Return on Investment versus Economic Value Added: An Empirical Study of S&P BSE Sensex Companies

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***Abstract* –Return on Investments (ROI), which is also referred to as Return onCapital Employed is the traditional technique of measuring corporate performance. Economic Value Added (EVA®) an alternative technique of measuring corporate performance in gaining popularity and is perceived as better measure than Return on Investments. An EVA® is a profitability measure of a project or investment which is based on residual income technique. EVA® is an absolute measure vis a vis ROI which is relative measure. EVA® is easier to interpret than ROI. EVA quantifies the wealth creation made by an investment in a project. This paper determines the ROI and EVA® of S&P SensexCompanies for the accounting year 2016-2017. The study concludes that EVA® as a technique of corporate performance measurement is a better indicator and can supplement ROI.**

***Keywords* –Return on Investments, Economic Value Added, Beta Coefficient, Covariance, Net Operating Profit After Tax**

I. INTRODUCTION

Return on Investments is the most widely used tool for measuring the performance of a business unit.It is also referred as return on capital employed. Return on Investment (ROI) is a ratio. The numerator is the amount of profit and the denominator is the amount of investment. This ratio provides an easily calculated and acceptable measure of economic accomplishment. A simple formula for determining the ROI is given below:

$$\text{ROI} = \frac{\text{Operating Profit}}{\text{Capital Employed}} \times 100$$

Where,Operating Profit is Net Operating Profit After Tax and Capital Employed is sum of Net-Worth (i.e. Share Capital plus Reserves & surplus) and Long-term Debt.

The term EVA® is of recent origin. It is the registered trade mark of Stern Stewart & Co USA. It was postulated in the year 1990. It is a modified version of residual income concept. The recent thinking is that economic value added is the true measure of corporate performance. A business entity should earn sufficient to cover its cost of capital and surplus to grow. Thus, any profit earned over and above the cost of capital is Economic Value Added. Positive EVA® implies wealth creation for the shareholders. Economic value added is just a way of measuring an operation's real profitability. EVA® measurement requires a company to be more careful about resource mobilisation, resource allocation and investment decisions. It effectively measures the productivity of all factors of production. EVA® can be measured as follows:

$$\text{EVA}^{®} = \text{NOPAT} - (\text{TCE} \times \text{WACC})$$

$$= \text{NOPAT} - \text{Cost of Capital}$$

Where,

NOPAT= Net Operating Profit After Tax

TCE= Total Capital Employed

WACC = Weighted Average Cost of Capital

The Net Operating Profit After Tax (NOPAT) is calculated excluding non-operating items like dividend, interest on securities invested outside the business and non-operating expenses. The Total Capital Employed (TCE) is the sum of shareholders' fund as well as loan funds. However, this does not include investments made outside the business. Weighted Average Cost of Capital (WACC) is cost of debt after tax and cost of equity as measured on the basis of Capital Assets Pricing Model.

For the purpose of measuring EVA®, Cost of Equity is measured on the basis of Capital Assets Pricing Model (CAPM) which is given below:

$$\text{Cost of Equity} = K_e = R_f + \beta\,(R_m - R_f)$$

Where,

R_f= Risk free return

R_m= Expected Market rate of return

β= Risk Co-efficient of Particular Company, measured by its beta.

Beta co-efficient is measured as under,

$$\beta = \text{Covariance}\,(r_i, r_m) \,/\, \text{Variance}\,(r_m)$$

Where,

r_i = Return on Specific Stock

r_m = Return on Market

The proponents of EVA® offers following four justifications in defence of superiority of EVA® compared to other measures.

1) EVA® calculation is easier and easy to understand
2) It is nearer to the real cash flows of the business entity
3) EVA® displays higher correlation to the market value of the entity
4) Application of EVA® to employee compensation aligns the managerial interests with that of the shareholders resulting into minimization of dysfunctional behaviour of the management.

This paper applies the concept of ROI and EVA® to 28 companies included in Bombay Stock Exchange's index S&P Sensex and evaluates the superiority of EVA® over ROI.

Note: S&P Sensex constitutes 30 stocks. Tata Motors Ltd represents has two types stocks in the Sensex Viz. Tata Motors Ltd (with regular voting rights) and Tata Motors Ltd – DVR (Differential Voting Rights). Thus, study has not considered Tata Motors Ltd. DVR. Further the company 'Coal India Limited' is eliminated form the study due to non-availability of audited financial statements of the company.

II. LITERATURE REVIEW

EVA®as a measure of profitability of company is becoming popular over other approaches to corporate profitability measurement such as ROI. Over last two and a half decades since first the concept of EVA®was postulated in 1990 by Stern Stewart & Co, various studies have been conducted and research papers published on EVA®.

Thampy and Baheti (2000) measured the EVA®by Indian Banks and Development Financial Institutions during the accounting period 1995-96, 1996-97 and 1997-98. The study revealed that Indian banks have not been creating wealth for shareholders, and most of them showed negative EVA®.

A review of the Theoretical and Empirical literature on EVA®by Worthington, Andrew and West, Tracey (2001) provided synoptic survey of EVA's conceptual underpinnings. The findings of their study indicated that empirical evidence concerning EVA® has been mixed. Their study concluded that the examination of EVA®over a longer time frame would allow greater empirical certainty on its status as a corporate performance measurement.

Anil and Satish (2009) presented a narrative literature review of 112 papers on EVA®from 1994 to 2008. Their narrative research paper concluded that there are gaps in existing literature on and suggested the direction for future research.

Ende (2017) studied financial performance of an Indonesian pharmaceutical company 'PT Kalbe FarmaTbk'. The paper published by Eden "Financial Performance Analysis Using Economic Value Added" revealed that company created wealth for shareholder during the 2012 to 2014 by generating positive EVA®.

III. OBJECTIVES

The Objectives of study are as under

1) To determine the Return on Investments (ROI) of the Sensex Companies for the Financial Year 2016-17
2) To determine the Economic Value Added (EVA®) by Sensex Companies for the Financial Year 2016-17
3) To make conclusion on the profitability of the Sensex Companies on the basis of EVA® and ROI

IV. METHODOLOGY

This study is a quantitative research. Secondary data has been used for the study. The share price of 28 S&P BSE Sensex companies and S&P BSE Sensex values for the period 1st April 2016 to 31st March 2017 has been taken from BSE website. Based on the share price data and the Sensex values, natural logarithmic return for the said period has been calculated. The natural logarithmic returns so calculated has been is used for calculating beta coefficient of the Sensex companies. Subsequently the cost of equity is calculated by applying Capital Asset Pricing Model.

The Reserve Bank of India (RBI) bank rate during the period of study was 6.25% which has been considered as risk free return for the study.The NOPAT and TCE has been computed from the audited financial statements of the companies for the accounting year 2016-17. The Cost of Debt has been computed by relating the finance cost of the company with the average long- term debt of the company.

The corporate tax rate of 30% has been applied to ascertain the Cost of Debt after Tax. The Average Equity has been calculated by taking the average of Equity and Reserves at the beginning of accounting period and end of the accounting period. Average Debt too is calculated by taking average of long-term debt at the beginning of accounting period and end of the accounting period. Finally, EVA® of Sensex companies is been calculated by applying the EVA® formula given by Stern Stewart & Co USA.

V. DATA ANALYSIS

The ROI and EVA® of the 28 S&P Sensex companies is determined by adopting the methodology described and is been presented in Table I to Table VI as under.

TABLE I: Post Tax Cost of Debt (2016-2017)

Companies	Finance Cost	Average Debt	Post Tax Cost of Debt
Adani Ports	₹ 1,442	₹ 13,204	7.65%
Asian Paint	₹ 1	₹ 37	1.09%
Axis Bank	₹ 26,449	₹ 5,16,181	3.59%
Bajaj Auto	₹ -	₹ -	0.00%
Bharati Airtel	₹ 5,255	₹ 45,900	8.01%
Dr Reddy Lab.	₹ 57	₹ 740	5.41%
HDFC Bank	₹ 36,167	₹ 6,74,531	3.75%
HDFC	₹ 20,896	₹ 1,71,494	8.53%

Hero Motocorp	₹ -	₹ -	0.00%
Hindustan Unilever	₹ -	₹ -	0.00%
ICICI Bank	₹ 32,419	₹ 6,16,914	3.68%
Indusind Bank	₹ 8,343	₹ 1,33,511	4.37%
Infosys Ltd	₹ -	₹ -	0.00%
ITC Ltd	₹ 7	₹ 26	20.11%
Kotak Mahindra Bank	₹ 9,573	₹ 1,69,070	3.96%
L & T Ltd	₹ 1,318	₹ 7,723	11.95%
Mahindra & Mahindra	₹ 146	₹ 1,865	5.46%
NTPC Ltd	₹ 3,597	₹ 91,218	2.76%
ONGC Ltd	₹ 3	₹ 38	5.41%
Power Grid Corp	₹ 6,304	₹ 1,05,568	4.18%
Reliance Industries	₹ 2,723	₹ 78,277	2.44%
State Bank of India	₹ 1,13,659	₹ 22,08,256	3.60%
Sun Pharma	₹ 224	₹ 13,417	1.17%
Tata Motors	₹ 1,590	₹ 4,515	24.65%
Tata Steel	₹ 2,689	₹ 24,311	7.74%
TCS	₹ 16	₹ 47	23.83%
Wipro	₹ 392	₹ 1,146	23.94%
Yes Bank	₹ 10,627	₹ 1,62,430	4.58%

Rupees in Crores

TABLE II: Cost of Equity (2016-2017)

Companies	Beta	Cost of Equity (K_e)
Adani Ports	1.3630	19.48%
Asian Paint	0.8167	14.18%
Axis Bank	0.9338	15.32%
Bajaj Auto	0.8214	14.23%
Bharati Airtel	0.7416	13.45%
Dr Reddy Laboratories	0.3923	10.06%
HDFC Bank	0.5712	11.80%
HDFC	1.0159	16.11%
Hero Motocorp	0.9510	15.48%
Hindustan Unilever	0.5894	11.97%
ICICI Bank	1.4611	20.44%
Indusind Bank	0.9102	15.09%
Infosys Ltd	0.5786	11.87%
ITC Ltd	0.6630	12.69%
Kotak Mahindra Bank	0.6693	12.75%
L & T Ltd	1.0397	16.35%
Mahindra & Mahindra	0.8566	14.57%
NTPC Ltd	0.5622	11.71%
ONGC Ltd	0.5966	12.04%
Power Grid Corp	0.5832	11.91%
Reliance Industries	0.5333	11.43%
State Bank of India	1.1116	17.04%
Sun Pharma	0.6371	12.44%
Tata Motors	1.5131	20.94%
Tata Steel	1.2646	18.53%
TCS	0.5391	11.48%
Wipro	0.4129	10.26%
Yes Bank	1.0941	16.87%

TABLE III: Average Investment (2016-2017)

Companies	Average Net-Worth	Average Debt	Average Investment
Adani Ports	₹ 14,801	₹ 13,204	₹ 28,005
Asian Paint	₹ 6,438	₹ 37	₹ 6,476
Axis Bank	₹ 54,464	₹ 5,16,181	₹ 5,70,644
Bajaj Auto	₹ 15,150	₹ -	₹ 15,150
Bharati Airtel	₹ 1,06,468	₹ 45,900	₹ 1,52,368
Dr Reddy Labs	₹ 11,840	₹ 740	₹ 12,579
HDFC Bank	₹ 81,070	₹ 6,74,531	₹ 7,55,601
HDFC	₹ 36,883	₹ 1,71,494	₹ 2,08,377
Hero Motocorp	₹ 9,473	₹ -	₹ 9,473
Hindustan Unilever	₹ 5,831	₹ -	₹ 5,831
ICICI Bank	₹ 94,843	₹ 6,16,914	₹ 7,11,757
Indusind Bank	₹ 19,171	₹ 1,33,511	₹ 1,52,682
Infosys Ltd	₹ 64,550	₹ -	₹ 64,550
ITC Ltd	₹ 43,499	₹ 26	₹ 43,525
Kotak Mahindra Bank	₹ 29,917	₹ 1,69,070	₹ 1,98,986
L & T Ltd	₹ 44,074	₹ 7,723	₹ 51,797
Mahindra & Mahindra	₹ 24,046	₹ 1,865	₹ 25,911
NTPC Ltd	₹ 93,762	₹ 91,218	₹ 1,84,981
ONGC Ltd	₹ 1,75,657	₹ 38	₹ 1,75,695
Power Grid Corp	₹ 46,809	₹ 1,05,568	₹ 1,52,377
Reliance Industries	₹ 2,71,156	₹ 78,277	₹ 3,49,432
State Bank of India	₹ 1,66,280	₹ 22,08,256	₹ 23,74,536
Sun Pharma	₹ 21,381	₹ 13,417	₹ 34,799
Tata Motors	₹ 22,036	₹ 4,515	₹ 26,551
Tata Steel	₹ 50,423	₹ 24,311	₹ 74,734
TCS	₹ 71,518	₹ 47	₹ 71,565
Wipro	₹ 43,966	₹ 1,146	₹ 45,112
Yes Bank	₹ 17,920	₹ 1,62,430	₹ 1,80,350

Rupees in Crores

TABLE IV: Total Cost of Capital Employed (2016-2017)

Companies	Cost of Equity	Post Tax Cost of Debt	Total Cost of Capital
Adani Ports	₹ 2,883	₹ 1,010	₹ 3,893
Asian Paint	₹ 913	₹ 0	₹ 913
Axis Bank	₹ 8,344	₹ 18,531	₹ 26,875
Bajaj Auto	₹ 2,156	₹ -	₹ 2,156
Bharati Airtel	₹ 14,320	₹ 3,677	₹ 17,997
Dr Reddy Labs	₹ 1,191	₹ 40	₹ 1,231
HDFC Bank	₹ 9,566	₹ 25,295	₹ 34,861
HDFC	₹ 5,942	₹ 14,628	₹ 20,570
Hero Motocorp	₹ 1,466	₹ -	₹ 1,466
Hindustan Unilever	₹ 698	₹ -	₹ 698
ICICI Bank	₹ 19,386	₹ 22,702	₹ 42,088
Indusind Bank	₹ 2,893	₹ 5,834	₹ 8,727
Infosys Ltd	₹ 7,662	₹ -	₹ 7,662
ITC Ltd	₹ 5,520	₹ 5	₹ 5,525
Kotak Mahindra Bank	₹ 3,814	₹ 6,695	₹ 10,510
L & T Ltd	₹ 7,206	₹ 923	₹ 8,129
Mahindra & Mahindra	₹ 3,504	₹ 102	₹ 3,605

NTPC Ltd	₹ 10,980	₹ 2,518	₹ 13,497
ONGC Ltd	₹ 21,149	₹ 2	₹ 21,151
Power Grid Corp	₹ 5,575	₹ 4,413	₹ 9,988
Reliance Industries	₹ 30,993	₹ 1,910	₹ 32,903
State Bank of India	₹ 28,334	₹ 79,497	₹ 1,07,831
Sun Pharma	₹ 2,660	₹ 157	₹ 2,817
Tata Motors	₹ 4,614	₹ 1,113	₹ 5,727
Tata Steel	₹ 9,343	₹ 1,882	₹ 11,225
TCS	₹ 8,210	₹ 11	₹ 8,221
Wipro	₹ 4,511	₹ 274	₹ 4,785
Yes Bank	₹ 3,023	₹ 7,439	₹ 10,462

Rupees in Crores

TABLE V: Return on Investments (2016-2017)

Companies	NOPAT	Average Investment	ROI
Adani Ports	₹ 3,381	₹ 28,005	12.07%
Asian Paint	₹ 1,874	₹ 6,476	28.94%
Axis Bank	₹ 30,128	₹ 5,70,644	5.28%
Bajaj Auto	₹ 5,336	₹ 15,150	35.22%
Bharati Airtel	₹ 9,811	₹ 1,52,368	6.44%
Dr Reddy Labs	₹ 1,121	₹ 12,579	8.91%
HDFC Bank	₹ 35,501	₹ 7,55,601	4.70%
HDFC	₹ 31,623	₹ 2,08,377	15.18%
Hero Motocorp	₹ 3,261	₹ 9,473	34.42%
Hindustan Unilever	₹ 4,247	₹ 5,831	72.83%
ICICI Bank	₹ 29,554	₹ 7,11,757	4.15%
Indusind Bank	₹ 7,848	₹ 1,52,682	5.14%
Infosys Ltd	₹ 13,257	₹ 64,550	20.54%
ITC Ltd	₹ 10,857	₹ 43,525	24.95%
Kotak Mahindra Bank	₹ 19,136	₹ 1,98,986	9.62%
L & T Ltd	₹ 5,653	₹ 51,797	10.91%
Mahindra & Mahindra	₹ 3,733	₹ 25,911	14.41%
NTPC Ltd	₹ 11,190	₹ 1,84,981	6.05%
ONGC Ltd	₹ 17,653	₹ 1,75,695	10.05%
Power Grid Corp	₹ 11,063	₹ 1,52,377	7.26%
Reliance Industries	₹ 30,450	₹ 3,49,432	8.71%
State Bank of India	₹ 86,900	₹ 23,74,536	3.66%
Sun Pharma	₹ 134	₹ 34,799	0.38%
Tata Motors	₹ -492	₹ 26,551	-1.85%
Tata Steel	₹ 5,632	₹ 74,734	7.54%
TCS	₹ 21,057	₹ 71,565	29.42%
Wipro	₹ 7,755	₹ 45,112	17.19%
Yes Bank	₹ 9,770	₹ 1,80,350	5.42%

Rupees in Crores

TABLE VI: Economic Value Added (2016-2017)

Companies	NOPAT	Total Cost of Capital	EVA
Adani Ports	₹ 3,381	₹ 3,893	₹ -512
Asian Paint	₹ 1,874	₹ 913	₹ 960
Axis Bank	₹ 30,128	₹ 26,875	₹ 3,254
Bajaj Auto	₹ 5,336	₹ 2,156	₹ 3,180
Bharati Airtel	₹ 9,811	₹ 17,997	₹ -8,185
Dr Reddy Laboratories	₹ 1,121	₹ 1,231	₹ -110
HDFC Bank	₹ 35,501	₹ 34,861	₹ 640
HDFC	₹ 31,623	₹ 20,570	₹ 11,053
Hero Motocorp	₹ 3,261	₹ 1,466	₹ 1,795
Hindustan Unilever	₹ 4,247	₹ 698	₹ 3,549
ICICI Bank	₹ 29,554	₹ 42,088	₹ -12,534
Indusind Bank	₹ 7,848	₹ 8,727	₹ -880
Infosys Ltd	₹ 13,257	₹ 7,662	₹ 5,595
ITC Ltd	₹ 10,857	₹ 5,525	₹ 5,332
Kotak Mahindra Bank	₹ 19,136	₹ 10,510	₹ 8,627
L & T Ltd	₹ 5,653	₹ 8,129	₹ -2,476
Mahindra & Mahindra	₹ 3,733	₹ 3,605	₹ 128
NTPC Ltd	₹ 11,190	₹ 13,497	₹ -2,308
ONGC Ltd	₹ 17,653	₹ 21,151	₹ -3,498
Power Grid Corp	₹ 11,063	₹ 9,988	₹ 1,075
Reliance Industries	₹ 30,450	₹ 32,903	₹ -2,453
State Bank of India	₹ 86,900	₹ 1,07,831	₹ -20,932
Sun Pharma	₹ 134	₹ 2,817	₹ -2,683
Tata Motors	₹ -492	₹ 5,727	₹ -6,219
Tata Steel	₹ 5,632	₹ 11,225	₹ -5,593
TCS	₹ 21,057	₹ 8,221	₹ 12,836
Wipro	₹ 7,755	₹ 4,785	₹ 2,970
Yes Bank	₹ 9,770	₹ 10,462	₹ -692

Rupees in Crores

VI. FINDINGS AND CONCLUSIONS

27 S&P Sensex companies out of the 28 S&P Sensex companies studied has positive ROI for the financial year 2016-17. Tata Motors Ltd has negative ROI of 1.85%. Thus, it can be concluded that 96% of the companies has positive ROI for the financial year 2016-17.

Whereas, 14 S&P Sensex companies out of the 28 S&P Sensex companies studied has positive EVA®. This indicates that only 50% of the companies have generated surplus and has added to the wealth of the shareholders during the financial year 2016-17. The balance 50% of the companies having negative EVA® has eroded the wealth of shareholder.

TABLE VII: ROI vs EVA (2016-2017)

Companies	ROI	EVA
TCS	29.42%	₹ 12,836
HDFC	15.18%	₹ 11,053
Kotak Mahindra Bank	9.62%	₹ 8,627
Infosys Ltd	20.54%	₹ 5,595
ITC Ltd	24.95%	₹ 5,332
Hindustan Unilever	72.83%	₹ 3,549
Axis Bank	5.28%	₹ 3,254
Bajaj Auto	35.22%	₹ 3,180
Wipro	17.19%	₹ 2,970
Hero Motocorp	34.42%	₹ 1,795
Power Grid Corp	7.26%	₹ 1,075
Asian Paint	28.94%	₹ 960
HDFC Bank	4.70%	₹ 640
Mahindra & Mahindra	14.41%	₹ 128
Dr Reddy Labs	8.91%	₹ -110

Adani Ports	12.07%	₹ -512
Yes Bank	5.42%	₹ -692
Indusind Bank	5.14%	₹ -880
NTPC Ltd	6.05%	₹ -2,308
Reliance Industries	8.71%	₹ -2,453
L & T Ltd	10.91%	₹ -2,476
Sun Pharma	0.38%	₹ -2,683
ONGC Ltd	10.05%	₹ -3,498
Tata Steel	7.54%	₹ -5,593
Tata Motors	-1.85%	₹ -6,219
Bharati Airtel	6.44%	₹ -8,185
ICICI Bank	4.15%	₹ -12,534
State Bank of India	3.66%	₹ -20,932

Rupees in Crores

Out of the 14 S&P Sensex companies with negative EVA® only 1 company has negative ROI and the remaining 13 has positive ROI. Thus, it can be concluded that positive ROI may not be a true indicator of shareholder wealth creation. EVA® is a better indicator of shareholder wealth creation.

Further, since ROI is a relative measure it is incapable of indicating the quantum of wealth created for the shareholders. Higher ROI is not an indicator of higher wealth creation.

The ROI and EVA® rankings for the 14 S&P Sensex companies presented in Table VIII below shows that higher ROI does not necessarily means higher EVA®. Companies with lower ROI has higher EVA® compared to companies with higher ROI.

TABLE VIII: ROI and EVA Rankings (2016-2017)

Companies	ROI	Rank	EVA	Rank
Hindustan Unilever	72.83%	1	₹ 3,549	6
Bajaj Auto	35.22%	2	₹ 3,180	8
Hero Motocorp	34.42%	3	₹ 1,795	10
TCS	29.42%	4	₹ 12,836	1
Asian Paint	28.94%	5	₹ 960	12
ITC Ltd	24.95%	6	₹ 5,332	5
Infosys Ltd	20.54%	7	₹ 5,595	4
Wipro	17.19%	8	₹ 2,970	9
HDFC Ltd	15.18%	9	₹ 11,053	2
Mahindra & Mahindra	14.41%	10	₹ 128	14
Kotak Mahindra Bank	9.62%	11	₹ 8,627	3
Power Grid Corp	7.26%	12	₹ 1,075	11
Axis Bank	5.28%	13	₹ 3,254	7
HDFC Bank Ltd	4.70%	14	₹ 640	13

Rupees in Crores

Hindustan Unilever Ltd has highest ROI of 72.83%, ranked at 1st position, and its EVA®is Rs. 3,549, ranked at 6th position. This implies that there are 5 companies which has lesser ROIs than Hindustan Unilever Ltd but higher EVAs than Hindustan Unilever Ltd.

TCS Ltd which has ROI of 29.42%, ranked at 4 position and has EVA® of Rs. 12,386 crores, ranked at 1st position. This implies that there are 3 companies having higher ROIs than TCS Ltd has lower EVAs than TCS Ltd.

The ROI of HDFC Ltd is 15.18%, ranked at 9th position and has EVA® of Rs. 11,053 crores, ranked at 2nd position. This implies that there are 8 companies having higher ROIs with lesser EVAs than HDFC Ltd.

Thus, it can be concluded that higher ROI is not a true indicator of shareholder wealth creation. EVA® is a better measure of corporate performance.

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