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THE RELATIONSHIP BETWEEN THE CAPITAL STRUCTURES WITH THE PROFITABILITY IN TEHRAN STOCK EXCHANGE

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ABSTRACT

In the present research, effect of capital structure on profitability of the companies accepted in Tehran stock exchange has been studied. Total debt to total assets ratio was selected as measure of capital structure and value-based performance measure (economic value added) and traditional performance measures (return on assets and return on equity) were selected as measures of performance and profitability of the companies. The statistical population under study consists of 100 corporations among the companies registered in Iran-Tehran Stock Exchange during the period 2006-2011, other than investment and financial intermediation companies. To test the research hypothesis, simple methods were applied. Research findings indicate a linear and significant reverse relationship between variables of capital structure and ROA, ROE and EVA and relationship between capital structure and ROA is more significant than that of other two variables.

KEYWORDS

Capital Structure (CS), Economic Value Added (EVA), Return On Assets (ROA), Return On Equity (ROE).

INTRODUCTION

The corporate performance has been considered by the beneficiaries among managers and profitability of the companies in future and its predictability can help them make decision in sale and purchase of shares, give credit to companies and can be a warning for managers to improve their performance. Performance evaluation is one of the most important issues considered by the stockholders, creditors, governments and managers. Performance evaluation is an activity which the managers perform for reaching their goals and strategies. Selection of a measure for evaluation of suitable performance and reaching goals of the company using this measure increases importance of selection of a suitable measure for performance evaluation [9]. Managers use performance evaluation in order to evaluate them and the covered sections. Investors (stockholders) are interested in application of their capital in order to evaluate success of the managers. Creditors evaluate performance regarding rate of credit. The most important aspect which is considered for investors is whether value has been created for them or not. In other words, has their investment value increased as result of management's performance or not?

On the other hand, the decisions on both financing and investment in the corporations are those made on providence. The resources of financing in the companies are divided into two parts based on their financing policies including internal financial resources and external financial resources. In the internal financial resources, the company starts to finance from the profit it has gained; it employs the profit in the mainly operational activities of the company for producing further yield, instead of distributing the dividend between the shareholders, and in external financial resources, it proceeds to finance from the liabilities and equity [24]. Use of external resources has benefits and risks in terms of capital cost and its divided interest or profit and is effective on return and share price and accounting profit.

PROBLEM STATEMENT

The companies finance their required funds in different ways, however, different factors such as company size, condition of management, production and sale rate, raw material acquisition sources, access to financing markets as well as their economic and political environments have made them cautious of making optimal decisions in this field [14].

Loan and capital have been defined as two main groups of financing the companies, meanwhile, use of the resources which has resulted from debt creation causes to increase leverage and as a result, risk of the company while creating considerable amount of fixed cost. It is of special importance to study financing based on leverage method considering different factors. It means that selection of any cheap or expensive debt by the company causes to create suitable profitability opportunities due to critical condition while changing capital cost [7].

On the other hand, performance evaluation is one of the most important subjects considered by Stockholders, creditors, governments and managements considering development of capital market. Investors tend to be aware of success of the managers in application of their capital. They like to find how much credit has been created out of the performed investment. Therefore, role of performance evaluation measures in reflection of the companies' performance has increased through their available information content. It should be noted that maximization of share market value of the companies is one of the main goals of any company. For this purpose, analysts seek to find the measures to take action regarding maximization of the company's value and increase of the stockholders' wealth considering the cost of capital and Rate of Return on Investment.

Considering the realities of preference of economic measures based on Economic Income such as EVA over the traditional measures for evaluating performance of the companies, this question is raised that to what extent decision of the people about performance of the companies conform to realities of their performance. In this research, two major measures used by stockholders regarding traditional evaluation of performance i.e. ROE and ROA and value-based performance evaluation measure i.e. EVA have been used to determine profitability of the companies. We seek to find if making decision about use of different financial sources by commercial unit management is effective on their profitability. For this purpose, financial leverage ratio has been used for measure of capital structure and its relationship with profitability.

Therefore, in the present research, we have studied effect of capital structure on traditional measures of performance (ROA and ROE) and economic value added measures (EVA) in the companies.

LITERATURE REVIEW AND EXTRACTION OF HYPOTHESES

Stewart (1993) compared the accounting general criteria with EVA. He believed that the EVA criterion is more general than other similar criteria, such as income, dividend, equity interest output as well as cash flow. It was also shown that the changes in market value of selected companies group (especially in their market value added) have weak correlation with accounting general criteria, while the maximum correlation is between EVA and market value added [22].

Modigliani and Miller first studied issue of capital structure in 1958 and they discussed whether use of debts in capital structure was effective on value of the company and capital cost. They concluded that debts would have positive effect on value of the company and limited effect on Weighted Average Cost of Capital. They later reviewed their primary theories considering income tax of the company and present a new theory. In their new theories, they argued that whereas borrowing creates tax benefit for the company, the companies are expected to use borrowing among different financing sources because more use of borrowing will cause increase of the company's value [13].

Rajan et al, 1995 in their comprehensive research entitled "do we know about capital structure? Some evidence from international data" studied determinants of capital structure pattern of the companies from the international viewpoint. Rajan & Zingales, in their joint research studied balance sheets of many corporates in seven large industrial countries in the world (America, England, Canada, France, Germany, Italy and Japan). They calculated debt ratios using book and market values of equity and then studied relationship between four fundamental variables of accounting (value of fixed assets, market to book value, sale logarithm and profitability) and capital structure of the companies by estimating multivariate regression model. Results of this research showed that debt ratio has negative relationship with two factors of market to book value and profitability of the company and positive relationship with two factors of fixed assets and company size [19].

Chain, 1997 studied relationship between capital structure and profitability ratios for 267 companies during 1994-1985 in Kuala Lumpur stock exchange and some ratios such as debt ratio, equity ratio, financial leverage ratio etc were used for variable of capital structure and ROE, ROI and EPS ratios were used as profitability ratio. Results showed that there was significant relationship between capital structure ratios and profitability ratios.

Tian et al, (2007) studied relationship between capital structure and corporate performance using information of 167 Jordanian companies during 1989-2003 and concluded that there was significant relationship between short term debts to total asset, total debts to total asset, long term debts to total asset and total debt to equity ratio and ROA ratio [23].

In another study, Céspedes et al, (2010) examined the relationship between the capital structure and the ownership structure in 7 countries of Latin America and concluded that there is a positive relationship between the leverage and the ownership concentration. Furthermore, the results achieved by this investigation indicate a positive relationship between the leverage and the growth variables as well as a negative one between the leverage and the profitability, the bigger companies have more tangible assets [6].

Lee (2009) examined the capital structure; somewhere in this investigation, he made use of return on assets and the return on sales as the performance benchmarks. They concluded that there is a negative and harmonious relationship between the financial performance and leverage and the short-term debt ration; thus Chinese companies utilize the short-term debts lesser than other ones [10].

Noravesh et al, (2004) studied the relationship between operating cash flows, operating income, and EVA with created wealth of shareholders. The results of research indicated that EVA is a better index for predicting the created shareholders value and represents the management's capability in increasing the company's value (shareholders' wealth) [17].

In an investigation carried out in 85 companies among the companies registered in TSE during the period 2006-2009, Abdoli et al, (2011) showed that there is a significant relationship between both economic value added and residual income with the CSV. However, residual income standard in relation to the created shareholder value is more significant than that of economic value added [1].

Namazi et al, (2005) demonstrated in their investigation during the period 1996-2006 that there is generally a positive relationship between the capital structure and profitability, but it is statistically weak. The relationship between the capital structure and the capital itself depends on the industry; thus an optimal structure should be sought in different industries [15].

Nikbakht et al, (2009) studied relationship between capital structure ratios and performance evaluation accounting measure in the companies accepted in Tehran stock exchange. In this research, it was found that there is significant relationship and multiple correlation between four ratios of capital structure, equity ratio and return on asset but this correlation is stronger about ROA [16].

RESEARCH QUESTIONS AND HYPOTHESES

In this study, we are seeking to answer the following question:

Do the capital structure affect the Company's Performance?

In order to conduct this investigation and to answer the proposed question and considering the results achieved by the previous studies, the following hypotheses are formulated:

- H₁: hypothesis: the capital structure of the companies is significantly effective on the EVA.
- H₂: hypothesis: the capital structure of the companies is significantly effective on the ROE.
- H₃: hypothesis: the capital structure of the companies is significantly effective on the ROA.

RESEARCH METHOD

The research method is deductive and inductive and the correlation is cross-sectional in terms of test statistical method.

In order to study hypotheses, simple regression method has been used. Equations used in this research are as follows:

$$EVA_t = \beta_0 + \beta_1 CS_t + \epsilon_t$$

$$ROE_t = \beta_0 + \beta_1 CS_t + \epsilon_t$$

$$ROA_t = \beta_0 + \beta_1 CS_t + \epsilon_t$$

CS: Capital Structure

EVA: Economic Value Added

ROA: Return On Assets

ROE: Return On Equity

€: Residual error

POPULATION AND SAMPLE

The sample of this study includes 100 companies among all the companies registered in Tehran Stock Exchange which have been randomly selected with respect to the following conditions:

1. They should be registered in TSE within the period of research.
2. Its fiscal year shall be finished before 20th March (end of Esfand in Georgian Calendar).
3. It shall not be of the investment and dealer companies.

VARIABLES

In this research, there are three dependent variables of economic value added (EVA), return on assets (ROA) and return on equity (ROE) and one independent variable i.e. total debt to total asset ratio as measure of capital structure.

INDEPENDENT VARIABLE

Capital Structure: One of the most important goals which financial managers should consider for maximizing wealth of the stockholders is to determine the best optimal composition of the company or capital structure. Puzzle of capital structure is regarded as one of the most important issues of financial management and even is more complex than puzzle of dividend [14]. Capital structure is a composition of debt and equity with which companies finance their assets [3].

Companies use both sources of debt and equity in composition of capital structure. Based on theoretical fundamentals and financial research, there is capital structure based on financial ratios of total debt to total assets, total debt to total equity, total debt to total capital and total long-term debts to total assets [16]. According to Rajan et al, it is very important to define debt or leverage ratio as a dependent variable in capital structure research and selection of suitable measure depends on goal of the research. The most common definition of leverage is total debts to total assets ratio [5]. In this research, capital structure measure has been calculated as follows:

$$\text{Capital Structure} = \frac{\text{Total Debt}}{\text{Total Assets}} \quad (\text{Model 1})$$

DEPENDENT VARIABLES

Profitability: One of the evident characteristics of companies in financing markets is their profitability. Relationship between profitability and financial leverage is asymmetrical despite many researches on theory of information. It means that companies prefers financing out of local sources due to more information clarity at time of profitability due to unwillingness of managers to distribute profit due to arrival of new investor and integration of corporate ownership [14]. To calculate and evaluate profitability variable, measures of ROA·ROE·EVA have been used which we elaborate.

Economic Value Added (EVA): One of the newest value-based measures is Economic Value Added. Based on this measure, value of the company depends on return and cost of capital. Therefore, difference between EVA and traditional measures is that attempt is made to pay attention to all financing costs [11]. Measurement method of economic value of an enterprise is performed after considering total capital cost (including debt and cost of equity). Bearer share cost is also included in calculation of EVA in addition to debt cost. Key principle of EVA is that value is created when rate of return on investment is higher than total capital cost and this capital cost reflects investment risk. EVA is an instrument of measuring local performance of the annual company's operation. Then, EVA is regarded as an additional income. A positive EVA means that rate of return on investment is higher than capital cost. At the end, EVA of larger than 0 means creation (increase) of value for stockholders [18]. EVA which was first introduced by Stern Stewart was calculated as follows [22]:

$$\text{EVA} = (\text{ROIC} - \text{WACC}) \times (\text{IC}) \quad (\text{Model 2})$$

Where: EVA = Economic value added;
 ROIC = Return on invested capital(total capital return)
 WACC = Weighted average cost of capital
 IC = Investment capital

Return on Invested Capital (ROIC): To calculate this, the operating profit after tax is divided to the invested capital. The operating profit after tax is obtained as follows:The expenses of R&D, advertising, marketing, training as well as rental fees which are extracted from the financial statements, are added to the operating profit after tax [operating profit × (1-22.5%)] as accounting adjustments.

Investment capital (IC): Also, increase in supplies, bad debt receivables, decline of inventory value, and pensions extracted from notes of financial statements are added to the operating profit after tax.

Weighted average cost of capital (WACC): In order to determine and measure the weighted average cost of capital, the following equation is used[8]:

$$\text{WACC} = \text{We} \cdot \text{Ke} + \text{Ws} \cdot \text{Ks} + \text{Wd} \cdot \text{Kd}$$

In order to determine the company's cost of capital, it is essential to independently calculate the cost of each component of capital, and based on their ratio in the total structure, the average company's cost of capital can be obtained.

Where: We = weight of equity; Ws = weight of retains and reserves earnings; Wd = weight of debt; Ke = cost of equity; Ks = retains and reserves cost of income; Kd = rate of debt.

Any of the above mentioned rates are calculated as follows:

$$\text{Rate of debt} = (\text{interest expense} / \text{interest debt}) \times (1 - \text{tax rate})$$

$$\text{Cost of equity} = \text{dividend per share} / \text{market value of each share.}$$

In calculating the cost of retains and reserves earnings, the dividend approach or the Gordon model was used [4]:

$$g = (\text{interest per share} / \text{market value of each share}) + (\text{undivided earning percentage})$$

$$\text{Undivided earning percentage} = 1 - (\text{profit paid per share} / \text{profit per share})$$

Return on assets (ROA):This measure calculated profit rate for each monetary unit (Rial) of the company's asset and shows management efficiency in use of the company's assets to create net profit and is calculated as follows[2]:

$$\text{ROE} = \frac{\text{Net Income}}{\text{Total Assets}} \quad (\text{Model 3})$$

Return on equity (ROE): One of the definitions of profitability means the acquired return on investment of the stockholders through efforts of management. Stockholder considers effect of company's operations results on their investment market value as important. The analysts use the measures which analyze corporate performance regarding equity and one of the most important measures is ROE. This ratio represents income obtained from application of a monetary unit of financial equity and is calculated as follows [20]:

$$\text{ROA} = \frac{\text{Net Income}}{\text{Stockholder'S Equity}} \quad (\text{Model 4})$$

RESULTS

Considering picture 1 which shows descriptive statistics of the study, it is found that skewness coefficients of variables of EVA,ROE,ROA, CS which are -8.865, 1.137, 0.378 and -0.138respectively show that because all variables except EVA is close to 0.5(symmetry proportion), their skewness is low. Skewness coefficients of these four variables are 176.100, 2.692, 7.343 and -.454 respectively and show that because variables of ROE,ROA,CS are close to 0.5 (skewness proportion), they show lower dispersion and are closer to normal and EVA variable is longer than normal distribution.

TABLE 1: DATA DESCRIPTIVE STATISTICS

Variables	Maximum	Minimum	Median	Variance	Skewness	Kurtosis
EVA	5.E12	-1.E13	1.89E10	4.816E23	-8.865	176.100
ROA	1.45270	-.19766	.1101019	.014	1.137	2.692
ROE	8.52870	-1.71673	.2756410	.076	.378	7.343
CS	1.0618	.1803	.644735	.024	-.138	-.454

Statistical Results of Hypotheses: In order to test hypotheses, Pearson correlation coefficient and simple linear regression have been used. In order to ensure reliability of the results, presupposition tests of using regression model have been used.

Residuals Normalization Test: Statistic of this test is calculated in picture 2 and its value is equal to 2.192 while statistic of this test between 1.5 and 2.5 is suitable. It can be concluded that errors are independent of each other and regression model can be used for testing hypotheses.

TABLE 2: RESIDUALS NORMALIZATION TEST

Normality test data	Standardized Residual - Sig	Results
Durbin-Watson	2.192	Normal
One-Sample Kolmogorov-Smirnov Test	0.791	Test distribution is Normal

Kolmogorov-Smirnov Test: It is a nonparametric test which is formulated through the following hypotheses.

H₀: Data are normal.

H₁: Data are not normal.

In case statistic value is Sig> 5%, statistical hypothesis of normal distribution of the studied variable is accepted with confidence of 95%. Statistic of this test is calculated in picture 2 because Sig> 5%, and is equal to 0.791. Therefore, null hypothesis is accepted and as a result, data follow normal distribution.

The Statistical Results of First Hypothesis: Companies' capital structure is effective on the EVA.

Considering the relationships so resulted, it was demonstrated that the correlation between the capital structure and the EVA. Correlation coefficient of this variable is -0.425 and its coefficient of determination is 0.181; it means that about 18.1% of the EVA changes are explained by the capital structure.

TABLE 3: STATISTICAL RESULTS SUMMARY OF HYPOTHESES

Dependence Variable		Dependence Variable		
Model		1	2	3
Capital Structure		EVA	ROA	ROE
Correlations	Sig	0.000	0.000	0.005
	Pearson	-0.425	-0.735	-0.254
Model Summary	R	0.425	0.735	0.254
	R Squared	0.181	0.54	0.064
	Adjusted R Squared	0.168	0.535	0.055
ANOVA	F	13.923	113.663	6.883
	Sig	0.000	0.000	0.010
Coefficients	Beta	-0.425	-0.735	-0.254
	t	-3.731	-10.661	-2.623
	sig	0.000	0.000	0.010
Hypothesis Rejection or Confirmation		Confirmation	Confirmation	Confirmation

Significance Test of Coefficients: This test, in addition to determining the significance of coefficients, specifies their impact direction of those coefficients on dependent variable. The statistic related to the significance of coefficients is the t statistic, instead of which the Sig column can be used. After confirmation of coefficients significance, both direction and amount of each independent variable effect on the dependent variable can be determined using the calculated coefficients in Beta column.

H₀: β = 0 EVA has no effect on CS.

H₁: β ≠ 0 EVA has effect on CS.

The Sig column of the table 3 shows that Sig statistic rate for EVA variable is equal to 0.000 Since the error level for this study has been considered as 5%, then the Sig<0.05 and t>2; thus this variable is significant and the first research hypothesis is confirmed and it may be said that the EVA variable has been inversely and significantly effective on the CS.

Statistical Results of Second Hypothesis: Companies' capital structure is effective on the ROA.

Considering the relationships so resulted, it was demonstrated that the correlation between the capital structure and the ROA. Correlation coefficient of this variable is -0.735 and its coefficient of determination is 0.54; it means that about 54% of the ROA changes are explained by the capital structure.

SIGNIFICANCE TEST OF COEFFICIENTS

H₀: β = 0 ROA has no effect on CS.

H₁: β ≠ 0 ROA has effect on CS.

The Sig column of the table 3 shows that Sig statistic rate for ROA variable is equal to 0.005 Since the error level for this study has been considered as 5%, then the Sig<0.05 and t>2; thus this variable is significant and the first research hypothesis is confirmed and it may be said that the ROA variable has been inversely and significantly effective on the CS.

Statistical Results of Third Hypothesis: Companies' capital structure is effective on the ROE.

Considering the relationships so resulted, it was demonstrated that the correlation between the capital structure and the ROE. Correlation coefficient of this variable is -0.254 and its coefficient of determination is 0.064; it means that about 6.4% of the ROE changes are explained by the capital structure.

SIGNIFICANCE TEST OF COEFFICIENTS

H₀: β = 0 ROE has no effect on CS.

H₁: β ≠ 0 ROE has effect on CS.

The Sig column of the table 3 shows that Sig statistic rate for ROE variable is equal to 0.010 Since the error level for this study has been considered as 5%, then the Sig<0.05 and t>2; thus this variable is significant and the first research hypothesis is confirmed and it may be said that the ROE variable has been inversely and significantly effective on the CS.

ANALYSIS AND INTERPRETATION OF THE RESULTS

In this research, it was discussed that if management decisions in financing policies and their decision to use resources can be effective on corporate performance and profitability. Regarding the first hypothesis of the research that total debts to total assets ratio was applied as measure of effect of capital structure on EVA, results showed that this ratio had reverse and significant relationship with EVA. The presence of reverse relationship indicates that financing through borrowing (debt) causes decrease of economic value added.

Regarding the second and third hypothesis of the research in which effects of capital structure on ROA and ROE were studied as representatives of traditional measure of performance evaluation, results showed that capital structure was able to predict ROA and ROE but it is more able to predict ROA and considering reverse relationship between structure and two variables of ROA and ROE, it can be said that increase in debts and borrowing has negative effect on ROA and ROE. Considering the results obtained from hypotheses test, it can be inferred that capital structure of the company has reverse and significant relationship with their profitability and performance. In other words, capital budgeting and financing decisions and optimal composition of financing resources are effective in creation of value for stockholders. Therefore, it can be mentioned that excessive increase of corporate debts decreases the wealth created for stockholders. On the contrary, decrease of debts or increase of equity leads to reverse results. Therefore, increase in debts of companies can be useful considering its effect on corporate profitability until optimal capital structure is achieved. It means that excessive increase of debts leads to increase of bankruptcy risk and causes decrease of share value. On the other hand, excessive use of equity will lead to increase of the expected return of the stockholders and finally increase of financing costs.

FURTHER SUGGESTIONS TO THE RESULTS OF THE STUDY

Considering result and achievements of research, one can specify the following cases regarding the applied fields:

1. Considering that rate of capital cost is one of the factors affecting EVA changes, the company's managers are suggested to accurately measure cost of each one of the financing sources and their optimal composition in order to minimize financing cost and reach optimal capital structure in order to maximize value for the stockholders.

2. The investors who seek to acquire higher value of their investment should pay attention to ROA and ROE which can be easily calculated and analyzed unlike EVA at time of selecting their investment and make their investment in shares of the companies with proper proportion.
3. Investors in stock exchange and financial analysts are suggested to include debt ratios of the company as measure for testing and predicting corporate profitability and performance in their analyses.

FURTHER SUGGESTIONS FOR FUTURE STUDIES

1. One can study effect of capital structure on other performance evaluation models such as residual earnings , gross profit rate , operating profit ratio and working capital return which was used in other researches and compare the research results with the present research.
2. Regarding capital structure variable , one can also use total long –term debts to total assets , total debt to total equity and total debt to total capital used in other researches to calculate this variable with other models and compare research results with the present research.
3. Since validity and reliability of a research are higher when a research time interval is longer and its results are generalized more reliably, it is advisable to perform the research again for longer time interval which can provide more accurate results for the research.

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