

# INTERNATIONAL JOURNAL OF RESEARCH IN COMPUTER APPLICATION & MANAGEMENT

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## THE STUDY OF RELATIONSHIP BETWEEN REFINED ECONOMIC VALUE ADDED (REVA) AND DIFFERENT CRITERIA OF THE RISK ADJUSTED RETURN

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### ABSTRACT

*Stockholders are the main owners of a business entity and are continually trying to maximize their own wealth and this wealth will result in the desirable performance of the business entity. Lack of using appropriate criteria to assess the performance will result in not achieving the real value of the company to be realized. The present research is going to try to study the information content of the refined economic value added and the different criteria of the risk adjusted return (RVAR, RVOL,  $\alpha$ ) during the years between 2007 and 2011 for 200 companies accepted in Tehran Stock Exchange. The research results which have been estimated by using the integrated regression model (PANEL DATA) and using Eviews 7 software showed that there is a positive relationship between the refined economic value added and the total risk adjusted return but regarding the relationship between refined economic value added and the systematic risk adjusted return, on the contrary to acceptance of a negative relationship between them, the relationship between them was assessed to be weak. Finally the refined economic value added has had a positive relationship with the excess return.*

### KEYWORDS

Return, Risk, REVA, Value Added.

### INTRODUCTION

The main role of management in new organizations is to create value for all individuals and institutions which search for their interests in the organization. From among the beneficiaries of every organization and entity which entail stockholders, customers, staffs, goods suppliers, society and governmental referents, the stockholders are especially important due to their principal role in job creation and forming the entity (Nikomaram & Asgari, 2006). On the other hand we can not study different investment resolutions without considering the risk and only through return and thus we adjust return based on the risk to assess investment appropriately (Jahankhani & Zariffard, 1995).

The researchers and scholars in finance and accounting have done many studies regarding value creation and have posed different approaches for decision making for the investors to help investors to use these tools and criteria to achieve their objectives. It is clear that the traditional criteria do not have the capability of predicting future and remove the information needs of the users but they solely present some information for the investors which may deviate them in decision makings. Currently the performance assessment of most companies and organizations is carried out based on financial (traditional) criteria (Young & Byrne, 2001). Although these methods are still practically utilized they are not very suitable for assessing the performance of managers because profitability has a close relationship with the amount of investment and none of these traditional methods care about the amount of investment. In summary, the novel criteria for performance assessment have a close relationship with the value of stockholders. These criteria reflect the future trends because the investors and market expect inflation to affect the risk and money value all the time. The novel criteria, as a pattern, are capable to create value for the stockholders in a company from one period to the other (Hovezakova, 2010).

In the present research we will focus on one of the criteria based on value, refined economic value added (REVA) and the study of relationship between these criteria and different criteria of the risk adjusted return (RVAR, RVOL,  $\alpha$ ) to help stockholders to make proper decisions by using the most appropriate performance assessment criteria.

If the relations above are proved the results of this study will lead to introduce an appropriate criterion for performance assessment. This will be related to stock return on one hand and it will represent the wealth created for the stockholders on the other hand which help them greatly to make decisions better regarding the purchase or sales of stocks or making decisions to invest in companies and also assess the efficiency of management.

Due to the growth of bourse in Iran during recent years and considering the principle 44 of the constitution of Iran our country is moving towards privatization. Meanwhile, the bourse market in Iran still needs to progress and develop to be a safe place for investment and acceptance of investment. Besides that the financial managers who are considered as the main body of decision making in companies have a lot of problems in this area to increase the wealth of their stockholders. On the other hand, the stockholders try every day to purchase those stocks which have the least risk for them with the highest returns. These factors force them to choose from among the present companies.

The results of this study will be helpful in recognizing the behaviors of economic units active in Tehran Stock Exchange and the results of utilizing REVA will be considered as a criterion in assessing the performance of managers of the companies and its role in increasing the wealth of stockholders will be great.

### REVIEW OF LITERATURE

Bacidore & et al (1997) studied the relationship between economic value added and refined economic value added with extraordinary return for a sample of companies including 600 American companies during the time period between 1982 and 1992. The results of their research showed that refined economic value added predicts extraordinary return better. As pointed out by Basidore & et al it is better to use refined economic value added to assess the performance of the top levels of the organization and to use economic value added to assess the performances of the lower levels of performance.

Bausch & et al (2003) carried out a research about the question below: Is the earnings' residual based on market value a better criterion to assess performance compared to the earnings' residual based on book value?, and it was presented in accounting congress in Europe. They studied the residual based on market value and compared it with earnings' residual based on book value. Their results showed that refined economic value added can lead to under-investment in projects with a positive net present value (NPV) or over-investment in projects with a negative net present value (NPV). They emphasized that market value added (MVA) and the refined value added are the same in an unlimited time period after considering the results of utilizing economic value added.

Badavar-e-nahandi (2004) studied the relationship between refined value added and the risk adjusted return in firms accepted in Tehran Stock Exchange during the years between 2001 and 2003. He concluded that there is a weak positive correlation between REVA and risk adjusted return and  $\alpha$  (the excess return) and RVAR (the total risk adjusted return), and RVOL (the systematic risk adjusted return) have had the most amount of correlation with REVA.

Goyandeh (2007) tested the relationship between economic value added and the refined economic value added with the return of firms accepted in Tehran Stock Exchange by using the integrative data for 71 firms accepted in Tehran Stock Exchange during 10 years. The results of the research showed that there is not a meaningful relationship between economic value added and the refined economic value added with the return.

**OBJECTIVE**

The ideal objective of the present research is to recognize new criteria to assess the performance of managers and companies and make them in line with the managers' benefits and the owners' through connecting the benefits and their rewards with stockholders' wealth.

In fact our main objective is the study of effects and descriptive capability of the refined economic value added on each of the criteria of the risk adjusted return that is the total risk adjusted return, the systematic risk adjusted return and the excess return to achieve a criterion to make useful decisions.

Finally the applied objective of this research is to help investors to determine the appropriate investment strategy. This research will help them in choosing a type of stock which has a better return, a risk adjusted return, and avoid investors to make mistakes in choosing the stocks and the creditors and lenders can devise validity for the decisions. On the other hand, by decision makings of investors based on risk and return, the capitals will be led towards some industries which have a risk adjusted return and this will prepare grounds for optimized appropriation of the resources and the results of this research will be helpful.

**RESEARCH METHODOLOGY**

The present research is post incidental and it has a descriptive nature. Also due to the fact that it is possible to discover the relationship between the two variables through correlation method and therefore, our research method is correlation by using the integrative regression model (panel data). Finally the present research is applied regarding the objective.

The statistical method used in the present research is the regression method by using integrative data and we have used the estimated generalized least squares (EGLS) for estimating of regression models with panel data. Also the hypotheses were tested through the results of the econometrics models and multiple regression by using Eviews 7 software.

The statistical society of the present research entails all companies accepted in Tehran Stock Exchange during the time period between 2007 and 2011 which have had the following conditions:

1. Due to the necessity of the existence of the coverage of the data for the research period, the name of companies should have been enlisted in the list of firms accepted in Tehran Stock Exchange before 2007.
2. To prepare reports in the same date and delete seasonal effects, their fiscal year should end on end of year.
3. Due to the special type of activities of investing companies, banks, insurances and financial intermediaries, the companies for the present project should not be among them.
4. The companies included should not have accumulated loss before the year 2007.
5. The data needed to carry out the present research should be presented completely for the period between 2007 and 2011.

The sampling method was systematic deletion and we could not have random sampling and the companies were selected considering the conditions defined for them. By applying the conditions above, the number of our selected sample was 200 companies.

**HYPOTHESIS**

**H1:** There is a relationship between refined economic value added and the total risk adjusted return (RVAR).

**H2:** There is a relationship between refined economic value added and the systematic risk adjusted return (RVOL).

**H3:** There is a relationship between refined economic value added and the excess return ( $\alpha$ ).

**VARIABLES**

In the present research different criteria related to the risk adjusted return (RVAR, RVOL,  $\alpha$ ) have been used as the dependent variable. The extra return is the rate of return created without any risks by an investment which has been incurred by the investor and make the return of different stocks comparable in the market and we have used 3 criteria of the risk adjusted return, the reward to variability ratio (RVAR) to calculate the total risk adjusted return, the rewards to volatility ratio (RVOL) to calculate the systematic risk adjusted return, and the criterion of differential excess return or alpha ( $\alpha$ ). The calculation method for them is as follows (Jones, 2012):

$$RVAR = \frac{R_i - R_f}{\sigma(R_i)}$$

$$RVOL = \frac{R_i - R_f}{\beta_i}$$

$$\alpha_i = R_{it} - E(R_{it})$$

Ri = real return of stocks

Rf = rate of interest without risk

O (Ri) = deviation or total risk

$\beta$  = beta

E (Rit) = the expected return rate

Rm = market return

The independent variable of the present research is refined economic value added (REVA). REVA is the net residual which is gained after the subtraction of investment opportunity cost to the market value of the market from the operational net profit after the taxation and it is expressed in the following form (Giurca, 2007).

$$REVA_t = NOPAT_t - WACC (MCPITAL_{t-1})$$

NOPATt = operational profit after taxation.

WACC= weight average of capital cost

MCPITALt-1 : the market value of the capital in the beginning of the period

**FINDINGS**

**H1:** There is a relationship between refined economic value added and the total risk adjusted return (RVAR).

**TABLE 1: A MODEL BY USING ESTIMATOR ELGS**

Dependent variable: RVAR							
Regression model: $RVAR_{it} = \beta_0 + \beta_1 REVA_{it} + \epsilon_{it}$							
hypothesis	independent variable	coefficients	t statistics	P-Value	F statistics	Durbin-Watson	adjusted R <sup>2</sup>
1	REVA AR (1)	1.59 -0.253	6.457 -4.625	0000 0000	4.56	2.28	0.47



As it can be seen above the amount of F statistics regarding %5 alpha error level, is higher than F statistics. Thus we can say that it means the meaningfulness of the regression model and the amount of Durbin-Watson, regarding its tendency towards number 2, and it is appropriate for after removing first order self-correlation. Also P-Value gained and the results of testing the model and the coefficient of the independent variable showed that the coefficient of the refined economic value added is positive and meaningful.

Finally the amount of the identification coefficient of the model showed that the estimating variables of the model have a capability of good descriptiveness (%47) to describe the dependent variable. Thus, the first hypothesis is accepted. Therefore it is suggested that the investors, creditors, and other beneficiaries to use refined economic value added as an alternative for the total risk adjusted return to assess management's performance and be used as a success assessment criterion and pricing for stocks of the companies.

Also the research findings of Badavarnahandi (2004) showed that there is a positive but weak correlation between refined economic values added and the total risk adjusted return.

**H2:** There is a relationship between refined economic value added and the systematic risk adjusted return (RVOL).

**TABLE 2: A MODEL BY USING ESTIMATOR ELGS**

Dependent variable: RVOL							
Regression model: $RVOL_{it} = \beta_0 + \beta_1 REVA_{it} + \epsilon_{it}$							
hypothesis	independent variable	coefficients	t statistics	P-Value	F statistics	Durbin-Watson	adjusted R <sup>2</sup>
2	REVA	-4.11	11.19	0.000	2.08	2.42	0.21
	AR (1)	-0.22	-3.07	0.002			

As it can be seen above the amount of F statistics regarding %5 alpha error level, is higher than F statistics. Thus we can say that it means the meaningfulness of the regression model and the amount of Durbin-Watson, regarding its tendency towards number 2, and it is appropriate for after removing first order self-correlation. Also P-Value gained and the results of testing the model and the coefficient of the independent variable showed that the coefficient of the refined economic value added is negative and meaningful.

Although the second hypothesis is accepted, the amount of the identification coefficient of the model showed that the estimating variables of the model have a capability of good descriptiveness (%21) to describe the dependent variable. Therefore it is not suggested for the investors, creditors, and other beneficiaries to use refined economic value added as an alternative for the the systematic risk adjusted return to assess management's performance and be used as a success assessment criterion and pricing for stocks of the companies.

Also the research findings of Badavarnahandi (2004) showed that there is a positive but weak correlation between refined economic values added and the systematic risk adjusted return.

**H3:** There is a relationship between refined economic value added and the excess return ( $\alpha$ ).

**TABLE 3: A MODEL BY USING ESTIMATOR ELGS**

Dependent variable: $\alpha$							
Regression model: $\alpha_{it} = \beta_0 + \beta_1 REVA_{it} + \epsilon_{it}$							
hypothesis	independent variable	coefficients	t statistics	P-Value	F statistics	Durbin-Watson	adjusted R <sup>2</sup>
3	REVA	2.90	2.96	0005	5.83	2.43	0.55
	AR (1)	-0.17	-2.68	0007			

As it can be seen above the amount of F statistics regarding %5 alpha error level, is higher than F statistics. Thus we can say that it means the meaningfulness of the regression model and the amount of Durbin-Watson, regarding its tendency towards number 2, and it is appropriate for after removing first order self-correlation. Also P-Value gained and the results of testing the model and the coefficient of the independent variable showed that the coefficient of the refined economic value added is positive and meaningful.

Finally the amount of the identification coefficient of the model showed that the estimating variables of the model have a capability of good descriptiveness (%55) to describe the dependent variable. Thus, the third hypothesis is accepted. Therefore it is suggested that the investors, creditors, and other beneficiaries to use refined economic value added as an alternative for the adjusted stock return as an alternative for differential stock return to assess management's performance and be used as a success assessment criterion and pricing for stocks of the companies.

Also the research findings of Badavarnahandi (2004) showed that there is a positive but weak correlation between refined economic values added and the excess return.

## SUGGESTIONS

1. The results of the present research showed that the stock price has an important effect on the changes of REVA and stock return. Thus, it is suggested that the stock exchange should avoid changes in stocks of some companies which result in gaining unusual profits through illegal information gaining of some major stockholders without authorities' regulations. They should force companies to present transparent and in time information about the reasons for overpricing of the stocks to help investors to make more conscious decisions and avoid losses of many minor stockholders who make their livings through it and to avoid lack of knowledge among them.
2. Regarding the fact that the rate of capital cost is one of the effective factors on changes of REVA, it is suggested for the managers in companies that they should assess the costs accurately for each of the financial resources to maximize the value creation for the stockholders and integrate them optimally to minimize the cost of financing and achieving the optimal capital structure.
3. Due to the criticisms and based on the traditional performance assessment criteria done by the researchers in financial areas during the recent years and the necessity of utilizing and considering novel criteria it should be considered that these criteria are a high and effective step towards making appropriate decisions in financing, operations and investment.

## SCOPE FOR FURTHER RESEARCH

1. The subject discussed here can be investigated for the different industries.
2. The comparison of the information content of market value added (MVA) and cash value added (CVA) with the risk adjusted return.
3. Studying the relationship between refined economic value added and market value added (MVA) and cash value added (CAV)
4. Studying the relationship between stockholders' economic value added and refined economic value added with EPS and DPS.

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