

INVESTIGATING THE RELATIONSHIP BETWEEN FINANCIAL EVALUATION (ECONOMIC AND MARKET VALUE-ADDED) AND DIVIDEND YIELD OF THE COMPANIES LISTED ON TEHRAN STOCK EXCHANGE

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ABSTRACT: In the stock market, investors are always seeking high profits. They purchase what they regard as the best stocks with the highest amount of return. To what extent managers' activities and objectives are in line with shareholders' expectations, or to what extent their goals conform to stockholders' profits, or how much managers were successful in creating value and wealth for shareholders are determined through performance evaluation. The present study aims to investigate the correlation between economic and market value added and dividend yield of the companies listed on Tehran Stock Exchange. For this purpose, 87 companies among them were examined as research samples. The results showed no significant correlation between economic value-added and dividend yield. In addition, there is a positive and significant correlation between market value-added and dividend yield.

KEYWORDS: Economic value-added, Dividend yield, Stock Exchange

INTRODUCTION

In the stock market, investors are always seeking high profits. They purchase and keep what they regard as the best stocks with the highest amount of profit and return. To what extent managers' activities and objectives are in line with shareholders' expectations, or to what extent their goals conform to stockholders' profits, or how much managers were successful in creating value and wealth for shareholders are determined through performance evaluation. Essentially, the existing criteria for evaluation of the companies' performance in stock exchange are divided into two categories, namely traditional and value-oriented.

Using traditional criteria such as profits, earning per share, return on equity, return on assets, cash flow, and so forth was very common in the capital market for a long period, until value-oriented norms were introduced. In traditional method of performance evaluation, accounting profit is only taken into consideration; therefore, because of ignoring the need for funding companies from capital resources, it is not an appropriate technique.

Economic and market value-added are among the newest performance evaluation criteria which have been taken into consideration by the managers of companies, financial consulting firms, and researchers.

Economic value-added is of the criteria that provide managers with required guidelines for evaluation of the performance of a business unit. Additionally, capital market can employ it for

evaluation of business units. Based on economic value-added, value is created when business units can cover all of the operational and capital costs while preserve an extra amount as economic value-added.

This criterion was first introduced by Stern Steward. He believes that other performance criteria such as profit, earning per share, dividend per share, and so forth are not comprehensive evaluation indices; while, economic value-added is more complete and practical. Due to the relationship between economic value-added and the changes in shareholders wealth, it is not a good standard for performance evaluation ([Ahmadpoor and Barzegar, 2001](#)).

Therefore, the difference between economic value-added and traditional criteria has to do with economic value-added attempt to cover all financing costs.

Market value-added represents investor's evaluation of the company. Moreover, maximizing value-added is the goal of every company which is looking to make the most of shareholders' wealth. Since, with rising of share prices, the wealth of shareholders increases actually and practically. Therefore, changes in market value-added of every company indicate changes in shareholders' wealth ([Rahnamayeroodposhti, 2007](#)).

Since share value in market has large fluctuations and regarding the importance of the capital size imposed on the company by investment, it is attempted here to investigate

the correlation between economic and market value-added and dividend yields of the companies listed on Tehran Stock Exchange. By this, one can identify whether economic or market value-added can be appropriate criteria to describe performance of companies.

LITERATURE REVIEW

In 1991, Stewart ranked and divided 613 out of 1000 top American companies during 1987 -88, based on economic value-added (EVA).

This study was based on MVA and EVA for each of 25 groups and their changes. Results showed high level of correlation in the companies with positive EVA (coefficient of determination); while, there was insignificant correlation between these two criteria in the companies with negative EVA ([Stewart, 1991](#)).

[Finegan, \(1991a\)](#) extended the analysis discussed above to include other criteria. The results of the regression of MVA against EVA and other criteria showed that EVA outperformed the other measures. Finegan repeated the analysis of changes in MVA and again found EVA was superior to the other measures. The coefficient of determination for this criterion was 44%, while return on investment (r^2) reached 35%.

The study of [Kleijman, \(1999\)](#) set out to determine whether companies that adopt EVA as a performance measure add more value for their shareholders than their competitors do. He limited his research scope to those companies that practically used EVA. The results indicated that EVA companies earned an extra total return of 28.8% over four years versus the median competitors.

O'Byrn used ten years of data (from 1985 to 1994) of 1000 companies to examine the explanatory power of capitalized EVA (i.e. EVA divided by the cost of capital), net operating profit after tax (NOPAT), and free cash flow (FCF) with respect to market value divided by invested capital.

His findings showed that EVA explained about 31% of the changes in market values; while, determination coefficient of NOPAT was 17%. O'Byrn concluded that against NOPAT and other earning measures, EVA is systematically linked to market ([O'Byrn and Stewart, 1996](#)).

The results from Grant's study, 1993, showed a correlation of 33% for all of the companies. For the 50 largest US wealth creators, the correlation was 83%. For the 50 biggest US wealth destroyers, it was 3%. In another study, 1996, he used standardized values of the variables instead of their absolute values and reached the similar results ([Grant, 1996](#)).

[Zaima et al., \(2005\)](#) examined the correlation between MVA and EVA and economic effect of market on 1000 companies from Stern Steward over 1997 to 1998. She endeavored to separate economic factors from management factors that affect market value of a business unit. The results from this analysis showed that 43% of market variance was explained by the model, which would be a combination of management decisions (EVA) and economic level (GDP).

Zaima concluded that GDP explains only 1.4% of MVA variance. Therefore, the difference between these two values is 41.6%, indicating economic value-added caused by management decisions. However, some other studies have refuted this claim ([Zaima et al., 2005](#)).

Pablo Fernandez analyzed 582 American companies, using EVA, MVA, NOPAT (net operating profit after tax), and WACC (weighted average cost of capital) data from Stern Steward. For each company, ten years correlation between annual growth of MVA, EVA, NOPAT, and WACC was calculated. Finally, he stated that EVA is not necessarily the best performance indicator and introduced an MVA proxy, which provided better results.

Ramana, 2005, used regression analysis to examine the correlation between economic value-added and market value-added in Indian companies, and compared it with common measures of accounting (net operational earnings after tax, earnings before interest and tax, etc.). The results of the study suggest economic value-added does not outperform common accounting criteria.

[Dewet, \(2004\)](#) investigated the correlation between 19 financial ratios and EVA. In addition, he examined the role of inflation in this relationship and carried out this study in three levels and two states. Three levels mentioned above are categorized into: 1) all sample companies, 2) companies with positive EVA, and 3) the top 20 companies in creating value. Correlation investigation in these three levels was performed first with and then without inflation adjustments to the data. The results are as follows:

- Inflation adjustment results in improved relationship between financial ratios and EVA.
- Financial ratios that are categorized into two balance sheet and profitability groups are correlated with EVA in different levels. In that, for the whole sample, profitability ratios had better correlations with EVA. In addition, with improvement of EVA, the correlation between balance sheet ratios and EVA improves, and finally the significance correlation between the ratios and EVA promotes ([Dewet, 2004](#)).

In a research the correlation between dividend yield in Stock Exchange of Malaysia and Singapore over the period 1988-1996, with some financial variables has been investigated. In that study, data of 82 Singaporean and 163 Malaysian companies were analyzed. Research independent variables are as follows:

1. Company size (ME): Logarithm of the company's stock market value in June of year t
2. B/M ratio: net book value of assets to market value at the end of the year
3. E/P: net profit before tax and interest to stock price in market
4. Cash flows: CF was defined as profit, regardless of extraordinary items, plus depreciation.
5. Sales growth: here, the sequential weighted average revenue over the past three years was used. In that, the weights are, in turn, one, two, and three for three, two, and one years ago.

The correlation between the yield and size in the markets of these two countries was negative. In Singapore, there is a negative correlation between the yield and SG. With reference to Malaysia, there is positive correlation between the yield and E/P.

[Chan et al., \(1991\)](#) concluded a significant correlation between dividend yield and such variables as B/M and CF/P in Japan Stock Market. In general, results of this article are as follows:

1. In Malaysian and Singaporean markets, the results showed when the market faced with excess return (during stock market boom) there is a positive correlation between yield and risk. Moreover, when excess yield is negative (during stock market crash) the correlation between risk and dividend yield is also negative. These results are in contrast to labor market assumptions.
2. In addition, a negative correlation was seen between yield, and size and SG in Malaysian Market; while, an inverse correlation between size and dividend yield, and a direct correlation between E/P ratio and dividend yield were observed.

The results revealed a set of similarities and contradictions between American markets and other emerging and developing markets such as Singaporean and Malaysian Markets ([Chan et al., 1991](#)).

[Kramer and Pashner, \(1997\)](#) examined the intensity of correlation between EVA and MVA using data of 1000 companies from Stern Stewart over 1982-1992.

[Finegan, \(1991b\)](#) analyzed the degree of correlation between market value-added and

evaluation criteria in about 450 medium US companies. He concluded that economic value-added has more explanatory power over criteria such as capital growth, dividend yield, earning per share, and cash flows. The results of the regression MVA and investigated criteria show that EVA outperformed other measures (47% dividend yield) with a level of correlation of 61% with EVA. With respect to changes in EVA, Finegan claimed that economic value-added is more powerful than other measures. It means that the coefficient of correlation changes in MVA and in EVA were 44%.

Steward compared general standards of accounting with measures of economic value-added. He believes that EVA measures are more common than other criteria such as profit, dividend, return on equity, and cash flows. He also maintains that EVA is a powerful and efficient measure in describing a company's performance. This measure is more capable in describing stock market value of companies, compared to traditional criteria. He showed that changes in EVA of the selected group of companies (especially, in reference to MVA) are insignificantly correlated with general standards of accounting; while, the highest level of correlation exists between EVA and MVA ([Stewart, 1991](#)).

RESEARCH METHODOLOGY

It is an applied research, as it can be used in investments, companies, etc. This descriptive study describes correlations exist between variables. In terms of data collection, it is a library and field study - onsite (in Stock Exchange Organization) investigation of Financial Statements and so forth. Data collection instruments included observation and financial statements by means of Tadbir Pardaz' application (containing data of the companies listed on Tehran Stock Exchange including financial statement, price, different indicators, etc.), as well as, the website "www.rdis.ir".

Autocorrelation test (D-W), coefficient of determination (r^2), and so forth were done using Excel and Eviews. Statistical population of this study includes all of the companies listed on Tehran Stock Exchange. With respect to the time range, March 21, 2007 to March 21, 2011, the companies which were selected by screening method should have following characteristics:

- They should have been listed on exchange market before Iranian year 1386 (March 21, 2007) and continue to be on the list up to the end of July 21, 2012. In addition, their shares should have continuously been exchanged during the research period.

- The companies should not have made loss during the years of study.
- Financial year should end 19th of March of every year without any changes during the years of investigation. The statistical population is comprised of all companies listed on Tehran Stock Exchange from March 21, 2007. For hypotheses testing, data of 87 companies listed on Tehran Stock Exchange during March 21, 2007 to March 21, 2011 was used. Other companies were excluded from the study, due to not conforming to the required conditions.

3.1. Research hypotheses

The first hypothesis: there is a significant correlation between EVA and dividend yield
 The second hypothesis: there is a significant correlation between MVA and dividend yield

Table 1: the results of descriptive statistics of dependent and independent variables in all years from March 21, 2007 to March 21, 2011

	EVA _{it}	MVA _{it}	R _{it}	LEV	M/B
SD	55%	35%	47%	26%	20%
Mean	5.4%	45%	15%	25%	68%
Median	7.8%	9.5%	2.4%	18%	68%
Maximum	31%	21%	45%	175%	291%
Minimum	-21%	-13%	-63%	-23%	21%

Table 2: studying the correlation of research variables

	EVA _{it}	MVA _{it}	R _{it}	LEV	M/B
EVA _{it}	1.00	0/45	0/17		
MVA _{it}	0.45	1.00	0.56		
R _{it}	0.17	0.56	1.00		
LEV	0.04	0.02	0.12	1.00	
M/B	0.18	0.20	0.58	-0.72	1.00

Reference: Results from the test

As can be seen in the results, the correlation between EVA and dividend yield is 0.17, showing poor correlation between these two variables. In addition, the level of correlation between MVA and dividend yield is 0.56 implying strong correlation between them.

4.1. First hypothesis testing

First hypothesis:

H₀: there is no significant correlation between economic value-added (EVA) and dividend yield of the companies listed on Stock Exchange.

H₁: there is a significant correlation between economic value-added (EVA) and dividend yield of the companies listed on Stock Exchange.

Table 3: investigation on the normality of data using Kolmogorov-Smirnov and Shapiro-Wilk tests

	Kolmogorov-Smirnov			Shapiro-Wil		
	Statistic	Df	Sig.	Statistics	Df	Sig.
R	0.179	508	0.425	0.774	508	0.536
MVA	0.524	508	0.426	0.254	508	0.425
EVA	0.233	508	0.362	0.702	508	0.0965
LEV	0.070	508	0.752	0.894	508	0.145
MB	0.310	508	0.125	0.511	508	0.235

According to the above results, as significance levels of all variables are bigger than error rate (0.05), so variables are normally distributed.

HYPOTHESES TEST

To investigate hypothesis test using regression, we estimated the research model with dependent variable of independent variables. For hypotheses testing, cumulative data of 87 companies listed on Tehran Stock Exchange over the years March 21, 2007 to March 21, 2011 was employed using Eview5. To investigate hypothesis test using regression, research method was estimated with dependent variable of independent variables. For hypotheses test, cumulative data of 87 companies listed on Tehran Stock Exchange over the years March 21, 2007 to March 21, 2011 was used, employing Eview6. A very common question in applied studies asks whether there is any evidence that implies data merge-ability or the model is different for every cross sectional units. Therefore, it should first be investigated if there are heterogeneity or individual differences between the cross sections. In case of heterogeneity, panel data technique is employed; otherwise, data fusion methods with ordinary least squares are used. For this purpose, Leymer F statistic is employed. In testing null hypothesis (H₀), homogeneity of intercepts (cumulative data), versus H₁, heterogeneity of intercepts (panel data), is investigated.

For this purpose, the results of Leymer F statistic are first examined:

Table 4: the results of Leymer F-test

Null hypothesis	Model	F	p-value	Result of Leymer statistic
Intercept of are cross sections are equal	First hypothesis model	8.99	0.425	H ₀ is confirmed
	Second hypothesis model	4.523	0.245	H ₀ is confirmed

To investigate and test the first hypothesis, following model is used:

$$R_{it} = \beta_0 + \beta_1 EVA_{it} + \beta_3 LEV_{it} + \beta_4 M/B_{it} + \epsilon_{it}$$

Where, R_{it} denotes dividend yield, EVA_{it} stands for EVA, and ε_{it} is estimation error

Table 5: results from the first hypothesis test with respect to the summarized model
$$R_{it} = \beta_0 + \beta_1 EVA_{it} + \beta_3 LEV_{it} + \beta_4 M/B_{it} + \varepsilon_{it}$$

Variables	Coefficient	Student's t-test	Significance
Intercept	0.05**	20.25	0.00
EVA	0.62**	42.39	0.00
LEV	0.54**	29.75	0.00
M/B	0.45	25.36	0.00
Adjusted coefficient of determination	50.40%		
Fisher's exact test (Significance)	751.02** (0.00)		
F-Leymer statistic (Significance)	8.99 (0.425)		
Durbin-Watson Statistic	1.88		

**significance level of 1%

4.2. Second hypothesis testing

The second hypothesis is defined as follows:

H₀: there is no significant correlation between market value-added (MVA) and dividend yield of the companies listed on Stock Exchange.

H₁: there is a significant correlation between market value-added (MVA) and dividend yield of the companies listed on Stock Exchange.

To investigate and test the second hypothesis, following model is used:

$$R_{it} = \beta_0 + \beta_1 MVA_{it} + \beta_3 LEV_{it} + \beta_4 M/B_{it} + \varepsilon_{it}$$

Where, R_{it} is dividend yield and MVA_{it} denotes market value-added

In addition, to calculate MVA, as independent variable, following equation is used:

Market value-added = average market value of shares – average market value of debts

Table 6: the results from the second hypothesis testing with respect to summarized model
$$R_{it} = \beta_0 + \beta_1 MVA_{it} + \beta_3 LEV_{it} + \beta_4 M/B_{it} + \varepsilon_{it}$$

Variables	Coefficient	Student's t-test	Significance
Intercept	0.07**	19.24	0.00
MVA	0.35**	36.38	0.00
LEV	0.45**	39.75	0.00
M/B	0.63**	62.36	0.00
Adjusted coefficient of determination	40.23%		
Fisher's exact test (Significance)	635.00** (0.00)		
F-Leymer statistic (Significance)	4.52 (0.245)		
Durbin-Watson Statistic	1.96		

**significance level of 1%

RESULTS

As mentioned before, several researchers, especially Steward on the top, always believed that economic value-added was a powerful and efficient measure in describing companies' performance (they maintained that this measure was more powerful than general and traditional measures in describing stock value of the companies). In contrast, some other researchers claimed that this measure had weaker correlation with stock value of the companies, compared to general and traditional measures. In the present study and in line with previous studies, the effect of this measure was investigated, using the information related to the companies listed on Tehran Stock Exchange. In that, it was determined that over the years March 21, 2007 to March 21, 2011 the level of correlation between economic value-added and dividend yield, and between market value-added and dividend yield were, in turn, weak and strong. Therefore, market value-added can provide stock market investors and analysts

with a good measure for evaluation of performance of the companies listed on Tehran Stock Exchange.

RECOMMENDATIONS

Accounting as an information system for making economic decisions requires progress in process of informing clients. Due to the progress in economic field, accounting must employ economic measures to evaluate the performance of companies and managers. Therefore, traditional criteria for performance evaluation can no longer meet those needs, and so making changes in data of financial statements and the way they are given to the clients are inevitable. For example, financial ratios and statements provided by companies are based on historical information; while, decision-makers require current information of the companies to make proper decisions. Therefore, preparation and provision of adjusted financial statements seem essential.

The following are recommended for future research:

1. Investigating the correlation between financial ratios and economic value-added in separate industries of Tehran Stock Exchange
2. Investigating the correlation between economic value-added to accounting profit, and market value-added to accounting profit in the companies listed on Tehran Stock Exchange
3. Investigating the correlation between economic value-added (EVA) and stock price, and earning per share of the companies listed on Tehran Stock Exchange

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