

Application of Economic Value Added (EVA) In Stock Return Evaluation of Accepted Oil Productions Companies in the Tehran Stock Exchange (TSE)

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ABSTRACT – One of the most important goals of companies and profit making organizations is gaining interest in short term and increasing shareholders' wealth in long term. Achieving these purposes should be done through proper decision making about financial issues like finance providing, the methods of using capital inside organizations and investments out of the organization. Proper decision making needs performance evaluation through applying appropriate criteria and indices. The Criteria of financial performance evaluation has a higher status than other criteria because of its practicality, objectivity and tangibility. One of the most important financial criteria of active companies in stock exchange is stock return (SR) and stock investors have been seeking a way to predict it. Economic value added (EVA) is one of the most efficient criteria in evaluating quantitative explanation of stock return and one of the most important internal performance criteria. The purpose of the present research is to explain the relationship between EVA and stock return and comparing it with Net profit (NP) regarding effectiveness on stock return. This operation is done to evaluate efficiency rate of EVA in Iran capital market for oil production companies. Coefficient of the relationship between net profit and stock return came 0.07 explaining higher power of net profit in explaining the changes of stock return. The results of the study showed that EVA didn't have a meaningful relationship with stock return because of Iran capital market in oil production companies sector. We should seek a better economic criterion to evaluate the stock return of these companies.

KEY WORDS: *Economic value added (EVA), Stock return (SR), Net profit (NP), Capital cost (c), Opportunity cost (OC).*

Introduction

One of the proper ways to balance the opposition between managers' and shareholders profits is applying performance evaluation system which possesses a great part of management control system. Also finding a criterion of performance evaluation which have adequate explaining power needs special studies which should be done through simultaneous use of modern and past knowledge. In general Balanced Score Card model of Kaplan and Norton (1996) four perspectives including financial, customer, internal processes and learning were introduced to evaluate the performance. Because of distinctiveness and purpose of the present research financial perspective (shareholders' perspective) is regarded. Financial perspective explains success of failure of company performance in other dimensions through financial report. The modern financial theory seeks maximization of value instead of maximizing profit [1]. Maximization of shareholders' long-term return means maximization of their value which shows optimized use of source and capital by management which has led to increase of value added through making strategic decisions. So the present research aims at proving an efficient performance evaluation criterion having information content power to evaluate value added and return in a better way. Regarding scientific advancements and human evolution and the need to use more precise methods, it can be said that EVA has been noted more among all other performance evaluation criteria. Considering a long time span (10 years in this research) we can find a good difference in results and use it as steadier document than before.

Statement of Problem

Shareholders and investors need to identify various variables which effect stock return. Finance creditors need a model to assist them in evaluating the repaying power of the given loans and facilities and their interest. Investors need a model to evaluate companies' performance and determine their expected return. Determination of an appropriate performance evaluation criteria for a remuneration system to managers spur their motivational behavior and cause a stable value in companies. These are all the perturbing issues around this research. the main subject of the study is that unlike developed countries, the performance criteria in most of Iranian companies is net profit because

their end is to maximize the final profit not having a strategic and value-based approach. The lack of culture in using value-based financial performance criteria have caused important and indispensable concepts like capital cost and lost opportunity cost be neglected. In EVA the opportunity cost of shareholders has been regarded. So in the present research through investigation of application of EVA and its comparison with accountancy net profit as performance evaluation criteria, the relationship of each of them with stock return of accepted oil production companies in stock market is evaluated and their higher rates of efficiency in Iran is recognized.

Review of Literature

For the first time Miller and Modigliani (1961) published a research titled “the policy of profit division, stock growth and evaluation” in Journal of Business referring to the concept of EVA. After that Peter Drucker (1964) discussed this issue in his book “management of result”. The main identity of EVA was based by Joel Stern & Bennett Stewart in 1970s and recorded for them in a book titled “a quest for value”. Establishing a research institute called Stern-Stewart, they introduce EVA as brand of their discoveries. Stern-Stewart was the first institute which provided EVA as counseling services for companies which needed a compensation level of proper services for their managers. Then EVA analysis tool became prevalent in 1981. Commercial development of EVA is the result of innovation of innovators like Stern who reconsidered and reorganized scientific limitations of accountancy profits aiming at moving toward economic profit. Tully (1993) complimented this internal evaluation criterion which increased the popularity of EVA. After that companies like Coca-Cola, Georgia Pacific (GP), Polaroid Chemistry, Diago, ATT & SPX and etc. used EVA to evaluate their performance and management reward payment. Nowadays encouraging programs and reward payment are based on managers’ ability in making positive EVA. Payment based on EVA is done through considering all capital costs (debt and shareholder wage costs) to let companies managers act as a shareholder in making financial decisions. EVA has become widespread in community of investors. Numerous conferences on EVA after 1996 show this claim. Investment companies like Global Asset Management and Oppneheimer Capital use EVA in stock selection, portfolio structure and risk control process. Other big investment companies have deeper looks toward EVA. It has made meaningful advancement in world of practical analyses. Also good studies in Journal of Portfolio management show great advancement of EVA in academic and financial communities. In 1994, Stewart in a domestic study showed that EVA is the best tool for making value in companies. He claimed that EVA acts 50% more important than accountancy variables in explaining the process of change in shareholders’ wealth. This study provided evidences on superiority of EVA on accountancy criteria like accountancy profit. In 1993, Fortune magazine introduced EVA as the main key in wealth production. Steven Stewart believed to forget accountancy profit as performance evaluation criteria. Recently researcher form different nationalities have studied the concept of EVA among them are Gregory T.Fraker (2006), Muhammad Asad Khan (2008), Andreea Paula and Cristina Elena (2011), Amalendu Bhunia (2011) Satish Kumar and A.K. Sharma (2012).In Iran EVA has been researched numerously especially after 2001 which. After M.A thesis of Mohammed Jalili in 1380 lots of economics students have investigated EVA up to now. According to Jalili, after 2001, nearly 1000 theses have been done on this issue which shows its importance.

Research Variables

Stock return (SR)

Independent variable of the present research which is stock return includes total ratio of profits of investment in a special period to performed investments in that period which is belonged to stock or shareholders in the following conditions:

- change of stock price in one period (capital gain)
- cash profit Per share (Divined)
- profits of priority of stock purchase
- Profits of reward stock [2].

Economic Value Added (EVA)

EVA as the main variable of the present research is evaluation of economic profit of a company in one year which shows the remained profit after distracting capital cost. EVA is calculated through deducting opportunity cost of shareholders from profit, so it is a criterion which considers opportunity cost of all used sources of a company [3].

EVA considers time value of money and obviates the corruption emanated from accountancy principles. The more company EVA, the better the company’s condition [4]. In other words, positive EVA shows optimized allocation of sources, making value in company and accretion of shareholders’ wealth. It means that investor beside preserving his future money value (keeping purchase power in relation to market inflation) by created wealth has gained a higher profit than this future profit. Negative EVA shows the waste and inefficient allocation of company’s sources and consequently decline of shareholders’ wealth. Simply stated, the shareholder by remain of his sources won’t be able to purchase the goods or services which could by last year. EVA is not strategy but a way to measure the results. It includes:Net Operation profit after tax minus Weighted average capital cost multiplied by applied capital [6].

Mathematically the results of EVA equal the amounts gained by Decreasing Cash Flow (DCF) or Net Present Value (NPV). EVA includes two basic principles in managers’ decision making:

- Primary financial goal of every company is maximizing value and wealth of shareholders.

The value of every company depends on the extent that expected future profits are more or less than capital cost.

5) Conceptual comparison of accountancy profit and EVA

- Profit and loss Statement consider interest cost but don't consider shareholders' expected return. Everything gained by shareholders even less than their expected return is regarded profit while in EVA viewpoint this company has made loss.
- In accountancy profit approach, accountants can easily manipulate the profit but EVA suggests some modifications to minimize accountant's tricks to manipulate profit.
- Profit and loss Statement consider every kinds of expenditure being expected to have return more than one year as cost but EVA considers these expenditures as investment.

Calculation of Eva

EVA includes Net Operational Profit After Tax minus capital cost. The value of a company equals with total value of employed capital by the company and its present EVA value. So three factors are effective in its calculation:

Total capital employed

Net operational profit after tax.

Rate of capital cost

EVA calculation formula:

$$EVA = (r - c) \times \text{Capital}$$

$$EVA = (r \times \text{Capital}) - (c \times \text{Capital})$$

$$r = \text{NOPAT} / \text{Capital}$$

$$r \times \text{Capital} = \text{NOPAT}$$

$$EVA = \text{NOPAT} - (c \times \text{Capital})$$

Regarding the present formula, the components are calculated as following:

NOPAT:

Net Profit After Tax

+ deferred Cost

+ Interest Cost

- Tax Saving in Interest Cost

+ Cost of inventory Devaluation

+ Employee Serve Termination Benefits Cost

+ Cost of Doubtful Receivable Claims

+ Cost of Investment Devaluation

Net Operation Profit After Tax

- Capital Employed:

All the cash which is put in the company disregarding sources of financial providence or account name or commercial goals of the company is called capital. According to Stewart, financing (through debt or worth of equity) is not important but whether the company management uses the capital optimized or not.

Capital equals:

The total worth of equity:

+ Interest-Bearing Liabilities

+ Save of inventory Devaluation

+ Save of Investment Devaluation

+ Liabilities for deferred Costs (Payable Costs)

+ Employee Serve Termination Benefits Save

+ Doubtful Receivable Claims Save

Total Capital Employed

- Capital Cost Rate

(C) is weighted average capital cost (WACC). By capital cost is the weighted average of return expected by company owners based on their stock in financing and money providence. Sources of finance providence which include capital cost are:

Bearing liabilities **b)** Issuant bond **c)** Usual stock **d)** Other net worth

The Calculation of Capital Cost Rate:

$$c = w \times r$$

$$c = (w_1 \times r_1) + (w_2 \times r_2) + \dots + (w_n \times r_n)$$

For example supposing the following information, we have:

row	Capital components	Interest rate	Rate after tax modification	Capital allocation	Cost rate
1	Bearing liabilities	26%	$26\% \times (1-22.5\%) = 20.2\%$	50%	10.1%
2	Issuant bond	20%	$20\% \times (1-22.5\%) = 15.5\%$	20%	3.1%
3	Paid capital	36%	$36\% \times (1-22.5\%) = 27.9\%$	20%	5.6%
4	Non-shared profit	20%	$20\% \times (1-22.5\%) = 15.5\%$	10%	1.5%
(WACC)					20.3%

The tax effective rate is considered in accordance with 2001 law and %10 tax discounts for firms accepted in bourse. The effective tax rate is %22.5.

Research Hypotheses

There is a relationship between EVA and Stock Return.
 There is a relationship between Net Profit and Stock Return.
 The relationship between EVA and SR is more than relationship between NP and stock return.

Research Method

The method of present research is correlation. By the way, research type of perspective Goal is Application and applied profiting from study of the results of other basic researches [7].

Research Models

Eston and Harris (1991) studied the relationship between accountancy profit and stock return for accepted companies in New York stock exchange from 1968 to 1986. They studied the relationship between accountancy profit and stock return grounding on this hypothesis that with increase of time span the correlation of these two variables also increases. To find an alternative for relationship of profit and return designed an official evaluation model which connected profit level and its changes [8]. The following is their mathematical model:

Level $SR_{jt} = \alpha_0 + \alpha_1 [A_{jt} / P_{jt-1}] + \epsilon 1_{jt}$
Changes $SR_{jt} = \beta_0 + \beta_1 [\Delta A_{jt} / P_{jt-1}] + \epsilon 2_{jt}$
A two variable mixture in which $SR_{jt} = \lambda_0 + \lambda_1 [\Delta A_{jt} / P_{jt-1}] + \lambda_2 [A_{jt} / P_{jt-1}] + \epsilon 3_{jt}$
 SR_{jt} = stock return of (j) company in time (t)
 ΔA_{jt} = change of (j) company profit in time (t)
 P_{jt-1} = price of every (j) company's stock at the beginning of period
 A_{jt} = (j) company's profit in time (t)

If we substitute each of EVA or NP independent variables by profit in original model (A), we have:

Model 1: $SR_{jt} = m_0 + m_1 [\Delta EVA_{jt} / P_{jt-1}] + m_2 [EVA_{jt} / P_{jt-1}] + \epsilon 4_{jt}$
Model 2: $SR_{jt} = n_0 + n_1 [\Delta NI_{jt} / P_{jt-1}] + n_2 [NI_{jt} / P_{jt-1}] + \epsilon 5_{jt}$

Independent variables include: EVA_{jt} , ΔEVA_{jt} , NP_{jt} & ΔNP_{jt}

Research Domain

Time domain: ten year period from 2002 to 2011
Spatial domain: accepted oil production companies in Tehran stock exchange

Global significance of oil-related issues in Iran is one of the most important reasons to select this domain for the present research.

Subject domain: financial management and economy

Descriptive Statistic

Statistic	SR	EVA/Pt-1	ΔEVA/Pt-1	NP/Pt-1	ΔNP/Pt-1
frequency	81	81	81	81	81
mean	27.7	16	-2.1	132.9	15.7
Standard deviation	4.2	1.3	1.4	1.8	1.8
variance	1.8	1.7	2	3.2	3.4

Table2. Descriptive statistics of variables

12) HYPOTHESES TESTING

- **First hypothesis:** there is a relationship between EVA and stock return

$$\left\{ \begin{array}{l} H_0 : \beta = 0 \text{ There isn't a relationship between EVA and stock return} \\ H_1 : \beta \neq 0 \text{ There is a relationship between EVA and stock return} \end{array} \right.$$

Model 1: $SR_{jt} = m_0 + m_1 [\Delta EVA_{jt} / P_{jt-1}] + m_2 [EVA_{jt} / P_{jt-1}] + \varepsilon_{jt}$

Table3. Regression analysis of stock return and EVA

Method	R Square	Sig. F Change	Durbin-Watson
ENTER	0.002	0.623	1.905

Table 3 shows the lack of meaningful relationship between EVA and annual stock return. R square for EVA/P_{t-1} and $\Delta EVA/P_{t-1}$ is 0.002 and error of significant level is higher than 0.05 (0.063), so there isn't a relationship between EVA and stock return. So H_0 is supported and H_1 is rejected, so EVA can't explain the changes of stock return.

- **Second hypothesis:** there is a relationship between net accountancy profit and stock return

$$\left\{ \begin{array}{l} H_0 : \beta = 0 \text{ There isn't a relationship between each stock profit and stock return} \\ H_1 : \beta \neq 0 \text{ There is a relationship between each stock profit and stock return} \end{array} \right.$$

Model 2: $SR_{jt} = n_0 + n_1 [\Delta NP_{jt} / P_{jt-1}] + n_2 [NP_{jt} / P_{jt-1}] + \varepsilon_{jt}$

Table4. Regression analysis of stock return and EPS

Method	R Square	Sig. F Change	Durbin-Watson
ENTER	0.071	0.000	2.011

Table 4 shows that there is a meaningful relationship between the changes of net profit and annual stock return. The sig level of NP/P_{t-1} is zero and R square is 0.071, so there is relationship between net profit and stock return. So with rejection of H_0 , the other H_1 is accepted. So the changes of net profit explain 7% of the changes of stock return. But $NP/P_{t-1}\Delta$ variable has 0.092 sig level which is more than 0.05, so we can't reject null hypothesis. So there isn't an effective variable on return and it should be deleted from equation.

Using Stepwise model the rejected variable is deleted from equation and the suggested model is presented as:

$$SR_{jt} = 28/532 + 79/25 [NP_{jt} / P_{jt-1}] + \varepsilon_{jt}$$

- **Third hypothesis:** EVA in relation with each share profit has more relationship with stock return

$$\left\{ \begin{array}{l} H_0: r^2_1 \leq r^2_2: \text{EVA in relation with Net profit hasn't more relationship with stock return} \\ H_1: r^2_1 > r^2_2: \text{EVA in relation with Net profit has more relationship with stock return} \end{array} \right.$$

As supported in the first and second hypothesis, EVA hasn't meaningful relationship with stock return but profit of each share has a meaningful relationship with stock return. So H_1 is rejected and H_0 is supported. It becomes known that Net profit in has more relationship with EVA than stock return. So the changes of stock return is explained with higher quality by NP.

Complimentary tests to verify the appropriateness of regression analysis

Investigation of tolerance regression:

In the results, tolerance, inflation factor and variance are near to one, so the appropriateness of regression analysis has good validity.

Investigation of Durbin-Watson index to verify the lack of errors' correlation:

Regarding table 3 and 4, Durbin-Watson index is between 1.5 and 2.5 in two of the equations, so the lack errors correlation is verified and regression can be sed.

Non-linearity test of independent variables to prevent influencing results

Eigen values aren't very close to zero and are normal. Also condition index is less than 15 and shows non-linearity.

The test of lack of correlation coefficient of independent variables was done and showed that coefficients of independent variables are completely uncorrelated.

Conclusion

The present study has adequate sample and depending on the results of 81 year/company of 9 accepted oil Productions companies in Tehran stock exchange can be used with certainty. Frequency and descriptive statistics represented in tables had some points. The mean of dependent variable of return (SR) was positive, so we can conclude that in ten-year time span a positive mean has been gained for stock of oil Productions companies. It was observed that EVA/P_{t-1} and $EVA/P_{t-1}\Delta$ were 0.002 but sig level was higher than 0.05 (0.0623) meaning that there wasn't a relationship between EVA and stock return and EVA can't explain changes of stock return. A meaningful relationship was verified between net profit and annual stock return with R square of 0.07, so there is a meaningful relationship between net profit and stock return. But it doesn't mean that the changes of net profit can explain the changes of stock return with high power. As supported in first and second hypotheses, EVA doesn't have meaningful relationship with stock return but it has a meaningful relationship with net profit, so net profit has a more relationship with stock return in comparison with EVA. So the changes of stock return are explained with a better quality by NP.

Suggestions

The main purpose of the study was to provide the culture in using criteria of performance evaluation which needs time and is not inaccessible through applying the results of such studies in Iran.

The following suggestions can be represented according to results of the study:

Since political and economic factors have different effects on different industries, so it is suggested to do the present research in another similar industry to consider the effect of this factor comprehensively and separately.

Since using a long-term time span is more real in analyzing this research, it is suggested to use long-term time span in future studies.

Because of approval of increasing efficiency of EVA evaluation criterion, it is suggested to use this criterion more in stock buying and selling.

Noting the importance of accountancy net profit it is suggested to do performance evaluation and rewarding system based on EVA in Iranian companies to promote more quickly the concept of added growth in business and capital market and make it a common criterion.

EVA is an economic criterion and to promote EVA it is better to use other criteria like P/E and EPS in reports and information sources of stock exchange for public use.

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