EVA VERSUS CONVENATIONAL PERFORMANCE MEASURES – EMPIRICAL EVIDENCE FROM INDIA

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ABSTRACT

Value based financial performance measures like Economic value added (EVA), Shareholder value added (SVA) has attracted the attention of investors, policy makers and researchers in the recent time due to their superiority and ability to reflect the true valuation of the companies. Investor's in developing countries are shifting their attention from traditional mandated corporate performance measures like NOPAT, EPS to value based mainly to EVA in while analyzing the performance of the companies and making investment strategy. The main objective of this study is to examine whether Economic Value Added (EVA) can be used as a tool of performance measures while investing in Indian market and provide evidence about its superiority as a financial performance measure as compared to conventional performance measures in Indian companies. To achieve this, performance of the Indian listed manufacturing companies is compared with traditional mandated corporate financial performance measures used in investment analysis. Further, the present study ranks the performance Indian companies on the basis of various performance measures and suggests to investors which performance measures should be used to analyze the companies in order to make better investment decision. The results of our study revels that investor should use EVA alongwith traditional measures in firm valuation and making investment strategy

INTRODUCTION

The most important objective of Financial Management is the maximization of shareholders' value. After reading this, the first question which comes to our mind is that how do shareholders know that the company to whom they have entrusted their hard earned money is efficiently utilizing it and thus, creating value for them. We have always read the annual reports of the companies to find out information about their 'top line' and 'bottom line'. We also have various financial ratios for our aid like Return on Capital Employed (ROCE), Return on Net worth (RONW), Earning per Share (EPS), Dividend per Share (DPS) etc. In 1890, Alfred Marshall introduced the concept of Residual Income, which can be arrived at by subtracting the charge for the capital employed from the operating profit. In the beginning of the 1990's, Stern Stewart & Co. came out with a modified way of calculating Residual Income suggesting accounting changes with respect to depreciation, inventory, research and development expenditure etc., for arriving at the figures of operating profit and capital employed. With this, the term – Economic Value Added (EVA) was introduced on which the firm has the copyright. Many studies have been carried out to find out whether these measures really contribute to the shareholders' wealth. However, since EVA was introduced as an indicator for shareholders' wealth maximization, it has been a focal point for majority of the studies. Also, many Indian companies like Infosys, Hindustan Lever, Tata Steel, Godrej etc. have adopted EVA and are disclosing it in their annual reports.

This study is another attempt to find out whether EVA really explains the value accretion for the shareholders. Are we better off by removing the focus from EVA and concentrating on traditional measures like ROCE, RONW, EPS, DPS etc.? The another motivation of conducting this is to know whether should used EVA as tool of measuring financial performance while making investment based strategy or they should focus on traditional measures in valuation of Indian companies.

The structure of the study is as follows. First, we briefly review the literature regarding efficacy of various performance measures. The next section discusses the hypotheses developed and used in the study. Data and methodology constitute the next section. Analysis and Interpretation is discussed in the next section. Finally, we provide the research findings and discuss their managerial and theoretical implications.

REVIEW OF LITREATURE

Traditional performance measurement systems were developed at a time when decision-making was focused at the center of the organisation and responsibilities for decision-making were very clearly defined. According to Knight (1998, p.173) 'these performance measurement systems were designed to measure accountability to confirm that people met their budget and followed orders'. However, during the last two decades it was widely argued that most of the performance measurement systems failed to capture and encourage a corporation's strategy, producing mostly poor information leading to wrong decisions. They are often criticized for not taking into consideration the total cost of capital and for being unduly influenced by accrual-based accounting conventions .VBM approach, based mainly on NPV techniques, Free Cash Flow, and cost of capital, have its main objective the maximization of shareholder value. Value-based management emerged from the discipline of strategic management in the late 1970's. Interest in value-based methods reflected disenchantment with traditional accounting earnings, although the objectives of each are different. Value-based management recognized that accounting data was no longer providing a robust insight into business performance. Value-based methods are based on the concept that the underlying financial performance of a business is best represented by the change in its economic value. That is, the change in the net present value of its expected future cash flows.

To overcome problems associated with earnings-based measures, several scholars proposed alternative theories and new (modern) performance measures. As a consequence, the Shareholder Value approach was developed in the late 1980s and early 1990s. Shareholder Value approach estimates the economic value of an investment by discounting forecasted cash flows by the cost of capital (Rappaport, 1998, p. 32). Proponents of shareholder value approach, either academics or consulting firms, grounded their analysis on free cash flows (FCF) and the cost of capital and produced a variety of such measures. The most common referred variants of those measures are: (a) Shareholder Value Added (SVA) by Rappaport and LEK / Alcar Consulting group (Rappaport, 1986; 1998), (b) Cash flow return on investment (CFROI®) by Boston Consulting Group (BCG) and HOLT Value Associates (Black, Wright and Bachman, 1998; Madden, 1999; Barker, 2001), (c) Cash Value Added (CVA) by Boston Consulting Group (BCG) and the Swedes Ottoson and Weissenrieder (Ottoson and Weissenrieder, 1996; Madden, 1999; Barker, 2001), and (d) Economic Value Added (EVA) by Stern Stewart & Co. (Stewart 1991; 1999; Ehrbar, 1998; 1999; Stern, 2001).

One such model in the field of internal and external performance measurement is a trade-marked variant of residual income known as EVA® (Economic Value-Added). EVA is financial performance measure that most accurately reflects company's true profit (Stewart, 1991). EVA is the calculated after deducting the cost of equity capital and debt from the operating profits. EVA is a revised version of Residual Income (RI) with a difference the way the economic profit and the economic capital are calculated. Coined and popularized by New York based management consultancy firm Stern Stewart & Co. in 1991, EVA over the years has gained popularity as a reliable measure of corporate performance. In the later years, the concept has received recognition and support from various corporate houses; those adopted it as an internal control measure. The selling point of EVA is that it considers economic profits and economic capital in order to know the value created and destroyed by an organization during a particular period. Economic profit and economic capital is calculated by making certain adjustments into the accounting profits.

The empirical studies such as Milunovich and Tsuei, 1996; O'Byrne, 1996; Uyemura et al., 1996; Biddle *et al.,* 1997; Chen and Dodd, 1997, 2001; Bao and Bao, 1998; De Villiers and Auret, 1998; Turvey et al., 2000; Worthinton and West, 2001, 2004; Peixoto, 2002; DeWet(2005); Ismail, 2006; Kyriazis and Anastasis, 2007; Maditinos *et al*., 2009 have been conducted in the last two decades, initially in the developed markets like USA and later in the rest of the international market , to answer if *"it is really better to use value-based than traditional accounting performance measures to measure the financial performance of corporations, or which financial performance measure best explains corporations' change of value created and destroyed*".

Recently researchers like Ismail (2008), Maditions et al. (2009) and Lee and Kim (2009) have examined the explanatory power of EVA and traditional measures. However, the results reported in the studies are quite mixed and controversial. Further in India, very less number of studies has been undertaken to test the efficacy of various performance measures particularly of value based measures. Present study aims to fulfill this gap and shall conclude whether EVA based performance measures should be used by investor while analyzing the performance of companies and designing investment strategy.

RESEARCH QUESTIONS

This study is primarily intended to test whether a new value based measurement i.e. EVA better explains the variation in market value added (MVA) of Indian companies as compared to conventional accounting based corporate performance measures such as ROE, ROI, EPS, NOPAT, NI, OCF and RI. Also another objective is know whether investor should follow EVA based investment strategy or continues to use traditional performance measures while making investment decisions. In order to achieve this following research questions are empirically examined and analyzed:-

1. Does a statistical relationship between EVA and shareholder wealth exist, and if it does, how much of the variation of the shareholder value (as measured by stock returns or MVA) of Indian companies can be explained by EVA?.
2. Does EVA dominate traditional corporate performance measures such as ROE, ROI, EPS, NOPAT, NI, OCF and RI in explaining contemporaneous MVA or stock returns of Indian companies?
3. Do components unique to EVA, such as Cash flow from operations (CFO), Interest expenses (ATI), Accruals (ACC), Cost of capital (CC) and Adjustments (ADJ) help in explaining contemporaneous MVA (stock returns) beyond the explanation given by conventional performance measures?

Following hypotheses are formulated to achieve the stated objective of the study:-

1. Economic Value Added (EVA) is significantly and positively associated with the firm's Market Value Added
2. EVA dominates conventional performance measures such as NOPAT, ROCE, ROE, and EPS etc. in explaining contemporaneous MVA.
3. Components unique to EVA help in explaining contemporaneous MVA beyond the explanation given by conventional financial performance measures such as ROCE, RONW, EPS, NOPAT, NI, OCF and RI.

RESEARCH METHODS

In this study panel data (or sometimes referred as pooled data) regression is used to test the research hypotheses. In the last decade or so, panel data analysis has became central in quantitative studies. Its popularity has been greatly increased among social and behavioral science researchers and it became one of the most active and innovative bodies of literature in econometrics. The main limitation of basic regression is that it is based on the assumption that parameters do not vary across sample observations. Whereas, pooled time series model (panel) allows parameters to vary in some systematic and / or random way across partitions of the sample data or even from observation to observation. The statistical models used in the study are based on the combination of earlier work of various researchers such as Biddle et al. (1997), Chen and Dodd (1997, 2000), Elali (2006), Erasmus (2008), Ismail (2006) and Kramer and Pushner (1997) etc. To achieve the various objectives of the study and to test the research hypotheses, two panel regression models are used. The data is analyzed with E-Views version 6 and SAS 9.1 software. In the present study, to test the relative and incremental information content of various performance measures, various univariate and multivariate econometric models are built and analyzed.

The first model examines the association between the various corporate performance measures and the MVA. It also highlights the value relevance of the various competing corporate performance measures in explaining the firm values. To test hypothesis two and three, following models are formulated

$MVA_{it} = \beta_0+\beta_1\ EVA_{it}+ e_{it}$

$MVA_{it} = \beta_0+\beta_1\ EPS_{it} + e_{it}$

$MVA_{it} = \beta_0+\beta_1\ RONW_{it} + e_{it}$

$MVA_{it} = \beta_0+\beta_1\ ROCE_{it} + e_{it}$

$MVA_{it} = \beta_0+\beta_1\ OCF_{it} + e_{it}$

$MVA_{it} = \beta_0+\beta_1\ NOPAT_{it} + e_{it}$

$MVA_{it} = \beta_0+\beta_1\ NI_{it} + e_{it}$

$MVA_{it} = \beta_0+\beta_1\ RI_{it} + e_{it}$

$MVA_{it} = \beta_0+\beta_1\ EVA_{it} + \beta_2\ EPS_{it} + \beta_3\ ROCE_{it} + \beta_4\ RONW_{it}+ \beta_5\ OCF_{it}+ \beta_6\ NOPAT_{it}+ \beta_7\ NI_{it}+ \beta_8\ RI_{it} + e_{it}$

The dependent variable in the above models is the Market Value Added (MVA) for the firm *i* and period *t*. The independent or explanatory variables are: economic value added (EVA), earnings per share(EPS), return on net worth (RONW), return on capital employed (ROCE), cash flow from operations (OCF), net operating profit after taxes (NOPAT), net income (NI), and residual income (RI). The entire variables in the above models are scaled by market capitalization to overcome the problem of heteroscedasticity. The ***Second*** set of models investigates whether EVA components can explain contemporaneous MVA beyond that explained by the others performance metrics. Following panel models are used and examined to find out whether EVA components can explain MVA beyond explained by other performance measures. Following Biddle et al. (1997);Worthington and West (2004) and Elali (2006), EVA is broken down into five components i.e., Cash flow from operations (OCF), Accounting Accruals (ACC), After tax interest cost (ATI), Capital Charge (CC) and Stern-Stewart

Accounting Adjustments (ADJ) in order to examine the contribution of each components towards explaining contemporaneous MVA as compared to other measures . The dependent variable is given as MVA. Along with this five components of EVA are used as independent variables. This model is also estimated by using the pooled ordinary least squares.

$MVA_{it} = \beta 0+\beta_1 OCF_{it} + e_{it}$

$MVA_{it} = \beta 0+\beta 1ACC_{it} + e_{it}$

$MVA_{it} = \beta 0+\beta_1 ATI_{it} + e_{it}$

$MVA_{it} = \beta 0+\beta_1 CC_{it} + e_{it}$

$MVA_{it} = \beta 0+\beta_1 ADJ_{it} + e_{it}$

$MVA_{it} = \beta 0+\beta_1 OCF_{it} + \beta_2 ACC_{it} + \beta_3 ATI_{it} + \beta 4 CC_{it} + \beta 5 ADJ_{it} + e_{it}$

The present study is based on secondary data. Data about various variables used in the study is mainly obtained from ***Prowess*** and ***Capitaline Plus*** databases. Since EVA figures are not published by Stern Stewart for Indian companies, the EVA values are calculated from the information available in the Prowess database using standardized financial statements. For this purpose Net operating profits after taxes (NOPAT) is used as available in the database and various adjustments as suggested in BT- SS survey, 2001 about Indian companies are made in the NOPAT to arrive at economic profit figures. Economic capital of the sample companies for the period 2000-2009 is also calculated after making the adjustments suggested in the BT-SS survey about Indian companies.

EMPIRICAL RESULTS

Correlation

Table 1 illustrates the relationship between MVA and the independent variables. The correlation coefficients thus reveal a significant association between MVA and EVA suggesting that EVA yield information that is perceived important by the stock market, a rightful claim made by EVA advocates. Nevertheless, the relationship between MVA and the EVA measure is far from perfect. A correlation of 0.4541 between MVA and EVA indicates that increasing EVA alone is not all that matters in the marketplace. As, it can be observed from the table that apart from EVA, RI and NOPAT and OCF are also highly correlated with MVA. An interesting observation from the table is that a weak correlation exits between MVA and NI and also between MVA and RONW. Highest correlation coefficient between MVA and independent variables can be observed between MVA and RI.

TABLE 1: CORRELATION MATRIX

	MVA	EVA	EPS	NOPAT	OCF	NI	RI	ROCE	RONW
MVA	1.0000								
EVA	0.4541	1.0000							
EPS	0.1658	0.0434	1.0000						
NOPAT	0.4249	0.2935	0.2446	1.0000					
OCF	0.2830	0.1690	0.3152	0.2751	1.0000				
NI	0.1107	0.0121	0.4288	0.7288	0.6109	1.0000			
RI	0.4633	0.9990	0.0533	0.2841	0.1924	0.0312	1.0000		
ROCE	0.1690	0.0387	0.2382	0.1735	0.0126	0.3124	0.0414	1.0000	
RONW	0.0423	0.0427	0.0260	0.0236	0.0336	0.0021	0.0440	0.0197	1.0000

Note: EVA= Economic Value Added; EPS= Earnings per share; MVA= Market value Added; NI= Net Income; NOPAT= Net operating income after tax; OCF= Cash flow from operations; RI= Residual Income; ROCE= Return on capital employed and RONW= return on net worth

Fixed Effects vs. Random Effects

In the present paper, two sets of tests are conducted to test the fixed effect model against the standard model (the fixed effect) and the random effect against the fixed effect model (the Hausman test) respectively. The fixed effect test was conducted first to see whether the result of standard or fixed effect model is appropriate. The fixed effect test evaluates the statistical significance of the estimated fixed effect. The test statistics and p-value without time variable trend was analyzed. The results consist of two tests that evaluate the joint significance of the cross-section effects using sum-of-squares (F- test) and the likelihood function (chi-square test). The test is run for the fixed model regressors of all the empirical models. The null hypothesis is that the fixed effects are redundant. The results suggest that the corresponding effects are statistically significant. The null hypothesis

that the effects are redundant is therefore rejected in all the models. This suggests that the fixed effects for all the models are acceptable in the estimates.

The Hausman test is conducted to determine whether fixed and/or random effect models are appropriate. Hausman test compares the fixed versus random effects under the null hypothesis that the individual effects are uncorrelated with the other regressors in the model (Hausman, 1978). If correlated (H_0 is rejected), a random effect model produces biased estimators, violating one of the Gauss- Markov assumptions; so a fixed effect model is preferred. Hausman's key findings are that the covariance of an efficient estimator with its difference from an inefficient estimator is zero (Greene, 2003; Baltagi, 2001; Woodridge, 2002). The results of Hausman test suggest we shall reject the null hypothesis suggesting that fixed effect model is preferred over random effect.

Hypothesis1: *Economic Value Added (EVA) is significantly and positively associated with the firm's Market Value Added (MVA). This hypothesis was tested using the following regression model with the dependent variable of MVA.*

Hypothesis 1 was tested using the following regression model with the dependent variable of MVA scaled by beginning-of-year invested capital and the independent variable of EVA scaled by beginning-of-year invested capital.

$MVA_{it} = \beta_0 + \beta_1 EVA_{it} + e_{it}$……(1)

where $MVA_{i,t}$= market value added for firm *i* in period *t*; $EVA_{i,t}$= economic value added for firm *i* in period *t*; and $e_{i,t}$ is a generic regression error term. This model was estimated using a pooled time-series–cross-sectional least squares regression.

TABLE 2: HYPOTHESIS 1 UNIVARIATE REGRESSION RESULTS

Statistics	**Fixed Effect Results**
Number of Observations	9960
R-Squared	0.231693
Adjusted R- Squared	0.191871
Coefficients:	
Constant	2.005083
Std. error	0.067738
Independent Variable	
EVA	0.010810
Std. error	0.087838
t- statistics :	
Constant	29.60035
Independent Variable (EVA)	16.05910
p-value:	
Constant	0.0000
Independent Variable (EVA)	0.0000
F-statistic	2.134147
Prob(F-statistic)	0.000000

The overall model yielded a positive and statistically significant coefficient of 0.0677 and an adjusted R^2 of 0.191871 for the entire sample. This upholds Hypothesis 1, that EVA is positively and significantly related to MVA. The very low p-value (0.000) implies that the EVA coefficient is statistically significant – a result that allows for the null hypothesis to be rejected in favour of the alternative hypothesis. Moreover, the positive sign on the EVA coefficient and t-statistics of 16.06 indicate that EVA has a strong effect on MVA.

While these results are significant, much of the determination of MVA remains unexplained. In order to obtain more insight into the strength of EVA as a proxy for MVA, an ordinary least squares regression was performed with NOPAT as an independent variable:

$MVA_{it} = \beta_0 + \beta_1 NOPAT_{it} + e_{it}$……(2)

The results of the above model are summarized in Table 3. Compared to Table 2, it can be seen that the level of MVA is positively related to both EVA and NOPAT in the same periods. However, NOPAT explains slightly less (18%) of the total variation in MVA than EVA does. This suggests that the level of EVA is not only a better proxy, but is also a better predictor of corporate performance than the level of NOPAT.

TABLE 3: HYPOTHESIS 1 UNIVARIATE REGRESSION RESULTS

Statistics	Fixed Effect Results
R-Squared	0.190990

Adjusted R- Squared	0.180990
Coefficients:	
Constant	2.017170
Std. error	0.067670
Independent Variable	
NOPAT	1.269772
Std. error	0.080327
t- statistics:	
Constant	29.80896
Independent Variable (NOPAT)	15.80752
p-value:	
Constant	0.0000
Independent Variable (NOPAT)	0.0000
F-statistic	2.124467
Prob(F-statistic)	0.000000

Hypothesis 2: *EVA dominates conventional performance measures such as NOPAT, ROCE, ROE, and EPS etc. in explaining contemporaneous MVA.*

To test for the incremental value-relevance (also called information usefulness or content) of EVA over the value-relevance of conventional performance measures, the following multivariate regression model was used:

$MVA_{it} = \beta_0 + \beta_1\ EVA_{it} + \beta_2\ EPS_{it} + \beta_3 ROCE_{it} + \beta_4\ RONW_{it} + \beta_5\ OCF_{it} + \beta_6\ NOPAT_{it} + \beta_7\ NI_{it} + \beta_8\ RI_{it} + e_{it}$…….(3)

The above model was also estimated using a pooled time-series–cross-sectional least squares regression. The dependent variable was MVA for firm (i) in period (t); whereas, the explanatory variables were EVA, NOPAT, ROCE, RONW, EPS, NI and RI.

TABLE 4: HYPOTHESIS 2 MULTIVARIATE REGRESSION RESULTS

Statistics	**Fixed Effect Results**
Number of Observations	9960
R-Squared	0.312824
Adjusted R- Squared	0.235865
Coefficients:	
Constant	1.905522
Std. error	0.067761
Independent Variables:	
EVA	0.124302
Std. error	0.009230
EPS	0.045534
Std. error	0.001558
ROCE	1.67E-06
Std. error	0.000197
RONW	0.000396
Std. error	0.000399
OCF	0.044923
Std. error	0.055964
NOPAT	2.091175
Std. error	0.112039
NI	0.457093
Std. error	0.057217
RI	0.132522
Std. error	0.008779
t- statistics :	
Constant	28.12118
Independent Variable (EVA)	13.46680
Independent Variable (EPS)	29.22855

Independent Variable (ROCE)	0.008487
Independent Variable (RONW)	0.992516
Independent Variable (OCF)	0.802707
Independent Variable (NOPAT)	18.66477
Independent Variable (NI)	7.988821
Independent Variable (RI)	6.964544
p-value:	
Constant	0.0000
Independent Variable (EVA)	0.0000
Independent Variable (EPS)	0.0000
Independent Variable (ROCE)	0.9932
Independent Variable (RONW)	0.3210
Independent Variable (OCF)	0.4222
Independent Variable (NOPAT)	0.0000
Independent Variable (NI)	0.0000
Independent Variable (RI)	0.0000
F-statistic	4.064849
Prob(F-statistic)	0.000000

Table 4 shows the estimated coefficients, standard errors, t-statistics, F-statistic and adjusted R-squared for this model (Equation 3) and indicates that all eight performance metrics, that is, EVA, EPS, RONW, ROCE, OCF, NOPAT, NI and RI, are positively associated with shareholder value (MVA). The coefficients for and EVA, EPS, NOPAT, NI and RI are 0.5088, 0.1437, and 0.5466, respectively and all are significant at 5%, whereas the coefficients of RONW, ROCE and OCF are not statistically significant. The overall adjusted R- square of 23.58 percent indicates that only 24 percent of variations in market value can be only explained by all the variables together leaving most of the proportion of changes in market value of Indian companies unexplained. Following the value-relevance literature (Biddle *et al*., 1995; 1997; Chen and Dodd, 1997; Worthington and West, 2004; Bao and Bao, 1998; Feltham *et al*., 2004; Elali, 2006), this hypothesis was tested using a two-step process. For the first step, the value-relevance of each of the eight explanatory variables was evaluated. To accomplish this, each of these eight variables was specified as the explanatory variable in separate univariate regressions with MVA as the dependent variable. Value-relevance was then assessed by comparing adjusted the R-squared for the eight univariate regressions. Table 5 exhibits the results of the regressions and shows that EPS has the greatest value-relevance as it possesses the greatest information power in explaining the variation in the MVA followed by RI and EVA. The main observation is that EVA has adjusted R-squared (19.2%) that of many traditional measures like NOPAT, OCF, RONW, NI and ROCE. Another interesting observation from the above table is that there is no large difference in the variation explained by each of the independent variables.

TABLE 5: RELATIVE AND INCREMENTAL VALUE RELEVANCE TEST (INDIVIDUAL)

Rank order of R^2	EPS		RI		EVA		NOPAT		OCF		RONW		NI		ROCE
R^2 (%)	23.40	>	19.4	>	19.17	>	19.10	>	19.09	>	16.90	>	16.87	>	16.84

Note: EPS= Earnings per Shares; RI= Residual Income; EVA= Economic Value Added; NOPAT= Net Operating Profit after taxes; OCF= Cash flow from operations; RONW= Return on net worth; NI= Net Income; ROCE= Return on capital employed

In the second step, a set of tests was conducted to find out which of the eight predictors of shareholder wealth provides value-relevance data beyond that provided by other measures. In these tests, each of the eight explanatory variables was paired alternately with each other in a multivariate regression. Taking the adjusted R-squared from the pair wise regression, and subtracting the individual R-squared for each of the independent variables obtained in the earlier univariate regressions, yields the incremental value-relevance of various independent variables. The results of pair wise are given in the table 6 and it is evident that EPS is the most significant explanatory metric by itself or when paired with NOPAT. The three pairwise combinations that most explain MVA, in order of decreasing power, are EPS/NOPAT (26.54%), EPS/RI (25.98%), and EVA/EPS (29.89%). EVA is ranked third best measures when combined with EPS, thereby concluding that although EPS

is best measures of shareholder valuation but EVA also can be used by investors making investment decision and in firm valuation.

TABLE: 6 RELATIVE VALUE-RELEVANCE- TEST (PAIRWISE COMBINATIONS)

Pair-wise combination	R^2 (%)
EPS/ NOPAT	26.54
EPS /RI	25.98
EVA/ EPS	25.70
EPS/OCF	25.05
EPS/ NI	23.64
EPS/ RONW	23.42
EPS/ ROCE	23.40
NOPAT/RI	21.56
EVA/RI	21.34
EVA/NOPAT	21.24
OCF/ RI	21.18
EVA/OCF	20.96
NOPAT/ NI	20.51
OCF/ NOPAT	20.46
RONW/RI	19.53
NI/ RI	19.51
EVA/RONW	19.22
EVA/NI	19.19
OCF/NI	19.18
EVA/ROCE	19.17
RONW/ NOPAT	19.16
RONW/OCF	19.14
ROCE/NOPAT	19.10
ROCE/OCF	19.09
RONW/ NI	16.92
ROCE/ RONW	16.90
ROCE/RI	16.87

The results in Table 7 provide incremental value-relevance tests for the pairwise combinations of EVA, NOPAT, EPS, ROCE, RONW, NI, NOPAT and RI. For example, the incremental value-relevance of EVA over ROCE (2.33%) can be quantified by comparing the R-squared of the two regressions: the value-relevance of the pairwise comparison of EVA and ROCE (19.17%) from Table 6 minus the value-relevance of ROCE (16.84%) from Table 5. As summarized in Table 8, the results indicate that EVA exhibits the largest incremental information usefulness over traditional measures. These results support the claims made by EVA proponents that EVA outperforms other performance measures in explaining shareholder wealth, whereas relative information test indicates that traditional performance measures are better reflector of firm value. Overall, it can be summarized from the results that EVA should be used along with traditional measures in valuation of firm and making investment strategy based on firm performance.

TABLE: 7 INCREMENTAL VALUE-RELEVANCE TEST

Rank order of R^2	EVA/ROCE		EVA/RONW & EVA/NI		EVA/ EPS		EVA/NOPAT		EVA/OCF		EVA/RI
R^2	2.33%	>	2.32%	>	2.30%	>	2.14%	>	1.87%	>	1.86%

Hypothesis 3: *Components unique to EVA help in explaining contemporaneous MVA beyond the explanation given by conventional financial performance measures such as ROCE, RONW, EPS, NOPAT, NI, OCF and RI.*

This hypothesis was tested with an objective to know the explanatory power of the components of EVA in explaining the MVA of the Indian Companies. This is achieved by breaking the EVA into five components and then the explanatory power of all the components was examined in explaining the market value of the firms.

$MVA_{it} = \beta_0 + \beta_1 OCF_{it} + \beta_2 ACC_{it} + \beta_3 ATI_{it} + \beta_4 CC_{it} + \beta_5 ADJ_{it} + e_{it}$……(4)

This model was also estimated using a pooled time-series–cross-sectional least squares regression. The dependent variable was MVA for firm (i) in period (t), and the explanatory variables were OCF, ACC, ATI, CC and ADJ. These variables are cash flow from operations (OCF), Accounting accruals (ACC), After tax inertest cost (ATI) and Accounting adjustments (ADJ).

TABLE 8: HYPOTHESIS 3 MULTIVARIATE REGRESSION RESULTS

Statistics	Fixed Effect Results
R-Squared	0.275163
Adjusted R- Squared	0.194257
Coefficients:	
Constant	-1.246293
Std. error	0.068971
Independent Variables:	
OCF	2.684468
Std. error	0.099928
ACC	2.039272
Std. error	0.095575
ATI	-0.092206
Std. error	0.009612
CC	-0.008713
Std. error	0.000643
ADJ	1.624204
Std. error	0.072010
t- statistics :	
Constant	-18.06971
Independent Variable (OCF)	26.86411
Independent Variable (ACC)	21.33679
Independent Variable (ATI)	-9.593121
Independent Variable (CC)	-13.55654
Independent Variable (ADJ)	22.55537
p-value:	
Constant	0.0000
Independent Variable (OCF)	0.0000
Independent Variable (ACC)	0.0000
Independent Variable (ATI)	0.0000
Independent Variable (CC)	0.0000
Independent Variable (ADJ)	0.0000
F-statistic	3.401021
Prob(F-statistic)	0.000000

From the above table, the results of this regression indicate a significant relationship to all of the independent variables and provide a baseline for analyzing the incremental value-relevance of EVA components. The components of EVA are able to explain the 20 percent (adjusted R- square) of variations in the market value of Indian companies. To address this incremental value-relevance question, EVA was broken down into five

components, as described above; and the contribution of each component towards explaining contemporaneous MVA was assessed. Following the value-relevance methodology and as in case of hypothesis 2, this hypothesis was tested using a two-step process. First, the value-relevance of each of the five explanatory variables, that is, OCF, ACC, ATI, CC and ADJ, alongwith traditional financial performance measures was evaluated in order to know which components of EVA contributes maximum to the variation in market value of Indian companies. To accomplish this, each of these variables was specified as the explanatory variable in separate univariate regressions with MVA as the dependent variable. Value-relevance was then assessed by comparing the adjusted R-squared of the five regressions. Table 9 presents the results and shows that EPS has the greatest value-relevance – that is, it possesses the greatest information power in explaining the variation in the MVA. The main observation was that CC, a component of EVA has a significantly higher adjusted R-squared (19.52%) than that of RI (19.10), OCF (19.09%) and ATI (18.46%). OCF in turn has a significantly higher adjusted R-squared (19.09%) than ADJ (17.60%) and ACC (17.08%). The results conclude that although, traditional financial performance dominates but components of EVA are also has role to play in the market valuation of Indian companies.

TABLE 9: RELATIVE VALUE -RELEVANCE TEST (INDIVIDUAL)

Variable	Adjusted R^2(%)
EPS	23.40
CC	19.52
RI	19.40
NOPAT	19.10
OCF	19.09
ATI	18.46
ADJ	17.6
ACC	17.08
RONW	16.9
NI	16.87
ROCE	16.84

Note: EPS= Earnings per Shares; RI= Residual Income; EVA= Economic Value Added; NOPAT= Net Operating Profit after taxes; OCF= Cash flow from operations; RONW= Return on net worth; NI= Net Income; ROCE= Return on capital employed; ACC= Accounting Accruals; ADJ= Accounting Adjustments; ATI= After Tax Interest expense; CC= Capital Charge or cost of capital and OCF= Cash flow from operations

CONCLUSION

The market value of stocks depends upon number of factors ranging from company specific to market specific. However, one factor, which has a significant influence on the market value, is the expectation of the shareholder regarding the return on their investment. The share prices are influenced by the extent to which the management is able to meet the expectation of shareholders. Various measures like return on capital employed, return on equity, earning per share, net profit margin, operating profit margin have been used to evaluate the performance of the business. The problem with these measures is that they lack a proper benchmark for comparison. To overcome the problems associated with traditional measures, various value based measures have been developed. Economic value added (EVA) is one such measure that has gained significant attention among researcher and companies due to its ability to reflect the true value of the company.

The main objective of this study is to examine whether Economic Value Added (EVA) can be used as a tool of performance measures while investing in Indian market and provide evidence about its superiority as a financial performance measure as compared to conventional performance measures in Indian companies. To achieve this, performance of the Indian listed manufacturing companies is compared with traditional mandated corporate financial performance measures used in investment analysis. Panel data regression was used to know the efficacy of various performance measures and to test the hypotheses. Our Regression results about hypothesis 1 indicate that EVA is significant associated with MVA of the Indian companies and there is positive relationship between EVA and MVA of Indian companies. Another observation from our results is that since EVA outperforms NOPAT, it can be used as proxy for market return (MVA). But only a little proportion of changes in MVA can be explained by EVA and NOPAT as measured by adjusted r- square of EVA and NOPAT respectively. Hypothesis 2 was tested in order to know whether EVA dominates conventional performance measures such as NOPAT, ROCE, ROE, and EPS etc. in explaining contemporaneous MVA. The regression results indicate that EPS and RI dominate than EVA in explaining the MVA. The three pairwise combinations that most explain MVA, in order of decreasing power, are EPS/NOPAT (26.54%), EPS/RI (25.98%), and EVA/EPS (29.89%). EVA is ranked third best measures when combined with EPS, thereby concluding that

although EPS is best measures of shareholder valuation but EVA also can be used by investors making investment decision and in firm valuation. Another inference from these results is that investor in India mostly focus on traditional measures while making investment decision and in valuation of companies. Incremental value relevance test also hold the same results, reflecting the superiority of traditional measures. Finally, the results about the value relevance of components of EVA alongwith traditional performance measures reveals that EPS dominates , but components of EVA also contribute to the variations in shareholder value. Thus from the mixed evidences we can conclude that investor should use EVA while designing investment strategy.

Overall, the findings in this study are broadly comparable to prior studies supporting the information usefulness of traditional mandated performance measures, including Biddle *et al*., 1997; Chen and Dodd, 1997 and Ismail (2006) among others. But low explanatory power of all variables in explaining the market value of Indian companies indicates that apart from financial measures, market discounts non- financial measures in firm valuation. These includes, technology , R&D, product quality, human resources, quality of management etc. which should be included in order to analyze the variations in the shareholders' value. Hence, future research should be expanded to include such financial and non-financial metrics. Lastly, the difference between the findings of this study and that of others is attributed following reasons: 1) the differences in research design and methodology, and 2) the differences in the accounting principles and variables definition.

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