Investigating the Power of Accounting and Economic Criteria at Stock Return Determinant

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Today, according to company's development and the separation of ownership from management, the discovery of appropriate criterion has become increasingly important for evaluating managers and companies performance.This research has been done to study the determinant power of traditional criteria (Return on Assets and Operating Cash Flow) and new ones (Economic Value-Added and Market Value-Added) in non-financial companies. listed in Tehran Stock Exchange. The economic performance proxied by stock and period of research is between 2004-2009. Kolmogorov-Smirnov test (KS) has been used to determine the normality of data related to dependent variable (stock return) and in order to test the research hypotheses, the correlation coefficient and coefficient of determination were exerted. The results showed a significant relationship between EVA as well as the ROA and stock return and on the other hand, there was no significant relationship between OCF as well as the MVA and stock return. Moreover, there were no significant difference between the determinant power of accounting and economic criteria (ROA & EVA).

Field of Research: Financial Accounting, Financial Statement and Business Valuations.

1. Introduction

Stock Exchange is one of the pillars of capital market. The most important task of this market is to attract dispersed capital and optimal resource allocation. Investors who enter the capital market with different incentives have fundamental role in fiscal resource security. Economic units follow different goals from the attraction of dispersed capital. But both groups common aim is to achieve more benefits and maximizing wealth. Generally, the investor that benefits in this market is in the form of interest payment, increase of stock price, or both which is expressed in the stock return.

It is been many years that researchers and analysts of fiscal domain in search of performance criteria which can predict the returns and their changes for company's stock by closest approximation. Usually, stock returns have direct

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effect on stockholders wealth and if the decision maker's of security market can somehow predict stock returns and sell the low future stock returns and to purchase the high future stock returns will be able to maximize their wealth. Identifying criteria which is applicable in determining the stock returns and also relatively to determine the information content of each criteria and comparison with each other is one of the concerns of researchers in the field of finance and accounting (Mashayekhi 2004).

In this study, attempt is made in addition to the introduction of Economic value added (EVA) and Market value added (MVA) as a criterion of economic performance evaluation and to study the information content of these criteria in comparison with the Return on assets (ROA) and Operating cash flow (OCF) and finally to introduce the best criteria to evaluate the performance of companies.

2. Literature Review

Lehn and Makhija(1997) in a research studied the correlation between five performance index which includes; returns on equity, return on assets, return of sales, economic value added, and market value added with stock return. Their research result shows the presence of significant relationship between all the criteria with stock returns and no significant difference between the providers of these criteria.

In a research with regard to the role of inflation have studied the relationship of 19 financial ratio with economic value added. Results show that financial ratio which is classified into two categories of balance sheet and income statement has relationship at different levels of economic value added and also inflation adjustments causes the improvement of the relationship between financial ratio and economic value added (Hall 2001).

Ghanbari(2002) research examines the relationship of economic value added and financial proportion in companies listed in Tehran Stock Exchange. It is concluded in the study that there is a significant correlation between the 16 financial ratio and economic value added.

Vafapour(2004) in a research studied the relationship between the changes in cash flow items with stock returns changes. The results show that cash flow items and stock return changes there is no significant relationship.

In the Indian capital market has researched on the study of relationship between economic value added and market value added and also comparison power of these two variables in explaining performance than the traditional criteria such as net profit and operating cash flow. Research results show that economic value added in comparison with traditional criteria performance evaluation, lacks the relative information content (Ramana 2005).

Ismail(2006) in a research studied the comparison of the relationship economic value added with stock return than the accounting profit in the UK capital market. His research result show that operating profit after tax and net income had better

performance in explaining share returns than the economic value added and residual income.

Palliam(2006) in a research studied the comparison power of economic value added in explaining the performance (stock return) than traditional criteria. His research results show that this criterion lacks the relative increasing information content.

Tsuji(2006) in a research studied the comparison of relationship of economic value added and several traditional performance criteria such as operating cash flow, operating profit with company's market value. Results show that relationship between operating cash flow and other accrual profit with company market value is more than the relationship of these factors with the economic value added.

Delshad(2009) in a research studied comparison of new and traditional performance evaluation criteria in explaining the economic performance of manufacturing company's. His research result showed a significant relationship between market value added, return on assets, return on equity and return on sales with performance and no significant relationship of economic value added with performance.

Lee et al(2009)in a research to measure value creation resulting form investment in information technology used the economic value added and traditional performance criteria such as return on assets. Their research result showed a positive relationship between economic value added with value creation and lacks relationship between return on assets and value creation.

Maditinos et al(2009) in a research studied the relationship of economic & market value added and also earning per share, return on assets and return on equity with stock returns in the Greek stock exchange. Their research results show that the relative higher power of earning per share is more than other variables to be researched.

3. Research Hypothesis

The research hypothesis is as follows;
1. There is a significant positive relationship between the economic value added and stock return.
2. There is a significant positive relationship between the market value added and stock return.
3. There is a significant positive relationship between the return on assets and stock return.
4. There is a significant positive relationship between the operating cash flow and stock return.
5. Economic criteria power and accounting performance evaluation are different in explaining companies' stock return.

4. Methodology and Research Design

Due to the purpose the present research method is applicable. This research is done by collecting the companies past data to examine the relationship between EVA, MVA, OCF, ROA with stock returns (R). Therefore, according to the performance this research faces EX-Post Facto along with correlation analysis.

The study period is between the years 2004-2009 chosen due to the following two reasons;

In this period Tehran Stock Exchange has flourished because of the increasing privatization in Iran.

Selected period includes the present updated information in Tehran Stock Exchange.

Kolmogorov-Smirnov test (KS) has been used to determine the normality of data. Also in the test assumption from one to four, regarding evaluating the relationship between independent variables and stock returns which has been raised is done using single variable regression model as follows;

$$Y = \alpha + \beta_1 x \tag{1}$$

In the above equation, α is constant and β_1 is the regression slope line (independent coefficient variables) and x is the independent variable.

In addition, to compare the correlation coefficient and significant test their difference for each of correlation coefficient a confidence interval is defined by equation 2;

$$Z = 1/2 \ \mathrm{Ln}\left[\frac{1+r}{1-r}\right] \tag{2}$$

In equation 2, *r* is the correlation coefficient.

$$Z_L = (Z - Z_{\alpha/2})\sqrt{\frac{1}{n-3}} \quad , \quad Z_u = (Z + Z_{\alpha/2})\sqrt{\frac{1}{n-3}} \tag{3}$$

In equation 3; $Z_{\alpha/2}$ = 1/96 and *n* is the sample selection. And finally confidence interval is defined in equation 3;

$$\frac{1+e^{2ZL}}{1+e^{2ZL}} \quad , \quad \frac{1+e^{2Zu}}{1+e^{2Zu}} \tag{4}$$

If the calculated confidence interval in equation 4 is continuous for correlation coefficient means that there is no significant difference between correlation coefficient (Moeinadin 2004).

4.1. Population Statistics, Sampling Method and Sample Size

Population statistic of this study is all the companies listed in Tehran Stock Exchange with the following characteristics:
1. 20th March is the company's financial year end.
2. Not a member of investment and financial companies.
3. Complete information and associated financial statement note of company's to be available.

By applying the above conditions the total population sampled were 299 companies. Then the samples needed using the Cochrane formula consist of 70 companies and using randomly classified method among the population were selected.

4.2. Calculating Research Variables

In this research, independent variables includes economic value added, market value added, return on assets and operating cash flow, research dependent variable is stock return.

4.3. Economic Value Added (EVA)

Economic value added is calculated with the following equation 5;
$$EVA = NOPAT - (WACC \times CAPITAL) \qquad (5)$$

In calculating EVA, Net Operating Profit after Tax (NOPAT) represents the economic profit and CAPITAL represents the economic capital which can be calculated using both operational and financial approaches. In this study, to calculate these two components operational approach and financing approach is used. Also among the Stewart discussed adjustments because of their importance to retirement benefits allowance and tax allowance have been selected and other adjustment because of less important ,their lack in financial statement or lack of access to them has not been considered.

Weighted Average Cost of Capital is (WACC). Later, the calculation method of each aforementioned variable is described.

A. Net operating profit after tax: to calculate this factor operating profit of the concerned companies is extracted from the stock exchange archive and multiplied by 77.5% (tax rate of stock exchange companies is 22.5% respectively) and thus net operating profit after tax is calculated and this profit on account of changes to retirement benefits allowance and tax allowance has been adjusted.
B. Capital: to calculate this factor dept interest (both short and long term) and shareholder's equity of the concerned companies are summed and adjusted on account of the account balance of retirement benefits allowance and tax allowance.

C. Weighted average cost of capital is calculated according to equation 6;
$$WACC = K_e.W_e + K_d.W_d \qquad (6)$$

In equation 5, $K_d.W_d$ expresses the weighted rate cost of debt. In this study, K_d or rate cost of debt is equal to the rate of diffusion of government participation bonds i.e. 17%, with respect to interest cost a component of acceptable tax cost and stock company tax rate is 22.5% therefore the effective financial cost rate is: 17% (100% - 22.5%) = 13.175%.

Also, $K_e.W_e$ expresses the weighted rate cost of common stock and aggregate profit. In this study, to calculate the cost rate of common stock (K_e) capital asset pricing model (CAPM) is used.

$$K_e = K_f + (K_m - K_f).\beta \tag{7}$$

The fundamental elements of this equation 7 are:

K_f: is the rate of return without risk which is considered as the equivalent interest rate of government bonds (17%).

K_m: is the rate of return of stock market obtained by the following equation8;

$$K_m = \frac{I_1 - I_o}{I_o} \tag{8}$$

where,
I_1: general market index at the end of fiscal period and
I_o: general market index at the beginning of fiscal period.
β: is coefficient of systematic risk and obtained from the following equation9;

$$\beta = \frac{Cov(K_e, K_m)}{Var(K_m)} \tag{9}$$

4.4. Market Value Added (MVA)

Market value added is calculated using the following equation 10;
$$MVA = company\ market\ value - company\ book\ value \tag{10}$$

4.5. Return on Asset (ROA)

This criterion is obtained by dividing net profit over the sum of assets.

4.6. Operating Cash Flow (OCF)

This criterion has been extracted from cash flow statement of the existing companies in their annual financial reports.

4.7. Stock Return (R)

General formula of rate of return is based on the general parameters are as follows (Penu 1999);

$$R = \frac{stock\ price\ difference\ of\ 1^{st}\ \&\ 2^{nd} + dividends + benefits\ of\ stock\ dividends + benefits\ of\ stock\ rights}{stock\ price\ in\ the\ first\ period}$$

5. Analytical Techniques and Way to Analyze Research Data

In order to study the relationship of variables, Pearson correlation coefficient and determinant coefficient were used. The correlation coefficient is determined by symbol r, which is a statistical index and shows the presence, intensity and direction of the relationship between two variables. Usually, correlation is evaluated between 0 and ± 0.3 is weak, between ± 0.3 and ± 0.6 is average and between ± 0.6 and ± 1 is stronger (Afshani 2008).

Also determinant coefficient which is determined by r^2 shows the intensity correlation between two variables. In fact, determinant coefficient shows that how much percent of change of each variable with another variable is predictable. To determine the relationship between the significant variables use significant level (SigF), in a way that when the significant level is lower than $\alpha = 0.05$ (confidence level is 95%) the null hypotheses which shows no significant relationship between variables is rejected and significant relationship is accepted and vice verse. Regarding the third hypotheses test (comparing the explanation of operating evaluation criteria) reliability coefficient calculation technique and their comparison is used.

6. Research Limitations

1. Non-disclosure of average rate of debt cost by companies which in this study caused the selection of government bonds rate as a representative of average rate of debt cost of the company.
2. To adjust capital and NOPAT has used the tax allowance and retirement benefits allowance and other minor adjustments due to lack of access and less importance been disregarded.

7. Presenting and Analysis of the Findings

7.1. First to Fourth Hypotheses Test

The first four hypothesis in order to evaluate the rate of relative power of independent variables consisting of economic value added, market value added, return on assets and operating cash flow in explaining the dependent variables (stock return) were examined and discussed. The research result is illustrated in table 1. According to the subject statement in the analytical technique discussion, if the number of SigF is less than the acceptable error (5%) it can be claimed that the significant relationship between dependent and independent variables are established. As in table 1, there is a positive significant relationship between economic value added and rate of asset return with stock return in years, also the total years but this relationship about the operating cash flow and market value added is just significant for two years and in the beginning of the first forth years of the study there is no significant relationship between these two variables with stock return. The obtained results are compatible with the research results of Makhyja & Lehn, Ramana, Palliam, Ismail, Maditinos, Vafapour and Delshad and not compatible with Lee and co-workers.

7.2. Fifth Hypothesis Test

The fifth hypotheses about the comparison of the determinant power of accounting and economic criteria discussed in explaining the stock return. Confidence interval for correlation coefficient of independent variables and their relationship which is significant with stock return (economic value added and return on assets) is calculated and analysed according to table 2. According to the description discussed in analytical techniques section and observation of common boundary between the calculated confidence interval, it can be stated that there is no significant difference between the powers of these two variables in explaining stock return.

Table 1: Result summary of the first fourth hypothesis

Independent variable	Economic value Added (EVA)			Market Value Added (MVA)			Return on Assets (ROA)			Operating Cash Flow (OCF)		
Statistic _____ Year	R	R^2	Sig F	R	R^2	Sig F	R	R^2	Sig F	R	R^2	Sig F
2004	0.19	0.036	0.512	0.12	0.044	0.49	0.2	0.04	0.38	0.14	0.019	0.07
2005	0.03	0.09	0.33	0.17	0.029	0.65	0.56	0.31	0.08	0.15	0.022	0.66
2006	0.6	0.36	0.02	0.24	0.058	0.54	0.82	0.67	0.002	0.37	0.14	0.2
2007	0.66	0.44	0.01	0.19	0.36	0.6	0.87	0.79	0.0	0.22	0.048	0.82
2008	0.84	0.7	0.001	0.46	0.21	0.02	0.85	0.82	0.0	0.65	0.42	0.005
2009	0.89	0.79	0.001	0.53	0.28	0.01	0.88	0.77	0.0	0.7	0.49	0.003
Total	0.49	0.24	0.001	0.22	0.048	0.3	0.32	0.1	0.04	0.18	0.03	0.4

Table 2: Fifth hypotheses test

Variables Year	Confidence interval correlation coefficient EVA and stock return	Confidence interval correlation coefficient of return on assets and stock return
2004 – 2009	- 0.17 – 0.29	-0.19 – 0.27

8. Conclusion

The findings of this research show that the two criteria of return on assets and economic value added have a positive significant relationship with stock return. Therefore, using them as reliable criteria in performance evaluation is explainable and can use these criteria to predict the future stock return of the company. On the other hand, operating cash flow and market value added has no relation with stock return and can not be used as performance evaluation measures and predicting the stock returns.

9. Recommendations

According to the analysis hypotheses of the research, recommendation based on the study and recommendation for future research is discussed.

9.1. Recommendation Based on Research

1. According to the existence of a significant correlation between the return on assets and economic value added with stock return, it is recommended that the

investors while predicting the stock return and determining company value should pay special attention to these two criteria.

2. It is suggested that this criteria along with other information written in companies financial statement are disclosed.

9.2. Recommendation for Future Research

1. To study the relationship of performance evaluation criteria with adjusted stock return on the account of inflation effects.

2. To evaluate the relationship of organising components of economic value added with company's stock return.

3. To study the value added criteria power in predicting the operating cash flow.

4. To study the relationship of economic performance evaluation criteria with company market value.

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