



## The impact of capital structure on Financial Performance of the firms: Evidence From Borsa Istanbul

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### Abstract

The paper tries to examine the impact of capital structure on the financial firm performance of industrial companies in Turkey. The annual financial statements of 136 industrial companies listed on Istanbul Stock Exchange (ISE) were used for this study which covers a period of 8 years from 2005-2012. A multivariate regression analysis is applied to test the relationship between capital structure and firm performance. To measure firm performance used indicators such as Return on Asset (ROA), Return on Equity (ROE) and Earning per Share (EPS) as well as Debt Ratio (DR) as capital structure variable. The results show that there is a negative significant relationship between capital structure and firm performance.

**Keywords:** Capital structure; Firm performance; Return on asset; Return on equity; Earning per share; Debt ratio

### Introduction

The main objective of the firms is to maximize its profits and in the same time minimize its costs, when companies search about resources to finance its investments they take this objective in consideration.

The main sources that firms could use to provide the necessary finance are the internal finance which is equity, and the external finance which is debt. Most of companies use a mix between equity and debt which form the capital structure.

Capital structure was defined firstly by Modigliani and Miller as the mix between debt and equity that the company uses in its operation. The paper that published by Modigliani and Miller refers to the impact of capital structure on firm value under many restrictive assumptions that have been modified by them five years later in (1963) [1].

After Modigliani and Miller, Jensen and Meckling discussed the agency cost theory which refers to the potential conflict between managers and shareholders in one side, and between shareholders and debtors in another side.

Since Jensen and Meckling's argument the relationship between capital structure and firm performance, many researchers have begun to study the relationship between capital structure and firm performance.

The main objective of this paper is to examine the impact of capital structure measured by debt ratio (DR) on financial performance measured by earning per share (EPS), return on equity (ROE), and return on assets (ROA). Data of 136 firms listed as industrial sector companies on Istanbul stock exchange (ISE) during the period 2005-2012 will be used.

The paper proceeds along the following lines. Section-2 presents the theoretical framework, Section-3 discusses review of literature, Section-4 discusses the research methodology, hypothesis, data, and variables, Section-5 discusses data analysis and results and Section-6 offers findings and conclusions.

### Theoretical Framework and Literature Review

Capital structure has been defined by many authors and scholars. However, these definitions are explicit and have the same meaning. This research work adopts that of Pandey which says "a company's capital structure refers to its debt level relative to equity on the balance sheet

[2]. It is a snapshot of the amounts and types of capital that a firm has access to, and what financing methods it has used to conduct growth initiatives such as research and development or acquiring assets".

From this definition, we can say that capital structure is a trend at how a company finances its assets through a combination of debt, equity or mixture between securities and that a company's capital structure is then the figuration or structuring its liabilities.

### Capital structure theories

The following capital structure theories have evolved from capital structure literature:

**Modigliani and miller (mm) theory (1958, 1963):** In Modigliani and Miller provided the seminal in capital structure under certain assumptions include no taxes, homogenous expectations, perfect capital markets, and no transaction costs [1]. This theory which called "capital structure irrelevance" states that the relationship between capital structure and cost of capital is irrelevant, that mean the increases in debt does not effect on cost of capital. In a result, the investor's expectations of future benefits are totally effect on firm value and cost of capital.

Latterly, Modigliani and Miller introduced new evidence that cost of capital effect on capital structure, and thus effect on firm value with taking taxes as assumption into consideration, which refer that borrowing give tax advantage, because the interest will deduct from the tax which result what is known as tax shields, which in turn reduce the cost of debt and then maximize the firm performance [3].

**Pecking order theory:** Pecking order theory is the result of Asymmetric information. The pecking order model does not discuss

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the optimal capital structure as significant point, but states that firms have two main sources to fund its financial needs which are internal and external finance; the theory claims that firms prefer to use firstly internal finance such as excess liquid assets or retained earnings then external finance. If internal financing is not enough to fund investment projects, firms may or may not obtain external financing, and if they do, In order to minimize additional costs of asymmetric information, the managers head for choosing between the different sources of external finance, firms prefer to use debt leverage firstly, secondly issuance of preferred stock and finally issuance of common stock [4,5].

**Trade-off theory:** Trade off theory is an extension of the MM theory developed by Miller. The theory proposes that the firm's optimal capital structure include the tradeoff among the influences of firms and personal taxes, agency costs and bankruptcy costs, etc. Trade-off theory expect that corporations choose levels of debt in order to achieve a balance among the benefits from the interest tax shield with the costs related to a future financial distress or with current financial inflexibility.

**The agency theory:** Agency cost theory which provided by Jensen and Meckling is discussing the conflict of interest between principals (shareholders) and decision makers (agents) of firms (managers, board members, etc), this conflict stems from the differences in behavior or decisions by point out that the parties (agents and shareholders) often have different goals, and different tolerances toward risk. In this case, the managers whom are responsible of guiding the firm toward to achieve them personal goals rather than maximizing benefits to the shareholders. Hence, the main conflict that shareholders face is to ensure that managers (agents) do not invest the free cash flow in unprofitable projects. In another hand, increasing the debt to equity ratio would assist firms to make sure that managers are running the firm more efficiently [6].

## Literature review

Since Modigliani and Miller's theory has been published many of the researchers are still studying the relationship between capital structure and firm performance, some of them found that there is a negative relation between capital structure and firm performance, while others found a positive relation between capital structure and firm performance. In another hand many papers referred to a significant relation between structure and firm performance, while some of them referred to an insignificant relation between structure and firm performance.

In this study we will browse the newest published papers in this aspect, because its will be closer to reality, in addition these papers applied in an emerging markets which have similar characteristics with Turkish market.

Badar and Saeed study showed the impact of using leverage in firm's capital structure on firm's performance [7]. They applied study on all firms of food sector listed on Karachi stock exchange. The paper covered a period of five years from 2007-2011. The capital structure variables were three variables, long term debts to total assets (LTDTA), Total debt to Equity (TDE), and Short-term debts to Total assets (STDTA). and they measured firm performance by Return on Assets (ROA) and Assets Turnover Ratio (ATO), they found that long term debts has a positive and significant impact on firm performance, while, short term debts has negative significant impact of on firm performance.

Mumtaz study seeks to investigate the relationship between capital structure and firm performance in the context of large private

companies in Pakistan [8]. To measure capital structure they used Debt to Equity ratio (DR), while ratios such as, Return on Asset (ROA), Earning per Share (EPS), Return on equity (ROE), Operating profit Margin, Price to Earnings Ratio are used to measure firm performance. Moreover, the relationship between capital structure of a firm and market value of the firm is significant and negative.

Le and Phung study investigates the impact of capital structure on firm performance in all firms listed in Vietnamese Stock Exchange during the period from 2007 to 2011 [9]. They used return on assets (ROA), return on equity (ROE), and Tobin Q to measure firm performance, while to measure capital structure they used short-term debt, long term-debt, and total debt ratios. They found that capital structure has a significant negative impact on firm performance.

Salteh paper explores the impact of capital structure on firm performance in Iranian corporations listed as a vehicles and parts manufacturing economic sector in Tehran Stock Exchange (TSE) [10]. To measure firm performance they used five variables including, Return on Assets (ROA), Return on Equity (ROE), Tobin's Q, Earning per Share (EPS), and equity market value to equity book value (MB/VR). While they measure capital structure by, Long-Term Debt, Short-Term Debt and Total Debt to Total Assets, and Total Debt to Total Equity. The findings referred to a positive and significant relation between capital structure and ROE, MB/VR, and Tobin's Q, while, showed a negative relation with ROA, and EPS.

Ahmad study discussed the influence of capital structure on firm performance of Malaysian firms listed as consumers and industrials sectors in Malaysian equity market from 2005 to 2010, to measure firm performance they use return on equity (ROE) and return on asset (ROA), and to measure capital structure they use long-term debt (LTD), short-term debt (STD), and total debt (TD). The study results that each of debt level has significant negative relationship with ROE, while ROA has significant positive relationship only with STD and TD [11].

Iorpev and kwanum study investigates the relationship between capital structure and firm performance of manufacturing companies listed on the Nigerian Stock Exchange [12]. They covered a period of five (5) years from 2005-2009. The study used multiple regression analysis to examine firm performance indicators such as Profit Margin (PM) and Return on Asset (ROA), while, the capital structure variables were, Long term debts to Total assets (LTDTA), Short-term debts to Total assets (STDTA), and Total debt to Equity (TDE). They found that STDTA and LTDTA have insignificant negative relationship with ROA and PM; while TDE has positive relationship with ROA and negative relationship with PM. STDTA is significantly related with ROA while LTDTA is significantly related with PM. The study concludes that capital structure is not a main determinant of firm performance.

Onaolapo and Kajola study investigates the influence of capital structure on financial firm performance, applied on non-financial firms listed in Nigerian Stock Exchange according the period from 2001 to 2007 [13]. To examine capital structure they used Debt Ratio (DR), while used Return on Assets (ROA), and Return on Equity (ROE) to examine firm performance. They found that capital structure has a significantly negative impact on financial firm performance.

**Comments of literature review:** Since Modigliani and Miller's theory has been published many of the researchers are still studying the relationship between capital structure and firm performance [1], some of them have been found a negative relation between capital structure and firm performance such as Mumtaz, Le, Phung, Salteh, Ahmad and

Onaolapo, Kajola [8-11,13] while; Badar and Saeed found a significant positive relation between capital structure and firm performance [7], As well as Iorpev and kwanum found that capital structure and firm performance have insignificant negative relation [12].

## Research Methodology, Hypothesis, Data and Variables

### Conceptual framework

This paper aims to find if there is an Impact of Capital structure on Performance evidence from all industrial firms listed in Amman stock exchange.

### Variables measurement and empirical model

Variables of the study illustrated in the following Figure 1, which was designed by the researcher.

**Capital structure (independent variable):** Capital structure of a firm is measured by different accounting based methods like short term liability to total assets, long term liability to total assets and total debt to total assets [7,9-12]. This study takes total debt to total assets as a proxy for capital structure of a firm based on Onaolapo, Kajola and Mumtaz [8,13].

$$\text{Debt Ratio(DR)} = \frac{\text{Total Debt}}{\text{Total Assets}}$$

**Firm performance (dependent variables):** A number of variables measuring firm performance are commonly accounting based measures of performance calculated from financial statements as ROE, ROA, EPS and Net Profit Margin [3], while stock market return and volatility in returns are also used as performance measures of firms. Tobin's Q measurement of performance is also used by some studies which are a mix of market performance and accounting measurement. This study adopts the three accounting based measure of performance including earning per share (EPS), return on equity (ROE), and return on assets (ROA) computed as follow:

$$\text{Earning per Share(EPS)} = \frac{(\text{Net income} - \text{Dividends on preferred stock})}{\text{Average outstanding share}}$$

$$\text{Return on Equity (ROE)} = \frac{\text{Net Income}}{\text{Equity}}$$

$$\text{Return on Assets (ROA)} = \frac{\text{Net Income}}{\text{Total Assets}}$$

### Hypotheses

The following hypothesis is formulated for the study:

**H<sub>1</sub>:** There is a negative relationship between capital structure (DR) and financial performance (ROE).

**H<sub>2</sub>:** There is a negative relationship between capital structure (DR) and financial performance (ROA).

**H<sub>3</sub>:** There is a negative relationship between capital structure (DR) and financial performance (EPS).

### Data collection

Data for this study is taken from annual financial statements of firms. Ratios of firms are collected from annual firm analysis reports which available on Fin net program, and stockkeys website. This study is conducted on firms listed as industrial companies under (UXSIN) index on Istanbul Stock Exchange (ISE), 136 firms are taken from 290 firms form the period of 2005-2012.

**Criteria for selected the sample:** The sample of firms is selected on the basis of following criteria.

- Firms with missing data for any factor in the model during study period are dropped.
- Firms having extremist values for any of capital structure are also dropped.
- Firms having extremist values for any of performance variables are also dropped.

## Results and Discussions

### Descriptive statistics

Table 1 gives the detail of descriptive statistics of the variables used in this paper. First row of the table shows the mean of the variables including debt Ratio (DR), earnings per share (EPS), return on assets (ROA), and return on equity (ROE). The respective mean values are 46.528, 0.619, 4.455, and 7.881 (Table 1).

### Correlation analysis

Correlation is concern describing the strength of relationship between two variables. In this study the correlation co-efficient analysis is under taken to find out the relationship between capital structure and financial firm performance. It shows the degree of relationship exist between capital structure and financial performance.

**Capital structure correlated with Performance variables:** The Table 2 above shows the relationship between Performance variables (EPS, ROE, and ROA) and capital structure variable (DR). There are a weak negative relationship between independent variable (capital structure DR) and all dependent variables (performance variables).

The correlation between DR and EPS is -0.088. Significant level is 0.01. The co-efficient of determination is 0.0077. That is 0.7% of variance in the capital structure is accounted by the EPS.

The correlation between DR and ROE is -0.287. Significant level is 0.01. The co-efficient of determination is 0.015. That is 1.5% of variance in the capital structure is accounted by the ROE.

The correlation between DR and ROA is -0.124. Significant level is

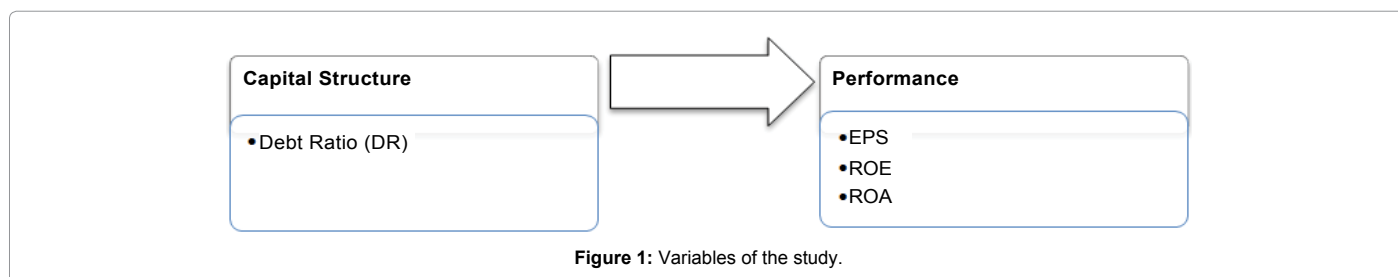


Figure 1: Variables of the study.

	DR	EPS	ROA	ROE
Mean	46.528	0.619	4.455	7.881
Median	44.645	0.263	4.441	8.593
Maximum	87.878	27.898	38.040	54.123
Minimum	15.073	-12.180	-32.760	-61.843
Std. Dev.	16.433	1.716	7.438	15.501
Jarque-Bera	50.991	389892.004	323.448	397.221
Probability	8.5E-12	0	0	0

Table 1: Descriptive statistics.

Variables	Performance variables		
	EPS	ROE	ROA
Capital structure variable (DR)	-0.088	-0.287	-0.124
R <sup>2</sup>	0.0077	0.0153	0.0824

Table 2: Correlation result between capital structure variable (DR) and performance variables (EPS, ROE, ROA).

Variables	Financial Performance					
	EPS		ROE		ROA	
Constant	1.046	0.000	13.31	0.00	10.502	0.00
DR	-0.009	0.003	-0.12	0.00	-0.129	0.00
R <sup>2</sup>	0.007		0.015		0.082	
F value	8.488		16.893		97.61	
Sig	0.003		0.000		0.000	

Table 3: Regression result between capital structure variable (DR) and Performance variables (EPS, ROE, ROA).

0.01. The co-efficient of determination is 0.082. That is 8.2% of variance in the capital structure is accounted by the ROA.

### Regression analysis

Regression analysis is used to examine the impact of capital structure on financial performance of the listed companies traded in Istanbul stock exchange (Table 3).

The table above shows the regression result used to verify the association between independent variable (DR) and dependent variables (EPS, ROE, and ROA). The result indicates a negative significant relation between DR and all financial performance variables (EPS, ROE, and ROA). This means an increase in DR by one dollar will increase EPS, ROE, and ROA by 0.009, 0.12, 0.12 dollar respectively. R<sup>2</sup> in average is 3.4%; means only 3.4% of variance of performance variables is accurate by these factors. But, remaining 86.60% of variance with performance variables is attributed to other factors.

### Findings

Based on the empirical results of this study, we accept all of three hypotheses (H1, H2, and H3) which referred to a negative relationship between capital structure and financial firm performance (EPS, ROE, ROA). These results are consistent with Mumtaz, Le and Phung, Salteh, Ahmad and Onalapo, Kajola [8-11,13], who pointed to the negative relationship between capital structure and financial firm performance, While inconsistent with Badar and Saeed who found a significant positive relation between capital structure and firm performance [7], As well as Iorpev and kwanum, who found that capital structure and firm performance have insignificant negative relation [12].

### Conclusion

This study investigates the impact of capital structure on firm

performance in Istanbul's stock market, particularly on industrial sector companies listed under XUSIN index. Our results suggest that firm's capital structure is negatively and significantly associated with financial firm performance which defined by (EPS, ROE, and ROA variables). That mean using a high level of debt negatively affects a firm's return on assets, earnings per share, and return on equity.

There are three main limitations of this study; it studies the data of only one market of developing economy so it cannot represent all the markets of transition economies. Secondly this study includes only 8 years data. To explore consistent results long time series of data could be required. Thirdly we can find the impact of capital structure on firm's performance by sector and then compare the results to know the real picture of the relationship.

Capital structure is a puzzling concept especially so in emerging markets like Turkey. Further study can be conducted by adding sales growth and business risk as independent variables. To clarify the results of our study more variables for performance measurement may be useful. Data of long time series could also be used for credibility of results. Future research can be can be processed by comparing the capital structure and firm performance of small and large firms.

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