The Study of Relationship between the Criteria of Value Creation and Companies Success Degree with Fuzzy Approach: Evidence From IRAN

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ABSTRACT

Economic units have different degrees of membership in the success or failure. This research aimed to the study of relationship the criteria of value creation and companies success degree with fuzzy approach based on the rate of return on equity (ROE) conditions of Iran. In this type of application and the descriptive – correlation and causal – comparative . The study of listed companies in Tehran Stock Exchange (TSE) during the period from 2005 to 2012 . Using the Cochran formula method to remove systematic sample was selected. Data mining method Library in value creation state.3 criteria Economic Value Added (EVA), Market value Added (MVA) and Cash Value Added (CVA) measures used for Excel software was calculated. To test the hypotheses software SPSS20, Matlab and Fuzzy Teck and method of data analysis from multivariate parametric modeling, fuzzy regression and Pearson correlations for fuzzy criterion variable (degree of success of the companies) were used. Research finding shows that there are not significant statistical relationship between the value creation with varying degrees of success with the company's financial performance.

KEY WORDS: Fuzzy Approach, Predicting of Financial Performance, Return on Equity (ROE), Value Creation Criteria, Tehran Stock Exchange (TSE).

1. Introduction

Nowadays to avoid bankruptcy is a basic strategic which aims at guaranteeing commercial activities so that the researchers become interested in predicting the profit making and evaluating the continuation of companies activities.

Financial performance defined as the capability of making profit is of great importance for all stockholders and stakeholders and basically all stakeholders are interested in achieving proper tools to predict and analyze profit making and the continuation of these entities activities. Financial statements are the only common informative source available at every stakeholders’ hands, however, there are some points not reflected in the reports such as their the relative strength to success in the future.

We are following a basic principle in this research: Are significantly relationship value creation criteria extracted from financial reports and success degree with fuzzy approach based among those companies? recognition this relation and prediction of the companies’ performance can help decision making process and assist all stakeholders and users of financial statements.

The swift progress of technology and wide environmental changes have accelerated industrial growth. the ascending competition among industrial entities has limited the access to profit and has increased the improbability of abiding by their commitments and a halt to their activities. Recent unprecedented bankruptcies in main companies at the international level, the undulation of Iran stock exchange, the presence of financial crises in main companies and industries and their effect on the bankruptcy and destruction of companies called as financial crises tsunamis all and all have created worries which necessitates the creation of tools to evaluate the ability and financial health of companies. one of the tools to evaluate the financial ability of companies is
To use financial ratios extracted from financial statements and all kinds of properties based on value creation as predicting variables of companies’ financial health. (Kritsonis, 2005)

Therefore to do a research in order to help to know and to predict closely and evaluating the activity continuation and financial performance and finally making a more correct decision through using the information at the hand of all users (financial reports) and taking out some value creation criteria proves to be necessary.

The purpose of the present research is to identify and determine proper dependable criteria (of accounting information qualitative features) of the kind of value creation having the ability to evaluate the events of economical units taken out of financial reports and the capital markets for all stakeholders and activists in financial markets (capital, money and insurance) in order to promote the capability of the company to pay the return and expected by investors and creditors and to make a proper background to continue activity and to evaluate it in Iran’s environmental conditions. As a result three criteria have been identified and analyzed.

2. Literature Review

Financial performance is a topic related to the activity continuation, bankruptcy, financial distress and the qualitative characteristics of accounting information (validity and reliability). Therefore the Companies’ performance assessment in the areas of operation, marketing, finance and accounting seems a necessity. (Kritsonis, 2005)

From a long time in the performance assessment past the involved financial information and data and till now the criteria for the measurement and performance assessment have been presented differently in different books and articles denoting the idea that in the process of assessment, a collection of indexes should be taken into consideration. Some of the most important criteria available are such as:

1) Performance measurement criteria which are divided into accounting models and economical models (Jahankhani and Zariffard, 1996)
2) Performance measurement criteria which are divided into groups of financial and non financial (Rahnamay Roodposhti et al., 2007)

Financial and accounting criteria to help decision making will not suffice while the pace of changes is very fast and the economy agencies are competing seriously depending only on these criteria to performance assessment will affect the present decisions about long term present decisions about long-term profits and other short term profits. Therefore, there is an ascending tendency to use non financial and economical criteria. Not only the stockholders wait for gaining return by the managers like the past but they want the managers to think of alternatives to maximally increase the value of their investment, consequently financial indexes cannot favorably indicate the companies’ performance, inevitably we are in need of criteria homogeneous with value creation in long term. (Rahnamay Roodposhti et al., 2007)

2.1. Economic Value Added (EVA):

EVA is actually the value added to the previous activities (input) or the virtual production value after the deduction of the value of goods and medium services (input). In other words the value created in that stage of production is taken into consideration if it is produced through different devices by labor.

Generally speaking we can define the value added as the difference the in selling of products and virtual services and services and material purchased or in other way the collection of income produced by staff, capital providers, government and economical agencies. (Rahnamay Roodposhti, 2009)

EVA is a criterion which is generally used for value creation in the company. EVA is not a strategy but a way to measure the results.

EVA is produced by multiplying the difference between rate of return (r) and rate of capital cost (c) by the amount of capital.

\[
\text{EVA} = (r - c) \times \text{capital}
\]

or

\[
\text{EVA} = (r \times \text{capital}) - (c \times \text{capital})
\]
and or \( EVA = NOPAT - (c \times \text{capital}) \)

2.2. Market value added (MVA):

EVA pros believe that maximizing the whole value of the market will not necessarily maximize the stockholders’ wealth because we can simply increase the general value of the company by increasing capital. Stockholders wealth will maximize when the difference between the general value of the company and the general value of the capital of the investors is maximized. This difference is called (MVA) and indicates the difference between the capital being used by the investor in the company and the present value of the payments by selling the stock. Company managers can increase the stockholders wealth through maximizing the difference. (MVA) indicates that how the company can predict and plan the future profit making opportunities and to be successful in the application of the capital. MVA is calculated as follows:

Market value of stockholders’ equity - Book value of stockholders’ equity (applied capital) = MVA

2.3. Cash Value Added (CVA):

CVA is the surplus cash which is deduced after the deduction of cash capital cost from operational cash profit. the surplus is sometimes called surplus profit.

\[ \text{CVA} = \text{operational cash profit after tax} - \text{cash capital cost} \]

In the above formula:

Cash profit after tax = cash earned from operational activities after paid tax according to standard no.2 of Iran accounting standards. The operational cash profit is calculated as follows:

Operational cash profit = operational profit (loss) + Accruals + non cash costs

By cash capital costs we mean the remainder of paid interest and stock profit. Both items can be obtained from cash flow statement prepared according to standard no.2 of Iran Accounting standards.

3. Research History:

Reviewing the literature of accounting and financial researches shows some of the researches about the parameters and Indexes of value creation effective and related to the variables defining financial health such as activity continuation, profit utilized or presented value added as follows:

3-1. Domestic Evidence

Based on domestic studies, Ahmad pour and Ahmadi (2009) in a research entitled "using qualitative properties of financial information in the evaluation of profit quality" concluded that profit is one of the most basic components of financial statements (Income statements) which is always paid attention by all Stakeholders and is used as a criterion to evaluate activity continuation, entitys performance, measurement of profitability and forcibility of entitys next activities.

Noravesh and mashaykhi (2005) in a research studied the relation ship between value added and accounting profit, therefore, they have tested the relationship between accounting profit changes with the data of cash value added and EVA of accepted manufacturing companies in TSE from 1997 to 2003. the results obtained from the research test hypothesis reveals a significant relationship between accounting profit changes and EVA changes and no significant changes and cash value added changes in all the companies under study, not considering the industry they belong to.
Ghorbani (1999) studied the relationship between profit changes and value added changes in the manufacturing companies affiliated to Restoration and Expression Organization of Iran industries. The results show that there is no significant linear relationship between profit changes and value added changes in the companies under study. Shariat (2004) studied the relationship between EVA and accounting profit of automobile manufacturing industry accepted in TSE. The results show that there is a significant relationship between profit and EVA. Izadinia (2004) did a research entitled "evaluation of commercial units using EVA models and free cash flows the determination of a gap between price and stock value". The results show that in Iran capital market, there is a significant relationship between stock prices, companies' market value and market value added with value creation factors such as EVA and free cash flow. Noravesh et al. (2005) studied the relationship between operational cash flows, operational profit and EVA with the wealth produced by stockholders in their research. The results show that EVA is a more concise index to predict CSV in the companies accepted in TSE.

3-2. International Evidence

Hoong et al. (1994) have analyzed the coefficient correlation of value added and profitability of cooperative companies in Singapore (except financial institutes) and have also analyzed the effect of companies' size on this correlation their research. The results show that in 1986 to 1991 there is a close correlation in between value added and favorite performance, but when the companies experience net loss the correlation between value added and performance is very low and sometimes even negative. In addition to that changes in the value added is usually strongly correlated with the changes in net profit but it is very low at the time of net loss furthermore, it seems that the bigness of the company is effective in the correlation.

Tracey and writhing (2000) have studied the content of EVA information and compared it with operational profit and operational cash flows. They have concluded studying the relative information content, that the operational profit with a determination coefficient of 23.67% is more defining the total stock return in comparison to operational cash flows (18.1%) and EVA (14.29%).

Pexoto (2000) has studied the information content of economic value added in comparison to operational profit and net profit. The results show that the net profit with the determination coefficient of 53.86% is more defining the total in comparison to operational profit (51.35%) and EVA (54.22%).

Clinton and chen (1998) comparing the stock price and return with CVA criteria, EVA and other traditional criteria suggested that the companies which use EVA criterion to assess performance consider CVA as a substitution.

4. Methodology

The objective orientation of the book is "functional" and its performance is "descriptively" oriented. The research sample includes the financial statements and reports of the accepted companies in TSE. Some of the common features of these companies for the researcher to select the appropriate sample are:

1- To be accepted in TSE before 2005.
2- Having delivered all their financial statements to TSE from 2005 to 2012.
3- Having not changed their activity during the mentioned financial years.
4- To increase the comparability of the selected samples, their kind of activity is manufacturing and the investing companies are not included in the sample because of their activity difference.

224 companies from 37 divided industries in the TSE were selected to comprise the statistical sample of the research. Using Cochran formula, 67 companies were selected as samples from the previous sample that with using random sampling, all kinds of different levels of financial performance (Return On Equity based on their degree of success) were selected. The company, in terms of return on equity performance was above the median, as a successful company that was below the median, were classified as non-successful (Bhramfr and saee, 2008).

Data used for Excel software was calculated. To test the hypotheses software SPSS20, Matlab and Fuzzy Teck and method of data analysis from multivariate parametric modeling, fuzzy regression and Pearson correlations for fuzzy criterion variable (degree of success of the companies) were used.
4.1. Research variables include A) criterion variable:

In this study, the criterion variable, the variable degree of success is the ability of listed companies in Tehran Stock Exchange that expressed as a fuzzy variable (according to the third quartile of the first, second and third phase to be formed) and interval scale is obtained.

B) predicting variables: The predicting variables are EVA, MVA and CVA being extracted from the statistical sample’s financial reports and capital market.

4-1. Hypothesis Research:

1) Between Economic Value Added (EVA) with a success degree of listed companies in Tehran Stock Exchange has a significant relationship.
2) Between Market Value Added (MVA) with a success degree of listed companies in Tehran Stock Exchange has a significant relationship.
3) Between Cash Value Added (CVA) with success degree of listed companies in Tehran Stock Exchange has a significant relationship.

5. Findings

Degree of success of listed companies in Tehran stock exchange can be based on a fuzzy number S as indicated. For this purpose, the ROE indicator variable for the establishment phase of the company's success is variable table. The results of fuzzy rules based on the values of ROE is based on three principles. Membership function for values of 0.729 or 0.8 is the number one desire. The membership function for the 0.125 at close to 0.5 will be, and membership function for the -1.83 and ROE values close to it, is zero.

<table>
<thead>
<tr>
<th>Variable</th>
<th>No.</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Membership function of degree of success</td>
<td>67</td>
<td>0.5024</td>
<td>0.1767</td>
<td>-1.83</td>
<td>0.729</td>
</tr>
</tbody>
</table>

5.1. Findings resulting from testing hypotheses:

Because from 3 the value added variables is used to analyze value creation. Table (2) shows the degree of correlation between the components of the value creation of the company's success.

Table (2): Correlation coefficients between the components and the degree of success of a company's value creation

<table>
<thead>
<tr>
<th>Number Hypothesis</th>
<th>Criteria</th>
<th>Number of Companies</th>
<th>Correlation Coefficient</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>EVA</td>
<td>67</td>
<td>0.146</td>
<td>0.239</td>
</tr>
<tr>
<td>2</td>
<td>MVA</td>
<td>67</td>
<td>-0.108</td>
<td>0.283</td>
</tr>
<tr>
<td>3</td>
<td>CVA</td>
<td>67</td>
<td>0.071</td>
<td>0.566</td>
</tr>
</tbody>
</table>

According to Pearson correlation coefficients, Component of value creation with degree of companies success that are significance level greater than 0.05, Therefore, between value creation status with degree of company's success are not significant relationship.

6. Summary and Conclusions
The accounting objectives have been announced in the official statements of legislating organizations such as Iran financial accounting theoretical implications statement focusing on the users. In the concluding part it is said that financial report should provide useful information for the users. One of the requisite conditions to be useful is that the information reported should be related to the kind of decision made by these people and one of the requisite conditions for the information relatedness, is their predictability. Because one of the uses of accounting information is to predict company profitability and activity continuation, regarding the research problem, the results obtained show that the published financial information. (In regard to the calculation of the criteria under study) About different health level of the companies are enough informatively loaded even though it is of importance that the informative load of the reported cases are not equal in the financial reports and the capital market. Research finding shows that there are not significant statistical relationship between the value creation with varying degrees of success with the company's financial performance. The information obtained can help a wise investor or other users in predicting the results of his potential and present investments and the rank of companies financial health besides other studies and analyses at hand.

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References


