A study of value creation criteria: An Iranian scenario

Mahdi Salehi1*, Hashem Valipour2 and Zahra Yousefi3

1Department of Accounting, Islamic Azad University, Takestan Branch, Iran.
2Department of Accounting, Islamic Azad University, Firooz Abad Branch, Iran.
3Islamic Azad University, Daryon Branch, Iran.

Accepted 20 January, 2011

Measuring shareholder value creation has been the subject of discussion all around the world. It has become crucial since companies are increasingly committed to creating shareholders’ value. The aim of this study is to induce voluble measures to users and increase their understanding. In this study, these measures are obtained by using informative contexts comprising accounting and economic measures for this purpose. The main hypothesis and the sub-hypotheses are tested and 92 companies listed in Tehran Stock Exchange are selected in the four year period (2005 to 2009). The results of the study reveal that according to the findings, there is meaningful relationship between economic measures and value creation.

Key words: Value creation, performance analyzes, economic measures, accounting measures.

INTRODUCTION

Shareholders are the owners of the corporation and the board of directors is their representative elected by them. The objective function of the corporation is to maximize the shareholders’ value. Managers in most of the developed world must focus on building shareholders’ value. If the managers and director do not maximize value, there is always the threat of a hostile takeover. The further a company's stock price falls due to the wrongheaded policy, the easier it is for another company or group of investors to buy up a majority of the shares. The profit paradox indicates that managers always do not try to maximize profits of shareholders. The shareholders can adjust existing profit pared by payment of salaries and rewards in accordance to managers’ performance using analyzing systems. Shareholders as owners of business unions try to increase their wealth, and increasing the wealth causes the assessment of business union favorably, which is very important for business owners. On the other hand, the large challenge for management is proper integration value, given to different profit owners in organization. Investors always need to utilize information in taking their strategic decisions. These decisions should be the ones that build value for company, biannually. Existence of such conditions forces managers to install new economic frame in their companies and by this, value and profit-ability are better refluxed. For this, finding an index is necessary by which company's performance is logically explored for assessment of managers' performance and measure-ment of value given to shareholders. Several indexes defined that between them, economic value added (EVA) and market value added (MVA) can be pointed out in this study. Thus, the informative context of these indexes in Tehran Stock Exchange (TSE) and the relationship between the well known index and value creation for shareholders will be investigated.

Value creation

The globalized world, characterized by accelerated competition companies, must stimulate profitable growth, measure value creation and continually learn from success and setbacks. The only companies that can acquire new capital, grow and remain profitable are those that create value.

Active shareholders are putting more pressure on corporate management to measure and communicate how they are creating value, and shareholders find...
anything other than value-creating companies unacceptable. So, to understand value creation, it is important to first define the means of value. In literature, value is a meaningful loading which humans relate to phenomena and actions; in such cases, value in business is created by working tools (hardware and software). Business based on value is meant for value creation, and any economic activity without value creation is not a business firm. There are two cases for value in organizational levels: using value and exchanging value. The first type uses value for special qualities that are related to job, duty and product, and which users pay attention to depending on their need. The second type, which is exchange of the value, is the rate of money which is paid by customers for using the value of that duty, work, product or job. In all, these definitions hold that value creation depends on the value obtained by customers and this trend results in exchange of the money for the obtained value. Here, two requirements are introduced that lead to value creation: first, rebate of money which is exchanged should be more than costs (money and time); secondly, the rate of money paid by a customer is the determinant of the performance that leads to difference between goals of buyers and the newly created value; but in accounting, according to Copeland et al. (2000), value is created in the real market by earning a return on the investment greater than the opportunity cost of capital. Thus, the more you invest at a return above the cost of capital the more value you create. This means that growth creates more value as long as the return on the capital exceeds the cost of capital. They go on to mention that one should select the strategies that maximize the present value of expected cash flows or economic profits. The returns that shareholders earn depend primarily on changes in the expectations more than the actual performance of the company.

Dalborg (1999) pointed out that value is created when the returns to shareholder in dividend and share-price increase and exceed the risk adjusted rate of return required in the stock market (the cost of equity). He stated that the total shareholder return must be higher than the cost of equity to truly create value.

Value definition

One of the most frequently used terms in business today is shareholders’ value. The “equity culture” wildfire is spreading rapidly from the US to the rest of the world (Thakor et al., 2000). It is seen as crucial all over the world. Shareholders’ value was accredited to be a considerable appraisal following a publication of creating shareholder value (Rappaport, 1998). In value creation process, creating shareholder’s value is very important (Fernandez, 2001). The total economic value of an entity such as a company or a business unit is the sum of the value of its debt and equity. This value of the business is named “the corporate value”, while the value of the equity portion is named “shareholder’s value” (Rappaport, 1998), and is realized in the form of an equation:

“Corporate value = Debt + Shareholder value”.

Rearranging this formula in order to compute shareholder value gives:

“Shareholder value = corporate value – debt”.

In this formula, the debt portion stands for the market value of debt, unfounded pension liabilities and also the market value of other claims such as preferred stock; whereas the corporate value is the value of the total firm or business unit. It includes the following three components: (1) The present value of cash flow from operations during the forecast period; (2) Residual value, which represents the value of the business attributable to the period beyond the forecast period; and (3) The current value of marketable securities and other investments that can be converted to cash and are not essential to operating business (Rappaport, 1998). Serven (1999) commented that what matters most to shareholders is what happens to the price of their stock and then he defines shareholder value as being the market value of a common stock.

Shareholder versus other stakeholders

Normally in the shareholder value management model, the primary goal of the company is to maximize value for the shareholder. The opponents of this model argue that this model does not take into account other stakeholders of the companies. They therefore argue that the stakeholder model in which the ultimate goal of the company is to satisfy all stakeholders would be the best. Many researchers who studied the shareholder value model have confirmed that other stakeholders are included in the shareholder value model.

Rappaport (1998) wrote that a growing number of domestic and global companies demonstrated that shareholder value orientation builds more attractive companies not only for investors, but for employees, customers, and also other stakeholders. He mentioned that there are powerful market incentives that lead value-maximizing managers to make decisions consistent with social desirable outcomes, namely work place safety. He argued that the managements governed by shareholder interests would invest in technology, training, or reengineered workplaces that reduce safety cost. He explains then a view that would be an alternative to stakeholder model at the same time as being consistent with shareholder interests. This view recognizes that to continue to serve all stakeholder companies, one must be competitive if they are to survive. Furthermore, the
company’s long-term destiny depends on the financial relation with each stakeholder who has an interest in the company.

To satisfy the financial claims of those stakeholders, the management must generate cash flow by operating its business efficiently. Then this emphasis on long-term cash flow is actually the essence of the shareholder value approach. In fact a value creating company benefits not only from its shareholders, but also from the value of other stakeholders’ claims. Indeed, all stakeholders are vulnerable when the management fails to create shareholder value. According to him, self-interest dictates that shareholder and other stakeholders engage actively in a partnership of value creation.

Dalborg (1999) discussed further this issue and made it clear that the shareholders are the residual claimers on a company cash flow since they do not have claim to the company’s cash flow until the other direct stakeholders have been compensated. He goes on to say that in the company’s income statement, other stakeholders are paid first before dividends to shareholders are considered. He added that in the long run also, all stakeholders benefit from shareholder oriented management. Value cannot be created for shareholders unless the interests of employees are met, such as an attractive working environment. Therefore, fulfilling the goal of value creation is the ultimate test of how a company meets the interests of employees, customers and shareholders. He also stated that while a company is managed by a shareholder who concentrates on its objective, it cannot afford to ignore other stakeholders. That is because the employees would leave if they are under-rewarded or mistreated; customers will leave if they are not satisfied. Furthermore, suppliers have to be kept happy.

Value creation methods

Different ways are identified in which companies create shareholder value. In a research by Nyiramahoro and Shooshina (2001), they concluded that companies by means of following methods can create value for their shareholders, which are:

i. The companies which act in the main background create more value in companies from different backgrounds.

ii. The companies which are excellent in operations are better than other companies and they have the first level in the market.

iii. The companies which focus on organizational growth and small companies’ education by special ability create more value for their shareholders, because they develop business actions by this.

Having a capital structure right in every company is necessary in order to create value for shareholders. The capital structure must be right and the objective is to have a capital structure that enables financial flexibility and long-term stability and at the same time conduct operations using capital in an efficient way.

Some companies creating shareholder value have a clear-cut strategy to create shareholder value through eliminating some businesses with poor profitability. They do it because they have a policy, which states that every activity in the company should create value.

Stock repurchased as a result of this increases the stock turnover and adjusts debt/equity ratio. Also, the company’s shares are undervalued and it is good then to use the buy back share system.

Some companies do create shareholder value through focusing on the new areas that will increase the profit and volume in the long run.

Giving out enough information to the market will influence the market to believe the good story and believe in the future of the company as well, and this will certainly create value.

Having a policy that creates customer value, these companies believed that giving better service to customers and satisfying their needs and developing the consumer market will create value for it, especially for shareholders.

Having innovation, technical innovation is given much attention in many companies and more is being invested in it.

The company constantly challenged itself to do what is right, smarter, faster and cheaper. Managers should also provide an exciting, competitive and fast-paced environment for their employees, where there is a great opportunity and rewards for innovation and success.

Competence, long-term relation and good objectives can create value. Reducing cost is vital in creating shareholder value in the company and will create more value.

Value drivers

Value drivers are the operating factors with the greatest influence on the operating and financial results and they also incorporate the entire decision-making dynamic. Value drivers help make the strategy real at all levels of specificity that are meaningful and actionable. Value drivers include aspects of the operating decisions and are used to understand non-financial operating measures. Value drivers occur in all parts of the company. In fact, value drivers are the root of value creation. Rappaport (1998) explain that value audit permits the managers to monitor the overall value creation, and value drivers’ analysis is a very critical step in searching for strategic initiatives with the highest value creation leverage. He made it clear that the shareholder value analysis helps management to determine the areas of business which
need to be managed most; otherwise, it is not easy to set priority since many factors can influence the value of a business.

Petty and Martin (2001) recognize that if one wants to manage shareholder value, the first and foremost thing is to identify just what drives shareholder value in the capital market.

Dalborg (1999) identified three fundamental drivers of value creation. These are profitability, growth and free cash flow. According to him, normally the value of a company is determined by its current profitability and expectation for profit growth, and he added also that free cash flow could be considered to be a determinant of value in certain situations.

**Literature review**

Bacidore et al. (1997) investigated American’s companies from 1982 to 1992. They concluded that the framework for analyzing performance and calculating the shareholder value is by using return on investment, which resulted in dividend and change in share price in a period. They also concluded that economic value added is a suitable measure for performance analysis and calculation of the created shareholder value.

Cash flow return on investment of Boston Consulting Group and economic value added are current tools which are applied by financial managers to answer whether measures of economic value added is better or cash flow return on investment is difficult. Cash flow return on investment is an accrue measure, but it is very complicated, whereas economic value added is easy but less popular.

Clarke (2000), by studying a case of innovation and testing new forms, conducted an organizational work towards shareholder value creation and announced it as a suitable change in the center of stakes. He concluded that values are created for shareholder only when management reports strategies in financial statements, which are conducted toward value creation and thus facilitates the stock exchange in allocating scarce capital resources.

Dockery et al. (2000) report the results of a survey of European and UK CFOs drawn from 175 large companies on 21 contextual value maximizing strategies clustered around three key categories: operation, investment and capital strategies. The results show that enhancing operating margins, ability to generate new/enhanced products internally and instituting a leveraged buyout are respectively, excellent operating, investment and capital strategies in the creation of shareholder value.

The results support the general proposition that shareholder value is created through a mixture of strategies.

Nyiramahoro and Shooshina (2001) presented a general method on how shareholder value is created as a background to the valuation methods being used for shareholder value creation measurement. The empirical part of this study showed that although the companies in this study have implemented many ways to create shareholder value, little effort is being made to measure it since the majority of them are still using the traditional accounting measures. The reasons for this may be conservatism and lack of pressure from both the stock market and shareholders. Subsequently, a recommendation was made that the companies should use “value based methods” when measuring shareholder value creation since they are more reliable.

Bartram (2001) presented a comprehensive review of positive theories and their empirical evidence regarding the contribution of corporate risk management to shareholder value. It is argued that because of realistic capital market imperfections, such as agency costs, transaction costs, taxes and increasing costs of external financing, risk management at the firm level (as opposed to risk management by stock owners) represents a means to increase firm value to the benefit of the shareholders.

Fernandez (2001) analyzed 582 American companies and used the data from economic value added, market value added, net operating profit after taxes and weighted average cost of capital obtained from Stern Stewart. Consequently, a search was made on economic value added and cash value added measure creation for shareholder. For each of the 582 companies, the correlation between increasing market value added for each year and economic value added, net operating profit after taxes and weighted average cost of capital in 10 years was calculated. He concluded that among 582 companies, 296 companies correlation between increasing market value added yearly and net operating profit after taxes is more than the correlation between the increasing market value added and economic value added. There were 210 companies which had negative correlation by economic value added and then correlation by the shareholder return during 1994 to 1998, but their rising cash value added from 100 profitable companies was 1.1%.

Fernandez (2001) defined and analyzed shareholder value creation. To help us understand this concept better, he used the General Electric Company, as an example, between 1991 and 1999. He concluded that in order to obtain the created shareholder value, the firm must first define the increase of equity market value, the shareholder value added, the shareholder return and the required return to equity. He also calculated the created shareholder value of 142 American companies during the three-year (1997 to 1999) and eight-year (1992 to 1999) period.

Harmsen and Jensen (2004) conducted a study when they found a relationship between market demand and company competencies. The method is based on the concept of managerial cognition. By using two methods,
twenty seven (27) characters of the market and 28 company competencies were determined in a cognitive re-exhibition manner, by the main industrial informers, related to company competencies. Consequently, these affected value creation in the market.

Madden et al. (2004) analyzed an empirical demonstration of the creation of shareholder value through brands. Using time-honored models from the discipline of finance, this paper specifies and subsequently tests the necessary and sufficient conditions to determine whether brand strength leads to the creation of shareholder value or not. They analyzed 111 companies’ performance during 1994 to 2000 and 13409 shares of companies with or without brands. The results show that strong brands do not only deliver greater returns to stockholders but also a relevant market benchmark; and they do so with less risk. A reframing of brand research within the framework of risk management is recommended toward a goal of greater organizational interdependence and accountability for the marketing function as a whole.

Lichtenstein and Dade (2007) sought to redress the current situation by proposing that the needs and values of leaders and executives drive the vision, goals and strategies to create shareholder value. The objective of this paper is to build on previous executive values research by examining the impact of how the values of one executive value group translate into methods of creating shareholder value, and proposing the linkage between leaders’ and shareholders’ value. First, a theoretical background is provided. Next, the results of the empirical research into executive values are briefly reviewed and combined with data and insights from proprietary market research to discuss how the needs and values of one executive value group impact on strategic leadership factors, driving shareholder value creation methods. This is followed by proposing a conceptual framework illustrating the linkages between leaders’ values and shareholders’ value creation with propositions.

Husted and Allen (2007) searched that corporate social responsibility (CSR) leads to competence and value creation. Although leaders in government insist in public that CSR projects create value for the firm, privately they admit that they do not know if CSR pays off. They examined the impact of three strategic CSR variables - visibility, appropriatability and voluntarism - on value creation among large Spanish corporations. The conclusions from these findings suggest that managers need to understand how CSR is similar to and different from other traditional corporate market activities if they are to pursue value creation through CSR.

Yen and Andre (2007) provided empirical evidence on the relation between concentrated ownership and the long term operating performance of acquiring firms. They investigated the performance around 287 takeovers in English-origin countries other than the US by following. Their principal finding was that the relationship between concentrated ownership and the level and change in operating cash flow returns after takeovers is non-linear. Value creating deals are associated with higher levels of concentration consistent with decreasing agency costs as the dominant shareholder’s wealth invested in the acquiring firm increases.

Izadiniya (2005) in a study analyzed traditional accounting norms for investigating financial reports of business units and found that the main challenge of managers of business corporations, with respect to the changed conditions due to global economy, is value creation for shareholders, especially wealth creation whose main index for value creation and performance appraisal is economic value added and free cash flow norms. Hejazi and Maleki (2007) focused on measures by which shareholders wealth could be valued. They analyzed the relation of cash value added and price to earnings ratio to future return on stock of 85 companies in Tehran Stock Exchange during 2005 to 2007. The results of the research indicated that informative context of price to earnings ratio is more than the cash value added, related to future return.

Research problem

The main goal of business organizations is maximizing shareholder value by profit of share or increasing market price and its axes by managers (Copeland et al., 2000). In respect to that, shareholders and creditors locate their financial resources to individual institutes, but cannot observe all actions of managers, as regards whether they use companies’ resource for shareholders’ profit and make suitable decisions for investment or not.

For this, shareholders search a norm which indicates companies’ value and rate of created value. In the past, this concept was performed by analyzing similar profit measures, profit of each share, return on investment, return on equity and residual profit. These were accounted for based on information of accounting union for rare measures and offering output information of accounting union till performance results would be fulfilled. On the other hand, measures based on accounting information cannot meet shareholders and creditors’ need for measuring shareholders’ wealth and created value in companies. Therefore, some measures were needed based on economic information and value creation. Some of those measures are: economic value added, market value added and cash value added, which are called metric index based on value. This is because value and value creation are considered as base and target. These new economic measures cover the main parts of failures in accounting measures but they have some problems, such as disability in TV installation in new companies with respect to the aforementioned concepts. This article tries to show that measures for
value creation are suitable with regard to the fact that cost profit could principally offer more information for shareholders about correct management.

Importance of the study

Today, the foundation of business in a country is stock exchange, where people make profit. People invest in companies, with equal risk, having higher efficiency and providing profit for them. Only some companies can absorb more shares and grow in value creation. What is return on shareholder? In which state is high profit of a job enough or the quality of profit and gap of investment important? According to investment theory, investors try to maximize their desirability. In respect to large group of shareholders and creating giant investment that leads to economic growth, the main target of management should be increasing of value for them. If business units want to move toward growth, they should think about value creation.

Therefore, finding a measure for analyzing managers, saving profit of large group of investors is important.

Objectives of the study

Shareholders always search for ways in analyzing managers’ performance toward wealth creation for companies, but in reality they use unsuitable measures for this.

Misusing of suitable measures for this and value creation for shareholders does not identify real value for companies, and lack of proportion in offsetting programs for managers’ performance with real performance for maximizing the wealth of shareholders leads to crash between managers’ and shareholders’ profit. In this research, a trial will be made on studying accounting and economic measures for analyzing information context in relation to value creation in order to decide correctly shareholders’ performance measures. This research provides a total image of how value is created for them and considers it as a background for value creation.

METHODOLOGY

This research is of post event and correlation research. In this study, the goal is to analyze existing relations among variables and data or post events, without interfering with the researchers.

The main and alternative sub-hypotheses postulated in this study are as follows.

Main hypothesis: There is a meaningful relationship between economic measures and value creation.

The sub-hypotheses are as follows:

i. There is a meaningful relation between value creation and economic added value.

ii. There is a meaningful relation between value creation and market added value.

iii. There is a meaningful relation between value creation and cash added value.

Variables of the study

The first step for testing this hypothesis is careful and suitable variables for measuring considerable specifications in this research.

Variables for this are divided in two groups: dependant and independent variables.

Independent variable

In this research, economic value added, market value added and cash values added are considered as independent variables, and are calculated as:

\[ \text{EVA} = \text{NOPAT} - \text{C}\% (\text{TC}) \]

\[ \text{MVA} = \text{market value} - \text{total capital} \]

\[ \text{CVA} = \text{Cash flows of operating activities} - \text{taxes} - (\text{interest} + \text{dividend}) \]

Dependant variable

In this research, value creation is considered as a dependent variable and is calculated as:

\[ \text{Operating income} = \text{Net sales} - \text{Cost of goods sold} - \text{Marketing and administrative costs} \]

\[ \text{Value creation} = \text{Operating income} - (\text{WACC} \times \text{Net assets}) \]

Population of the study

The statistical society of this research without sampling of all companies quoted by Tehran Stock Exchange during 2005 to 2009 has the following conditions:

i) By the end of 2005, the companies must have been listed in Tehran Stock Exchange.

ii) The adequate date of report and removal of seasonal effects of the financial period ended in the fiscal year.

iii) For special type of action, the company is not of considerable investment corporation.

iv) These companies during research have been active and their shares have been in trade.

v) Required financial information for research during 2005 to 2009 should be offered completely.

vi) For the fact that earning per share is one variable in calculation, the companies, whose profit during these 4 years have been negative, are not considered. As such, analyzed companies are chosen.

By this, numbers of statistical society members in the research are 92 companies.

Data collection

In this research, for history and research literature analysis and for
data and information collection, field and library manner was used. Conceptual basics were collected from Persian Journals and books and internet articles of Burse Organization in Tehran. In addition, financial statements, weekly reports, daily transactions and monthly papers which were issued in Tehran Stock Exchange and other resources were used for analyzing data and testing hypotheses.

RESULTS AND ANALYSIS

For analyzing data and testing hypothesis of (average and variance) measures, Pearson correlation coefficient, determination coefficient, linear regression model and variance analysis were used. For identifying Pearson correlation coefficient, the following equation was used:

\[ r_{xy} = \frac{\sum xy}{\sum x \sum y} \]

The obtained correlation coefficient indicates relation among variables, and existence of correlation and relativeness (low or high). For testing the hypothesis of the research, regression multi variables model by stepwise approach was used. The multi-variable regression model assumes that dependant variable is the functioning of several independent variables and an error:

\[ Y_i = \alpha + \beta_1 x_{i1} + \beta_2 x_{i2} + \ldots + \beta_k x_{ik} + \epsilon_i \]

Where \( Y_i \) is the dependant variable of \( y \), \( x_{i1}, x_{i2}, \ldots, x_{ik} \) are independent variables, \( \beta_1, \beta_2, \ldots, \beta_k \) are regression coefficients for independent variables, \( \alpha \) is constant amount and \( \epsilon_i \) is random error. In that model, earning per share, earnings before interest and taxes, return on investment, return on equity, economic value added, market value added and cash value added which explore more percent of variance of independent variable have more relation to value creation.

In such model, the main assumptions are considered as:

i) Variables are accidental and there is no complete linear relation among two or more independent variables.
ii) For all observations, error is zero and variance is constant.
iii) Errors of different observations have correlation together.
iv) Error has normal disturbance.

Determination coefficient and adjusted determination coefficient

Determination coefficient is the measure which explores the power of relation between the independent and dependant variable and indicates that percent of charges for the dependant variable is of the independent variable. Consequently, \( R^2 \) is realized as:

\[ R^2 = 1 - \frac{\sum (y_i - \hat{y}_i)^2}{\sum (y_i - \bar{y})^2} = 1 - \frac{SSE}{SST} \]

Where \( SSE \) is a change in error by regression, and \( SST \) is the total changes in the dependant variable. The study prefers the use of another measure named adjusted determination coefficient for multi – variables regression.

\[ R^2 \text{ Model becomes: } R^2 = 1 - \frac{(n-1)}{(n-k)} \left(1 - R^2\right) \]

Where \( n \) is the number of observations and \( k \) is the number of independent variables. However, \( R^2 \) facilitates comparison of several regression models by different number of independent variables.

Test of meaningful regression equation

In multi–variables regression, if there is no relation between dependant and independent variables, all independent variables should be zero. By \( F \) distribution the study would have:

\[ H_0 : \beta_1 = \beta_2 = \ldots = \beta_k = 0 \quad \text{regression not meaningful} \]
\[ H_1 : \beta_i \neq 0 : i = 1,2,\ldots,k \quad \text{regression is meaningful} \]

If the level of significance for \( F \) is calculated less than \( F \), \( H_0 \) will be accepted; otherwise it will be rejected. If it failed, the regression equation will be meaningful.

Testing meaningful coefficients

After the test, meaningful coefficients should be determined. The goal of this is to analyze zero coefficients or coefficients opposite to zero in the level of significance. The study assumes:

\[ H_0 : \beta_i = 0 \quad \text{Total coefficient is zero} \]
\[ H_1 : \beta_i \neq 0 \quad \text{Total coefficient is not zero} \]

For this test, the study uses \( t \) statistic. If in the level of significance, the obtained \( t \) is less than \( t \), \( H_0 \) will be
accepted; otherwise, it will fail. In this test, accepting $H_0$ means the coefficient is not meaningful and failure of $H_0$ means the coefficient is meaningful.

**Testing of hypotheses**

In this research, the relation between economic measures and value creation is analyzed. This analysis explores the one main hypothesis and three sub-hypotheses. First and before testing them, statistics for each variable are calculated based on years and columnar diagrams of each year that exists in Index 2. Then, the discussed hypotheses are researched by the information of 4 years.

As regards this discussion, the first correlation among variables is tested and for surety of regression model, variance analysis is presented. Finally, pre-assumption is analyzed.

First, the hypothesis in statistical form is explored: There is no meaningful relationship between economic measures and value creation.

$H_0: P(x, y) = 0$

There is meaningful relationship between economic measures and value creation.

$H_1: P(x, y) \neq 0$

For testing the first correlation coefficient test between economic measures and value creation, the aforementioned hypotheses were postulated.

**Testing the first sub-hypothesis**

There is no meaningful relationship between economic value added (EVA) and value creation.

$H_0: P(x, y) = 0$

There is no meaningful relationship between economic value added (EVA) and value creation.

$H_1: P(x, y) \neq 0$

For this, Pearson correlation coefficient is estimated then $H_0$ hypothesis is tested. This information is presented in Table 1.

The obtained correlation coefficient indicates that these two variables have little correlation because $P – value = 0.139 > \alpha = 5\%$, and $H_0$ cannot be rejected, which means there are no meaningful relationships between economic value added and value creation.

**Testing the second sub-hypothesis**

There is no meaningful relationship between market value added (MVA) and value creation.

$H_0: P(x, y) = 0$ and

There is meaningful relationship between market value added (MVA) and value creation.

$H_1: P(x, y) \neq 0$

For testing the first Pearson correlation, coefficient between market value added and value creation is estimated then $H_0$ hypothesis is tested. This information is presented in Table 2.

The obtained correlation coefficient indicates that these two variables have a correlation together. In the error level of 5\%, $P$–value indicates that correlation between market value added and value creation is meaningful; thus, $P – value = 000.0<\alpha = 5\%$. However, $H_0$ is rejected and there is meaningful relationship between market value added and value creation.
Testing of the third sub-hypothesis

There is no meaningful relationship between cash value added (CVA) and value creation.

\( H_0: P(x, y) = 0 \)

Likewise, there is meaningful relationship between cash value added (CVA) and value creation

\( H_1: P(x, y) \neq 0 \)

For the test, Pearson correlation coefficient is first estimated between cash value added (CVA) and value creation, then \( H_0 \) hypothesis is tested. This information is presented in Table 3.

The obtained correlation coefficient indicates that these two variables have little correlation because \( P - \text{value} = 0.329 > \alpha = 5\% \), and \( H_0 \) cannot be rejected.

By these results, it is concluded that between economic measures, MVA has meaningful relationship with value creation. As such, more reliability and correlation between the two variables is seen with the use of regression model and variance analysis.

The regression model is a linear equation, showing accounting measures of the independent variable and value creation of the dependant variable:

\[
R = \beta_0 + \beta_1 \text{(MVA)} + \epsilon
\]

where \( \beta_0 \) is the constant of the model, \( \beta_1 \) is the coefficient of the independent variable and \( \epsilon \) is the error of the model that is explored.

Pre-assumption in this model is the normal error that will be proven. This hypothesis is supported by

\[
\epsilon \sim N(0, \sigma^2)
\]

By step wise model, only the variables of MVA are used. Model Summary and \( R \) (Pearson correlation coefficient) and standard error of the estimate are presented in Table 4.

In the first model, \( R^2 \) has the most quantity.

Regression model includes 2 variables: \( \beta_0, \beta_1 \), that indicate constant amount and MVA coefficients, respectively. Here, zero being the amount of each coefficient is tested. Table 5 presents the regression model coefficients and the required information used to test the hypothesis.

The first margin of the hypothesis holds that MVA coefficient in the regression model \( R = \beta_0 + \beta_1 \text{(MVA)} + \epsilon \) is equal to zero. This hypothesis becomes:

\[
\begin{align*}
H_0: & \beta_1 = 0 \\
H_1: & \beta_1 \neq 0
\end{align*}
\]

If \( \beta_1 \) is equal to zero, \( H_0 \) is accepted, and there is no relationship between the dependent and independent variables.
Table 6. Variance analysis of the main hypothesis (ANOVA\(^a\)).

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of squares</th>
<th>Df</th>
<th>Mean square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>1.923</td>
<td>1</td>
<td>1.923</td>
<td>133.273</td>
<td>0.000(^a)</td>
</tr>
<tr>
<td>Residual</td>
<td>5.281</td>
<td>366</td>
<td>0.014</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>7.204</td>
<td>367</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^a\)-Predictors (constant), MVA; \(^b\)-Dependent variable.

variables. Consequently, a test by \(P\)-value is performed. If \(P\)-value is less than \(\alpha = 5\%\), \(\beta_2\) is not zero (\(H_0\) is rejected) and if it is more than \(\alpha = 5\%\), \(\beta_2\) is zero (\(H_0\) is accepted). In the model, \(P\)-value is less than \(\alpha = 5\%\) because \(H_1\) is accepted. Thus, MVA coefficient is 0.052. This indicates that MVA has meaningful relation with value creation.

The second margin hypothesis holds that the constant amount is zero. This hypothesis becomes:

\[
\begin{align*}
H_0 : \beta_0 &= 0 \\
H_1 : \beta_0 &\neq 0
\end{align*}
\]

where, \(P\) – value of constant amount, \(\beta_0\), is less than \(\alpha = 5\%\). Thus, the test is meaningful and \(H_0\) is rejected while \(H_1\) is accepted.

\[VC = 0.119 + 0.052 \times MVA\]

Results of variance analysis are similar to those of the regression model. These results are presented in Table 6. \(P\)-value indicates that economic measures in this model for error are meaningful, although \(H_0\) failed and the existing linear relationship between variables is proven.

Pre-assumptions of the main hypothesis test

In this stage, for assurance of accuracy test, pre-assumptions of the regression model include independence of errors, constant of error variance, and constant of error variance by independent variables.

Independence of error test

This test is performed with the aid of diagrams. By diagrams, the error of a series of numbers, and its independence is tested.

With the aid of diagrams, errors (\(\varepsilon\)) are independent because standard errors do not have increasing or decreasing way or sinuses or coinsure shape (Figure 1).

Also, Durbin-Watson in Table 1 confirms this case:

\[1.5 < \text{Durbin-Watson} = 2.059 < 2.5.\]

Constance of error variance test

In the second hypothesis, \(\sigma^2\) (error variance) is assumed to be constant. As such, it is drawn by a diagram of error against predicted values.

In Figure 2, standard errors are drawn against \(P\)-value. This is because the total diagram is not cylinder or funnel in shape, so the error variance is constant.

Conclusion

As declared earlier, this research aimed at exploring the most appropriate criterion among the economic measures used to determine value creation, thereby reaching valid and valuable information suggested to investors. The hypothesis is based on conducted tests. Among economic measures, there is just a meaningful relation between MVA and value creation and so there is meaningful relation between economic measures and value creation.

Briefly, according to findings, although there is meaningful relation between economic measures and value creation, in regard to correlation and determination of the coefficient calculated, it is concluded that because there is meaningful relation between dependent and independent variables, these variables are appropriate enough to predict independent variables. It is calculated that economic measures, having powerful correlation and determination coefficient have appropriate predictability for value creation as an independent variable. Thus, decision making based on each will lead to different results. In addition, the findings obtained in this research are similar to those of Nyiramahoro and Shooshina (2001), because they concluded that economic measures have high association with value creation, and that they are powerful enough to predict value creation. On the other hand, these results are not consistent with the findings of Fernandez (2002), and Hejazi and Maleki (2007) in that they concluded that economic measures can not predict value creation.
Limitations and constraints

Some of the constraints and limitations of this study are as follow:

- It is not possible to consider adjustments for computations, due to the lack of accessibility to financial accounts, explanatory memorandum, and announcements of firms and public associations.
Some of the firms have been omitted in the sample representing the research population, because there are no valid data about them. If these firms were considered as part of the samples, the general population would have had more confidence on the valid results.

The lack of valid information about some firms led to the consideration of just some preeminent stock exchange firms that had enough information for researchers, and as such were selected as the research population while some of them were omitted.

To gather information needed for the research, multiple sources of evidence, such as stock exchange publications and information software pertaining to stock exchange were applied.

Some constraints relating to gathering of information are lack of enough information in this software and sometimes incomplete information. These constraints and their following errors must be paid much attention to.

RESEARCH APPLICATION RECOMMENDATIONS

It is recommended that investors should apply measures such as value creation, as well as other measures.

Considering economic measures, value creation is not completely recognized. It is suggested that these index and their applications are explained to investors in educational seminars.

However, precise systems should be constructed for measuring performance in order to reach value creation objectives and strategies.

Suggestion for future research

With regard to the new subject of value creation in the field of accountancy in Iran, the following suggestions are presented in order to start a new research related to value creation:

1. Using non-linear regression models to test research hypotheses.
2. Investigating other accounting and economic measures that are related to value creation.
3. Determining value creation methods in firms that are confirmed in Tehran’s stock exchange.
4. Analyzing research hypotheses yearly.
5. Conducting research with the subject of the present research for industry district.
6. Investigating the impact of trade name on value creation.

REFERENCES