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Evaluating the Relationship between Economic Value Added and Capital Structure in Companies Listed at Tehran Stock Exchange

Atabak Baybordi[1], Ehsan Kermani[2], Esmaeel Farzaneh Kargar[3]*

[1.]Department of Accounting, Urmia Branch, Islamic Azad University, Urmia, Iran
[2.]Young Researchers Club, Dariun Branch, Islamic Azad University, Dariun, Iran
[3.]Department of Business Management and Customs, Hormozgan University, Iran
*Corresponding author's Email: fkargar@hormozgan.ac.ir

ABSTRACT: Maximization of wealth is the major purpose of a business unit. Nowadays, economic value added is considered to be the most important criterion for evaluation of internal performance. On the other hand, as discussed in capital structure, capital is the first fundamental necessity for establishing a company and is needed for further developments. Thus, the present study aims at evaluating the relationship between economic value added and capital structure of companies listed at Tehran Stock Exchange from 2004 to 2010. The samples are chosen by the use of systematic elimination method and include 70 companies. In the present study, value added as the dependent variable is a measure used for of assessing value-making in companies. Capital structure is the independent variable comprising rate of short-term liability, rate of long-term liability, and return on equity. Thus, three hypotheses are proposed for explaining the relationship between value added and elements of capital structure. Excel and SPSS 17 are used for data analysis. Statistical methods include the correlation coefficient, determination coefficient, significant t- and f-statistics. Results of testing the hypothesis with linear regression method indicate a significant and positive relationship between economic Value Added and stock return.

Key words: Economic Value Added, Capital Structure, Rate of Return, Cost of Capital

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INTRODUCTION

The emergence of big companies and the weighty issue of separating ownership from management, and a great conflict of interests between owners and managers made creditors, state owners and even managers evaluate corporate performance and the performance of managers or leaders. It is also of great importance for shareholders to increase their wealth by either increasing price or value of the company or through cash. Different groups, such as owners, managers, state investors, banks and creditors hold, for different reasons, pay especial attention to the matter of corporate performance evaluation. There exist several various criteria for evaluating performance which may prove helpful in their own merits. Information about these criteria can be collected from financial statements, economy, free market, or a combination of them, each with its own advantages and disadvantages (Tahmasbi, 2011).

Shareholders and investors need to recognize major variables to be able to explain stock return. Creditors need a model that assists them in evaluating their ability to pay the loans, their interests and the finance allocated to customers. Shareholders, both natural and legal, need a model to enable them evaluate corporate performance and determine expected returns. They have to determine an appropriate measure for performance of managers' reward system in order to provoke incentive behavior and create a stable value in the company. Unlike developed countries, net profit, is the measure of corporate performance in most Iranian companies. However, the new financial theory prefers value maximization to profit maximization. Lack of utilization of value-based performance measures have led such significant concepts like capital costs and costs of missed opportunities to be neglected (Jahankhahi, 2011).

Measures proposed so far for determining corporate value and manager's performance can be classified into two categories: accounting models and financial models. In accounting models, corporate value is a function of various variables such as profit, earnings per share, profit growth rate, return on equity, book value, cash flow, dividends, stock demand and supply. In financial models, corporate value is a function of ability to gain profit from existing assets and their potential investments and differential rate of return and capital costs of the company. It is claimed that economic value added is less defected than accounting earnings and shows the real value of the company. In EVA, opportunity cost of equity is taken into consideration. A great bulk of studies indicate that EVA can be used as a basis for determining the goal and value, investment in projects and plans, performance evaluation, determining intellectual capital of the company, rewards, etc. In spite of EVA using accounting information, it is used as a financial measure (Ohlson, 2004). Performance evaluation methods are introduced by financial and non-financial measures (Roudposhti, 2006).

Financial measures:

- Internal financial measure (operating profit).
- External financial measure (stock price).

Non-financial measures:

- Internal non-financial measure (delivery time).
- External non-financial measure (customer satisfaction).

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Companies state their financial and non-financial measures via a report called comprehensive measure of performance evaluation including:

1. Profitability measures: operating profit and earnings growth
2. Customer satisfaction measures: market share, customer accountability, in-time operation
3. Efficiency, quality and timing measures: efficiency deviation of direct materials, overhead variance.
4. Innovation measures: number of innovations, number of new products

The above measures differentiate between modern and traditional methods for evaluating and measuring performance (Roudposhti, 2006).

a) Traditional methods

1. Return of investment (ROI)
2. Residual income (RI)
3. Return of sale (EOS)
4. Earnings per share (EPS)
5. Market price of share to earnings per share (P/E)

b) Modern methods

1. Economic value added (EVA)
2. Market value added (MVA)

EVA is the measure of performance evaluation that calculates the ways leading to increase or elimination of the corporate value. It shows the residua profit deducing capital costs. EVA is considered a simple performance measure and provides a real view of earning wealth for shareholders and also helps managers in making investment decisions and identifying opportunities for improving and paying attention to short term interests like long term ones. It is the increase of a product value during a production stage. In other words, it is wealth earned by a business unit through the efforts of a group of people working in that unit (Rashidpour, 2011).

EVA, as an evaluation measure, takes the opportunity cost of equity and time-value of money and distortions arising from applying accounting principles. The higher the EVA, the better is the company's status. In other words, a positive EVA presents optimal allocation of resources, value-making in the company and increasing the wealth of shareholders. On the other side, a negative EVA implies waste of resources and non-optimal and insufficient allocation of resources, and consequently, reduction of shareholders' wealth. If the EVA of a company is positive, the company is profitable to shareholders and this profitability indicates capability of the managers. Therefore, EVA is alternatively called 'management profit" (Penman, 2005).

The notion of EVA was primarily founded in 1970 by Stern & Stewart. EVA is designed for providing consulting services to companies willing to determine a proper level of compensations for their managers. The authors explicitly suggest forgetting accounting profit as an evaluation measure of performance, while the theory of value added is based on the following principles.

1. The company is not profitable in practice, unless its earnings exceed costs of missed opportunities.
2. Wealth for shareholders is made when managers make investment decisions in a way that their net present value be positive.

Nowadays, big companies like Coca Cola, Georgia Pacific, Polaroid, T&AT, base their rewarding system in terms of managers' capabilities in creating positive EVA. Rewarding based on EVA is done with considering all costs of capital (debt cost and cost of equity), so that managers perform as a shareholder in making financial decisions. EVA is common in the community investors. Various conferences held in this field in the recent years (since 1996) have proved the claim (Warr, 2005).

Some innovators like Stern, have investigated and reorganized the limits of accounting profit. Unlike traditional measures like EBIT, NOPAT, etc, EVA examines the real profitability of the corporate. Investing companies like Management Global Asset and Oppenheimer Capital use EVA in choosing share, portfolio structure and the process of risk control (Greene, 2003).

In 2005, Penman conducted a study to evaluate the relationship between EVA and expected profit per share which resulted in a positive significant relationship between the two. In a study by Mir and Seboui in 2008, they discovered a positive significant relationship between EVA and earned wealth for shareholders. Xiang et al. (2009), evaluated corporate performance in China and came to the conclusion that EVA is the most important performance evaluation measure of companies. Among many studies conducted in Iran, Norawesh and Karami (2004) investigated the relationship between EVA and earned wealth for shareholders, finding a positive significant correlation between them. Hejazi and Mollanazari (2005), "Evaluating the Relationship between Economic Value Added and Capital Structure", found that economic value-added is an essential factor in determining capital structure. The authors found a significant relationship between them. In 2006, Roudposhti in a study examined and evaluated the performance of MVA to figure out corporate performance, only to find that EVA is the best evaluating measure of corporate performance.

Yahyazadehfar et al. (2010) in research entitled the Relationship between Economic Value added, the Ratio of Profitability and Market Value Added in

Companies Listed at Tehran Stock Exchange", found a significant relationship between EVA, ratio of profitability and MVA. Tahmasbi (2011) examined the relationship between EVA and rate of return on assets, as a profitability measure, and found a significant relation between them. Also, a significant relationship was observed between capital structure and EVA in a study conducted by Nikbakht and Moghimi (2011).

MATERIAL AND METHODS

Hypotheses

In the present study, the following hypotheses are presented based on the relationship between EVA and stock return in companies listed at Tehran Stock Exchange.

- Main hypothesis: There exists a significant relationship between economic value added and capital structure of companies.
- Subsidiary hypothesis 1: there is a relationship between economic value added and rate of liability.
- Subsidiary hypothesis 2: there is a relationship between economic value added and rate of liability to equity.
- Subsidiary hypothesis 3: there is a relationship between economic value added and rate of interest-bearing liability to equity.

Research Period and Population

The study covers seven years of research between the years 2004 to 2010. The population of the study consists of companies listed at Tehran Stock Exchange. Due to the great number and heterogeneity of the population, the following criteria have been set in sampling, and so the systematic elimination method has been applied. Companies satisfying the following criteria are chosen:

1. Companies whose financial year ends in Esfand.
2. Companies with stable financial period from 2004 to 2010.
3. Companies that are not considered as financial and credit investing institutes.
4. Their equity is not negative.
5. Companies that have not faced detriment during the period under study.

Considering the above limitations, only 102 companies satisfied the requirements. Therefore, all these companies were taken as sample population to be evaluated.

Methodology and Variables

Since the study aims at explaining the relationship between information groups, i.e. EVA and capital structure, it is of correlative nature. On the other side, it is a post-event study. That is to say, it is based on analysis of prior information (financial statements of companies). Capital structure is the independent variable of the study. Capital is essential for any company to be established, and is needed for further development. Though it may be acquired from different resources, capital is generally obtained in the form of loans or shares. Theories on capital structure seek to find a balance between sources of financing, i.e. liability and return on equity, to maximize corporate value and minimize costs of financing, constituting rate of short-term liability, long-term liability, and return on equity.

EVA is the dependent variable indicating the difference between net operating profit after tax (NOPAT) and capital costs. Therefore, it is different from traditional means, such as EPS, for evaluating accounting profit since it takes into consideration the total price of financing (Xiang, 2009).

EVA is obtained by the difference of rate of return (r) and rate of capital cost (c) multiplied at the amount of capital.

EVA= (r - c) × Capital

EVA= (r × Capital) - (c × Capital)

Rate of stock return is calculated as:

r= NOPAT/capital

EVA= NOPAT – (c × Capital), where c is weighted average cost of capital.

RESULTS AND DISCUSSION

Data analysis is cross-sectional and year-to-year. Linear regression is used for testing hypotheses. The present study uses different descriptive statistics like mean, average, variance, standard deviation, and computer applications like Excel and SPSS17. Data were analyzed by statistical methods using the following tools: A. Correlation coefficient (R); B. Coefficient of determination (R^2); C. Significance level at t and F

Descriptive techniques try to describe research data using tables and descriptive statistics measures like central indexes and dispersion. The following descriptive statistics take the maximum and minimum values for the mean and standard deviation of data. Results are given in Table 1.

Table 1. Descriptive Statistics

Items	N	Min	Max	mean	Standard deviation
EVA	490	-30344	7698801	26867	795326
Rate of long-term liability	490	-365.5	88492	2366	8.172
Rate of short-term liability	490	-.0489	-.314	.00087	.00326
Return on equity	490	-275.8	97425	3694	4.164

Table 2 shows the Pearson correlation coefficient matrix between the variables.

The first hypothesis of the study is that there is a significant relationship between EVA and rate of liability in companies listed at Tehran Stock Exchange. Null and alternative hypotheses are:

Null hypothesis (H_0): there is no significant relationship between EVA and rate of liability.

Alternative hypothesis H_1): there is a relationship between EVA and rate of liability.

Based on the hypothesis, the relationship between EVA and rate of liability was examined. Adjusted coefficient of determination (R^2) indicates that the independent variable (rate of liability) explains 2 percent of changes in the dependent variable (EVA). Regarding the significance level of each variable and comparing them with alpha level (5%), a confidence level of 95% is confirmed. F statistics and its relevant significance level, compared with alpha level (5%), imply the significance of the regression model at 95% confidence level. Durbin-Watson statistics is between 1.5 and 2.5, which shows lack of significant correlation between error components of regression model. Thus, the null hypothesis (H_0) is rejected, leading to confirmation of alternative hypothesis (H_1).

Table 2. Pearson correlation matrix

Variables	EVA	Rate of long-term liability	Rate of short-term liability	Return on equity
EVA	1			
Rate of long-term liability	0.525	1		
Rate of long-term liability	0.463	0.486	1	
Rate of long-term liability	0.488	0.443	0.600	1

Table 3. The first hypothesis test results

Variables	Coefficients	T	Sig.	F	Sig.	Adjusted R2	D-W
Fixed value	-4.504	-8.959	0.000	10.242	0.000	0.02	1.824
Stock return	0/143	3.200	0.000	EVA= -4.504+(0.143)STL			

Table 4..The second hypothesis test results

Variables	Coefficients	T	Sig.	F	Sig.	Adjusted R2	D-W
Fixed value	-6.050	-256.350	0.000	65.537	0.000	0.12	1.610
Stock return	-0.344	-8.095	0.000	EVA= -6.050-(0.344)LTL			

Table 5. The third hypothesis test results

variables	Coefficients	T	Sig.	F	Sig.	Adjusted R2	D-W
Fixed value	-2.704	-6.445	0.000	20.835	0.000	180.	1.794
Return on equity	0.085	2.800	0.000	EVA= -2.704-(0.085)EQUITY			

The second hypothesis of the study indicates that there is a significant relationship between EVA and rate of liability on equity in companies listed at Tehran Stock Exchange. Null and alternative hypotheses are:

Null hypothesis (H_0): there is no significant relationship between EVA and rate of liability on equity.

Alternative hypothesis (H_1): there is a relationship between EVA and rate of liability on equity.

Based on the hypothesis, the relationship between EVA and rate of liability on equity was examined. Adjusted coefficient of determination (R^2) indicates that the independent variable (rate of liability on equity) explains 12 percent of changes in the dependent variable (EVA). Regarding the significance level of each variable and comparing them with alpha level (5%), a confidence level of 95% is confirmed. F statistics and its relevant significance level, compared with alpha level (5%), imply the significance of the regression model at 95% confidence level. Durbin-Watson statistics is between 1.5 and 2.5, which shows lack of significant correlation between error components of regression model. Thus, the null hypothesis (H_0) is rejected, leading to confirmation of alternative hypothesis (H_1).

The third hypothesis implies a significant relationship between EVA and rate of interest-bearing liability in companies listed at Tehran Stock Exchange. Null and alternative hypotheses are:

Null hypothesis (H_0): there is no significant relationship between EVA and rate of interest-bearing liability.

Alternative hypothesis (H_1): there is a relationship between EVA and rate of interest-bearing liability.

Based on the hypothesis, the relationship between EVA and rate of interest-bearing liability was examined. Adjusted coefficient of determination (R^2) indicates that the independent variable (rate of interest-bearing liability) explains 18 percent of changes in the dependent variable (EVA). Regarding the significance level of each variable and comparing them with alpha level (5%), a confidence level of 95% is confirmed. F statistics and its relevant significance level, compared with alpha level (5%), imply the significance of the regression model at 95% confidence level. Durbin-Watson statistics is between 1.5 and 2.5, which shows lack of significant correlation between error components of regression model. Thus, the null hypothesis (H_0) is rejected, leading to confirmation of alternative hypothesis (H_1).

CONCLUSION

Results of the study explaining the relationship between economic value added and capital structure indicate a significant relationship between the two. A review of other domestic studies those conducted abroad yields similar results in agreement with that of the present study. Since optimization of capital costs and factors of EVA causes an increase in corporate value and companies rely on capital for development, EVA is essential in determining capital structure. In general, EVA helps managers to move towards improving internal corporate performance, while taking financing costs and capital return into account. This way, they adopt themselves with their external factors and, through increasing capital structure, contribute to adding to the wealth of investors.

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