

## The Information Content of Economic Value Added and Residual Income - Evidence from Jordan

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### Abstract

The objective of this study is to supply independent empirical evidence on the information content of Economic Value Added (EVA), accounting earnings measures and residual income (RI). The other objective of this study is to boost interest in EVA in the business press, along with boosting the use of EVA by companies and increasing its use in the field of academics.

39 Jordanian industrial shareholders companies represent the study sample from 2002 to 2010. The study findings reveal that net income (NI) exceeds residual income (RI) and economic value added (EVA) in forecasting ability for stock returns.

It should be noted that the findings do not back Stern Stewart & Co. claims that economic value added is better in comparison to different methods in accounting for stock prices and returns.

**Keywords:** Information Content, Economic Value Added, Amman Stock Exchange, residual income, Stock Returns.

### Preface

Economic Value Added is a registered trademark of Stern Stewart & Co, commercially, is considered the best profitable performance measurement that is used by firms, investors and consultant.

EVA, if it is used in the correct manner, assures that it can yield greater returns and develop a company's performance for stakeholders (Morad, Bernard, 2009). It does so because it is considered a powerful business tool by assessing the financial performance of a firm.

EVA works by maximizing the spread found between the costs of using the capital to generate profits and the return on that capital. The use of EVA is expected to bring about a new economic paradigm. Increased shareholder value will be brought about because EVA will lead to increased effectiveness in the management and distribution of all assets. EVA being used for the following cannot go unnoticed because it can be used by many business leaders to identify problems of effectiveness, along with taking corrective action, and increasing shareholder value.

EVA can lead to decentralized decision making by used it as an integrated financial management system, so EVA has a lot more potential than to be just seen as a performance measure. Consequently, the use of EVA at a company indirectly brings about changes in management and this can lead to an enhancement in company value.

EVA is a performance measurement which is responsible for calculating the creation of investor value. It sets itself apart from other conventional financial performance measurement, e.g. Earnings per share and net profit. EVA is the calculation of the net profit that is left over after deduct the costs of capital, including equity and debt. EVA is based on the idea that true income should account for the cost of capital in a company.

Economic profit is considered the best if one would have to rely on a single performance number. It is considered so because it contains what mathematicians refer to as elegant information, which simply means that it contains a lot of information (Harper, David, 2009).

Management researchers have inquired if EVA offers forecasting ability earnings and net present value which considered traditional accounting based measures of performance. Majority of the findings have shown that EVA is no better than other accounting base measures and this will be discussed later more extensively.

An evaluation of the existing accounting and finance literature imply that accounting earning is a vital in the stock market from an institutional perspective. At the moment there is dependable empirical evidence when it comes to the earnings information content from the academic standpoint. Strong supporters of EVA disapprove of accounting earnings and see them as a faulty measure because of the fact that it does not succeed in including the total cost of capital. It is also overly partial to accrual-based accounting conventions this makes supporters of it EVA, doubt the value of accounting earnings. EVA recently has been considered the most electrifyingly new measure for corporate performance because it corrects the two types of errors that are found in accounting earnings. That is why it is believed that EVA should replace earnings when it comes to security analysis along with performance evaluation.

When it comes to the distinction between net operating profits after tax and the total cost of capital, EVA is considered a flow measure for the wealth that is produced by the firm during a specific amount of time. This is like accounting earnings in the fact that what it asserts to calculate. On the other hand, EVA is unlike earnings

because it contains the total cost of both the debt and equity capital. While when it comes to accounting earnings it includes only the interest expenses that are linked with the cost of debt capital. Stakeholders usually relinquish the cost of equity capital when investing in a specific company. EVA supporters dispute that because the cost of equity is costly in free market economies, since capital there has different uses, that means that consideration should be taken when it comes to determining the total cost of capital. Given that accounting earnings do not take into account equity capital, they are to be considered a deficient measure of economic reality.

Numerous consultants and advisors have advertised EVA as the answer to the question of what will greatly enhance shareholder wealth. At first glance, metrics like EVA ought to lead to an increase in share value. But the fact of the matter is there is no proof that financial markets acknowledge and feature EVA into their share price valuation models.

The usefulness of different performance measures is estimated by the ability to clarify the differences in stock returns by investigating if Economic value added and residual income have incremental information content to forecast stock return than with accounting traditional earnings.

The aim of this study is to clarify the explanatory power of EVA and RI when it comes to stock returns. The study offers empirical evidence when it comes to the relative and incremental information content of EVA, in comparison to the traditional performance measures, such as earnings, and cash flow. The deduction from this study is that industrial companies must constantly try to take full advantage of stock prices. The disadvantage of not doing that is if it isn't done then the company's stocks cannot survive in the market. The examination of this helps to better understand what lies beneath when it comes to the surface numbers to better enlighten the fundamental business. It is also important because it will help understand whether there is a prima facie situation when it comes to using EVA as one of the choices when it comes to performance measurement tools.

### **Literature Review**

In field of EVA "The Quest for Value" is the reference publication is by Bennet Stewart' (1991), which describe his views the value of EVA, when it comes as a good indicator for a firm performance.

After the use of various testing methods, Biddle et al. (1997) gave proof that disproves the claim that EVA has a high correlation with stock returns, in comparison to accounting earnings and operating cash flows. On the contrary, the findings show that the unadjusted, simple accounting profits have highly correlation coefficients than EVA with stock returns. Likewise, Clinton and Chen (1998) have come to the conclusion that companies that use EVA must regard it as a comparatively simple metric that is established on unadjusted accounting earnings, and cash flow, instead of economic value added. The two researches propose the intricacies that are associated with EVA calculations are not always cost acceptable.

Lefkowitz (1999) examined US firms. The results of this study do in fact back up Stern- Stewart hypothesis, which states that EVA is significantly associated with stock returns. The study established that EVA is a logically dependable guide, when it comes to considering the worth of a firm or company. Machuga et al. (2002) pointed out in their research that EVA usage can include the improvement of forecasting future profits. Lehn & Makhija (1997) examined the correlation that is found amongst various stock market returns and performance measures. The outcome of this show that EVA is indeed the most abundantly correlated measure when it comes to stock returns.

Kramer and Peters (2001) aim to test the relationship between market value added, shareholder value and economic value added using a series of tests that used cross-sectional time series data. The major find of this research was that there was nearly no advantage to using EVA instead of NOPAT to explain MVA.

Bao and Bao (1998) examined on US firms the relationship between the value of economic value added and the abnormal earnings. The outcome of this showed that EVA is an important factor, in terms of the market returns, it is also important when it comes to its explanatory power, which is higher than that of accounting earnings. Chen and Dodd (1997) stated that the EVA measures, present more relative information in comparison to net income. It was also reported that residual income and economic value added have a high correlation with stock returns. Worthington and West (2004) offered Australian evidence when it came to the information content of EVA. The study deduced that stock returns are in fact directly linked with EVA more than with residual income, earnings and net cash flow.

Harris and Ohlson (1992) remarked that EVA is a progressively more and more popular corporate performance measure. It is usually used by companies and other businesses not just for assessing performance but it is also used as a foundation, when it comes to establishing incentive pay. Rice (1996) believed that formerly numerous measurements were used, in order to measure the financial outlook, when it comes to earnings per share to the measurement of discounted cash flow and the return on average assets. At the company level, all future choices and all proceedings will then result from the breakdown that uses EVA principles. Ray, Russ (2001) remarked that the link that is absent amid EVA and better financials is productivity.

Numerous U.S. analyses, account that there is either no statistical or in fact poor connection between EVA and stock return. They reported the same for the relationship between market value and EVA (example, Peterson and DeVilliers and Auret, (1997) and Peterson, (1996). Dodd and Chen (1996) reported that economic value added can only account for 20% of the inconsistency of stock returns.

Dodd and Chen (1996) and Chen and Dodd (1997) research has led to the conclusion that while improving EVA performance is definitely linked with a higher stock return, it should be noted that the strength of this relationship is not as it has been claimed by EVA supporters. It has indicated that simple accounting earnings are important when it comes to incremental information value, along with EVA measures. EVA is also considered empirically equivalent to the residual income, which is relatively an old managerial accounting concept.

Worthington and West (2001) evaluated the literature that is available on EVA and gave a synoptic survey of EVA's theoretical foundation. The conclusion of his work is that the empirical evidence that is concerned with EVA has been jumbled up. In fact there is a compelling need for research in this field, which measures it over a long period of time. This is important because it will permit for better empirical certainty when it comes to the status of EVA, as a corporate performance measure.

### Research Hypotheses

We use several performance measures to estimate the forecasting capacity to clarify the variation on stock returns.

The additional information content is tested for economic value added, residual income and for other accounting measures is established by investigating the predictive power of these measures and then examining which of these measures have the highest information content in comparison to the other measurements. The hypotheses are as follows:

H<sub>01</sub>: Net Income cannot predict stock returns.

H<sub>02</sub>: Cash flow from operating activities cannot predict stock returns.

H<sub>03</sub>: Residual income does not provide additional information content beyond stock return more than operating cash flows and net profit.

H<sub>04</sub>: Economic value added does not provide additional information content beyond stock return more than operating cash flows and net profit.

### Research Models and Variables

The relationship between stock return and net income is examined using model 1. It's used to test the first hypothesis.

$$R_{it} = \alpha_0 + \alpha_1 NI_{it} + e_{it} \quad (1)$$

Where:

$\alpha_0, \alpha_1$ : Coefficients;

i: firm;

t: year;

R: rate of return;

NI: Net Income;

e = random disturbance term.

The dependent variable in equation (1) and the following equations is  $R_{it}$  that is computed using annualized compounded rate of return to the shareholders. Rate of return is used to study the explanatory power of profits measures (like, Easton and Harris, (1991) and Lev, (1989).

The relationship between stock return and cash flow from operating activities is examined using model 2. It's used to test the second hypothesis.

$$R_{it} = \alpha_0 + \alpha_1 OCF_{it} + e_{it} \quad (2)$$

Where:

OCF: Cash flow from operating activities.

The relationship between stock return and residual income is examined using model 3. It's used to test the third hypothesis.

$$R_{it} = \alpha_0 + \alpha_1 RI_{it} + e_{it} \quad (3)$$

Where:

RI: residual income.

Residual income is calculated as Net profit - (total invested capital \*cost of capital) (Ismail, 2006).

The relationship between stock return and economic value added is examined using model 4. It's used to test the fourth hypothesis.

$$R_{it} = \alpha_0 + \alpha_1 EVA_{it} + e_{it} \quad (4)$$

Where:

EVA (economic value added).

All variables divided by total equity.

EVA is calculated as cost of the capital minus net operating profit after taxes (Stewart, 1991).

We will use the following equation to compute EVA (Morad, 2009):

Economic Value Added = Net Operating Income – Capital Charges

Where:

Capital Charges = Weighted Average Cost of Capital \* (Assets – current Liabilities).

### Population and Sample

Industrial Jordanian companies listed in Amman Stock Exchange represent the population of the study during 2002 to 2010.

In the case of industrial shareholding companies that condition share prices data it is all available during the study during the time period between 2002 -2010. This data that is required to calculate the study variable is available and is also included in the sample. In this study, 39 companies are represented.

### Research period

The research period is from 2002 to 2010, many information is needed for 2001 to compute some variables. The following represents the required data:-

1. Total Shareholder equity from 2001 to 2010;
2. Total assets from 2001 to 2010;
3. Net income from 2002 to 2010;
4. Operating cash flow from 2002 to 2010;
5. Interest rate from 2002 to 2010;
6. Current Liabilities from 2002 to 2010.

### Statistical Analysis

Table (1) parts (a) and (b) presents the descriptive measures of the key variables before and after deleting the outliers' observation that influences the regression models outcomes and are not expected to be described in the future. The outliers' interpretations are revealed to be in the 99<sup>th</sup> percentile and less than 1 percentile. The sum outliers' interpretations are 19 observations from the 350 observations which are 5.43%.

**Table (1): Descriptive Measures**

(39 Industrial companies, 2002-2010, 331 company-year observations)

**Part (a)**

Variable	EVA	OCF	RI	R	NI
<b>Minimum</b>	-0.982	-1.307	-1.035	-0.877	-0.795
<b>Percentile 1</b>	-0.329	-0.876	-0.39	-0.691	-0.465
<b>Median</b>	-0.002	0.074	0.032	0	0.070
<b>Mean</b>	-0.104	0.058	0.03	0.166	0.062
<b>SD</b>	0.116	0.271	0.135	0.670	0.160
<b>Percentile 99</b>	0.234	1.008	0.368	2.795	0.604
<b>Maximum</b>	1.245	1.89	1.236	6.292	1.233

**Part (b)**

Variable	EVA	OCF	RI	R	NI
Minimum	-0.294	-0.809	-0.369	-0.630	-0.428
Percentile 1	-0.261	-0.737	-0.260	-0.581	-0.317
Median	-0.002	0.074	0.032	0	0.070
Mean	-0.012	0.057	0.028	0.135	0.061
SD	0.057	0.216	0.086	0.496	0.124
Percentile 99	0.176	0.677	0.283	2.117	0.399
Maximum	0.209	1.005	0.318	2.781	0.561

**Notes:**

The study main variables descriptive statistics after deleting outliers defined as the observations that they are less than percentile (1) and more than percentile (99) and on each of the study variables. Variables definitions: EVA is economic value added; OCF is cash flows from operating activities; RI is residual income; R is stock return; NI is net income; t is year; i is firm. All variables are divided by equity.

The descriptive measures include minimum value, percentile 1, median, mean, standard deviation, percentile 99, and maximum value. Additionally, Pearson correlations coefficients matrix among the study variables are shown in Table (2).

The largest mean was for the dependent variable (stock return) which has followed by NI, OCF, RI and EVA. Understandably one notices that low values for RI and EVA because in the long run, businesses do not have the ability to carry on earning, more than the cost of capital. This is because the competitive advantage of a company will not continue forever; meaning supernormal growth opportunities cannot persist over time.

Upon the deletion of the outliers' observations this indicates to the reduction of the variance for all the variables. Because those outliers' variable in fact increase with the data dispersion.

Observing the correlations that are present among these measurements in table (2) it can be noticed that independent variables are in fact, positively correlated with each another. Mainly it is important to note, similar that the findings of Ismail, (2006) and Biddle et al. (1997), NI has a higher correlation with stock returns in comparison to EVA. It should be taken into account that the economic profit measures (RI and EVA) in fact under-perform in comparison to traditional accounting performance variable (NI).

The positive relationship that is found between the accruals and the stock return indicates that the accruals have a concealed value and this is reflected in the share price.

**Table (2): Pearson Correlation Coefficients**

Variable	R	EVA	RI	NI
EVA	16%**			
RI	12%*	70%**		
NI	18%**	69%**	91%**	
OCF	12%*	29%**	35%**	41%**

**Notes:**

Pearson correlation coefficients between study key variables

Variable definitions: EVA is economic value added; OCF is cash flows from operating activities; RI is residual income; R is stock return; NI is net income; t is year; i is firm.\* Correlation is significant at the 0.05 level. \*\* Correlation is significant at the 0.01 level.

**Table (3): Regression analysis Results**

	Model 1	Model 2	Model 3	Model 4
$NI_{it}$	0.65** 2.94			
$OCF_{it}$		0.20 1.619		
$RI_{it}$			0.41 1.322	
$EVA_{it}$				0.54 1.141
Constant	0.103** 3.418	0.116** 4.191	0.121** 4.391	0.148** 5.322
Adjusted R <sup>2</sup>	2.2%	0.5%	0.2%	0.1%

**Notes:**

Variable definitions: EVA is economic value added; OCF is cash flows from operating activities; RI is residual income; R is stock return; NI is net income; t is year; i is firm. Model (1):  $R_{it} = \alpha_0 + \alpha_1 NI_{it} + e_{it}$ ; Model (2):  $R_{it} = \alpha_0 + \alpha_1 OCF_{it} + e_{it}$ ; Model (3):  $R_{it} = \alpha_0 + \alpha_1 RI_{it} + e_{it}$ ; Model (4):  $R_{it} = \alpha_0 + \alpha_1 EVA_{it} + e_{it}$ . \*\* Coefficient is significant at the 0.01 level (2-tailed). \* Coefficient is significant at the 0.05 level (2-tailed).

The four regression models findings are shown in Table (3). Model 1 aims to examine the forecasting ability for net income as independent variable in explaining the variation in stock return. The results show that coefficient of NI is 0.65 and is statistically significant at the 0.01 level. The adjusted  $R^2$  of this model is 2.2%. So based on these result we reject the null hypothesis and accept the alternative one so net Income can predict stock returns.

Model 2 examine the relationship between cash flow from operating activities and stock return. The results show that coefficient of OCF is 0.20 and isn't statistically significant. The adjusted  $R^2$  of this model is 0.5% only. So based on these result we accept the null hypothesis so Cash flow from operating activities cannot predict stock returns.

The incremental information content of residual income is examined in Model 3. The results show that coefficient on RI is 0.41 and isn't statistically significant. The adjusted  $R^2$  of this model is 0.2% which is lower than model 1 and model 2. The results of Vuong's tests between model 3 in one hand and Model 1 and 2 separately in the other hand also verify that the variances between the adjusted  $R^2$ 's aren't statistically significant. This lead us to accept the null third hypothesis so residual income does not provide additional information content beyond stock return more than operating cash flows and net profit.

Lastly the incremental information content of EVA is tested in Model 4. The results indicate that coefficient on EVA is 0.54 and isn't statistically significant. The adjusted  $R^2$  of this model is 0.1% which is lower than model 1 and model 2. The results of Vuong's tests between model 4 and Model 2 and 3 also verify that the variances between the adjusted  $R^2$ 's aren't statistically significant.

This lead us to accept the null fourth hypothesis so Economic value added does not provide additional information content beyond stock return more than operating cash flows and net profit.

The lowest adjusted  $R^2$  is model 4, then model 3 making model 1 the highest adjusted  $R^2$ .

The findings show that they are constant with those given by Biddle et al. (1997) and Ismail, (2006). Ismail, (2006) showed that net operating income had a higher association with stock return ( $R^2$  %26) than EVA ( $R^2$  %20), Biddle et al. (1997) showed that earnings has a better association with stock return (adjusted  $R^2$  %9) than either RI (adjusted  $R^2$  %6), EVA (adjusted  $R^2$  %5) or CFO (adjusted  $R^2$  %2). The findings also prove that the conclusion of Chen and Dodd (2001) was that the operating profit measures (adjusted  $R^2$  %6) performed better than Economic value added (adjusted  $R^2$  %2) and Residual Income (adjusted  $R^2$  %5).

The consequences of the panel data regressions conclude that the EVA does not perform any better than NI and NOPAT. It also shows that it occasionally does not even perform better than RI. Consequently, the explanatory power tests disprove the claim of EVA advocators, which state that the EVA is to be considered the best financial measure that can explain stock return variances.

## Conclusions

At the moment EVA is considered an important tool for performance measurement. It is also considered important to management in all corners of the globe, especially in advanced economies, though adopting it as a corporate strategy. It should be noted that evidence on the matter is mixed, when it comes to the superiority of EVA, in comparison to over traditional performance measurement tools.

EVA alleged capacity to bring superior stock returns seem to be its major selling point. Accordingly, it isn't shocking that in the investment community has begun to comprise economic value added in its study. It doesn't come as a shock that companies and firms are progressively more and more drawn to use EVA.

There are several stories of EVA's victories and while they are quite heartening, the proof behind the rhetoric has been mainly subjective. Inadequate empirical research exists to back the assertions of economic value added superiority when it comes to it being a performance measure in term of it being a value-relevance. This is quite the opposite of limited empirical evidence that has proposed otherwise.

EVA as a model is founded on the firm economic code that the firm value raises but only if it is proficient in generating surplus over the cost of capital. Consequently it is founded on the strong theoretical foundation. The calculation of it requires great subjectivity. Subjectivity leads to a reduction in its informative value. Conventionally, this is the favorite method that is very popular when it comes to assessing the company's performance. It is done through profitability measures and examples include earnings per share and a return on equity. All of these measures can be false because it usually is a poor marker of the shareholder value creation. When it comes to other performance evaluation tools, EVA is favored more over other seemingly economic measures, examples include earning per share and return on investment. This is done by bringing into line shareholders and manager's goal. In the more recent years, EVA has become more popular amongst companies and firms because the creation of share value is the ultimate economic purpose of most companies. This

research does reveal that at the moment that there is no proof of EVA overshadowing NI or OP, when it comes to clarifying the equity market value.

The information content is studied for the economic profit measures by performing this research by means of Jordanian data. The regressions models were applied to evaluate the information content of residual income, net income, economic value added, and operating cash flows. The findings show that net income performs better than residual income and economic value added in their forecasting ability for stock returns.

The analytical results give some foundation for EVA, when it comes to it being a performance metric. It should be noted, that there aren't any relationship between EVA and stock returns. Instead, it should be noted that there is an adequate correlation between EVA and the other measures so it should not be excluded as a feasible metric. Of course as the findings have revealed that there is no assurance that higher economic value added will guarantee higher stock returns.

There are numerous reasons why economic value added might not lead to an improvement in market returns. EVA foundation is based upon asset worth and book value. On the other hand share returns are based on cash flows and growth expectations. The problems that are found in EVA are partly due to the way EVA is measured. Stern-Stewart measurements leave out the cash flow that is produced from the depreciation of tax shields. This results in the EVA being higher than if depreciation was incorporated. This measurement of EVA doesn't give full cash flow information and this doesn't allow the stock market to act with the proper data. Stock prices are very susceptible to growth expectations. Those expectations base themselves on the extrapolation of book value and of fiscal returns.

Chen and Dodd (2001), propose that other non-accrual earnings and non- economic value added aspects that lead to an increase in share value. Those factors should be taken into consideration when it comes to shareholders' value creation. It should also be taken into consideration for the performance measurement and management compensation. Those factors include the following: employee satisfaction, along with market share growth rate, or research and development expenses.

When it comes to the EVA research other issues such as the relationship between EVA-MVA and the following should be taken into consideration such as economic value added and other discounting techniques, other RI based techniques and economic value added implementation along with economic value added and managerial control and performance.

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