

# The Study of the Relationship between the Capital Structure and the Variables of the Value-based Performance Assessment

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## Abstract

Decision-making about the capital structure meaning company's finance, like other managers' decisions has an impact on the company's value. Therefore, determining an optimal capital structure in order to select financial sources is of crucial importance. To do so, the managers must be aware of the effects of influential variables on the capital structure. In order to assess the performance of business, different criteria have been presented, among which are the relationships of the value-based performance assessment. The present study aims at showing the correlation between the capital structure and the variables of the value-based performance assessment. The study is among descriptive researches and its methodology is ex post facto method. Also the hypotheses of the research have been tested using Spss19. Based on results, there is a negative and meaningful relationship between the capital structure and the variables of value-based performance assessment including Economic Value-Added (EVA), Market Value-Added (MVA), Cash Value-Added (CVA) in 219 companies listed in Tehran Stock Exchange within a time period of 5 years from 2007 to 2011.

**Keywords:** Capital Structure, Economic Value-Added (EVA), Market Value-Added (MVA), Cash Value-Added (CVA)

## 1. Introduction

Decision making on capital structure is one of the most challenging and difficult issues facing the companies. The capital structure of a company is a combination of debt and shareholders equities. The main problem in determining the capital structure is that considering the differences between equity and debt, for optimum performance in the capital structure, how much debt and how much equity there should be to the company is not subject to the bankruptcy risk and less cost to pay (Nikbakht and Paikani, 2009). Creating and enhancing long-term shareholders' wealth are among the companies' main objectives and increase in wealth is achieved only by the optimal performance. In order to evaluate the optimal performance of the business units different criteria have been presented, among the newest ones is the variable of value-based performance assessment (Anvari Rostami et.al 2004). The main objective of the business units is to improve the shareholders' wealth. The existence of the debt in the capital structure of companies due to tax advantages leads to the increase in benefit and earnings per share will increase accordingly. On the other hand, due to interest costs and the possibility of non-fulfillment of obligations at maturity, the possibility of financial risk increases, stock market prices reduce and consequently range of shares diminishes (Izadi Nia and Rahimi Dastjerdi, 2009). In general, if we consider the variables of value-based performance assessment a relevant factor in the decision makings on the capital structure, normally there is a logical relationship between them and the structure of capital for companies. After assessing the presence or absence of correlation between each of the variables of value-based performance assessment with the corporate capital structure, the question is how much the capital structure affects each of these variables? It appears that providing a research that can measure the correlation between capital structure and each of these variables can be useful. Based on above descriptions, the results of such research could be very influential. Designing an optimal capital structure that will lead to the creation of value added and wealth creation for the company is very important from the perspective of managers and shareholders and investors. The results of this study can help managers create a value-making optimal capital structure and fulfill the demands of the investors and shareholders. Therefore, this study aims at calculating the variables of values-based performance assessment and capital structure and assess the relationship and correlation between them and the question that arises is this: is it possible to use the variables of value-based performance assessment as a factor for determining the optimization or non-optimization of capital structure? And the answer to this question is obtained by evaluating the research hypotheses and calculating the correlation between above variables.

## 2. The statement of problem

Shareholders as the owners of businesses, ask managers maximize their investment value. There are different criteria to measure and make value judgments about company performance. Lack of appropriate criteria to measure company performance and its equity value causes the value of a company not to find its true value,

which results in the loss of a group of customers of shares and profitability of other group (Hejazi & Hosseini, 2006). It could be said that one way to reduce conflicts of interest between owners and managers is the utilization of a capital structure that increase the company value (Riggi, 2010). Creating and enhancing long-term shareholders' wealth are among the companies' main objectives and increase in wealth is achieved only by the optimal performance. In order to evaluate the optimal performance of the business units different criteria have been presented, the ones being the variable of value-based performance assessment. Considering the development and importance of capital market, performance assessment in the decision-making process is among the most important issues in the financial and economic sphere, and these variables are the ones related to the management performance assessment criteria. The main measure of economic value creation in economic firms from the accounting perspective is the management of size and continuation of the remaining profit, which is measured in terms of value added.

### 3. Review of the literature

Several studies have been conducted on optimal capital structure and value-based performance assessment variables, each one dealing with the influential factors on capital structure from a special perspective and apply different criteria to analyze optimization or not-optimization of the capital structure which are presented as follows:

Fernandez, in an article entitled, economic value and cash value added, does not measure creating value for shareholders within 1994-1998 and he concluded that the correlation between shareholders' equity returns and increase in the cash value added (according to the Boston Consulting Group) in 100 more profitable companies is for the 7/1 percent (Fernandez, 2008).

Mazhar and Naser conducted a study on 91 Pakistani companies during the period 1999 to 2006 in which the size, growth, tax, and ROA were selected as independent variables, and financial leverage (capital structure) as the dependent variable. Then using Pearson correlation coefficient it was found that there is a negative and significant correlation between capital structure and ROA (Naser and Mazhar, 2007).

Huang and Song in a study entitled "Determining Factors in the Capital Structure" on 1200 Chinese companies over the years from 1994 to 2003 concluded that financial leverages have a negative relationship with profitability and growth opportunities (Huang and Song, 2006).

Wet in a paper investigated the relationship between economic value added and other traditional measures (operating cash flows, profit per share, dividend profit, etc.) with a market value added for listed companies in South Africa stock exchange market. The results of this study indicate that economic value added is not superior to traditional values (Wet, 2005).

Riggi in his thesis examines the relationship between capital structure and performance of manufacturing companies listed in Tehran Stock Exchange Market using economic value added criterion. In this study, multiple variable regression method using panel data is used. The results indicate that there is a positive and significant relationship between capital structure and the performance of companies (Riggi, 2009).

Soufiani in his study examined the relationship between capital structure and economic value added in the firms listed in Tehran Stock Exchange. The study results indicates that there is a negative and significant relationship between the ratio of interest-bearing debt to shareholders' equities, and there is economic value add (Soufiani, 2005).

Saleh Abadi and Ahmad Pour in a study examined the relationship between the ratio of economic value added to the capital and the ratio of market value added to the capital in the firms listed in Tehran Stock Exchange within the years 2000 to 2007. They concluded that there is a positive and significant relationship and correlation between the ratios of economic value added (EVA/Cap) and the ratio of market value added (MVA/Cap) in all companies accepted in Tehran Exchange Market (Saleh Abadi & Ahmad Poor, 2010).

Pouyan Far and his colleagues investigated the relationship between accounting standards and criteria of economic value added, and the value of cement and petrochemical companies in Tehran Stock Exchange within the years 1999 to 2008 and they concluded that economic criteria are better than accounting standards, and accounting standards are inadequate to assess company performance (Pouyan Far & et al. 2010).

Nikbakht and Paikani in a study investigated the relationship between capital structures and accounting criterion of performance assessment in the companies listed in Tehran Exchange Market during 2002 to 2007 and it was concluded that there is a significant relationship between capital structure and accounting criteria of performance assessment (Nikbakht & Paikani, 2009).

Moini and his colleagues in a paper investigated the performance of management using the cash value add of the 45 firms listed in Tehran Stock Exchange in different industries and it was concluded that the criterion of cash value added in connection with company stock returns, is not a better indicator than operating profit from cash flows and return on investment (Moini et al. 2010).

Rahnama Roudposhti and Mahmoudi in a study evaluated the economic value added and market value added in shareholders' value added management in the steel industry during the years 2000 to 2005. The results showed that there is a significant relationship between above variables and shareholders' added value, therefore, suitability of the economic value added and market value added as predictor variables and alternatives for identifying and measuring the shareholders' value added is recommended (Rahnama Roudposhti and Mahmoudi, 2010).

Mehrani and Rasayyan in a study investigated on the relationship between financial leverage and market value added of companies listed in the Tehran Stock Exchange during 1995-2006 in 189 companies. The results indicated that there is a positive and significant relationship between financial leverage and market added value (Mehrani and Rasayyan, 2009).

Izadi Nia and Rahimi Dastjerdi in a paper studied effects of capital structure on stock returns and earnings per share in the years 1997-2004 in 51 companies listed in Tehran Exchange Market and it was concluded that there is a direct relationship between the ratio of the debt to the shareholders' rights and stock returns and earnings per share (Izadi Nia and Rahimi Dastjerdi, 2009).

Mashaieky and Talebi in a study conducted on the companies listed in Tehran Exchange Market examined whether the economic value of profits is a good alternative for profits? It was concluded that incremental information content suggested that the specific components of remaining profit and economic value provide little incremental information content than specific components of profit (Mashaieki and Talebi, 2009).

Rahnama Roudposhti in a paper evaluated the function of the economic value added and market value added to assess the economic performance of companies in Tehran Stock Exchange over a period of 5 years and he concluded that there is a relationship between economic value added and financial variables like earnings per share. In addition, there is a relationship between market value added and accounting criteria (Rahnama Roudposhti, 2007).

Nikou Maram and Asgari conducted a research to determine a model to predict the return of Tehran Stock Exchange, using EPS, EP, REVA, EVA indices during the period 1996-2004 and it was concluded that indices based on economic value added for predicting stock returns have higher predictive power than accounting earnings (Nikou Maram and Asgari, 2006).

Namazi and Shyrzadeh in a study entitled "the capital structure and profitability of the companies listed in Tehran Stock Exchange", tested their own hypotheses using simple regression and correlation coefficient and concluded that there is a positive but statistically weak relationship between capital structure and profitability of the company (Namazi and Shirzadeh, 2005).

Anvari Rostami et al. conducted a study to examine the relationship between economic value added, per-profit interest and taxes, and the cash flow of operational activities with the stock market value of the companies listed in Tehran Exchange Market (Anvari Rostami et al. 2004). It was specified that per-profit interest and taxes has more correlation than economic value added with stock market value (Anvari Rostami et al. 2004).

Norouh and his colleagues examined the relationship between operating cash flows, operating income and economic value add, and the wealth created for shareholders. The results indicated that economic value added is a better indicator for predicting the wealth created for shareholders and it shows the management capabilities in raising the company value (shareholders' wealth) (Norouh and his colleagues, 2004).

#### **4. Study Hypotheses:**

Hypothesis 1:

There is a negative and significant correlation between capital structure and economic value added (E.V.A).

Hypothesis 2:

There is a negative and significant correlation between capital structure and market value added (M.V.A).

Hypothesis 3:

There is a negative and significant correlation between capital structure and cash value added (C.V.A).

#### **5. Conceptual and Operational Definitions of Study Variables**

##### **5.1 Conceptual Definitions**

###### **5.1.1 Capital Structure**

Capital structure refers to sharing resources and company's finance such as short-term debts, bonds, long-term debt, preferred stock and common stock (Rahnama Roudposhty et al. 2006, p 167). Capital structure of a business unit includes providing funds through debt and equity. The origin and combining two types of capital determines to a considerable extent financial stability and strength to pay the company's long-term debt (Rahnama Roudposhti et al. 2006, p. 352).

###### **5.1.2 Economic Value Adde**

Economic value added is an index based on value-based thinking to control the entire value created in business deals. Generally, economic value added is a measure of internal performance. Indicator of economic value added

deals with the challenges that companies face when assessing financial performance. The economic value added express economic profitability by measuring profit after deducting the expected return to shareholders (Rahnama Roudposhti et al. 2006, p. 352).

### 5.1.3 Market Value Added

How to assess the performance of companies through market based on debt market value, value of stock market and debt invested in the company can be compared (Rahnama Roudposhti et al. 2006, p. 389). The difference between the total market value of the business unit and its economic capital is called the market value added (Hejazi & Hosseini, 2006).

### 5.1.4 Cash Value Added

Cash value added represents the wealth created in a fiscal period, by financiers (shareholders and lenders), government employees and company. Total dividends paid to shareholders, interest paid to lenders, salaries paid to employees, taxes paid to government, and the remaining cash for the operations of a company's financial period, represents the distribution of a cash value added (Noroush & Haydari, 2004).

## 5.2 Operational Definitions:

### 5.2.1 Capital Structure:

$$\text{Capital structure} = \frac{\text{Total debt}}{\text{Total assets}}$$

### 5.2.2 Economic Value-Added (EVA):

EVA= operating income after tax – Cost of capital

Cost of capital = capital employed \* Weighted Average Cost of Capital (WACC)

$$\text{WACC} = \frac{D}{D+E} \times i \times (1-t) + \frac{E}{D+E} \times K$$

$$K = \frac{DPS}{P} + \frac{EPS}{P} \left(1 - \frac{DPS}{EPS}\right)$$

D: Total interest bearing debts

E: Equity at the end of period

i: Rate of loan cost

K: Expected rate of return for shareholders

P: Market price of per share

### 5.2.3 Market Value Added (MVA):

Market value added= the average stock market value- Average market value of debt

### 5.2.4 Cash Value Added (CVA):

Cash value added= cash operating profit after tax- cash cost of capital

Cash operating profit after tax= Cash from operating activities after tax paid

Cash cost of capital= dividend paid + Interest payments

Operating cash profit= non-cash expenses+ commitments+ Operating profit (loss)

In other words, the cash operating profit is defined as cash from operations in case of cash flows prepared in accordance with Standard No. 2 of Iranian accounting standards (Noroush and Heidari, 2004).

## 6. Methodology

From the perspective of the research objective, this is an applied study that explores the relationships between capital structure and value-based variables and attempts to explain the relationship between these variables, so this research is of descriptive-correlative type. In addition, in terms of statistical tests of variables, the Pearson correlation coefficient was used, and in order to investigate data normality Kolmogorov - Smirnov test has been used. The type of study methodology is past-event. According to the topic of this study, all firms listed in Tehran Stock Exchange have been chosen as the statistical community and the research study area, and study required data has been collected through information software "Rahavarad Novin, Tadbir Pardaz, companies' Internet sites and the site of Islamic Research Center of Tehran Stock Exchange Market Organization.

The study population consisted of all firms listed in Tehran Stock Exchange from 2005 to 2010. The statistical sample has been selected through filtering and following conditions:

1. Their fiscal year is the end of March.
2. Not a member of the investment industry companies, financial intermediaries and banks.
3. Information about research variables from annual reports of companies is available.

According to the above conditions, the study sample included 219 companies per year and a total of 5 years, 1095 companies.

## 7. Study Findings:

### 7.1 Statistical testing of the first hypothesis

The first hypothesis of this study states that there is a significant and negative relationship between capital structure and economic value added (EVA). The result of testing this hypothesis is depicted in Table 7.1.

Hypothesis  $H_0$ : there is not any negative and significant correlation between capital structure and economic value added.

Hypothesis  $H_1$ : there is a negative and significant correlation between capital structure and economic value added.

Table7.1: Statistical Table of Pearson Correlation Coefficient for testing the first hypothesis

		Capital structure	EVA
Capital structure	Pearson Correlation	1	-.368**
	Sig. (2-tailed)		.000
	N	219	219
EVA	Pearson Correlation	-.368**	1
	Sig. (2-tailed)	.000	
	N	219	219

\*\* . Correlation is significant at the 0.01 level (2-tailed).

ce: the findings of the researcher

Based on the Table 7.1 it can be concluded that, given  $Sig < .01$  , therefore, zero hypothesis that indicates a lack of significant correlation between variables is rejected and this claim that there is a significant and negative correlation between capital structure and economic value added is approved with 99% confidence level.

### 7.2 The statistical testing of the second hypothesis:

The second hypothesis of this study states that there is a significant and negative relationship between capital structure and market value added (MVA). The result of testing this hypothesis is depicted in Table 7.2.

Hypothesis  $H_0$ : there is not any negative and significant correlation between capital structure and market value added (MVA).

Hypothesis  $H_1$ : there is a negative and significant correlation between capital structure and market value added (MVA).

Table7.2: Statistical table of Pearson correlation coefficient for testing the second hypothesis

		Capital structure	MVA
Capital structure	Pearson Correlation	1	-.271**
	Sig. (2-tailed)		.000
	N	219	219
MVA	Pearson Correlation	-.271**	1
	Sig. (2-tailed)	.000	
	N	219	219

\*\* . Correlation is significant at the 0.01 level (2-tailed).

ce: the findings of the researcher

Based on the Table7.2 it can be concluded that, given  $Sig < .01$  , therefore, zero hypothesis that indicates a lack of significant correlation between variables is rejected and the claim that there is a significant and negative correlation between capital structure and market value added is approved with 99% confidence level.

7.3 The statistical testing of the third hypothesis:

The third hypothesis of this study states that there is a significant and negative relationship between capital structure and cash value added (C.V.A). The result of testing this hypothesis is depicted in Table 7.3.

Hypothesis H<sub>0</sub>: there is not any negative and significant correlation between capital structure and cash value added (C.V.A).

Hypothesis H<sub>1</sub>: there is a negative and significant correlation between capital structure and cash value added (C.V.A).

Table7.3: Statistical table of Pearson correlation coefficient for testing the third hypothesis

		Capital structure	CVA
Capital structure	Pearson Correlation	1	-.332**
	Sig. (2-tailed)		.000
	N	219	219
CVA	Pearson Correlation	-.332**	1
	Sig. (2-tailed)	.000	
	N	219	219

Correlation is significant at the 0.01 level (2-tailed).

Source: the findings of the researcher

Based on the Table7.3 it can be concluded that, given Sig < .01, therefore, zero hypothesis that indicates a lack of significant correlation between variables is rejected and the claim that there is a significant and negative correlation between capital structure and cash value added is approved with 99% confidence level.

7.4. The test for correlation between dependent variables of the study

Moreover, the test for correlation coefficient between variables of value-based performance assessment of the study (EVA, MVA, CVA) which are depicted in Table 7.4. Indicate a significant and positive correlation.

Table7.4: Statistical table of Pearson correlation coefficient for testing the correlation of dependent variables

		EVA	MVA	CVA
EVA	Pearson Correlation	1	.763**	.916**
	Sig. (2-tailed)		.000	.000
	N	219	219	219
MVA	Pearson Correlation	.763**	1	.958**
	Sig. (2-tailed)	.000		.000
	N	219	219	219
CVA	Pearson Correlation	.916**	.958**	1
	Sig. (2-tailed)	.000	.000	
	N	219	219	219

\*\* . Correlation is significant at the 0.01 level (2-tailed).

The source: the findings of the researcher

7.5 Kolmogorov-Smirnov Test

Test Kolmogorov- Smirnov which is used for testing the normality of the variables is depicted in Table 7.5.

H<sub>0</sub>: data follow a normal distribution

H<sub>1</sub>: data don't follow a normal distribution

Table7.5: statistical table of Kolmogorov-Smirnov for testing the normality of variables

		Capital structure	EVA	MVA	CVA
N		219	219	219	219
Normal Parameters <sup>a,b</sup>	Mean	.29613	22812.6719	-23530.0913	-358.7106
	Std. Deviation	.176185	289976.47595	404302.73105	326502.66252
	Most Extreme Differences				
Absolute	Absolute	.099	.345	.328	.333
	Positive	.099	.345	.328	.333
	Negative	-.061	-.287	-.302	-.295
Kolmogorov-Smirnov Z		1.470	5.099	4.851	4.932
Asymp. Sig. (2-tailed)		.658	.201	.267	.468

The source: the findings of the researcher

Based on the Table7.5 it can be concluded that, given  $Sig > .05$  therefore, zero hypothesis that indicates the normality of study data is accepted.

## 8. Conclusions and Suggestions

Decision makers today will inevitably need to have useful and relevant information and in case information systems fail to provide users with necessary information, adopted decisions are subject to errors. Meanwhile, exploring the relationship between different factors can improve information provided by the accounting system and enhance itself activeness, so that accounting information users can take the right decisions based on this information.

In the current study, the relationship between capital structure and value-based performance assessment variables in the companies listed in Tehran Stock Exchange Market from 2005 to 2006 to 2010 was examined. Findings indicate a significant negative correlation between capital structure and value-based performance assessment variables (EVA, MVA, CVA) on all companies listed in the Tehran Stock Exchange.

This study has three hypotheses which are explained as follows:

**Hypothesis 1:** there is a negative and significant correlation between capital structure and economic value added (E.V.A).

**The Result:** based on the acquired correlation coefficient ( $-.368$ ) and considering the significance level test that is less than 1%, negative and significant correlation between capital structure and economic value added (EVA) will be confirmed.

**Hypothesis 2:** there is a negative and significant correlation between capital structure and market value added (M.V.A).

**The Result:** based on the acquired correlation coefficient ( $-.271$ ) and considering the significance level test that is less than 1%, negative and significant correlation between capital structure and market value added (MVA) will be confirmed.

**Hypothesis 3:** there is a negative and significant correlation between capital structure and cash value added (C.V.A).

**The Result:** based on the acquired correlation coefficient ( $-.332$ ) and considering the significance level test that is less than 1%, negative and significant correlation between capital structure and cash value added (CVA) will be confirmed.

Thus, according to the results of the above assumptions, with increase in the rate of capital structure, the rate of value-based performance assessment variables decreases and vice versa. The reason that capital structures negatively and significantly related to above variables is because by increase in the rate of capital structure, i.e., the increased use of interest bearing debts in the composition of capital structure, capital cost increases and consequently company net profit reduces, and in turn this leads to devaluation of company in the future. The results of this study are consistent with previous similar research including Soufiani (2005) and also theoretical principles mentioned in the present study.

In addition, based on correlation coefficient test derived from statistical software Spss19, there is a positive and significant relationship between value-based performance assessment variables (EVA, MVA, and CVA).

In this study, although there was a negative and significant relationship between capital structure and value-based performance assessment variables, the role of other factors in the decision making of the users and value-creation of businesses managers could not be ignored. Certainly, economic factors including currency, inflation rate and employment rate and cultural and political factors are considered factors affecting investors' decision making and value-creation businesses managers.

The results of this study suggest that:

1. Given the significant negative relationship between capital structure and performance indicators and value-creation of managers (value-based performance assessment variables), it is suggested that investors in adopting decisions on investment by keeping accounting information in mind, pay attention to firms' value-creation that is measured by value-based performance assessment variables.

2. In Tehran Stock Exchange, based on the calculations of value-based performance assessment variables, it is possible to identify companies that are seeking greater value and to select the optimal portfolio of stocks.
3. In addition, given the relatively long and complex process of the calculation of value-based performance assessment variables, it is proposed that in order to facilitate access of analysts, investors, researchers and users to the mentioned variables, software companies that offer companies' financial data and Stock Exchange, calculate also value-based performance assessment variables and then deliver them to the users so as to both analysts and investors can easily use them in adopting decisions on investment and counseling and their academic research more quickly done.

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