

Effectiveness of Economic Value Added (EVA) and Conventional Performance Measures - Evidences from India

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ABSTRACT

In this paper we have tried to find out the effectiveness of EVA in selected Indian companies. During last decade, value added measures like EVA has gained popularity and companies around the world have started disclosing EVA figures in their financial statements, as a part of corporate social responsibility agenda. This is because of shifting corporate objective from profit maximization to value or wealth maximization. The paper examines whether selected companies are able to create value for their shareholders or not. For this, performance of selected companies has been analyzed using traditional performance measures such as ROCE, ROE and EPS alongwith value added measures called EVA. With the help of various statistical techniques like Regression, Trend analysis, Chi square and ANOVA, the present study tests the various hypotheses and reveals that except for few, majorities of the sample companies are able to continuously create value for their shareholders during the study period. Study provide that EVA is gaining popularity in India as important measures of firm performance and more companies should disclose EVA figures in their financial report so as to reveal correct financial position to the various stakeholders.

KEYWORDS: EVA, Return on Capital Employed (ROCE), Earning Per Share (EPS), Value Added Measures, Economic Capital.

JEL CLASSIFICATION: G30, M41

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INTRODUCTION

Corporate performance measurement is one of the emerging areas of research in finance among the researchers all over the world. Several studies are carried to find out what influences the share prices (market prices) of a company. Corporate performance is affected by various factors ranging from company specific, industry specific and economic variables, collectively

known as fundamental analysis. After Great depression of 1930's, there is exponential growth of corporate form of business all over the world. Separation of ownership from management is unique characteristic of this form of business. Due to wide spread distribution of shareholding (ownership) of companies, day-to-day affairs are managed by managers or Board of Directors or popularly termed as 'Board'. The board is duly

elected by shareholders and represents them in dealing with third party. The relationship between shareholders and board is termed as of 'Agency'.

The basic objective of shareholders is value maximization or wealth maximization. To achieve this managers take various decisions and their performance is reflected in terms of achievement of these objectives. "Shareholders' wealth is measured in terms of returns they receive on their investment. It can either be in forms of dividends or in the form of capital appreciation or both. Capital appreciation depends on the changes in the market value of the stocks. Financial information is used by various stakeholders to assess firm's current performance and to forecast the future as well" (Sharma & Kumar, 2010). Riemann (1989) observes that shareholder interests have been recognised as important objective for a long time, but performance measures rarely show that this objective is achieved. He argues that it is so because managers do not know how to correctly measure the performance of the company.

Corporate performance measurement systems were developed as a tool of monitoring and maintaining control, which is the process of ensuring that company aims at strategies that lead to the achievement of its overall objectives. Poorly selected performance measures communicate wrong signals to the managers, leading to poor decisions and undesirable results for various stakeholders. Financial managers, analysts and researchers have been of the opinion that the value of a company can be determined by using traditional accounting measures of corporate performance like earnings per share, return on assets (ROA) and dividends per share etc. Over the years, numbers of performance measures have been used on the assumption of having some correlation with shareholders' value. Conventional methods to measure 'Shareholders Value Creation' have used parameters based on earnings, market capitalization, discounting cash flows by estimating present value of future cash flows. "Extensive equity research has now established that it is not earnings *per se*, but VALUE that is important" (Annual Report, HUL 2009). These studies have further demonstrated that conventional financial performance parameters

particularly Net Operating Profit after tax (NOPAT), Return on Equity (ROE), Return on Capital Employed (ROCE), Earning Per Share (EPS) etc. have been criticized due to their inability to incorporate full cost of capital. Table 1 presents various financial metrics to measure corporate performance. This is because of the limitations of traditional measures of performance that have lead to the search for comprehensive measure of

Table 1: Performance Evaluation Metrics

Traditional Metrics	New Financial Metrics
Earning Growth	Value Based Metrics
Earning Per Share (EPS)	Economic Value Added (EVA)
Market Value	Market Value Added
Return on Sales	Cash Flow ROI
Return on Equity (ROE)	Discounted Cash Flow
Return on Assets	Balanced Scorecard
Total Returns to Shareholders	
Cash flow	
Assets Turnover	
Inventory Turnover	
Accounts Receivable Turnover	
Capital Spending	
Budget Comparisons	
Cost Structure Improvement	

(Source: Abdeen and Haight (2002). Fresh look At Economic Value Added: Empirical Study Of The Fortune Five-Hundred Companies, The Journal of Applied Business Research, 18(2), 27-36.)

corporate performance. Black *et al.* (2001) while summarizing the findings of various economists showed that little correlation exists between historical accounting returns and stock market performance. According to Rappaport (1986), within a business, there are seven drivers (e.g. sales growth rate, operating profit margin, income tax rate, working capital investment, fixed capital investment, cost of capital, and forecast duration) that can be managed to create value. The theory suggests that improvement in these value drivers leads to an increase in shareholders' value.

Value based management system has gained popularity in academic literature during last two decades. A common theme behind the value-based performance measures is that they take these all seven value drivers and summarise them into a single measure. One such innovation in the field of internal and external performance measurement is Economic Value added (hereafter EVA). EVA is calculated by deducting the total cost of capital from economic profit. 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, who have adopted it as an internal control measure. In developed countries like US and in Europe companies started disclosing EVA statements alongwith other accounting numbers. In deed, highly regarded corporations like Coca-Cola, AT&T, Quaker Oats, Briggs & Stratton, CSX, and Toys 'R Us have switched to EVA for investment decisions, capital reallocation, business combinations, and the performance evaluation of managers and divisions". (Keys *et al.* 2001)

In India, presently only few companies like Hindustan Unilever Limited, Godrej Consumer Products Limited (GPCL), Dr. Reddy, BHEL, Dabur, Hero Honda, Orchid Pharmaceutical & Chemical, Pidilite, Crompton Graves, Infosys, Satyam (Now Satyam Mahindra), Paras Pharmaceuticals limited and Marico Industries are

voluntarily disclosing EVA statements in their financial reports. Companies like Aditya Birla Group, TISCO, have adopted it to reward their executives. In the coming years in India, EVA is expected to replace many traditional accounting measures in financial statements as Ministry of Corporate Affairs has decided to revise Schedule VI to the Company Act 1956 (*Schedule VI stipulates the manner in which every company prepares and presents its balance sheet and profit and loss account*) and therefore one can expect increased numbers of EVA related information about Indian companies. The present study attempts to analyze the performance and discuss the effectiveness of various conventional corporate performance measures alongwith value added performance measure called EVA of selected companies in India.

THEORETICAL FRAMEWORK OF EVA

i) Meaning and Definition

EVA was introduced in 1991 by Stewart as a financial measure reflecting true value of the company. It measures the profitability of a company after taking into consideration the overall cost of capital employed in the business including equity capital. An In-house research conducted by Stewart provided evidences about superiority of EVA in reflection of Market value of company. "EVA estimates a particular type of economic profit, which has been part of mainstream economic thinking for more than a century" (Chakrabarti, 2000). In simple words, EVA is the residual income after charging the cost of capital provided by shareholders and lenders. EVA can be calculated by using following formula:-

$$EVA = NOPAT - \text{Capital charge} \dots \dots \dots (1)$$

$$= NOAPT - (WACC \times \text{Economic Capital}) \dots \dots \dots (2)$$

Where:-

- a) EVA= Economic Value Added
- b) NOPAT = After Tax net operating profits after adjusting various items of non- operating and non-recurring nature to arrive at economic profit for calculation of economic value.

c) *WACC*= Weighted average cost of capital. The weighted average cost of capital is calculated by calculating the cost of equity capital as well as after tax cost of debt and then multiplying the each cost by weights (proportion). The cost of equity capital is calculated by using Capital Assets Pricing Model (CAPM) by formula:- $K_e = R_f + \beta (R_m - R_f)$, where K_e is cost of equity capital, R_f is returns on risk-free investment R_m is market returns and β is sensitivity of security returns with market returns. The capital asset pricing model uses the market (R_m) as a benchmark for estimating the cost of equity. The Model assumes that the cost of equity (K_e) is simply a “risk free rate of return”(R_f) plus a premium that investors require to take on additional market risk.

d) *Economic Capital* = Amount of capital invested in a business after making adjustments as suggested by Stern- Stewart & co.

EVA can also be computed by taking the difference between the rate of return on net assets or invested capital and the weighted average cost of capital, multiplied by the invested capital.

$$EVA = (ROIC - WACC) * IC \dots\dots\dots (3)$$

Where:-

ROIC= Return on Invested Capital

WACC= Weighted average cost of capital computed as above.

IC= Invested Capital, calculated as described above.

EVA of a company can be increased by using any of following strategies:-

- a) Increasing returns on capital (while keeping WACC and invested capital constant).
- b) Reduction in overall cost of capital (WACC)
- c) Investment in new projects that generates returns more than the cost of capital
- d) Divestment(Sell-off) of value destroying activities or projects

e) Sustaining the competitive advantage (technological or cost leadership, for example) which will enable the company to generate above-normal returns ($RONW > WACC$), for a longer period

ii) Advantages of EVA

EVA is based on the idea of economic profit rather than accounting profit. A company creates value only when a certain investment project covers all operating costs and the cost of capital. EVA does not only consider the interest cost but also the cost of equity. Only if the rate of return on capital is higher than the cost of capital, value is being created and the demands of capital markets are fulfilled (Friedl & Deuschinger, 2008). Following are important advantages of EVA based performance measures:-

- 1. EVA is closely related to Net Present Value (NPV), a popular and important method of investment valuation. EVA is related with corporate finance theory that argues that the value of the firm will increase if you take positive NPV projects.
- 2. It avoids the problems associated with approaches that focus on percentage spreads - between ROE and Cost of Equity and ROC and Cost of Capital. These approaches may lead firms with high ROE and ROC to turn away good projects to avoid lowering their percentage spreads.
- 3. It is influenced by all of the decisions that managers have to make within a firm - the investment decisions and dividend decisions.
- 4. EVA calculates the economic profits and capital after incorporating various accounting adjustments as elaborated in the following part.

iii) Role of Accounting Adjustments in EVA Calculations

Accounting adjustments are the important and contentious aspect of EVA calculations in academic literature all over the world. Stern-Stewart has suggested 164 such accounting adjustments to convert the GAAP

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Dated: 6-Jul-2023

profits into 'Economic Profits' and to convert book capital into 'Economic Capital' as required for the calculations of EVA. In practice, companies adopting EVA as performance measures consider not more than fifteen adjustments in calculation of EVA figures. Young (1999) observes that the number of adjustments has fallen substantially in recent years. Various other researchers have suggested the number of adjustments required to convert GAAP profits into Economic profit. In the academic literature there are lots of anomalies over the exact number of adjustments need to be considered in computation of EVA. Close examination of literature reveals that four important adjustments are integral part of calculating EVA. These are commonly known as 'equity equivalents'. Stern- Stewart India and Business Today (BT) have conducted a study of Indian companies titled as *India's Biggest Wealth Creators* during 2002-2004 and identified various important adjustments for calculations of EVA as per Indian GAAP. The survey was published in Business Today and popularly known as BT-SS study. Following are important adjustment (See *Business Today, 2001*) required in profit and loss account and balance sheet of company to compute the NOPAT and the economic capital.

- i. *Research & Development*: The after-tax R&D expenditure is included in capital and added back to NOPAT. The amount included in capital is amortized over five years.
- ii. *Goodwill*: Goodwill amortization is excluded from the NOPAT, and gross goodwill is included in capital.
- iii. *Interest*: All interest expenses are added back to profits. The tax-benefits of interest are also removed, and the cash operating taxes are adjusted accordingly. This does not apply to the Banking and Financial Sector (BFS) companies.
- iv. *Non-Interest Bearing Current Liabilities (NIBCLs)*: NIBCLs are excluded from the capital in non-BFS companies.
- v. *Construction in Progress*: Construction in progress is included in capital. It does not apply to the BFS sector.

- vi. *Non-Recurring Income and Expenditure*: Non-recurring items are excluded from NOPAT, and capitalised after tax. Non-recurring expenditure is taken as addition to capital and non-recurring income as reduction.
- vii. *Asset Gains*: Gains or losses from BFS transactions are amortized to spread returns of assets over their lives.
- viii. *Cash-Operating Taxes*: Tax provision is restated to reflect taxes paid on operations. The tax-effects of financing and non-recurring items are eliminated.
- ix. *Investments in Marketable Securities*: These are included in capital, and the income from them shown in the books of accounts is included in the NOPAT.
- x. *Revaluation Reserve*: This is excluded from capital while calculating Economic Capital.

LITERATURE REVIEW

Several studies have been conducted during the last two decades, first in the developed markets like US and later in the other countries to know whether it is really better to use modern value-based measures such as EVA, NPV, IRR, Cash value added (CVA) and other cash flows based measures than traditional performance measures as mentioned in the preceding section to measure the corporate financial performance, or which performance measure best explains change in market value of corporations'. The results are quite mixed and controversial. In this section we will present important studies about the effectiveness of various corporate performance measures.

i) **Studies claiming superiority of EVA over other measures**

Stewart (1991) provided evidence of the correlation between EVA and MVA. By using a sample of 613 US companies over the period 1987-1988 and examining both constant and changes in EVA and MVA, he found that there is a relationship between both the levels of EVA and MVA. Since the correlation between changes in EVA and MVA was high, Stewart suggested that

adopting the goal of maximising EVA and EVA growth would in fact build a premium into the market value of the company. In a major study by Stern (1995) argues that the accounting measures such as earnings, earnings growth, dividends, dividend growth, ROE, or even cash flow are not key measures of corporate performance, but in fact EVA. The changes in the market value of a sample group of companies (specifically their MVAs) have been shown to have a relatively low correlation with accounting measures.

Milunovich and Tsuei (1996) investigated the correlation between frequently used financial measures (including EVA) and the MVA of companies in the US computer technology industry. The results of the study reveal that correlation of different measures was EVA; 42%, EPS growth; 34%, ROE; 29%, Free cash flow; 25% and FCF; 18% for the period from 1990 to 1995. The results clearly state that EVA demonstrated the best correlation and it would be fair to infer that a company that can consistently improve its EVA should be able to boost its MVA and therefore its shareholders' value. Lehn and Makhija (1997) studied the relationship between six performance measures and stock returns. They used data from 452 U.S. companies from 1985 to 1994. The results revealed that EVA and MVA are effective measures of performance. Moreover, the correlation of EVA with stock returns (.59) was slightly higher than the correlation of MVA (.58), ROE (.46), ROA (.46), or ROS (.39). Thus, EVA and MVA appear to be somewhat better long-run performance measures than conventional accounting performance measures.

Pablo (2003) analyzed 582 companies in respect of correlation between increase in the MVA and EVA, NOPAT, and WACC for successive ten years. The results revealed that the average correlation between the increase in the MVA and EVA, NOPAT and WACC was 16%, 21% and -21%, thereby revealing that EVA is better correlated with market value of the company. De Wet and Hall (2006) highlighted the importance of economic profits (EVA) and their long term effects on shareholder value (MVA) of data related to Jordan stock exchange. Statistical test (regression) results showed that there is positive relationship between spreads(EVA) and

shareholders value, but sales growth with less sustainable growth rate does not contribute significantly to shareholders value.

Irala (2007) examines whether Economic Value Added (EVA) has got a better predictive power relative to the traditional accounting measures such as EPS, ROCE, RONW, Capital Productivity (K_p) and Labor Productivity (L_p). Analysis of 1000 companies across 6 years (6000 company years), very much supports the claim that the EVA is the better predictor of market value compared to other accounting measures. EVA is gaining recognition as fundamental measure of company performance despite the fact that it has been in existence for a relatively short span of time.

In another study of Misra and Kanwal (2007) argued that accounting based metrics are misleading measures of corporate financial performance as they are vulnerable to "accounting distortions". Major corporate failures like Enron, World Com etc. have brought to fore the malleability of these accounting based measures. Also, with the increasing participation of institutional investors in maturing stock markets the investment decisions are increasingly being based on intrinsic value. Results of the study reveal that EVA (%) is the most significant determinant of MVA as it explains the variations in share value better than the other selected measures of firms' financial performance.

ii.) Studies rejecting superiority of EVA over other measures

In contrast to results reported in above studies, Biddle *et al.* (1997) tested the assertions that EVA is more highly associated with stock returns and firm's value than accrual earnings, and evaluated which component of EVA, if any, contributed to these associations. The results indicated that earnings ($R^2 = 12.8\%$) were significantly associated with market adjusted annual returns than either Residual Income ($R^2 = 7.3\%$) or EVA ($R^2 = 6.5\%$) and that all three of these measures dominate cash from operations ($R^2 = 2.8\%$). The empirical results do not support the conclusion that EVA dominates earnings in relative information content, and suggest rather that earnings generally outperform

EVA. Similar results were revealed by Kramer and Pushner (1997) by analyzing the strength of the relationship between EVA and MVA, using the Stern Stewart 1000 companies for the period between 1982 and 1992. They found that although MVA and NOPAT were positive on average, the average EVA over the period was negative. No clear evidence is found to support the contention that EVA is the best internal measure of corporate success in adding value to shareholders' investment. In their study Goetzmann and Garstka (1999) found that long-term survival of companies may be related to accounting earnings and more, simple EPS does as well or better than EVA at explaining differences across companies and at predicting future performance. Copeland (2002) provided evidence that earnings, EPS growth, EVA, and EVA growth are all uncorrelated with total shareholders' returns (TSR). This prompted Copeland (2002) to investigate the correlation between TSR and the difference between expected and actual performance, called 'Expectation-based Management' (EBM). Since he found a significant correlation, he suggested that EBM as a better tool for performance measurement.

Chen and Dodd (2001) empirically examined the value-relevance of three profitability measures- Operating Income (OI), Residual Income (RI), and Economic Value Added (EVA) and concluded that the market may place higher reliance on audited accounting earnings than the unaudited EVA metric. Their findings failed to support the assertion that EVA is the best measure for valuation purposes.

Mishra *et al.* (2002) explained that how market value added was correlated with the firm's performance in terms of financial measures of the company such as economic value added, Net Operating Profit After Tax, Return on Capital Employed, Return on Net Worth and Earning per shares on the one hand and the purely economic factor of the company such as labour productivity, capital productivity, total factor productivity, sales and R&D expenditure on the other. They selected a sample of 28 Indian pharmaceutical companies for the time span between 1992- 93 to 2000-01 and concluded that NOPAT and EVA

outperform other financial and economic measures in predicting MVA in most of the Indian pharmaceutical companies. Kim (2006) provides empirical evidence on the relative and incremental information content of EVA and traditional performance measures, earnings, and cash flow. Regression analysis tests the information content of EVA and indicates that earnings are more useful than cash flow in explaining the market value of hospitality firms.

Kyriazis and Anastassis (2007) investigated the relative explanatory power of the Economic Value Added (EVA) model with respect to stock returns and firms' market value. They compared EVA to established accounting variables (e.g. net income, operating income), in the context of a small European developing market, namely the Athens Stock Exchange, in its first market-wide application of the EVA measure. Relative information content tests reveal that net and operating income appear to be more value relevant than EVA. Nappi-Choulet *et al.* (2007) investigate the association between EVA and MVA generated by French listed companies and the weight of real estate in their assets' portfolio. Study reveals that the sales of real estate assets can be driven by value maximizing behaviour. Ismail (2008) provides evidences regarding Economic Value Added (EVA) and company performance in Malaysia. The study sought to explain the ability of EVA, compared to traditional tools, in measuring performance under various economic conditions; pre-economic crisis, during economic crisis and post-economic crisis period. This study found that traditional tools particularly EPS is able to correlate and had a relationship with stock returns. This study further revealed that EVA is also able to correlate with stock returns and is superior in explaining the variations in the stock returns as compared to the traditional tools under varying economic conditions. Lee and Kim (2009) introduced Refined EVA (REVA) to the hospitality industry and compare it to EVA, market value added (MVA) and other traditional accounting measures (cash flow from operations (CFO), return on assets (ROA), and return on equity (ROE)). The study provides interesting and meaningful findings that REVA and MVA can be considered good performance measures

throughout the three hospitality sectors (i.e., hotel, restaurant and casino). According to the findings, REVA and MVA significantly explain the market adjusted return by presenting positive coefficients.

Careful examination of available literature on performance measures reveals that any accounting based measure can influence the value of the company. Literature further reveals that earnings generally dominate in explaining stock returns. But performance indicators based on earnings are criticized by various researchers not incorporating full cost of capital in calculation of returns available for shareholders. Of late, various researchers have started giving importance to value added measures, EVA being one of them. Results are quite mixed from both, developed and developing markets. There exist gaps in number of studies conducted in the developed economies (where EVA is now important and mandatory indicator in financial disclosure of companies) and in the developing countries (where EVA figures are voluntarily disclosed). As a result of these gaps, the present study has been undertaken to provide evidences about Indian companies using EVA as one of the performance measures and to establish the effectiveness of this newly introduced tool.

OBJECTIVES OF THE STUDY

The main objectives of the study are as follows:

- To analyze whether sample companies have been able to generate value for their shareholders;
- To analyze and compare the performance of the companies under study on the basis of selected conventional performance measures such as ROCE, ROE, EPS along with a value added performance measure called EVA;
- To examine the relationship (if any) between ROCE and EVA as a percentage of Average Capital Employed (EVACE) in sample companies.
- To compute the estimated values of EVACE on the basis of ROCE.
- To determine whether significance difference (if any) exists between actual values of EVACE and time factor of the sample companies.

- To analyze and compare the performance of the sample companies and to examine the consistency in ROCE and EVACE.

DATA SOURCE AND RESEARCH METHODOLOGY

The present study has been conducted by taking a sample of seven companies from India. The sample companies are those who disclose EVA figures in their financial statements. Initially eleven such companies were identified and later due to non-availability of complete EVA data for the period under study, seven such companies were left. The companies covered under study belong to IT, FMCG, Automobile and Pharmaceutical industries. The study is based on secondary data. The necessary financial data have been obtained from the annual reports of the companies, and Capitaline database. The data set spans to 8-years period from 2001-02 to 2008-09. The financial performance of the sample companies have been analyzed using ratio analysis. For this purpose, some conventional performance parameters such as ROCE, ROE and EPS have been used. Apart from traditional measures a new parameter called EVA has also been used, as it is increasingly being put to use in recent times by the companies both in developed as well as developing economies. In the present study quantitative analysis of financial information is carried out by using various statistical tool including time series and regression analysis. Estimated EVACE for different years of the study has been calculated using least square linear regression model. Chi-square test has been employed to test the significance of estimated and actual EVACE. Along with Least squares, trend analysis of EVACE and Analysis of Variance (ANOVA) has been carried out on the data collected to compare the means of all the sample companies. For data analysis *SPSS 17* and *StatistiXL* ('statistical') have been used.

Research hypothesis

Major hypothesis used in the study are as follows:-

1. For examining the significance of difference between mean values (μ) about EVACE and ROCE of the sample companies.

- a. $H_0: \mu_1 = \mu_2 = \mu_3 = \dots = \mu_7$, where 1, 2, 37 are mean values of EVACE and ROCE of sample companies.
 - b. $H_1: \mu_1 \neq \mu_2 \neq \mu_3 \neq \dots \neq \mu_7$, where 1, 2, 37 are mean values of EVACE and ROCE of sample companies.
2. For analyzing the significance of difference between actual and trend values of EVACE of all sample companies.
 - a. H_0 : There is no significant difference between actual and trend value of EVACE
 - b. H_1 : There is significant difference between actual and trend value of EVACE.
 3. For analyzing the significance of difference between actual and estimated values of EVACE of all sample companies.
 - a. H_0 : There is no significant difference between actual and estimated value of EVACE.
 - b. H_1 : There is significant difference between actual and estimated value of EVACE.

EVA ANALYSIS OF SAMPLE COMPANIES

As discussed earlier, in India there are only few companies that publish EVA figures in their annual reports. In this study we have identified seven such companies from various industries of the economy. In this section we have analysed the EVA performance of these companies. Table 2 presents the EVA of sample companies for the period of eight years from 2001-2002 to 2008-09. It can be observed from the table that the absolute values of EVA of Infosys registered an upward trend during the period of the study except in 2003-04. In Infosys, the objective of sustainable long- term value creation for shareholders is well recognised by all the business groups. (Bardia, 2008). "At Infosys, we have always believed that information asymmetry between the management and shareholders should be minimized. Accordingly we have always been at the forefront in practicing progressive and transparent disclosure like EVA". (Annual Report, 2009). From the information about Satyam (now Satyam Mahindra) it

can be observed that there is growing trend of EVA figures of the company from Rs 167.42 crore in 2001-02 to Rs. 871.2 crore in 2008-09. During the period of the study company is able to create value for its shareholders.

Godrej Consumer Products Limited (GCPL) adopted EVA as a measure of business performance in 2001. Apart from performance measure the Company has a scheme of Performance Linked Variable Remuneration (PLVR) which rewards its employee based on Economic Value Addition (EVA). Company has adopted EVA as a business strategy and all business decisions and strategies are centered on EVA. EVA figures of the company reveal that company is consistently creating value for its shareholders as its economic profits exceed the cost of capital, thereby resulting into net value addition by the company. The absolute amount of EVA increased from Rs. 30.1 crore to Rs. 129.83 crore during the study period.

Hindustan Unilever Limited is one of the leaders in FMCG market in India. "In Hindustan Unilever, the goal of sustainable long term value creation for the shareholders is well understood by all the business groups. Company adopted various measures to evaluate business performance and to set targets to take into account this concept of value creation" (Annual Report, 2008-09). Company started EVA reporting in 1999 in their annual reports along with traditional performance indicators. Table shows that absolute amount of EVA has almost doubled from Rs. 1080 crore to Rs. 2097 crore during the eight years i.e. 2001-2002 to 2008-09. Company is achieving its goal of value creation with sparkling business performance. Dr. Reddy's Laboratories limited vision to focus on the long term value creation for its shareholders has guided the company to adopt value reporting measures like EVA and MVA. DRL among top ten pharmaceutical companies in India is not able to create consistently value for its shareholders as measured by EVA and MVA. From EVA figures of the company it can be observed that although company created value for its shareholder during the period of 2001-02 to 2004-05, but after that it is continuously destroying value for its shareholders as company's cost

Table 2: Economic Value Added (EVA) of All Companies

(Figures in Rs. Crore)

Year	Infosys	Satyam	Godrej	HUL	DRL	Pidilite	Hero Honda
2001-02	389.02	167.42	30.10	1080.00	945.00	130.00	374.00
2002-03	510.06	170.11	41.70	1236.00	2699.00	156.00	481.00
2003-04	454.65	93.76	53.70	1429.00	1307.00	276.00	569.00
2004-05	689.63	178.52	78.80	886.00	80.00	277.00	564.00
2005-06	1132.00	350.63	108.90	1014.00	(2400.00)	318.00	641.00
2006-07	1540.00	481.78	110.70	1126.00	(1229.00)	359.00	485.00
2007-08	2122.00	726.70	74.25	1314.00	2570.00	514.00	575.00
2008-09	2286.00	871.20	86.69	2097.00	(1367.00)	973.00	835.00

Source: Compiled from Annual Reports of Sample Companies

Table 3: EVA Capital Employed (EVACE) of All Companies

(Figures in percentage)

Year	Infosys	Satyam	Godrej	HUL	DRL	Pidilite	Hero Honda
2001-02	35.00	20.59	28.12	38.35	4.48	4.99	51.00
2002-03	29.40	12.4	46.13	36.40	34.81	5.53	53.80
2003-04	18.23	4.61	54.63	37.80	13.85	9.35	49.30
2004-05	22.07	7.57	66.5	23.92	0.75	8.17	37.50
2005-06	26.14	12.09	103.00	39.61	(22.88)	8.14	32.90
2006-07	24.93	12.76	79.62	42.05	(11.02)	8.12	20.10
2007-08	23.20	14.36	74.25	47.20	8.14	9.9	20.00
2008-09	18.20	13.26	86.69	92.38	(4.27)	11.01	23.90

Source: Compiled from Annual Reports of Sample Companies

of capital is more than its economic profits resulting into value destruction for its shareholders. The value destruction amounts to Rs 1367 crore in 2008-09 amounting to 4.27 percent of capital employed, whereas accounting profits of company are Rs 4972 crore during the same period. It can be concluded that company is

not able to follow the vision and create value for its shareholders, whereas it seems to be profitable during the period of the study.

Pidilite Industries limited, manufacturer of famous brands like Fevicol, Dr. Fixit etc. is another company publishing EVA figures in its annual report. The market

capitalisation of the Company on 31st March 2008 was Rs 33,624 crore and has grown at CAGR of 32.2% since the IPO in 1993. EVA figures of the company during the study period have registered an upward trend. The absolute amount of EVA has grown from Rs 130 crore to 973 during the period 2001-2002 to 2008-09. One important observation from the Table 2 and 3 is that Pidilite is consistently adding value to shareholder's wealth. The EVACE of the company has increased from 4.99 percent in 2001-02 to 11.01 in 2008-09. On the whole, EVA during the period of study continued to be strongly driven by robust business performance.

Hero Honda is the largest manufacturer of two wheelers in the world and has been so over the last eight years. It is evident from the table that the absolute figures of EVA showed an increasing trend except in 2006-07 when EVA declined to Rs. 485 crore in comparison to Rs. 641 crore in 2005-06. Hero Honda like other companies under the study also recognises the significance of value creation for shareholders. Company adopted EVA in 1999 and measures the business performance taking into consideration the concept of EVA. As evident from Table 3, EVACE of the company fluctuates from 20.1 percent to 53.8 percent during the period of study.

Traditional Performance Measures

Performance of a company can be measured by various indicators. Ratio analysis is one of the important and useful tools for measuring the firm's performance. For a meaningful analysis of financial statements, financial ratios should be used in conjunction with non-financial ratios (Bhattacharyya, 2006). Ratio analysis helps various stakeholders to make an evaluation about the profitability and financial position of the company. In his paper, we have used three important profitability ratios such as ROCE, ROE and EPS to analyze the performance of sample companies along with value based performance indicators called EVA. Tables 4-6 exhibit details about the performance of sample companies on the basis of above stated ratios. In this section we have presented the performance of sample companies on the basis of these ratios.

i) Return on Capital Employed (ROCE)

Table 4 reveals ROCE ratio of all seven companies. It can be seen that ROCE of all the companies is fluctuating during the period of study. In Infosys, it was as high as 63.17% in 2001-02 and as low as 41.52 % in 2008-09. The trend shows a downward direction in

Table 4: Return on Capital Employed (ROCE) of All Companies

(Figures in percentage)

Year	Infosys	Satyam	Godrej	HUL	DRL	Pidilite	Hero Honda
2001-02	63.17	45.55	89.6	68.95	42.06	29.11	64.86
2002-03	54.42	33.83	180.1	64.31	26.44	30.78	94.84
2003-04	46.94	24.64	105.21	59.13	15.61	28.12	99.22
2004-05	48.13	27.95	121.79	43.62	2.19	28.13	83.21
2005-06	52.5	29.85	158.05	55.46	9.24	30.52	81.04
2006-07	45.09	31.34	198.12	71.32	35.94	29.84	72.75
2007-08	45.99	31.15	99.82	97.55	12.01	27.65	51.66
2008-09	41.52	29.55	71	120.74	13.55	16.57	49.09

Source: Capitaline

Table 5: Return on Equity (ROE) of All Companies

(Figures in percentage)

Year	Infosys	Satyam	Godrej	HUL	DRL	Pidilite	Hero Honda
2001-02	56.57	55.46	79.1	59.35	29.23	21.82	45.82
2002-03	46.57	32.76	157.84	52.82	24.02	22.29	70.41
2003-04	38.78	20.55	108.51	61.14	14.70	21.14	75.09
2004-05	40.68	23.57	147.51	56.61	2.77	21.87	65.11
2005-06	44.82	25.88	186.66	64.05	8.57	23.03	61.58
2006-07	39.89	26.85	192.38	61.46	35.47	26.64	55.46
2007-08	41.90	28.12	141.31	82.61	10.35	33.41	38.30
2008-09	36.26	26.1	113.33	114.14	11.14	21.31	35.48

Source: Capitaline

Table 6: Earning Per Share (EPS) of All Companies

(Figures in Rs.)

Year	Infosys	Satyam	Godrej	HUL	DRL	Pidilite	Hero Honda
2001-02	93.73	17.17	0	7.19	59.56	20.65	12.06
2002-03	121.32	14.24	6.89	8.04	50.6	22.54	22.67
2003-04	142.76	9.49	9.04	6.35	36.37	23.3	26.78
2004-05	170.01	17.06	10.25	4.78	7.85	27.48	33.91
2005-06	68.96	22.85	13.59	5.67	26.82	3.34	37.75
2006-07	81.41	37.22	19.51	7.57	69.45	4.5	45.84
2007-08	64.35	20.77	5.29	7.21	27.62	7.14	40.07
2008-09	72.5	24.99	5.86	8.14	32.25	5.48	45.24

Source: Capitaline

case of Infosys. In case of Satyam same kind of trend can be observed from the table 4. Company reported highest ROCE i.e. 45.55 percent in 2001-02 and lowest ROCE 24.64 percent in 2003-04. Godrej Consumer Products Limited recorded highest ROCE in 2006-07 and after that there is sharp decline for the last two years. ROCE in GPCL in 2008-09 declined to 71 percent as

compared to 198.12 percent in 2006-07. In case of Hindustan Unilever limited (HUL), leader in consumer products in India ROCE is continuously growing except a decline in 2004-05. ROCE figure in HUL has substantially increased from 68.95 percent in 2001-02 to 120.74 percent in 2008-09. It shows that company's overall financial position is very strong. If we compare

Table 7: Descriptive Statistics of All Companies

Parameter	Infosys	Satyam	Godrej	HUL	DRL	Pidilite	Hero Honda
ROCE							
Average/Mean	49.72	31.73	116.76	72.64	19.63	27.59	74.58
S.D	6.80	6.20	63.82	24.90	13.83	4.60	18.54
Coefficient of Variation (CV)	13.67	19.53	54.66	34.28	70.45	16.67	24.86
Variance	117.18	33.59	3563.60	542.34	167.35	18.52	300.84
ROE							
Average/Mean	43.18	29.91	130.94	69.02	17.03	23.94	55.91
S.D	6.32	10.90	60.88	20.26	11.32	4.21	14.76
Coefficient of Variation (CV)	14.63	36.45	46.49	29.36	66.48	17.59	26.40
Variance	34.93	104.01	3242.98	359.30	112.17	15.51	190.55
EVACE							
Average/Mean	24.65	12.21	67.37	44.71	2.98	8.15	36.06
S.D	5.65	4.71	23.89	20.36	17.25	2.05	14.07
Coefficient of Variation (CV)	22.93	38.63	35.46	45.53	578.31	25.20	39.02
Variance	27.95	19.45	499.37	362.65	260.31	3.69	173.22

the ROCE figures of DR. Reddy's Laboratories limited during the period of study, one can conclude a highly fluctuating and declining trend in ROCE. DRL reported 42.06 percent in 2001-02 and it is now declined to 13.55 percent in 2008-09. Pidilite Industries limited exhibits stability in ROCE during the period of 2001-02 to 2008-09 except in 2008-09, when company has reported a decrease in ROCE from 27.65 percent in 2007-08 to 16.57 percent in 2008-09. It appears from the last Colum of the table that in case of Hero Honda after 2003-04, ROCE is continuously declining. ROCE is reduced just to half (49.09 percent) in 2008-09 from 99.22 percent in 2003-04. Overall, ROCE of sample companies has variety of fluctuations during the period of study. To investigate the significance of difference in ROCE of all sample companies statistical techniques for hypothesis testing have been used in the following part of this study.

ii) ROE and EPS

Return on equity and Earning per share are another important measures of corporate performance from shareholder's perspective. ROE measures the return available to equity shareholders. Earnings per share are one of the most commonly used measures of expressing corporate earnings. Table 5 and 6 reveal ROE and EPS figures of the sample companies under the study. It is evident from the Table 5 that ROE of the all the companies are fluctuating over the eight years. Except HUL, all the other companies are reporting decline in ROE during the period of the study. HUL is one company where ROE figures are continuously growing over the years. In case of Pidilite Industries limited, there are very little fluctuations in ROE figures for the period under study. The ROE of the company varied from 21.14 percent to 26.64 percent during 2001-02 to 2008-09 except 33.41 percent in 2006-07. The same

kind of trend is exhibited in EPS figures as evident from the table 6. In case of EPS, Hero Honda is one such company where EPS is increasing every year except in the year 2007-08. In all other companies under study EPS figures are fluctuating on the years and showing mixed trends. The financial analysis of all the companies on the basis of three important indicators reveals mixed trend. However the overall analysis indicates impressive performance of the companies throughout the period of the study.

DATA ANALYSIS AND DISCUSSIONS

As discussed in the preceding section of the study, the performance of sample companies reveals mix trends on the basis of various performance indicators. In this section we will test the different hypotheses to achieve the various objectives of the study. Descriptive statistics about EVACE, ROCE and ROE are presented in Table 7. The table reveals that both average ROCE and average ROE are highest in Godrej consumer products limited followed by Hindustan Unilever Limited, Hero Honda and Infosys Technologies limited. Average ROE and average ROCE are lowest in case of Dr. Reddy's Laboratories and Pidilite Industries limited. It is therefore clear that performance of Godrej is best among

all the companies under study and shareholders of Godrej, Hindustan Lever are getting highest returns.

It can be further inferred from Table 7 regarding the consistency of performance by comparing the CV (Coefficient of variation) of all seven companies. It is clear that CV of ROCE is lowest (13.67 percent) in Infosys followed by Pidilite, Satyam and Hero Honda. Similar results are true about ROE, where CV is lowest (14.63%) in Infosys. CV values of ROE are highest in DRL and Godrej followed by Satyam. While comparing the EVACE values of the sample companies it is evident that average EVACE figure exhibit same results as of ROCE and ROE but while comparing consistency of performance CV value is lowest about Infosys and Pidilite. The coefficient of variation is quite high in case of DRL as compared to other companies which indicate high degree of uncertainty and inconsistency in the value addition.

i) Significance difference between Mean Values of EVACE and ROCE

Table 8 reveals the summary of ANOVA tables for EVACE and ROCE. ANOVA has been performed to examine the significance of differences between mean

Table 8 : Summary of ANOVA on EVACE and ROCE

Parameters	EVACE	ROCE
Null Hypothesis (H_0)	$\mu_1 = \mu_2 = \mu_3 = \dots \mu_7$	$\mu_1 = \mu_2 = \mu_3 = \dots \mu_7$
Alternative Hypothesis (H_1)	$\mu_1 \neq \mu_2 \neq \mu_3 \neq \dots \mu_7$	$\mu_1 \neq \mu_2 \neq \mu_3 \neq \dots \mu_7$
Degree of Freedom(df)	$df_1 = 6, df_2 = 49$	$df_1 = 6, df_2 = 49$
Level of Significance(α)	$\alpha = 0.05$	$\alpha = 0.05$
Computed F Statistics	19.25	23.80
Critical F value	2.29	2.29
p-value	2.23E-11	5.78E-13
Result	H_0 Rejected	H_0 Rejected

Note: - $\mu_1, \mu_2, \mu_3, \dots, \mu_7$ are mean values of all companies respectively

Table- 9: ANOVA Table of differences in the Mean values of all companies

Source of Variation	SS	DF	MS	F	P-value	F critical
ANOVA Values for EVACE						
Between Groups	25397.83	6	4232.97	19.25*	2.231298E-11*	2.29
Within Groups	10773.03	49	219.85			
Total	36170.87	55				
ANOVA Values for ROCE						
Between Groups	68309.49	6	11384.92	23.80*	5.78824E-13*	2.29
Within Groups	23434.48	49	478.25			
Total	91743.97	55				

SS= Sum of square, DF= Degree of Freedom, MS= Mean Square.* denotes significant at 0.05 level of significance.

Table 10: Summary Results of Trend Analysis of EVACE and Chi Square Test

Parameters	Infosys	Satyam	Godrej	HUL	DRL	Pidilite	Hero Honda
Intercept	-1.48	-0.15	7.88	5.48	-3.48	0.71	-5.37
Coefficient	29.83	12.73	39.78	25.52	15.18	5.64	54.85
Computed value of chi - square	4.96	12.39	20.32	33.58	459.31	1.09	6.38
Results	H₀ Accepted	H₀ Accepted	H₀ Rejected	H₀ Rejected	H₀ Rejected	H₀ Accepted	H₀ Accepted
Hypothesis	H ₀ : There is no significant difference between actual and trend value of EVACE. H ₁ : There is significant difference between actual and trend value of EVACE.						
Level of Significance (α)	Level of significance (0.05)						
Degree of Freedom (df)	Degree of freedom (n-1) = 7						
Critical value of chi -square	14.7						

values of the EVACE and ROCE in sample companies. Table 9 presents the results of ANOVA for both EVACE and ROCE. It is apparent from the table that in both EVACE and ROCE calculated F value is greater than the critical F- values thus our null hypothesis is rejected.

Calculated F values are 19.25 about EVACE and 23.80 about ROCE, whereas critical value is 2.29. Also if we compare p- value it is smaller ($2.3112E-11 < .05$) for EVACE and ($5.788E-13 < .05$) about ROCE thereby rejecting null hypothesis. It means there is significant

Table 11: Summary Results of Regression Analysis

Parameters	Infosys	Satyam	Godrej	HUL	DRL	Pidilite	Hero Honda
Correlation Coefficient (R)	0.91	0.90	0.18	0.92	0.17	0.67	0.68
Computed Value of chi- square	1.74	2.96	58.06	8.49	1140.67	2.13	22.47
Results	H_0 Accepted	H_0 Accepted	H_0 Rejected	H_0 Accepted	H_0 Rejected	H_0 Accepted	H_0 Rejected
Hypothesis	H_0 : There is no significant difference between actual and estimated value of EVACE.						
	H_1 : There is significant difference between actual and estimated value of EVACE.						
Level of significance (α)	Level of significance (0.05)						
Degree of Freedom (df)	Degree of freedom (n-1) = 7						
Critical value of chi -square	14.7						
Dependent variable	EVA Capital Employed (EVACE)						
Independent Variable	Return on Capital Employed (ROCE)						

difference in the mean values of the sample companies. So we can conclude that mean values of ROCE and EVACE is not statistically significant.

ii) Trend Analysis of EVACE

The relationship between EVA and average capital employed of a company is called as EVACE. "EVA and capital employed are associated with each other. With any increase and decrease in capital employed, there should be corresponding increase or decrease in the amount of EVA" (Bardia, 2008). Table 10 represents the summary results of Trend analysis of EVACE and chi square test. To find out the trend values of EVACE in all companies, least square trend equation is used. Least square coefficient and intercept are also provided in table. It is apparent from the table that to know the significance of difference between actual and trend values of EVACE, chi square test is used and values are provided. Since the calculated values of chi square test in Infosys, Satyam, Pidilite and Hero Honda are less

than the critical value (14.7), null hypothesis (H_0) is accepted in all and values are more than critical values in Godrej, DRL and HUL i.e. 20.32, 459.31 and 33.58 respectively, null hypothesis (H_0) is rejected in these companies. So we can infer that differences between original and trend values are insignificant in Infosys, Satyam, Pidilite and Hero Honda and that have risen due to sample fluctuations only whereas these differences (actual and trend values) are significant in Godrej, HUL and DRL and have not risen due to sample fluctuations.

iii) Regression Analysis

The technique of regression analysis has been used to compute the estimated values of EVACE. For this purpose known variable ROCE is treated as an independent variable and EVACE is known as dependent variable. Least square linear regression has been applied to estimate the values of EVACE and then compared with actual values by applying chi- square test. Null hypothesis (H_0) assumes there is no significant

Table 12: Results of Regression Analysis – Dependent Variable EVACE

Variables	Infosys	Satyam	Godrej	HUL	DRL	Pidilite	Hero Honda
Intercept	-12.943	-9.534	55.71	-9.451	-1.28	16.349	-2.355
Coefficient(b) ROCE	0.756	0.685	0.092	0.74	0.217	-0.297	0.515
t- statistic	-1.830	-2.187	1.96	-0.904	-0.108	4.303	-0.13
Prob.	0.117	0.071	0.097	0.401	0.917	0.005	0.897
D- W	1.771	0.550	0.648	1.869	1.492	1.106	0.597
F- Statistics	28.73*	25.69*	0.18*	29.63*	0.187*	4.770*	5.127*
S.E	0.141	0.135	0.210	0.136	0.501	0.136	0.515
R- Squared	0.820	0.810	0.0303	0.831	0.0303	0.442	0.460
N	8	8	8	8	8	8	8

*denotes significant at 0.05 significance level, Dependent variable- ROCE

difference between actual and estimated values about EVACE of the sample companies, whereas alternative hypothesis (H_1) states there is significant difference between actual and estimated values of EVACE of the sample companies. The results of regression and chi square are presented in Table 11 and 12. Table 11 reveals that correlation coefficient between EVACE and ROCE is strong among all the companies except in case of Godrej Consumer Products Limited (0.18) and Dr. Reddy's Laboratories (0.17). It is apparent from the table that computed chi square values about Infosys, Satyam, HUL and Pidilite i.e. 1.74, 2.96, 8.49 and 2.13 respectively are less than critical value (14.7) at 5% significance level, so null hypothesis (H_0) is accepted and can be concluded that statistically there is no significant difference between actual and estimated values of EVACE of these companies. Whereas, null hypothesis is rejected in case of Godrej DRL and Hero Honda as computed values are more than the critical values. Thus we can conclude that statistically there is no significant difference between actual and estimated values of EVACE in majority of the companies. Table 12 provides detailed results of OLS regression analysis about sample companies, where ROCE is dependent

variable and EVACE is considered Independent variable. F- Values and t- statistics confirm the same results.

CONCLUSION

In this study we have examined the performance of selected seven Indian companies with traditional and value based performance measure called EVA. Companies selected are those publishing EVA information in their annual reports and belong to various sectors of the economy. The performance based on EVA has been examined along with three important ratios namely ROCE, ROE and EPS. Careful analysis of all the sample companies reveals that except DRL all are creating values for their shareholders during the period of the study. EVA as a percentage of capital employed (EVACE) marked a fluctuating trend during the period of study in almost all the companies. It is clear from the analysis that performance of Godrej is best among all the companies under study and shareholders of Godrej, Hindustan Lever are getting highest returns. Test of significance about mean values of sample companies reveals that in both EVACE and ROCE, calculated F value is greater than the critical F values: thus our null hypothesis is rejected, concluding that there is significant

difference among mean values of sample companies. ANOVA table supports the results with p value $< \alpha$, further verifying the same results. Results about significance of difference between actual and trend values of EVACE represent acceptance of null hypothesis in Infosys, Satyam, Pidilite and Hero Honda and rejection in Godrej, HUL and DRL. This further infers that statistically there is no significant difference between the actual and trend values of EVACE among sample companies. Regression results reveal positive and statistically significant coefficients for sample companies except for Godrej Consumer products limited and Dr.

Reddy's laboratories limited. Chi-square test about the significance of difference between actual and estimated values of EVACE reveals same results as of significance of difference between actual and trend values about EVACE among sample companies. The overall results of the study reveal that the financial performance of all seven sample companies except DRL is strong & consistently adding values to their shareholders and EVA is better measure of firm performance. Therefore, more and more companies in India should disclose EVA figures in their financial statements as it is a reliable predictor of firm's performance.

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