The Relationship between Economic Value Added and Cash index of the Companies Listed Tehran Stock Exchange

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ABSTRACT: Nowadays, investment in stock exchange plays a major role in allocation of capital in exchange and exchange largely contributes in development of economy. Increase of liquidity and profitability in stock exchange has been mentioned as the factor which measures economic development, so that this factor derives from liquidity and profitability of firms listed in stock exchange. Detection of the relationship between economic value added and cash index of the companies listed Tehran Stock Exchange is of great importance. The main purpose of this research is to examine the relationship between economic value added and cash index of the companies listed Tehran Stock Exchange during 2004-2013. In this research, three variables including the funds from operating activities, the funds from investment activities and the funds from financing activities as the components of liquidity indices (independent variables), the variable of economic value added (dependent variable) and two control variables of financial leverage and company size were used. To conduct this research, three hypotheses were designed. Multivariate regression model has been used to analyze data. Software Eviews8 has been used to test hypotheses. Findings of research indicate that it can state that there is a significant relationship between liquidity indices and economic value added at 95% confidence level.

Key words: funds from operating activities, the funds from investment activities, funds from financing activities, economic value added

Introduction

By separation of management from ownership followed by emergence of agency theory, performance assessment has been proposed as one of the most important issues in accounting. In other words, the firms' performance assessment has been constantly drawn into attention by shareholders, investors and financial creditors such as banks and financial institutions, creditors and especially managers. Performance assessment is determined via two indices of liquidity and profitability. Profitability indicates health of economic enterprise and liquidity indicates survival of economic enterprise. Profitability and liquidity criteria which have been emerged in recent years go beyond, of which it can refer to operating profit, economic value, and residual income and so forth to examine profitability. The liquidity criteria include working capital, cash flow period and so forth. Representation of the information on economic value added and its components, information content of this accounting variable and operating indices on the other hand has been largely discussed in financial and accounting conferences in recent years. Use of Performance Measurement Systems is another way to deal with conflict of interests between managers and shareholders. Performance measurement of an important part of any system indicates management control. Creating strategic program and controlling decisions need the information on how the performance of different units is in a company. For more influence, performance measurement and how to grant reward, the managers and other staffs of a firm at all levels must be stimulated to achieve predetermined aims and better performance (Horngren, 2006, p. 791).

Problem statement

Nowadays, investment in stock exchange plays a major role in allocation of capital in exchange and exchange largely contributes in development of economy. Increase of liquidity and profitability in stock exchange has been mentioned as the factor which measures economic development, so that this factor derives from liquidity and profitability of firms listed in stock exchange. Economic value added is assumed as a criterion for operating indices in this research. The relationship between operating indices can be assumed as an advanced approach for the current economy management. Nowadays, a majority of financial analysts believe that the firms must create the return over the capital cost (debt and shareholders’ equity) for creation of value.
This concept has been operationalized by use of the models such as economic value added and residual income. In the 1980s, by the changes that Stewart created in the concept of residual income, economic value added appeared as one of the modern instruments for financial performance measurement. Stewart believed that economic value added must be used as the criterion for internal and external performance assessment, instead of income and cash flows from operations. Significance of measurement of managers’ financial operations in all levels of the firm has been drawn into attention by the accountants from the long lost past especially 19th century. In this regards, most of firms have used the important accounting variables such as sale, income and percent of income to sale in a traditional way. However these methods are used in practice, they are found as unsuitable methods to assess managers’ performance, because profitability has a close relationship with investment rate mentioned that none of these traditional methods pay attention to the investment rate. Therefore, modern techniques have emerged to assess managers’ performance in recent years (Namazi, 2003, p. 163). In this research, operating indices have been considered as liquidity criterion of the firm. The main problem lies on this fact that whether a significant relationship exists between economic value added and operating indices or not. Therefore, the first step at any scientific research is to detect problem and state it. The major questions in this research are as follows; with regard to the issues in this research, we give response to the questions below:
1- what a relationship exists between operating activities and economic value added?
2- What a relationship exists between investment activities and economic value added?
3- What a relationship exists between financing activities and economic value added?

Internal studies
To date, some studies have been conducted in this context, in which the relationship between working capital management and accounting income and/or the relationship between these factors and other issues has been examined. Yet, we intend to examine the relationship between cash flow period and economic value added. Some studies have been elaborated as follows:
Gholam Hossein Mahdavi (2012) examined role of traditional and modern indices of liquidity in financial performance assessment of the firms listed in Tehran stock exchange. With regard to the results from hypotheses testing, in general modern liquidity indices in financial performance assessment of the firms give a more precise image than traditional liquidity indices to the users of financial information to make optimal decisions.
Mohammad reza Lashgari Darbandi(2011) has examined effect of working capital management on profitability of firms in the companies listed in Tehran stock exchange under the assumption for a significant relationship between working capital management and profitability of firms. In this research, 125 firms among the firms listed in Tehran stock exchange during 10 years have been selected as the sample group. Four variables of average collection period, inventory turnover, average payment period and cash conversion cycle have been used as the agents for the variable of working capital management. Further, five variables of debt ratio, current ratio, company size, ratio of financial assets and stock exchange index have been used as the control variables. In this research, regression analysis has been used. To sum up, this research has come to the conclusion that working capital management affects profitability of companies.
Saeid Sehat et al.(2011) examined the relationship between return on assets, shareholders’ equity and economic value added in insurance industry; traditional criteria of performance assessment are subjected to numerous criticisms due to ignorance of capital cost and use of accounting information. In contrary, economic value added will be a better criterion in assessment of the created value in the firms by considering the economic benefit. In this research, the relationship between the mentioned criteria and economic value added has been examined in insurance industry so as to specify to which extent the mentioned traditional criteria adapt with the economic value added and to which extent the traditional criteria assist for improving economic value added in economic enterprise. In this research, all the insurance firms except for reinsurance firm which includes 16 Freight companies have been assessed during four years. Further, since this research examines the insurance industry and since economic value added is an objective criterion, profit margin of economic value added has been used in the calculations. Findings of research indicate that there is a direct relationship between return on assets, shareholders’ equity and profit margin of economic value added in insurance industry. Yet, this relationship is clearer in shareholders’ equity. Further, the relationship between return on assets and shareholders’ equity was examined via operating profit ratio after tax cost of capital to specify further dimensions of the relationship between mentioned traditional criteria and economic value added. Results indicated a direct relationship between return on assets, shareholders’ equity and this ratio.
Mahmoud Yahya zadeh far & Shahab al din Shams (2010) examined the relationship between economic value added, profitability ratios and market value added in firms listed in Tehran stock exchange. Results from this research indicate that there is a significant relationship between economic value added, shareholders’ equity and market value added, yet there is no significant relationship between rate of return on assets, earning per share and market value added.
Hamid reza Vakili far(2010) examined the relationship between working capital management and profitability in the firms listed in Tehran stock exchange. Results from research indicate that there is an inverse relationship between variables of working capital variables and profitability.

Results indicate that if Average Collection Period, debt payment period, inventory turnover period, cash conversion cycle increase, this will result in reduction of profitability in the firms and managers will enable to create a positive value for the shareholders by reduction of Average Collection Period, debt payment period, inventory turnover period, cash conversion cycle.

Rezvan Mosayebi(2010) has examined the relationship between working capital management and profitability of firms among 101 firms listed in Tehran stock exchange as the sample; the obtained results indicated an inverse significant relationship between cash conversion cycle, debt payment period, Average Collection Period and profitability.

External studies
To date, several studies have been conducted in this context that some are as follows. The present research has been conducted based on the research by Yomra et al (2012), Yomra et al. (2013) examined the relationship between market value added and four criteria of net profit, earning per share, asset market and shareholders’ equity. In this research, the sample group consists of Stern & Stewart's 100 Largest Bank Holding Companies during 2003-2012. The results from their studies indicate that economic value added has a more correlation with market value added, increasing the shareholders’ wealth.

Monika et al.(2012) proposed economic value added as a profitability criterion and cash flow cycle period as a criterion for liquidity and profitability. These ratios propose a dynamic approach for management of firms. The relationship between the ratios can be assumed as an advanced approach for the management of the current economy.

Erbiren(2012) examined the relationship between economic value added and net operating profit after tax deficit, free cash flow and stock market value. He has used the data of Stern & Stewart's 100 Largest Bank Holding Companies during 2002-2011. Findings of his research indicated that correlation coefficient of net operating profit after tax deficit with stock market value has been equal to 33% and correlation coefficient of economic value added with stock market value has been equal to 31%. Further, he has deduced that economic value added and net operating profit after tax deficit have the same explanatory power. He elaborated that changes in economic value added describe 31% of changes. In addition, economic value added despite net operating profit after tax deficit associates to other profit-based criteria including stock market value; economic value added has been assumed as a means to understand expectations of the investors who have invested in the current stock price.

Grant and his colleague (2012) examined the relationship between market value added and the used capital and between the economic value added and the used capital among 50 companies with the highest rank of market value added. Results from this research indicated a significant relationship between the need to value. Stewart's study ignited a fundamental revolution in the methodology.

Cochran and his colleague (2011) made an attempt to compare the companies which use economic value added as a performance criterion and the companies which do not use this criterion. In this research, 115 companies which have used economic value added in United States of America against 1271 companies which have not used this criterion have been selected. Results from this research indicate that the companies which have low individual ownership put a huge effort to use economic value added.

Grant(2010) examined the relationship between adjusted market value added and adjusted economic value added among 983 companies selected from Stern & Stewart's 100 Largest Bank Holding Companies during 2008-2009. Results from this research indicate that there is a high positive correlation between market value added and economic value added.

Bakidor et al.(2009) put a huge effort to examine the explanatory power of economic value added and adjusted economic value added in creation of value for the shareholders. They extracted their information from Stern & Stewart's 1000 Largest Bank Holding Companies. The sample group consists of 600 companies during 2005-2009. Results from this research indicate that adjusted economic value added has a higher correlation than economic value added to predict market value.

Hall(2009) has examined the relationship between market value added and economic value added and examined the relationship between market value added and other financial criteria such as return on asset, return on shareholders’ equity and earning per share in southern Africa. He has reached to low correlation coefficients in this study, yet the best correlation was found between economic value added and market value added than rest of criteria.

Worthington et al.(2009) in other studies analyzed correlation rate of market value added with assessment criteria among 450 average-sized companies in united states of America. They have come to conclusion in their studies that economic value added has more explanatory power than rest of criteria such as capital growth, capital return, earning per share and cash flow. Regression results from market value added
and criteria under study indicate that economic value added with 61% correlation compared to rest of criteria has the highest correlation with market value added.

Finnegan et al stated about changes in market value added that changes in market value added and economic value added have been for about 44%.

Stewart (2008) believes that earning, earnings per share and earnings growth are distractive criteria of company performance, which economic value added is the best criterion for performance assessment. Economic value added refers to that factor which moves the stock price. Followed by this statement, numerous studies have been conducted to examine this issue.

Teso and his colleague (2008) examined the relationship between market value added and economic value added in the companies which have membership in computer technology industry during 2001-2007. In this research, the correlation between market value added and assessment criteria including a series of traditional criteria and the correlation between market value added and economic value added have been determined. They declared that there is the highest correlation between economic value added and market value added, that is, a company which can improve its economic value added constantly must enable to improve market value added and as the result Corporate shared value.

Bidell and his colleague (2008) examined the changes created in the firms by means of use of economic value added. They have compared performance of the firms which have used economic value added with performance of a control group. This control group has consisted of the firms which have not used the economic value added. They believed that use of economic value added has raised changes in decisions about financing, operating and investment activities. Further, they come to conclusion that economic value added increases the residual income and shareholders’ wealth.

Samylog and his colleague (2008) examined the relationship between profitability and working capital management during 10 years on Turkish manufacturing companies, deduced that accounts receivables period and leverages put a negative impact on profitability of company. Yet, company growth puts a positive impact on profitability of company. Nevertheless, cash flow conversion cycle, company size and fixed financial assets do not put a significant impact on profitability of companies under study. The results suggest that profitability of company increase through reduction of Accounts receivables period.

Kappelin (2008) examined the relationship between criteria of performance assessment and total return for 500 S& D institution’s companies during 2002-2008. He announced that there is a little correlation between shareholders’ equity in short term and short-term cash flow of earnings growth, economic value added and percent of changes in economic value added.

Sam Lio Glu and his colleague (2008) in an article entitled “impact of working capital management on profitability of company” mentioned capital budgeting, capital structure and working capital management as three major components of financial theory. Two first factors deal with financing and long-term investments. The third factor deals with current assets and currents. The present research aims to analyze impact of working capital management on profitability of company. To achieve this aim, a significant relationship was found between profitability of company and cash flow cycle period. This study has been conducted on the firms listed in Turkey stock exchange during 1998-2007. This analysis was made via multiple regression model. The empirical findings of research indicated that accounts receivable collection period, Inventory turnover period, and leverage (ratio of total debts to total assets) put a negative impact on profitability of company. Yet, growth in sale puts a positive impact on profitability of company.

Rahman & Nasr (2007) examined impact of working capital management on profitability of 94 firms listed in Pakistan stock exchange during 2001-2006. They have examined impact of different variables of working capital including accounts receivable collection period, Inventory turnover period, and leverage on net operating profit of the companies and concluded that there is a negative strong relationship between ratios of high working capital and profitability of company. In addition, managers can create value for the shareholders through reduction of cash flow conversion cycle to a favorable level. This study confirms the results from the same studies on the relationship between working capital and profitability. Kleemann (2007) examined whether the companies which have selected economic value added as the performance criterion have caused rise of shareholders’ value to other companies or not. In this analysis, 71 companies selected economic value added during 1977-2006. The results indicated that the companies which use economic value added acquired 28.8% additional return for 4 years than average industry; further, he declared that the companies which use economic value added enabled to improve their operating profit margin more than other companies.

Kramer & Peters (2006) compared the correlation between economic value added and market value added and the correlation between net operating profit after tax deficit and market value added among 53 industries during 1996-2005. They concluded that the correlation between economic value added and market value added has been better than the correlation between net operating profit after tax deficit and market value added just in 11 industries among 53 industries. In rest of factors, the correlation between net operating profit after tax deficit and market value added has worked out better.
Herzberg (2006) in a research entitled “use of economic value added to purchase stock of firms” concluded that it can use the economic value added assessment model to find the firms with stock lesser than the real priced rate, because this model can assist to predict profit rate and growth (Herzberg et al. 2006, p. 52).

Ferguson et al. (2005) in a research entitled “whether use of economic value added improves the profitability process in the firms or not” examined effect of economic value added on performance assessment of the firms. The results from research indicated that use of economic value added improves profitability process in the firms (Basidor et al. 1997, p. 111). Result from these studies indicated that the relationship between economic value added and market value added is more than the relationship between traditional criteria of performance assessment and market value added.

Research hypotheses

The hypotheses of this research have been acquired from a theoretical structure. For this, firstly the internal and external texts were examined before proposing hypotheses of this research. Then the variables were determined to formulate the hypotheses. There are three hypotheses in this research that each one has been designed to assess the purpose of research which lies on role of economic value added and operating indices of companies listed in Tehran stock exchange. With regard to the theoretical background in the context of overview of the relationship between economic value added and operating indices of companies listed in Tehran stock exchange, the hypotheses are proposed as follows:

Major hypothesis: there is a significant relationship between economic value added and liquidity indices of companies listed in Tehran stock exchange.

The first secondary hypothesis: there is a significant relationship between economic value added and the funds from operating activities of companies listed in Tehran stock exchange.

The second secondary hypothesis: there is a significant relationship between economic value added and the funds from investment activities of companies listed in Tehran stock exchange.

The third secondary hypothesis: there is a significant relationship between economic value added and the funds from financing activities of companies listed in Tehran stock exchange. Since the sampling process has been made via elimination of systematic sampling, 171 companies have been qualified to attend in study for hypotheses testing by applying restrictions and eliminating the companies which lack the aforementioned criteria. Therefore, the sample size has been reported equal to 1710.

The conceptual model of research

![Conceptual model of research](image.png)

- Control variables
  - Financial leverage
  - Operating size of company

- Dependent variables

- Independent variables
  - Operating activities
  - Investment activities
  - Financing activities

Figure 1
As observed in previous section, which mechanism has been contributed in knowing the model with fixed effects as the preferred model. In table below, the results from regression fitting have been reported. The results from model estimation with fixed effects method (dependent variable: economic value added)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficients of variables</th>
<th>Standard deviation</th>
<th>t-value</th>
<th>Sig</th>
<th>Result in model</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>8.62440</td>
<td>8.9681</td>
<td>0.9616</td>
<td>0.3366</td>
<td></td>
</tr>
<tr>
<td>CFO</td>
<td>0.2151</td>
<td>0.3162</td>
<td>-2.6802</td>
<td>0.0066</td>
<td>Effective</td>
</tr>
<tr>
<td>CFI</td>
<td>0.0555</td>
<td>0.0596</td>
<td>2.9301</td>
<td>0.0026</td>
<td>Effective</td>
</tr>
<tr>
<td>CFF</td>
<td>0.1971</td>
<td>0.1911</td>
<td>2.0317</td>
<td>0.0026</td>
<td>Effective</td>
</tr>
<tr>
<td>SIZE</td>
<td>0.00036</td>
<td>0.1119</td>
<td>2.0032</td>
<td>0.0274</td>
<td>Effective</td>
</tr>
<tr>
<td>LEV</td>
<td>-9.7391</td>
<td>10.2973</td>
<td>-2.9457</td>
<td>0.0446</td>
<td>Effective</td>
</tr>
<tr>
<td>Durbin-Watson</td>
<td>1.76</td>
<td></td>
<td></td>
<td></td>
<td>Errors are not correlated in the model.</td>
</tr>
<tr>
<td>Adjusted determination coefficient</td>
<td>0.65</td>
<td></td>
<td></td>
<td></td>
<td>65% of the changes in value added are determined via independent variables.</td>
</tr>
<tr>
<td>t-value</td>
<td>234.34</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig</td>
<td>0.0000</td>
<td></td>
<td></td>
<td></td>
<td>Linearity of model is confirmed.</td>
</tr>
</tbody>
</table>

Results from model estimation via fixed effects regression method in the first model indicate that adjusted determination coefficient equals to 0.65, i.e. 65% of the changes in dependent variable of economic value added of the firms are determined via significant variables in the model. Further, Durbin-Watson statistics equals to 1.76, which it can conclude that the errors in the model are not correlated since this value ranges from 1.5 to 2.5, as observed in table, since p-value of the operating cash flow is under 5%, it can say that the null hypothesis based on insignificance of coefficient has been rejected at sig(5%), thus the operating cash flow is a positive significant variable. Thereby, it can say that operating cash flow period of a firm has affected economic value added in that company and changes in operating cash flow raises change in value added in the company. Therefore, the first secondary hypothesis under a significant relationship between economic value added and funds from operating activities is confirmed.

Since p-value of the investment cash flow has been under 5%, it can say that the null hypothesis under insignificance of coefficient is rejected at confidence level(95%), thus the coefficient is significant in the model. As a result, it can say that investment cash flow affects economic value added. It can say that economic value added of the firm increases to 0.05 extent per increase in investment cash flow. Therefore, the second secondary hypothesis under the significant relationship between economic value added and funds from investment activities is confirmed. Since p-value of the financing cash flow has been under 5%, it can say that the null hypothesis under insignificance of coefficient is rejected at confidence level (95%), thus the coefficient is positive and significant in the model. Indeed, economic value added of the firm increases to 0.19 extent per increase in financing cash flow, i.e. financial cash flow has a positive significant effect on economic value added. Therefore, the third secondary hypothesis under the significant relationship between economic value added and the funds from financing activities is confirmed.

Since p-value of the company size has been under 5%, it can say that the null hypothesis under insignificance of coefficient is rejected at confidence level (95%), thus the coefficient is significant in the model. As a result, it can say that company size affects economic value added. Further, with regard to positive coefficient of this variable, it can say that the more company size, the economic value added will increase. On the other hand, reduction of company size directly reduces economic value added of the firm. Since p-value of the financial leverage has been under 5%, it can say that the null hypothesis under insignificance of coefficient is rejected at confidence level (95%), thus the coefficient is significant in the model. As a result, it can say that financial leverage puts a negative significant effect on economic value added. Increasing financial leverage which indicates increase in debts puts a negative impact on economic value added, resulting in reduction of economic value added.

**CONCLUSION CONCERNING THE RESEARCH HYPOTHESIS**

The first secondary hypothesis has been as follow: There is a significant relationship between economic value added and the funds from operating activities.

With regard to the obtained results, it can say that operating cash flow puts a positive significant effect on economic value added of the firms. This result confirms the first secondary hypothesis of the present research. Therefore, the first secondary hypothesis is confirmed, stated that there is a significant relationship between economic value added and the funds from operating activities.

The second secondary hypothesis has been as follow: There is a significant relationship between economic value added and the funds from investment activities.
With regard to the obtained results, it can say that the funds from investment activities put a positive significant effect on economic value added of the firms. This result confirms the first secondary hypothesis of the present research. Therefore, the second secondary hypothesis is confirmed, stated that there is a significant relationship between economic value added and the funds from operating activities. There is a significant relationship between economic value added and the funds from investment activities. The third secondary hypothesis has been as follow:
There is a significant relationship between economic value added and the funds from financing activities.

With regard to the obtained results, it can say that the funds from financing activities put a positive significant effect on economic value added of the firms. This result confirms the first secondary hypothesis of the present research. Therefore, the third secondary hypothesis is confirmed, stated that there is a significant relationship between economic value added and the funds from financing activities.
There is a significant relationship between economic value added and the funds from financing activities.

Conclusion and overview of the major research hypothesis
The major hypothesis of this research has been as follow: There is a significant relationship between economic value added and the funds from operating activities. To examine this hypothesis, three components of operating cash flow, investment cash flow and financing cash flow have been considered as the agents for operating indices and developed the secondary hypotheses of the present research. The relationship between these three variables and economic value added has been fitted via a regression model. Since the relationship between three aforementioned components and the economic value added of the companies has been confirmed, the major hypothesis of the research is proven. Therefore, it can say that there is a significant relationship between operating indices and economic value added. Table below represents the results from the research hypotheses.

Conclusion concerning hypotheses testing

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Explanation</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major hypothesis</td>
<td>There is a significant relationship between operating indices and economic value added.</td>
<td>Confirmed</td>
</tr>
<tr>
<td>Secondary hypothesis</td>
<td>There is a significant relationship between the funds from operating activities and economic value added.</td>
<td>Confirmed</td>
</tr>
<tr>
<td>Secondary hypothesis</td>
<td>There is a significant relationship between the funds from investment activities and economic value added.</td>
<td>Confirmed</td>
</tr>
<tr>
<td>Secondary hypothesis</td>
<td>There is a significant relationship between the funds from financing activities and economic value added.</td>
<td>Confirmed</td>
</tr>
</tbody>
</table>

CONCLUSION

Creation of value in the firms has been regarded as the most important duty of the managers. To display the extent of managers' success in creation and increase of value, performance assessment criteria are used. Economic value added has been regarded as the best performance assessment criterion. This criterion implies residual income after capital cost deficit from the income from operations. With regard to large body of studies, economic value added can be used as a basis to determine aim and value, investment in projects, performance measurement and assessment, intellectual capital, extent of reward and so forth. Since economic value added considers total capital cost, this weakness in accounting systems which considers debt price is eliminated. This index was created by Stern Stewart so as to elaborate the challenges that the firms face in the context of financial performance measurement. Economic value added determines economic profitability by measuring income after the shareholders' expected return deficit. Improvement in economic value added implies increase of shareholders' wealth. With regard to the results from this research, there is a significant relationship between operating indices and economic value added of the firm. Further, findings of this research indicate that company size and financial leverage of company have a positive significant relationship with economic value added of the company. Results from this research are consistent with the results from the research by Obiren(1996), Baidel et al.(1998), Chen and his colleague(1998), Kelmann(1998), Hall(2001), Kramer(2001), Jennis et al.(2005), Grant and his colleague(2012), Anvari Rostami et al.(2006), Mashayekhi(2004), Yahya zadeh far(2009). Yet, the results from this research are not consistent with the results of research by Ramana(2005), Khalili(2003), Sedighi(2006) and Fernández(2002).

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