Comparative Investigation of Relative Power of Selected Financial and Economic Criteria in Explaining the Performances of the Companies

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ABSTRACT

The aim of this research is comparative investigation of relative ability of selected financial and economic criteria in explaining the return performances of the companies. In order to achieve this aim, two different groups of hypothesis have been examined in this research. In the first group, the relation of the selected financial and economic performance variables with shares return of the companies has been studied and in the second group, relative power of financial and economic criteria effective in the previous stage has been compared. Multi variable regression based on panel data was used to examine the hypothesis of the first group and Z Wong test has been used to test hypothesis of the second group. The considered sample includes 70 companies selected in Tehran stock exchange that were selected via systematic omission method and under studied time section is during 2004-2011 (8 year domain).

The findings of research reveal that financial criteria of return on assets and profit per share and economic criteria of value added and balanced economic criteria of value added are in significant relationship with share return and any one of these criteria has not different data power toward each other.

KEY WORDS: Performance Evaluation, Financial Measures, Economical Measures, EVA, REVA, ROA, EPS

1- 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 (Baybordi et al. 2013). Furthermore the creation of value and enhancement of stockholders’ wealth in long term is one of the firms’ most important objectives. Performance evaluation systems are employed to realize this objective (Moein Addin et al. 2013).

For many years ago, the economists thought that all the groups related to a share company such as managers and stock holders are active in order to achieve a common aim, but since 1961 many cases of profits contrast were seen among these groups and subsequently those companies decided to solve this contrasts profits (Jensen and Meckling, 1976). Using Performance Measurement Systems is one of the solutions to encounter with the profits contract present among stock holders and managers (Horn grenet al. 2006). According to Lehman et al. (2004), performance measurement is an act which the managers perform it to achieve their aims and strategies. Selection of a proper performance measurement criterion and achievement to company aims using this criterion leads to that the selection method of proper criterion becomes more important for measuring the performance. In order to design the mentioned systems, the accountancy and economic performance measurement criteria played significant role in financial analyzing. But selection of a proper criterion is an issue that many researches were allocated at it in field of financial literature (Mansouri, 2008). Yet, in various texts, performance measurement criteria have been classified in various ways that classification according to financial (traditional) and economic criteria (modern) can be named among them. Baum et al. (2004) believe that many companies use traditional accountancy means such as profit per share, Return on Investment (ROI), Free Cash Flow (FCF), Residual Income (RI), price of shares in order to achieve their salary and fringe benefits. The financial criteria (traditional) of performance measurement, each includes some short comes that if they are used as basis for measurement, performance measurement and determination of company value won’t be correspond to the present facts(Worthington and West, 2004). In other word, although traditional criteria are among the important tools for financial and operational performance measurement of a company, but the changing environment of the companies lead to feel needs for application of new criteria of performance measurement beside traditional criteria(Hirsch, 2000).

According to Brigham et al. (1999) economic value added performs a proper and accurate measurement of value added to stock holders’ investment. In confirmation of Brigham et al.’s statement, Worthington and West state that economic value added is a sole criterion which has not short comes of traditional methods of performance measurement and it accounts the company value actually. In other word, economical value added is basic index for performance measurement and determination of company value. Also, according to

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Stewart (1991), the economic value added can be used to achieve the aims of a company, Capital Budgeting, company performance measurement and accounting the rate of managers’ reward. Wet and Toit (2007) believed that in addition to wide usage of economic value added as an economical criterion of performance measurement, this criterion cannot be reliable measurement criterion and subsequently it cannot be increased in order to maximize the company value. In order to remove the weak points relevant to Economical value added as economic model of performance measurement, the researchers such as Bacidore et al. (1997) have propounded an improved type of economic model of performance measurement named as balanced economic value added in which market value has been used instead of clerical values in calculations (Bacidore et al. 1997). Now, considering the short comings made on financial criteria by the economists and appearance of their competitors that is economic criteria and also since most performed researches have investigated ability of several limited criteria and time efficiency of most researches was 5 years, thus it seems necessary to perform a research that investigate the important financial and economical during longer time efficiency. Thus the present research investigated the relative ability of the most important financial and economic criteria in the selected companies in Tehran stock exchange during 8 years. So, the present research is seeking the answer of this question that which financial and economic criteria of performance measurement are more able to explain the companies’ shares return in Iran capital market.

2- Background of research in international level

Athanassakos (2007) investigated the management based on the value in Canadian companies, using descriptive variable of shares price performance and obtained positive result about EVA criteria ability in indicating shares price performance.  

Baybordi et al. (2013) have investigated at evaluating the relationship between economic value added and stock return of companies listed at Tehran Stock Exchange from 2004 to 2010. Results of testing the hypothesis with linear regression method indicate a significant and positive relationship between Economic Value Added and stock return.

Garajafary et al. (2013) have investigated at Describing the connection rate of Economic Value Added (EVA) with stock return is the base of current study. It also compares it with accounting net profit for purposes of its influence on stock return. The area of current study includes 51 accepted companies of food, drink and sugar industries of Tehran stock exchange. This study has been done for 10 years from 1379 to 1388. The results of study showed that Economic Value Added as compared with net profit has excess connection with stock return and in other words is the better criterion to assess stock return of mentioned companies.

MoeinAddin and HosseiniZadeh (2013) have examined the performance of food group companies in Tehran Stocks Exchange in order to perform a comparative analysis of traditional performance indexes such as return on assets (ROA), return on equities (ROE), and earnings before interest and taxes (EBIT) and value-based indexes (economic value added). The results of the study indicated that economic value added (EVA), return on assets (ROA), and earnings before interest and taxes (EBIT) are positively and significantly related to the market value (MV). On the other hand, it was noted that there is no significant relationship between return on equities and the market value (MV). In addition, economic value added (EVA) was found to be a better performance evaluation index than return on equities (ROE) and earnings before interest and taxes (EBIT).

Mirk&Sebou (2008) have investigated the difference between EVA and market value created by the stock holders (CSV) and obtained this result that boards of director independences the auditors’ fame and specialty and ownership structure play significant role in explaining this difference.

Lee&Kim (2009) have investigated the application of Economical value added criteria in hotel and hosting industry. Result of their research indicated the superiority of these criteria than other under studying criteria.  

Maditinus et al. (2009) performed a research in order to modulation of performance criteria based on value and accountancy to determine companies’ market shares in Greece capital market. Results of the research revealed that profit ability of each share in explanation of shares return was more than under investigating economic value added and other traditional criteria. Also, in analyzing the informational additional context of these criteria, it was cleared that simultaneous entrance of each share and economical value added in multi variable regression model increases model descriptive ability remarkably. Finally, the researchers suggested that the stock holders should consider both criteria especially during decision.

Xinet et al. (2012) have investigated the possibility of replacing traditional criteria by EVA criteria in performance measurement of China commercial banks and obtained positive results.  

Kahramanet al. (2012) have investigated financial performance measurement in order to suggest a new financial performance measurement approach for ranking the companies of each section in Turkey. Result obtained from ranking five companies of the best Turkey producer companies, using TOPSIS and VIKOR methods and financial ratios such as traditional and modern criteria in order to performance measurement of these companies.
3-Research hypothesis
1) **Main hypothesis**: There is a significant relationship between financial performance measurements of the companies and their shares return.

**Lateral hypothesis:**
1-1) There is a significant relationship between rate of return on assets and shares return.
1-2) There is a significant relationship between earnings per share and shares return.
3-1) There is a significant relationship between Operating Cash Flow and shares return.

2) **Main hypothesis**: There is a significant relationship between economic performance measurements and their shares return.

**Lateral hypothese**:
2-1) There is a significant relationship between Economic Value added and shares return.
2-2) There is a significant relationship between Retained Economic Value added and shares return.
2-3) There is a significant relationship between market value added.
3) There is a significant difference between ability of companies financial and economic performance measures in explaining their shares return.

4- Research Objectives
1) Examining the impact of financial performance measures on the stock return of the firms listed on the Tehran Stock Exchange.
2) Examining the impact of economic performance measures on the stock return of the firms listed on the Tehran Stock Exchange.
3) Comparative evaluation of the relative ability of the measures of financial and economic performance of the firms in describing the stock return of the firms listed on the Tehran Stock Exchange.

5- Method of research
The method of research is correlation method from viewpoint of application and descriptive performance and from studying the relations of variables. The present research is also back event from viewpoint of data situation. This research investigates comparatively the relative and increasing ability of selected financial and economic criteria of performance measurement in explaining the shares return of the companies selected in Tehran stock exchange from 2004-2011. The library studies have been used in order to collect data relevant to theoretical principles, basic concepts and research theoretic framework and financial statements of these companies selected in Tehran stock exchange, the software of stock exchange and library references such as data bank of stock exchange were used in order to data collection. In data analysis, description statistic such as mean, medium and mode were used in order to describe the variables in the sample companies and in studying the hypotheses; the multi variable regression based on panel data was used. The used statistical software was Eviews. In this research, two different groups of the hypotheses are investigated. First, meanwhile controlling the size factor and financial lever, the relation of selected financial and economic performance variables with shares return of companies is investigated. In this stage, the multi variable regression based on the panel data is used. In second stage, the relative ability of financial and economic performance criteria effective in previous stage is investigated. For this purpose, the retained explanation coefficient of regression model in first stage is determined, using Z Wong Test. In studying the hypotheses, the acceptable error is considered up to 5% and reliability level is 95%.

6- Population, method of sampling and sample size
The statistical community of this research was all companies selected in Tehran stock exchange in 8 year during 2004-2011. In this research, the companies with necessary qualifications were selected among statistical community, using systematic elimination method. Requirement of selecting the companies are the following conditions:
1- The company shall be selected in 2004 in stock exchange and its shares shall be exchanged in stock exchange until end of 2011.
2- The end of company financial year shall be end of each year and the company shall not have any change in financial year between under studied years.
3- They shall not be member of investment and mediator companies.
In this research, the researcher began to sample, selected the under studying company among statistical community with elimination method. That at the result of the mentioned process, 70 under studying companies was selected.

7- Research variable and method of studying them
Each project includes several independent variables, economic value added (EVA), retained economic value added (REVA), market value-added (MVA), rate of return on assets (ROA), earning per share (EPS), and
operating cash flow (OCF), dependent variables of share return achievement (R) and controlling variables of company size and financial level.

7-1- Economic value added
EVA Is calculated using the following formula:
EVA = NOPAT – (WACC × CAPITAL)
In calculation of EVA, NOPAT introduces economic profit that and CAPITAL introduces economic capital that are calculable using two operation approaches and financial securing. In this research, in order to calculate these both components, operating approach and financial securing have been used. Also in this research, among the Stuart’s considered retains, only after service fringe benefits saving, saving tax because of its importance, selection and other retains because of their low importance, lack of them in financial statements and/or lack of their accessibility were not considered.

WACC also indicates balance mean of capital cost rate and r rate per investment return. Then, calculation way of each mentioned variables are explained.

A) Net operating profit after tax (NOPAT): in order to calculate this factor, operating profit of the considered companies was extracted from archive of stock exchange companies and in number 77.5% (tax rate of stock exchange companies is 22.5%, thus profit after tax is (%100 - %22/5 = %77/5) and thus the operating profit is calculated after tax reduction and this profit has been retained about changes in stock after service fringe benefits and retained tax stock.

B) Economic capital is summed for calculation of these beneficial debts component (concerning all short and long time) and stock holders’ rights of the considered companies and has been retained about remained stock from after service fringe benefits and tax stock.

C) Balanced mean of the cost rate is invested: that is calculated as the following:
WACC = Ke × We + Kd × Wd

D) In above equation, Kd, Wd indicates balanced rate of debt cost. It is notable that in this research, Kd or debt cost rate is equal to publication rate of government contribution sheets that is considered up to 20%, that considering this matter that benefit cost is part of tax acceptable costs and tax rate of stock exchange companies is considered up to 22.5% and effective rate of financial cost has been considered as %20(%100-%22/5 = %15/5) = %5/22 - 100 (%20).

Kc, We indicates also balanced rate of common shares and stocked profit. In this research, Capital Asset Pricing Model has been used in order to calculate cost rate of common shares (Ke).

Ke = Kf + (Km - Kf) × β

The main elements of this formula are including: Kf, rate of return without risk that is considered equal to profit rate of government loan sheets (%20). Km is return rate of market capital that is obtained by the following equation:

Km = \frac{I_1 - I_o}{I_o}

Where I1, is market public index at end of financial period and I0 is market public index at beginning of the financial period.

β: is systematic risk coefficient and is obtained by the following equation:

β = \frac{Cov(K_c, K_m)}{Var(K_m)}

7-2- Retained economic value added (REVA)
In calculation of REVA, the applied capital market value added has been used instead of using capital clerical value. It is better to use capital cost based on market values in order to percept changes in stock holders’ wealth.

According to this basis, a retained form of EVA is obtained as REVA that is calculated as the following:
REVA=(r-WACC) × M.CAPITAL

7-3- Market value added
Market value added is difference between company market value and capital applied in company. MVA is net result of current value of the previous designs and future beneficial opportunities of company and indicates
that how company used its capital successfully and predicted future beneficial opportunities and has planed to achieve them.

7-4- Rate of assets
Ratio of return assets rate is one of the ratios that are considered in company performance measurement. This ratio is based on accounting profit considering obligation base and is calculated by the following equitation:

\[ \text{Net profit} = \frac{ROA}{\text{SUM OF ASSETS}} \]

7-5- Operating cash flow (OCF)
Includes incoming and outgoing cash flows due to main and frequent operations of operating income producer of commercial unit and its price has been extracted from flow statement text of cash in the companies selected in Tehran stock exchange.

7-6- Earning per share (EPS)
Earning per share is obtained via dividing net profit after tax by numbers of shares. The evidences indicate that earning per share and its predicted profit can effects on common share market price (Hendricson, w.d. 1992).

7-7- Shares Return (R)
Includes total ratio of benefit (loss) from investment in a determined period toward capital has been used at beginning of earning in order to obtain this benefit (Jahani and Pourebrahimi, 2003).

General formula of return rate according to general parameters is as the following:

\[ R = \frac{\text{stock price difference of} 1^{st} \text{&} 2^{nd} + \text{cash dividends + benefits of stock dividends + benefits of stock rights}}{\text{stock price at the beginning of the period}} \]

8- Models of research
Main model of research is presented as the following:

\[ \text{Performance}_{it} = a_0 + a_1 \text{ measure}_{it} + a_2 \text{ SIZE}_{it} + a_3 \text{ LEV}_{it} \]

Considering the investigation of financial and economic criteria selected for performance measurement in this research, the secondary models are used as the following:

\[
\begin{align*}
R_{it} &= a_0 + a_1 \text{ ROA}_{it} + a_2 \text{ SIZE}_{it} + a_3 \text{ LEV}_{it} \\
R_{it} &= a_0 + a_1 \text{ EPS}_{it} + a_2 \text{ SIZE}_{it} + a_3 \text{ LEV}_{it} \\
R_{it} &= a_0 + a_1 \text{ OCF}_{it} + a_2 \text{ SIZE}_{it} + a_3 \text{ LEV}_{it} \\
R_{it} &= a_0 + a_1 \text{ REVA}_{it} + a_2 \text{ SIZE}_{it} + a_3 \text{ LEV}_{it} \\
R_{it} &= a_0 + a_1 \text{ MVA}_{it} + a_2 \text{ SIZE}_{it} + a_3 \text{ LEV}_{it}
\end{align*}
\]

9 - Test of hypotheses
As it was explained in the previous sections, the multi variable regression based on panel data has been used in order to investigate ability to explain the considered models. With regard to multiplicity of models and because of necessity for observation of summy, brief statistic relevant to the models has been presented in tables 1 and 2.

Table 1: Results summy from regression models of financial selected variables.

<table>
<thead>
<tr>
<th>Model retained explanation coefficient</th>
<th>Durbin Watson statistic</th>
<th>Significance level</th>
<th>Independent variable t statistic</th>
<th>Significance level</th>
<th>F statistic of regression model</th>
<th>Model performance variable</th>
<th>Model No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.402</td>
<td>2.05</td>
<td>0.007</td>
<td>2.70</td>
<td>0</td>
<td>4.44</td>
<td>ROA</td>
<td>1</td>
</tr>
<tr>
<td>0.395</td>
<td>2.00</td>
<td>0.030</td>
<td>2.16</td>
<td>0</td>
<td>0.32</td>
<td>EPS</td>
<td>2</td>
</tr>
<tr>
<td>0.387</td>
<td>1.99</td>
<td>0.739</td>
<td>0.33</td>
<td>0</td>
<td>4.05</td>
<td>OCF</td>
<td>3</td>
</tr>
</tbody>
</table>
Table 2: Summary of regression models’ results of economic selected variables.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Model retained explanation coefficient</th>
<th>Durbin Watson statistic</th>
<th>Significance level</th>
<th>Independent variable t statistic</th>
<th>Significance level</th>
<th>F statistic of regression model</th>
<th>Model performance variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>0.379</td>
<td>1.81</td>
<td>0.0</td>
<td>-4.64</td>
<td>0.0</td>
<td>4.63</td>
<td>EVA</td>
</tr>
<tr>
<td>5</td>
<td>0.382</td>
<td>1.81</td>
<td>0.0</td>
<td>-5.20</td>
<td>0.0</td>
<td>4.57</td>
<td>REVA</td>
</tr>
<tr>
<td>6</td>
<td>0.366</td>
<td>1.84</td>
<td>0.096</td>
<td>-1.66</td>
<td>0.0</td>
<td>4.27</td>
<td>MVA</td>
</tr>
</tbody>
</table>

As is clear in table 1, the significance level equal to F statistic of all models is less than 5%, so the general regression model is confirmed for all financial criteria. Moreover, Durbin Watson statistic of every three models indicates relative independence of data. In order to confirm the present relationship between financial selected criteria and performance, one should refer to t statistic relevant to these criteria. As it is obvious in the table, only significance level equal to t statistic relevant to ROA and EPS is less than 5%, therefore presence of relationship between these both variables and return is confirmed and relationship between operating cash flow and return is rejected.

Table 2 also indicates that significance level equal to F statistic of all models is less than 5%, so the general regression model is confirmed for economic criteria. Moreover, Durbin Watson statistic of every three models indicates relative independence of data. In order to confirm the present relationship between economic selected criteria and performance, one should refer to t statistic relevant to these criteria. As it is obvious in the table, only significance level equal to t statistic relevant to EVA and REVA criteria is less than 5%, therefore, presence of relationship between these both variables and return is confirmed and relationship between market value added and return is rejected. In order to compare relative ability of financial and economic measurements retained determination coefficient of models relevant to above variables that their relationship with shares return was confirmed have been compared via Z Wong test. Whenever possibility of equality with Z Wong statistic is less than 0.05, then one can say that in reliability level up to 0.95, the relative ability of variables is deferent in explaining share return of the companies.

Table 3: comparison of relative ability through using Z Wong table

<table>
<thead>
<tr>
<th>Result</th>
<th>Significance level</th>
<th>Z Wong statistic</th>
<th>Model retained determination coefficient</th>
<th>Under comparing variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of difference in relative ability</td>
<td>0.49864</td>
<td>0.00341</td>
<td>0.395</td>
<td>EPS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.379</td>
<td>EVA</td>
</tr>
<tr>
<td>Lack of difference in relative ability</td>
<td>0.49786</td>
<td>0.00343</td>
<td>0.402</td>
<td>ROA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.498531</td>
<td>0.003683</td>
<td>0.395</td>
<td>EPS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.374</td>
<td>SREVA</td>
</tr>
<tr>
<td>Lack of difference in relative ability</td>
<td>0.498538</td>
<td>0.003683</td>
<td>0.402</td>
<td>ROA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.374</td>
<td>SREVA</td>
</tr>
</tbody>
</table>

Considering the recorded numbers of table 3 and observing this issue that significance level equal to Z Wong statistic in more than 0.05 in comparing with all models, one can conclude that any one of the under studying financial and economic variables has not informational ability different from other variable, therefore the relative ability of all variables are same in explaining the shares return.

9- CONCLUSION AND DISCUSSION

The first hypothesis is associated with the relationship between the selected financial measures and the firms’ stock returns and has been examined by using three measures of financial measures through three subsidiary hypotheses. The findings confirm the significant relationship between stock return and ROA and EPS; while they don’t confirm the relationship between this variable and operating cash flow. This conclusion indicates that the financial measures have been always considered by the public. The findings of this study are consistent with the results of Mansouri, Seboui and Mir, Li and Kim and Maditiniou et al.

Concerning the relationship between the selected economic measures and stock return, the second hypothesis has been tested by developing three subsidiary hypotheses through financial performance. The
results show that there is a significant association between the stock returns, EVA and REVA. However, there is no significant relationship found between this variable and MVA. The findings of this study are consistent with the findings of Baybordi et al and Mansouri.

The third hypothesis is about the relative ability of the selected financial and economic measures in the first and second hypothesis. The findings of this hypothesis reveal that any one of the financial and economic variables has no different informational ability in relation to the other variables and the relative ability of all variables in explaining the shares return are the same. These conclusions are not consistent with the findings of Lee and Kim, Atanassakos and Garajafary et al.

10- Recommendations

Results of research revealed that financial variables of earning per share (EPS) and return of assets (ROA) and variables of economic value added (EVA) and retained economic value added (REVA) were in positive significant relationship with share return, therefore we advice the managers of companies to improve these variables in order to increase share return, and we advised also the investors other consumers of market consider these variables in investigation of companies’ performance. Other results of the research revealed the lack of ability of economic performance variables in completing informational contents of financial performance criteria. Meanwhile, since variables of EPS x ROA x EVA and REVA are able to explain shares return, So we advise the investors and decision makers to use these variables during economic decision in order to predict shares return. Among other considerable results are that each selected criteria can explain 40% of shares return alone. So, we advise the decision makers of the capital market don’t lean only on financial and economic criteria, but consider other criteria and factors such as nonfinancial criteria too.

Variables and consider other variables which were not noted in this paper in order to complete informational content of financial variable.

About the future opportunities for study for next research, it is suggested to investigate the additional content of the considered variables in completing each other; also to search the comprehensive model for performance measurement of the companies can be subject of future study.

11- Research Limitations

There have been different limitations during the study period which might impact the consequences. The future studies are aimed to remove these limitations. The main limitations include:
1- Lack of a regular and organized database to achieve the firm’s information which leads to doubts in the data.
2- Based on the limited sample selected from the listed firms of the Tehran Stock Exchange which are different in terms of size, industry type, ownership structure and type of products, they are not the proxies of all economic entities and there should be caution on the generalizing the findings to the other firms.

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