

Correlation between Financial Leverage and Firm Value in Companies Listed in the Tehran Stock Exchange: A Case Study

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Abstract

The financial lever is a norm in measuring the scale of using debt in the firm's capital structure. One of the most important issues in financial discussions is obtaining a blend of capital structure which has the most attractions for the investors. The structure of capital is a required link between debt and the equity that provides financial needs for preparing the company's properties.

The capital structure as the most important parameter in evaluating companies has been stated. In addition, the aim of determining the capital structure is to identify an ideal combination of financial sources in each company, in order to increase the shareholders' wealth. Choosing an ideal capital's structure leads to a decrease in the company's expenses and an increase in its value in the market. This research belongs to the descriptive (quasi-experimental) researches and its plan is classified as post-event ones. The hypotheses in this research have been tested through the statistical methods of correlation analysis. Based on the results of this research, there is a negative significant correlation between the financial leverage and other variables as earnings per share, price earnings ratio, return on equity, return on asset and operation profit in 153 accepted companies in Tehran Stocking Market in a five year period between the years (2005) to (2010) have been confirmed. According to the correlations between these variables, it will be suggested for the shareholders to involve the mentioned variables in their financial decisions in order to make an ideal structure; and the managers do possible investments, through decreasing the proportion of debts, for increasing the value of their company. They also need to make shareholders closer to choose influential and possible resources for their wealth to be increased by the use of strategic planning.

Keywords: Financial Leverage, Firm value, Earnings per share, Return on equity, Return on asset

1. Introduction

Managers as the representatives of the shareholders, adjust the composition of the capital structure of a firm in a way to make positive effects on the process of increasing the firm value. Determining an optimal capital structure, financing in the firm's has a special importance. In this way, the managers need to be conscious about the effects of the variables which will influence the capital structure of the firm, as well, in order to do deliberate and conscious actions based on the capital structure theories on variables and companies' internal factors as accounting variables, management methods, combining shareholders and so on. On the other hand, creating value and enhancing long-term shareholder wealth are supposed to be the main goals of the firms. Maximizing the value of the firm necessitates the accomplishments of profitable projects by them; and the accomplishments of these projects necessitate financing. In today's world according to the competitive market conditions, determining the appropriate method of financing for

increasing profitability and surviving the firms are required. The optimization of the capital structure of the firms, recognizing various financial sources and financing expenses are of particular significance.

Financial managers believe that the financial leverage as one of the most important leverages in capital structure management is placed in an outstanding position. Capital structure is an interface condition between debt and equity which provides financial needs for preparing properties. The capital structure of a firm without any debts is made by equity. Because the capital structure of most of the firms is combined with debt and equity, financial managers are very sensitive to loans and their effects. There is no firm without debt in reality and most of the firms use different proportions of leverage. Previous researches show that, an increase in leverage decreases the opportunistic behaviors issuing free cash in two ways. First, debts cause managers to have few free cash flows for paying debts and their interests. This issue let them not to have non-optimal investments. Second, the firms which their financial preparation is based on debt needs to tolerate the lenders' intensive cares. So they are limited in investments. The selection of financing such as the propagation of new shares or optimal capital structure based on debt like financing and also is influential on the total firm's value. To optimize the capital structure of the firms, understanding and recognizing their financial sources and the dedicated expenses on various financing has a significance importance for firms' financial managers in decisions about financial preparation for maximizing value of the firms.

In this way, studying and understanding factors that, anyway, influence the companies' financial structure and financial sources' combinations are necessary. Due to the recognition of the influential factors on firm's financial structure and studying their dimensions and impacts, there will be a great step in leading companies in order to achieve the desired or optimal financial structure. There have been many researches focusing on the study of the correlation between the financial leverage and financial variables. Namazi and Shirzadeh (2006) studied the capital structure and profitability of the listed companies in Tehran Stock Exchange focusing on the type of industry and concluded that, there is a positive correlation between capital structure and profitability, but this issue is weak on the basis of the statistics. Maleki Pour Gharbi in a study titled "The Analysis of the Effect of Using Financial Leverage on the Profit of Listed Firms in Stocking Market"(2006) concluded that the using financial leverage does not have any impacts on corporate profitability. In addition, the companies couldn't increase the earnings per share using leverage. Comparison of standard deviation of return on equity and return on assets shows a decrease caused by the financial leverage during many years. The survey was taken to determine that companies' outputs are decreased compared to financial costs. So the companies couldn't profit from their capital structure.

Noravesh and Yazdani in a study titled "The Analysis of the Effect of Financial Leverage on Investment in the Listed Firms in Stocking Market" (2010) concluded that there is a negative and significant correlation between the leverage and the investment and the power of investment leverage for firms with fewer growth opportunities is stronger in firm with greater growth opportunities. Umotla has studied the effect of leverage on investment in emerging markets and concluded that financial leverage effect on capital investment because the value of the firm is determined based on cash flows expected to be carried from the investment, but the canal by which the leverage effects on investment is not clear. Anyway, the manager is not intended to invest by debts because the creditors will share in outputs. So with an increase in the debt ratio manager may not do a good investment which Leads to a reduction in firm's value. Alternatively, theories for the correlation between leverage and investment through the conflicts of interests between shareholders and managers arise. The managers prefer the larger size of the firm to increase their power in it; even if it costs a loss of shareholder wealth or devaluation of the firm's value because of accepting value less projects (Umotla J.2006).

Azrofa and Lopez has made a research on 450 firms from 10 countries; three countries based on the Anglo-Saxon system involving Canada, The U.S. and England and seven countries based on the Continental system involving Germany, Belgium, Spain, France, Holland, Italy and Switzerland. They expressed firm value based on the market value of equity on book value of equity and concluded that there is no valuable meaning between leverage and firm's value (Azofra, A & Lopez, V. 2005). Varuj et al. (2005) focused on the correlation and investment. They gathered and evaluated the information about listed Canadian companies from 1982 to 1999 and tried to answer this question "Is financial leverage considered when you invest - whether investing too much or investing less?" their argument was that, negative correlation for firms with fewer growth opportunities on firms with more growth opportunities is significantly stronger. These arguments confirm this concept that leverage has an inhibitory role for companies that

have poor growth opportunities ahead. Long et al. in a research titled "Leverage, Investment and Firm Growth" (1996), concluded that, between leverage and future growth of the firm there is a negative correlation for companies in various business sectors. Based on the results, Leverage growth of the firms with good investment opportunities are not decreased; but it has a negative correlation with the growth of companies which their growth opportunities are not defined with capital markets? Ferri and Gones in a study titled, "Determinants of Financial structure: A New Methodological Approach" (1979), concluded that financial leverage, type of industry and operating leverage has effect on the financial leverage but there is no correlation between firm value and financial leverage.

Black et al. in their article titled "The Capital Asset Pricing Model: Some Empirical Test Studies in the Theory of Capital Market" (1972), in a period of 40 years with the New York Stock Exchange companies came to this conclusion that firms with low stocks value have more values and There is no alignment between firm value and leverage. In a research by Mc Connel, J.J. Servese, H, large sample of manufacturing companies in America in 1976, 1986 and 1988 were selected. For each year their sample was divided into two groups. Companies that have high growth opportunities and companies that have fewer growth opportunities. The result was that, in companies that have high growth opportunities (Tobin Q ratio are high), leverage is negatively correlated to firm value, but companies that do not have the opportunity to grow, (Tobin Q ratio are low), leverage is positively associated with firm value. In their discussions, they have discussed two issues by theoretical concepts: first, leverage caused the less than the size investment, and firm values are reduced, second, leverage investments made over, and firm values are increased (McConnel et al, 1995). Therefore, the findings of previous research indicating that increasing the leverage of opportunistic behavior is reduced based on two causes related to free cash flows: first, debt causes managers having less free cash flow in paying debt's principal and interest, so they cannot make non-optimal investments. Secondly, companies that are financed through debt must deal with lenders' intensive care. So, they have restrictions on investments' activities. The aim of this research, is to recognize the role of financial leverage variable (the amount of debt in the capital structure of the firm) on the change in the equity of firm value, and in this way, the problem of this research is designed as whether financial leverage various combinations can affect the size of variables affecting equity? By understanding the theoretical research framework, this study, taking into account financial leverage as the independent variable and firm's evaluation index as dependent variables, following hypotheses were formulated:

2. Hypothesis:

2.1. The Main Hypothesis:

There is a negative and significant correlation between financial leverage and firm.

2.2 The Alternative Hypothesis:

2.2.1. Hypothesis 1: There is a negative and significant correlation between financial leverage and earnings per share.

2.2.2. Hypothesis 2: There is a negative and significant correlation between financial leverage and price earnings ratio.

2.2.3. Hypothesis 3: There is a negative and significant correlation between financial leverage and returns to equity.

2.2.4. Hypothesis 4: There is a negative and significant correlation between financial leverage and return to asset.

2.2.5. Hypothesis 5: There is a negative and significant correlation between financial leverage and operation profit.

3. Materials and Methods:

This research is focusing on classification based system under the category of applied research is done through descriptive. Considering this, in this research, the history of the firm's activities is used; therefore its setting is quasi-experimental. In order to test the normality of the data, Clomograph Smirnov Test, Test research hypotheses using regression analysis, Correlation test and F test is used and, "t" is 95% tested on the confidence level. The necessary information for the research is taken from financial statements and notes attached to the financial statements and Rahavaard Nowin information bank. Statistical community of the research is the companies listed on the Tehran Stock

Exchange and the time span of the research is from 2005 to 2010. The selection of countries from the list in order to use their information for testing hypothesis, are based on the following limitations:

- Until the beginning of 2007 has been a member of the Tehran Stock Exchange.
- Corporate finance period is to the end of March each year.
- During the period of research, their stock trading not to be interrupted longer than 6 months.
- Companies under the study must not be financial intermediation companies or investment companies.

Due to these conditions, about 153 companies in Tehran Stock Exchange are selected out of 433 listed companies. Conceptual definitions and values measuring of the variables used in the research hypothesis are used from the following relations:

Financial leverage represents a debt ratio to equity. On the other hand, financial leverage is a norm for measuring the rate of in the capital structure of the firm:

$$(1) \text{ Financial Leverage} = \frac{\text{Debt}}{\text{Equity}}$$

Earnings per share is a share that a firm has acquired in a specified period per ordinary share and is calculated as below:

$$(2) \text{ E.P.S} = \frac{\text{E.A.T-E}}{\text{N}}$$

E. P. S = Earnings per Share

E.A.T-E= Earnings After Tax Elimination

N= Number

Price earnings ratio is a device for measuring the relative price of a share. This ratio shows that, shareholders are expected to recover the value of their today's investment over the next few years. Price earnings ratio is calculated as follow:

$$(3) \frac{\text{P}}{\text{E}} = \frac{\text{Price}}{\text{EPS}}$$

Price: Price per Share

EPS: Earning per Share

Return on Equity represents the amount of net income generated is against each one Rial of equity. The increase in this ratio indicates the profitability of shareholders and it is calculated as follow:

$$(4) \text{ R.O.E} = \frac{\text{E.A.T}}{\text{R.E}}$$

R.O.E =Return on Equity

E.A.T= Earnings After Tax Elimination

R.E= Rial of Equity

The actual return on equity indicates how profitable a firm is and reflects that the firm's assets are used with what kind of efficiency and effectiveness.

$$(5) \text{ Rate of Return} = \frac{\text{Net Profit}}{\text{Total assets}}$$

Operation profit is a profit from operating activities and is calculated as follows:

$$(6) \text{ Operation Profit} = \text{Sales Revenue} - \text{Final cost} - \text{Operation Cost}$$

4. Results and Discussions:

Normal test results, of research data and test research hypotheses are as follows are shown in Table 1.

Based on the information on table number 1, it can be concluded that, noting sig <5%, therefore null hypothesis which indicates the normality of the research data will be accepted.

3.1.1. The first sub-hypothesis testing

The first sub-hypothesis of this study states that, there is a negative and meaning correlation between the financial leverage and earnings per share. The results of testing this hypothesis are summarized in Table 2.

Based on The information in table 2, it is concluded that, noting Sig <0/05, therefore, null hypothesis indicating no significant correlation between the variables is rejected and the claim that there is a significant negative correlation between financial leverage and Earnings per share has been confirmed on 95% confidence level.

3.1.2. The second sub-hypothesis testing:

The second sub-hypothesis of this study states that, there is a negative and significant correlation between financial leverage and price earnings ratio. The results of testing this hypothesis are summarized in Table 3.

Based on The information in table 3, it is concluded that, noting Sig <0/05, therefore, null hypothesis indicating no significant correlation between the variables is rejected and the claim that there is a significant negative correlation between financial leverage and Price earnings ratio has been confirmed on 95% confidence level.

3.1.3 The third sub-hypothesis testing:

The third sub-hypothesis of this study states that, there is a negative and significant correlation between financial leverage and return to equity. The results of testing this hypothesis are summarized in Table 4.

Based on The information in table 4, it is concluded that, noting Sig <0/05, therefore, null hypothesis indicating no significant correlation between the variables is rejected and the claim that there is a significant negative correlation between financial leverage and return on equity has been confirmed on 95% confidence level.

3.1.4. The forth sub-hypothesis testing:

The forth sub-hypothesis of this study states that, there is a negative and significant correlation between financial leverage and return on asset. The results of testing this hypothesis are summarized in Table 5.

Based on The information in table 5, it is concluded that, noting $\text{Sig} < 0/05$, therefore, null hypothesis indicating no significant correlation between the variables is rejected and the claim that there is a significant negative correlation between financial leverage and return on asset has been confirmed on 95% confidence level.

3.1.5. The fifth sub-hypothesis testing:

The fifth sub-hypothesis of this study states that, there is a negative and significant correlation between financial leverage and operation profit. The results of testing this hypothesis are summarized in Table 6.

Based on The information in table 6, it is concluded that, noting $\text{Sig} < 0/05$, therefore, null hypothesis indicating no significant correlation between the variables is rejected and the claim that there is a significant negative correlation between financial leverage and operation profit has been confirmed on 95% confidence level.

5. Conclusion:

The aim of this study is to understand the effects of changes in the composition of the Capital structure on firm value. Evidences from research suggest that, there is a reverse significant negative correlation between financial leverage and firm value in the Tehran Stock Exchange. The results of this research is coordinated with the findings of Kuben Rayan (2008), Rajan and Zingales (1995) and Myers (1984), and it is different with the findings of Ward and Price (2006), Sharma (2006) and Fyrr et al. (2004). On the theoretical basis, the use of interest-bearing debts in the capital structure leads to an increase in financial expenses and a decrease in net income. This in turn reduces the market value of shares and consequently reduces the firm value. Though this theory of in different economical conditions (inflation and recession) varies and it is expected that, in terms of inflationary financing through the debts would have less capital expenses, and thus the firm's value increases. But despite the rising inflation rate prevailing on Iran's economy, the findings of this research are inconsistent with the dominated economy of Iran and it must be stated based on the findings that, by increasing financing, the firm value will be reduced.

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Tables:

Table 1. Colomogorov Smirnov's statistic table for normality variables test

Variables	Numbers	Normal distribution parameters		Most differences			K-S-Z	Two-sided Significance level of the test
		Average	Standard deviation	Absolute value	Positive	Negative		
Financial Leverage	153	/915 559765033	134456/3521297	0/423	0/423	-0/211	5/235	0/195
Earnings per share	153	/313 1878725	537/42	0/254	0/254	-0/161	3/147	0/2341
Price earnings ratio	153	4/391418	1/5038197	0/260	-/260	-0/190	3/218	0/238
Return on Equity	153	772872/81	144890/76	0/263	0/138	-0/263	3/258	0/317
Return on Asset	153	1/44463	51/15591	0/299	0/166	-0/229	2/828	0/185
Operating profit	153	41220/8	28767/51	0/289	0/289	-0/232	3/581	0/452

Table2. Pearson correlation coefficients statistic table for the first sub-hypothesis

Correlation coefficients test for the first sub-hypothesis		Financial Leverage	Earnings per share
Financial Leverage	Pearson correlation coefficients	1	-.795**
	The significance level		.000
	Number	153	153
Earnings per share	Pearson correlation coefficients	-.795**	1
	The significance level	.000	
	Number	153	153

Table3. Pearson correlation coefficients statistic table for the second sub-hypothesis

Correlation coefficients test for the second sub-hypothesis		Financial Leverage	Price earnings ratio
Financial Leverage	Pearson correlation coefficients	1	-.531**
	The significance level		.000
	Number	153	153
Price earnings ratio	Pearson correlation coefficients	-.531**	1
	The significance level	.000	
	Number	153	153

Table4. Pearson correlation coefficients statistic table for the third sub-hypothesis

Correlation coefficients test for the third sub-hypothesis		Financial Leverage	Return on Equity
Financial Leverage	Pearson correlation coefficients	1	-.763**
	The significance level		.000
	Number	153	153
Return on Equity	Pearson correlation coefficients	-.763**	1
	The significance level	.000	
	Number	153	153

Table5. Pearson correlation coefficients statistic table for the forth sub-hypothesis

Correlation coefficients test for the forth sub-hypothesis		Financial Leverage	return on asset rate
Financial Leverage	Pearson correlation coefficients	1	-.482**
	The significance level		.000
	Number	153	153
return on asset rate	Pearson correlation coefficients	-.482**	1
	The significance level	.000	
	Number	153	153

Table 6. Pearson correlation coefficients statistic table for the forth sub-hypothesis

Correlation coefficients test for the fifth sub-hypothesis		Financial Leverage	Operation profit
Financial Leverage	Pearson correlation coefficients	1	-.631**
	The significance level		.000
	Number	153	153
Operation profit	Pearson correlation coefficients	-.631**	1
	The significance level	.000	
	Number	153	153

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