assets’ and financial performance.

H₀₂: There is no relationship between ‘long term liabilities to total assets’ and financial performance.

H₀₃: There is no relationship between ‘operating income to financial expenditures’ and financial performance.

H₀₄: There is no relationship between ‘total debts to equity’ and financial performance.

Methodology

To test the effects of capital structure decisions on financial performance, a regression model is formulated to estimate the performance effects of STLtoTA, LTLtoTA, OItoFEX, and TDtoEQ. Equation is specified as:

$$ROA_{ft} = C + \beta_1 STLtoTA_{ft} + \beta_2 LTLtoTA_{ft} + \beta_3 OItoFEX_{ft} + \beta_4 TDtoEQ_{ft} + \varepsilon_{ft} \quad (1)$$

where ROA_{ft} is the return on assets for firm f in year t ; $STLtoTA_{ft}$, $LTLtoTA_{ft}$, $OItoFEX_{ft}$, and $TDtoEQ_{ft}$ are the indicators of capital structure as independent variables. The data was analyzed using SPSS 17.0.

IV. Findings

The findings of the regression analysis are demonstrated in Tables 1, 2 and 3:

Table 1: ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	.387	4	.097	16.799	.000
Residual	1.101	191	.006		
Total	1.489	195			

As shown in Table 1, the result of the regression analysis is statistically significant ($p < .001$, $f = 16.799$).

Table 2: Model Summary^b

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
.510^a	.260	.245	.07592799	1.039

a. Predictors: (Constant), STLtoTA, LTLtoTA, OItoFEX, TDtoEQ

b. Dependent Variable: ROA

R Square expresses to what extent the independent variables can explain the alteration in the dependent variable. In other words, it symbolizes the explanatory power of the model. According to Table 2, independent variables account for 26% of the change in the dependent variable.

The autocorrelation among regression model residuals have been tested using Durbin-Watson factors, if Durbin-Watson factors are between 1 and 3 there is no autocorrelation problem (Alsaeed, 2006). As shown in Table 2, Durbin-Watson factor is 1.039, so there is no autocorrelation problem in the regression model.

Table 3: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.112	.016		7.182	.000*		
STLtoTA	-.140	.033	-.293	-4.197	.000*	.792	1.262
LTLtoTA	-.238	.057	-.265	-4.190	.000*	.966	1.035
OIttoFEX	.002	.000	.267	4.169	.000*	.943	1.061
TDtoEQ	.002	.002	.053	.765	.445	.813	1.230

*Variables are significant at the .05 and .01 levels, respectively.

If there is a relationship among the independent variables, it may lead to multicollinearity problem which will affect the model power (Shubita and Alsawalhah, 2012). Tolerance and Variance Inflation Factor (VIF) values have been used to explain the multicollinearity problem. To prevent the multicollinearity problem, the tolerance value should be higher than 0.2 and the VIF value should be lower than 10. As shown in Table 2, all tolerance values are greater than 0.2 and all VIF values are lower than 10. It means there is no multicollinearity problem in the regression models.

To state the equation:

$$ROA = .112C - .140STLtoTA - .238LTLtoTA + .002OIttoFEX + .002TDtoEQ$$

(2)

Results show that, all of the independent variables are significant except ‘total debt to equity’ variable. ‘Short term liabilities to total assets’ and ‘long term liabilities to total assets’ have negative relationships with the ROA indicator. It means that if firms increase their short term or long term debts, this will decrease their financial performance. There is a positive relationship between ‘operating income to financial expenditures’ and financial performance.

No significant relationship was obtained between ‘total debt to equity’ ratio and ROA as a financial performance indicator.

According to the results of the analysis, H₀₁, H₀₂ and H₀₃ hypotheses were rejected, while H₀₄ was accepted. Findings of the study displayed that there was a statistically significant negative relationship between borrowing and financial performance. The findings are similar those of a number of others (Adekunle A and Sunday O, 2010; Kabakçı, 2008; Salim and Yadav, 2012; Saeedi and Mahmoodi, 2011; Shubita and Alsawalhah, 2012).

V. Conclusion

In the present study, which analyzed the relationship between capital structure and financial performance, an evaluation was done on 28 manufacturing companies operating in Borsa Istanbul using regression analysis. As a result of the study, significant negative

relationships were obtained between 'short term debt to total assets', 'long term debt to total assets' and ROA. A significant positive relationship was obtained between 'operating income to financial expenditures' and ROA. No significant relationship was detected between 'total debt to equity ratio' and ROA. The results generally displayed that capital structure is not independent of financial performance.

Since different sectors have different capital structures, the current study can be replicated with a bigger sample on different firms and sectors. Moreover, different perspectives can be brought into the relationship between capital structure and financial performance by comparing different sectors.

References

- Adekunle A, O., & Sunday O, K. (2010). Capital Structure and Firm Performance: Evidence from Nigeria. *European Journal of Economics, Finance and Administrative Sciences* , 2 (5), 70-83.
- Akgüç, Ö. (2010). *Finansal Yönetim*. İstanbul: Avcıol Basım Yayım.
- Alsaed, K. (2006). The association between firm-specific characteristics and disclosure: The case of Saudi Arabia. *Managerial Auditing Journal* , 21 (5), 476-496.
- Ata, H. A., & Ağ, Y. (2010). Firma Karakteristiğinin Sermaye Yapısı Üzerindeki Etkisinin Analizi. *Ekonometri ve İstatistik* , 11, 46-60.
- Aydın, N., Başar, M., & Coşkun, M. (2010). *Finansal Yönetim*. Ankara: Detay Yayıncılık.
- Demir, S., & Baştürk, F. H. (2009). İMKB Sınai Endeksinde Yer Alan İşletmelerde Sermaye Yapısı ve Karlılık Arasındaki İlişki. *Finans Politik & Ekonomik Yorumlar* , 46 (529), 65-74.
- Demirhan, D. (2009). Sermaye Yapısını Etkileyen Firmaya Özgü Faktörlerin Analizi: İMKB Hizmet Firmaları Üzerine Bir Uygulama. *Ege Ekonomik Bakış* , 9 (2), 677-697.
- Doğan, M. (2013). Sigorta Firmalarının Sermaye Yapısı ile Karlılık Arasındaki İlişki: Türk Sermaye Piyasası Üzerine Bir İnceleme. *Muhasebe ve Finansman Dergisi* , 57, 121-136.
- Durand, D. (1952). Costs of Debt and Equity Funds for Business: Trends and Problems of Measurement. *Conference on Research in Business Finance* , 216-262.
- Ebaid, I. E.-S. (2009). The Impact of Capital-Structure Choice on Firm Performance: Empirical Evidence from Egypt. *The Journal of Risk Finance* , 10 (5), 477-487.
- Haugen, R. A., & Senbet, L. W. (1978). The Insignificance of Bankruptcy Costs to the Theory of Optimal Capital Structure. *The Journal of Finance* , 33 (2) 383-393.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. *Journal of Financial Economics* , 3 (4), 305-360.
- Kabakçı, Y. (2008). Sermaye Yapısı ile İşletme Performansı Arasındaki İlişki: Gıda Sektöründe Bir Uygulama. *Ege Akademik Bakış* , 8 (1), 167-182.
- Margaritis, D., & Psillaki, M. (2010). Capital Structure, Equity Ownership and Firm Performance. *Journal of Banking & Finance* , 621-632.
- Mesquita, J. M., & Lara, J. E. (2003). Capital Structure and Profitability: The Brazilian Case. *Academy of Business and Administration Sciences Conference*, (p. 1-14). Vancouver.
- Miller, M. (1977). Debt and Taxes. *The Journal of Finance* , 32 (2) 261-275.
- Modigliani, F., & Miller, M. H. (1958). The Cost of Capital, Corporation Finance and the Theory of Investment. *The American Economic Review* , 3, 261-297.

- 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), 187-221.
- Nawaz, A., Ali, R., & Naseem, M. A. (2011). Relationship between Capital Structure and Firms Performance: A Case of Textile Sector in Pakistan. *Global Business and Management Research: An International Journal* , 3, 270-275.
- Nunes, P. J., & Serrasquerio, Z. M. (2007). Capital Structure of Portuguese Service Industries: A Panel Data Analysis. *The Service Industries Journal* , 27 (5), 549-562.
- Okka, O. (2009). *Analitik Finansal Yönetim Teori ve Problemler*. Ankara: Nobel Yayın Dağıtım.
- Saeed, M. M., Gull, A. A., & Rasheed, M. Y. (2013). Impact of Capital Structure on Banking Performance (A Case Study of Pakistan). *Interdisciplinary Journal of Contemporary Research in Business* , 4 (10), 393-404.
- Saeedi, A., & Mahmoodi, I. (2011). Capital Structure and Firm Performance: Evidence from Iranian Companies. *International Research Journal of Finance and Economics* , 70, 20-30.
- Salim, M., & Yadav, R. (2012). Capital Structure and Firm Performance: Evidence from Malaysian Listed Companies. *International Congress on Interdisciplinary Business and Social Science 2012*, 65, (p. 156-166). Elsevier Ltd.
- Shubita, M. F., & Alsawalhah, J. M. (2012). The Relationship between Capital Structure and Profitability. *International Journal of Business and Social Science* , 3 (16), 104-112.
- Skopljak, V., & Luo, R. H. (2012). Capital Structure and Firm Performance in the Financial Sector: Evidence from Australia. *Asian Journal of Finance & Accounting* , 4(1), 278-298.
- Stephen, R. A. (1977). The Determination of Financial Structure: The Incentive-Signalling Approach. *The Bell Journal of Economics* , 8 (1), 23-40.
- Velnampy, T., & Nireesh, J. A. (2012). The relationship between Capital Structure and Profitability. *Global Journal of Management and Business Research* , 12 (13), 66-74.
- Yakar, R. (2011, Kasım). Yüksek Lisans Tezi. *Sermaye Yapısı Teorileri ve İMKB'de Ampirik Bir Çalışma* . Konya.