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INFORMATION CONTENT OF MARKET VALUE-ADDED (MVA) AND CASH VALUE-ADDED (CVA) VS. ACCOUNTING PROFIT TO ASSESSMANAGEMENT PERFORMANCE IN THE COMPANIES ACCEPTED IN TEHRAN STOCK EXCHANGE

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ABSTRACT
Value-added has no information content regarding company performance. As well, R square of variables
This study tries to investigate the information content of these reports to assess management performance. Calculating Adjusted R^2 of cash was not high, despite confirmation of their information content which indicates that these variables have low information content for market. As a whole, it is concluded that financial and accounting information paly a minor role in stimulating stock price. Thereby, most changes in stock prices are induced by other variables.

INTRODUCTION

Since long ago, stockholders have assessed performance of companies using either accounting-based measurements such as operating profit and cash flows or ratios such as the earnings per share and return on assets. Due to major pros of these measurements, including the management`s ability in manipulating profit as well as conflict of interests among the management and the owners, there has been an increasing trend in using a set of performance measurements, known as value-added methods, to decrease these difficulties (Frank and Kate, 2003).

Value-added measures are basically used to measure the management performance which is based on the managers' capability in increasing company value. Notably, since based on this logic, management performance can also be reflected in the companies` yield on stocks, it has been used by the security analysts. As some of the value-added measurements, one can mention economic value-added (EVA), market value-added (MVA) and cash value-added (CVA) (Franck and Kate, 2003).

Background Literature

Performance measurement is the formal process for providing information on an activity results. This identifies and highlights the positive points of the organization to create more values and finally a better performance. All profit firms have to inevitably assess their operation in different periods. Moreover, managers will have the best performance if they have established different decision-making frameworks to measure performance and bonuses (SamadiLorgani, 2008).

Major reasons for performance measurement include:

- Assessing the firm performance to insure that the limited sources provided by stockholders and lenders to the firm are optimally allocated;
- Performance assessment measurements are known as one of the management control systems, because economic planning and control decisions are necessary for assessing the units 'performance.
- Making logical decisions is directly related to the assessment of the firm performance;
- It establishes a base for accepting or rejecting the instructions, circulars and intra/ex-organizational rules;
- It also establishes a base for paying salary, bonus or even promotions to the managers (SamadiLorgani, 2008).

There are four approaches to evaluate a company value and management performance.

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Accounting Approach

Managers will have a good performance, if they can increase the company profit or value. In this approach, similar statistics for different years are compared or the results of a firm activity are compared to the results of the other firms active in the same industry to assess the management performance. Using accounting approach brings about an issue relating to the nature of profit calculation; that is, profit is calculated based on accounting principles and assumptions which decreases the variable precision. Other measurements in this approach include net cash flows and net operational cash flows (Pezhman, 2008).

Financial Management Approach

This approach is taken from financial management knowledge. It is claimed that the performance of firm managers can be assessed using ideas and technics such as different pricing models. These models can be used to value types of assets such as securities, land etc. As well, they can be used to calculate the investment return. CAMP is the most important valuing model in this approach. In this model, the performance of a firm can be assessed by comparing investment with the expected rate of return. Another model in this approach is arbitrage model (APT) (Pezhman, 2008).

Economic Approach

This approach mostly uses economic concepts to assess the performance of firms. Performance of firms in this approach is assessed considering the rate of return and the rate of expense of the exhausted capital, insisting on the profit-making power of the company's assets. Measures such as economic profit, economic value-added, market value-added and cash value-added are used in this approach (Pezhman, 2008).

If managers are know that EVA measure are the base for measuring their performance or granting bonuses, they must improve EVA in one or some the following way(s):

1- Increasing the return on available capital;
2- Using the capital more efficiently;
3- Decreasing the capital cost (Lucanda and Raghonda, 2006).

When managers try to increase the economic value-added and cash value-added, they are actually trying to create value for their stockholders. A company is able to create value for its stockholders if the capital return is higher than the cost of capitals (the required return on capital) (Fernandez, 2008).

Mixed Approach

This approach tries to mix the reported figures in financial statements and market values to assess the performance. Some of the measures in this approach include market value multiplier or stock price to earnings per share, market value ratio to book value, Q-Tobin ratio, etc. Considering the criticisms on accounting profit, it can be said that compared to accounting approach, mixed approach is more assuring to assess the performance of firm managers (Pezhman, 2008).

Based on the above-mentioned approaches, analysts have frequently analyzed two important assessing models derived from the aforementioned four approaches. A group of them are based on accounting models which calculate the stock value of a company by multiplying the earnings per share in the multiplier of price to income conversion.

The other group includes economic models which assess the stock value of a company based on the profit gaining power of the available assets and potential investment and the difference of the rate of return and the cost of capital.

Stewart (1991) indicates that accounting model doesn't provide a correct exact judgment on value. A weak point of this model as the value stimulator is that the assumption of fixed P/E coefficient is not real. This multiplier is constantly changing due to many factors such as changing financial structure, financial procedures and new investment chances. Moreover, profit is reported according to GAAP rules which give way to different accounting procedures. On the other hand, concentrating on profit results in the manipulating accounting procedures to maximize it.

Rapaport (1986) studied the weak point of accounting criterions, especially EPS, EPS growth, ROE and ROI. He states that too much concentration on profit would result in accepting strategies which decrease value or cause the reason to reject strategies which create value (Dovit, 2004).

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Thereby, within recent years, new assessment technics are based on economic theory, rather than accounting framework. Value-based criteria are also vastly used by researchers and analysts. These new performance criteria seek to assess periodical performance based on changes in value to maximize long-term return of stockholders. In another words, they bear the real meaning of creating value, thereby value evaluation criteria are proposed as economic models. This evolution has resulted in the development of new viewpoints, the evolution of present methods and finally the emergence of economic value added (EVA), market value added (MVA) and cash value added (CVA) as the assessment models.

Research Background

Exo-researches

In their research, Lehn and Makhija (1996) investigated the relation between economic value added and market value added and yield on stocks, sampling 241 American companies during 1987 to 1988 and 1992 to 1993. Their research result showed that economic value added has high correlation with yield on stock and this correlation is stronger than the relation between market value added and yield on stock.

Picsotto (2000) in a study examined the information content of economic value added vs. operating profit and net profit. In this research, he studied 39 Portuguese companies within the period of1995-1998. The results of Picsotto research showed that net profit is more strongly related to yield on stocks than operating profit and economic value added. Moreover, operating profit has stronger relation to yield on stocks than economic value added.

On the other side, Tortella`s research on market reaction after accepting the economic value added criteria, is carried out on companies which have accepted EVA technic within 1982-1999. For this, the list of 61 companies was derived from the annual brochure of Stern Stewart Consulting Company and studied.

He tried to study how performance measurement criteria, investment activity indexes and cash flow measures change after accepting economic value added measure compared to the time before it. He observed that accepting economic value added measure does not end in any major abnormal positive or negative return.

As well, he showed that companies accept EVA after a period of long-term unacceptable performance and performance indexes improve merely in long-term. Regarding investment activity indexes, he found that EVA motivates the management to increase the investment activity of the firm which seems to leads into using overwhelming amounts of debts for financing.

Finally Tortella found that accepting EV has major and positive effects on cash funds circulations measures.

Inter-researches

Reza (2005) in his study "Determining The Relation Between Market Value Added and the Performance of Companies in Tehran Stock Exchange" tires to investigate the depth of relation between market value added (MVA) and the performance of companies measures (B/P, E/P ratio, company size and return) on the companies accepted in Tehran Stock Exchange for an eight-year period (from the beginning of fiscal year 1997 by the end of fiscal year 2005). The sample was chosen by exclusion method and statistical methods such as correlation multiplier scatter diagrams and multiple regressions were used to test the research assumptions. The research results indicate a meaningful relation between market value added with the other performance measures.

Maliktaj (2005) in her research "Determining the Relative and Incremental Information Content of Cash Value Added and P/E Ratio In Relation to Yield on Stock in the Manufacturing Companies Accepted in Tehran Stock Exchange" tried to study cash value added as an internal measure in the process of assessing company performance and the P/E ratio as a mixed measure of the internal and external information of the company to test their relative and incremental information content in relation to the yield on stocks. The population was composed of the companies accepted in Tehran Stock Exchange during 1999-2003. The research assumptions were tested in aggregation least square. He used the meaningfulness of statistic t and statistic F and analyzing R square. Results of relative information content test showed that cash value added in relation to yield on stocks is a better criterion than P/E ratio,

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but the changes of P/E ratio in relation to yield on stocks was a better criterion, compared to the changes of cash value added.

Results of increasing cash value added information content and P/E ratio test showed that both have increasing information content to each other, but changes of P/E ratio had increasing information content compared to the changes of cash value added related to the yield on stocks.

Zari (2008) in a research studied the relation between market value added (MVA) and rate of yield of stockholder`s equity (ROE) in the machinery and equipment manufactory companies accepted in Tehran Stock Exchange during 2001-2006. The research results show that there is a very strong reversed correlation (-0.870) between the standardized market value added and the rate of yield of stockholder`s equity. As well, as an economic performance measure, market value added can be a good substitute for the rate of yield of stock of stockholder's equity for the investors, financial managers, lenders, etc makes decisions.

MATERIALS AND METHODS
Methodology
The methodology of this research is descriptive and analytical, the type used in correlation and post-event (using the past information) and sectional researches, based on analyzing Pierson`s correlation multiplier. To compare the clarifying ability of independent variables, the dependent variable r (Pierson`s correlation multiplier) of them is calculated and the adjusted R-squared (r^2) are compared. The one with bigger r has more information content.

Research Assumptions
1. There is a meaningful relation between cash added value (CVA) and yield on stocks.
2. There is a meaningful relation between market added value (MVA) and yield on stocks.
3. There is a meaningful relation between profit after tax and yield on stocks.

Population and Sample
Population
Population in this research is the companies accepted in Tehran Stock Exchange which
1. Are not investment, financial intermediation or insurance companies;
2. Their capital includes only ordinary stock, without preferred stock;
3. Their fiscal yearend to the end of Esfand (March);
4. Their stock is traded from the beginning of 1382 (2003) to the end of 1387 (2008) in Tehran Stock Exchange.

Sample
Considering the limitations, 60 companies are selected randomly by the use of following formula. Then, the required data for the research are extracted and tested:

$$n = \frac{NZ_{\alpha/2}{}^2 P(1-P)}{\varepsilon^2(N-1) + Z_{\alpha/2}{}^2 P(1-P)}$$

where,

N =the population size=444

n =size of the sample volume

P =success ratio, supposed to be 95%

$1-P$ =non-success ratio

Z =standard variable for normal distribution

ε =the evaluation error, supposed to be 50%

and, $Z_{\alpha/2} = Z_{5\%} = 1.64$.

Research Variables
Cash Value Added
Cash value added indicates the cash wealth created during a fiscal. In fact, the cash value added is the remaining amount out of the cash return created due to the production capacity of a company-work,

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capital, etc. Cash value added indicates the cash wealth developed during a fiscal by the financial providers (stockholders and lenders), employees, government and the company. In accounting, two methods of summation and difference are used to calculate cash value added.

Actually, summation method indicates how the cash value added is distributed. Sum of salary paid to the employees (SP), tax paid to the government (TP), interest paid to the lenders (IP), and dividend paid to the stockholders (DP), remaining operating cash flow (OCF) in a fiscal indicate distribution of cash value added (Nouravesh and Mashayekhi, 2004).

In this research, summation method is used in the following formula to calculate cash value added:

CVA=SP + IP + DP +TP + OCF

Market Value Added

Market value added (MVA) is the goodwill attributed by the market to the firm. It operates as a periodical metric measure. In other words, market value added equals market value minus the invested investment. If MVA is positive, from the investor`s viewpoint it means that the future expected results will be desirable. In most companies, finance resources include ordinary shares, debts and preferred stock. Total investment invested by the investors can be calculated directly from the value provided in financial statements. As well, total market value of a company is the summation of its market value, ordinary stockholder`s equity, debts and preferred stock. Since stock market price is easily accessible, calculating market value of a company is easy too, but calculating debit market value is not always that simple. Thereby most analysts used to use the reported debt value in financial statements or debt book value (Janis and Howard, 2000). This is indicated as follows:

Assuming that the market value and book value of debts are equal:

(Book value of stockholders equity) - (market value of stockholders equity) =market value added

Book value of stockholders equity is attributed to all items indicating stockholders equity such as reserves and earnings retention. In another words, in this regard, all items which are not debt (with or without interest) are classified as stockholders equities. Due to the absence of preferred stock in the sample companies in this research, market added value is calculated as follows: Firstly, market value of each company share at the end of the period, available in the stock exchange information, is calculated. Then, the number of ordinary shares at the end of the period is extracted from the notes included in the balance sheet (we don`t use the weighted average of the number of ordinary shares at the end of the fiscal, since this is usually done to calculate the earnings per share) and multiplied in the market value per share. The result includes the market value of the stockholders equity. It is subtracted from the book value of the stockholders equity calculated from the sample company`s balance sheet. This final result is the market added value (MVA).

Profit after Tax (PAT)

Profit after tax (PAT)-the last number in the income statements-of sample companies is extracted and calculated by Tadbirpardaz software.

Yield on Stocks

The dependent variable in this research is yield on stocks. To calculate total rate of return, total benefits accrued to the stock during the year, compared to the first stock price or to the last stock price is calculated.

RESULTS AND DISCUSSION
Research Findings

One of the most important regression assumptions is the normalization of the model residues. To estimate the final model of research, the information related to the independent and dependent variables are used, then the final regression of the model is assessed. It is necessary to assess the model, and then assess the values of dependent variable for different values of the independent variable. The difference between the estimated values from the real values gives the model residue. Before assessing the model one can assure the distribution of residues by testing the distribution of dependent variable. This assumption is tested by Colmogroff-Smirneff test.

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H_0 :   Data follow the normal distribution for dependent variable.

H_1 :   Data do not follow the normal distribution for dependent variable.

Table 1: Kulmurguff-Smirnoff Test for Normalizing the Dependent Variable-Yield on Stocks

Level of Meaningfulness	Kulmurguff-Smirnoff Test	Number of Samples	Year
205%	1.067	59	2003
0.097%	1.230	58	2004
559%	791%	60	2005
136%	1.159	59	2006
343%	937%	60	2007
160%	1.123	60	2008

The values of level of meaningfulness (sig) for the return percentage during different years are bigger than 5 percent (zero assumption is rejected when the amount of level of meaningfulness is less than 5 percent). So, the return percentage has a normal distribution during these years.

Results of Testing the First Assumption

As in table 1, the probability value F (or level of meaningfulness) equals 0.411. Since the values are not less than 0.05, the zero assumption at the level of assurance 95% is not rejected, i.e. there is no meaningful model.

The value of R-square or R^2 equals 0.002. The value of Durbin Watson statistic equals 2.02 which indicates nonexistence of self-correlation (verifies another pre-assumption of the model).
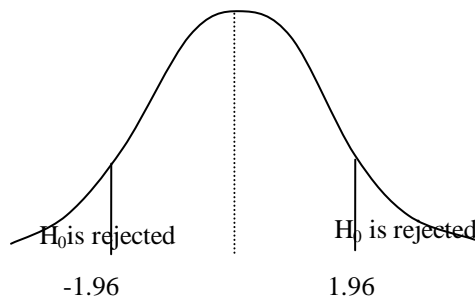
To assess the model parameters (slope and y-intercept), the zero assumption and the reversed assumptions are as follows:

$$\begin{cases} H_0 : \beta_i = 0 \quad i = 0,1 \\ H_1 : \beta_i \neq 0 \end{cases}$$

The value of test statistic is calculated by the following formula:

$$t_{\beta_i} = \frac{\hat{\beta}_i - 0}{S_{\beta_i}}$$

Moreover, rejection and acceptance areas of zero assumption are defined as follows:

H_0 is rejected H_0 is rejected

-1.96   1.96

Acceptance and rejection area at the level of assurance 95%, H_0 is not rejected
To judge, if the t value is in rejection area, the zero assumption is rejected.
Thereby, as in the model, the value of t for slope equals 0.73, but 5.1 for y- intercept. This indicates that zero assumption is not rejected for slope, but it is rejected for y-intercept. The model is written as follows:

$$Y_{1it} = 18/15$$

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So there is no relation between dependent and independent variable.

Table 2: Results of Assessing the First Assumption Based on the General Model of Dependent Variable (Return) Using Panel Analysis

Dependent Variable: Yield on Stocks

Variable	Multipliers	Standard Error	F-Statistic	P-Value
Fixed Value	18	3.558	5.102	0.000
Cash Added Value	0.0000635	0.0000865	0.733794	0.464
R-Square	0.002	Average of Dependent Variable		19.803
Adjusted R-Squared	-0.001	Dependent Variable Variance		56.76
Regression Variance	56.786	Sum of the Squares of the Residues		1125398
F-Statistic	0.678	Durbin Watson		2.023
F-Statistic Probability	0.411			

Results of Testing the Second Assumption

As in table 3, the value of F probability (or the level of meaningfulness) equals 0.000. Since the values are less than 0.05, the zero assumption at the assurance level of 95% is rejected, i.e. there is a meaningful model. The value of R-square, R^2, equals 0.048. The value of Durbin Watson statistic is 2.05.t value for slope equals 3.43, but 4.28 for y-intercept which indicates rejecting zero assumption for slope and y-intercept. The model is written as follows:

$$Y_{1it} = 13/3 + 1/14 \times 10^{-5} X_{it}$$

Finally to explain the multipliers, it can be said that if the independent variable increases one unit, the dependent variable will increase 0.0000114 units.

Table 3: Results of Assessing the Second Assumption Based on the General Model of Dependent Variable (Return) Using Panel Analysis

Dependent Variable: Yield on Stock

Variable	Multipliers	Standard Error	T-Statistic	P-Value
Fixed Value	13.313	3.109	4.282	0.000
Market Value Added	0.000014	0.0000331	3.435	0.0007
R-Square	0.048			
Adjusted R-Square	0.045	Dependent Variable Average		19.236
Regression Variance	55.246	Independent Variable Variance		56.536
F-Statistic	17.677	Total of the Residues Squares		1074347
F Statistic Probability	0.000	Durbin Watson		2.05

Test Results of the Third Assumption

As it is seen in table 4, F probability value (level of meaningfulness) equals 0.001. Since these values are less than 0.05, zero assumption at assurance level of 95% is rejected, i.e, there is no meaningful model. The value of R-square- R^2 -equals 0.029. The value of Durbin Watson statistic equals 2.09.

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T value for slope equals 3.05, but it equals 4.58 for y-intercept, rejecting zero assumption for slope and y-intercept. The model is written a follows:

$$Y_{it} = 14/6 + 3/82 \times 10^{-5} X_{3it}$$

To explain the multipliers it can be said that if the independent variable increases one unit, the dependent variable increases to 0.0000382.

Table 4: Results of Assessing the Third Assumption Based on the General Model of Dependent Variable (Return)

Dependent Variable: Yield on Stocks

Variable	Multipliers	Standard Error	T-Statistic	P Value
Fixed Value	14.61	3.19	4.58	0.000
Profit After Tax Deduction	0.0000382	0.0000125	3.053	0.002
R-Square	0.029			
Adjusted R-Square	0.026	Average of Dependent Variable		19.423
Regression Variance	55.94	Independent Variable Variance		56.692
F-Statistic	10.582	Total of Residues Squares		1104636
F-Statistic Probability	0.001	Durbin Watson		2.089

Summary of Research Results

Research Assumptions	Value of Independent Variable Probability	Adjusted R-Square	Type of Relation	Test Result
Assumption1	0.411	0.000	-	Assumption Rejected
Assumption 2	0.000	0.045	Direct	Assumption Accepted
Assumption 3	0.001	0.026	Direct	Assumption Accepted

Adjusted R-square is used to compare information content of three indexes presented as the research independent variables based on testing research assumptions results.

$$R^2(MVA)R^2(PAT)$$

Results show that the highest information content is firstly, created by market value added, if the adjusted R-square is 0.045 and secondly, by the profit after tax deduction. As well, cash value added has no information content to assess the company performance.

Considering the purpose of this research, that is to study and compare the information content of the traditional economic measures vs. the economic measures in assessing a company performance, we can conclude that market value added has higher information content in evaluating company performance, than profit after tax.

As well, we found that cash value added does not have high information content in evaluating the company performance, i.e., in evaluating performance, the highest information content is related to market value added. Despite verifying the information content of the variables, their adjusted R-square is not so high, indicating that these variables have low information content for market. As a whole, it is concluded that accounting and financial information have a minor role in stimulating stock prices and most changes in stock price is due to other factors.

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Suggestions
Functional Suggestions Based on Research Findings
1. Regarding the relation of market value added to yield on stocks, market value added growth is suggested to be used to forecast the management future performance.
Future Work
1. A research to study the information content of cash value added and market value added with the adjusted R-square value index is suggested to assess the management performance.

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