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RELATIONSHIP BETWEEN EVA (ECONOMIC VALUE ADDED) AND SHARE PRICES OF SELECT COMPANIES IN BSE-SENSEX - AN EMPIRICAL STUDY

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Abstract *In today's competitive world, corporate companies all around the world are trying to maximise the wealth of their shareholders in order to gain market value as well as satisfy their stakeholders.With the gaining popularity of value based performance measures like Economic Value Added (EVA), Total Shareholder Return (TSR), Cash Value Added (CVA) etc., many corporate companies in India have started assessing their value in terms of these measures. This paper investigates the relationship between EVA and share prices of select companies in BSE-SENSEX for a period of six years from 2008 to 2013. The study focuses on the explanatory power of EVA with respect to share prices of the selected companies. In turn, the performance of the selected companies belonging to different sectors in BSE-SENSEX was analysed using EVA. The volatile nature of the capital markets characterised by various speculative activities have a greater influence on share prices, eventually undermining the impact of performance metrics on them. Thus, the findings of the study enumerates that EVA does not have a considerable explanatory power on share prices.*

Keywords: *Economic Value Added, Share Prices, SENSEX, NOPAT, Value Based Performance Measure*

INTRODUCTION

The concept of EVA was propounded by the US based consulting firm Stern Stewart & Co in the early 1980's. EVA measures the surplusgained after making an appropriate charge on the capital invested in the firm by its shareholders. It takes into account a charge for the capital employed in the business which helps in assessing the true value of shareholders wealth. EVA calculates the true economic profit which is earned over and above the cost of capital employed by the business. Economists argue that true economic profit is generated only when a company generates revenue over and above the economic costs. A company's performance is usually assessed by the investors based on the share prices. The suppliers of capital expect a fair return to compensate for the risk they have taken and will not be satisfied if enough returns are not generated.

A company which maximises its value as measured by EVA will help maximise its share prices. A company with positive EVA is deemed to have created value to its shareholders in the long run. On the other hand, negative EVA implies destruction of shareholder's wealth (Stewart, 1991). It is also a measure of corporate governance which has led the company to perform well in congruence with the policies of good governance. Thus, a company is deemed to have created value by earning returns which is more than the opportunistic cost of capital. EVA indicates the economic value added for the shareholders by the management for which they have been entrusted with. It is exceptional from other traditional measures in the sense that traditional measures are dependent on accounting data which is usually distorted and as a matter of fact doesn't reveal the real status of the company. Thus, it is worth considering the relationship between EVA and share prices of the companies.

LITERATURE REVIEW

The empirical studies carried on by various researchers tried to prove EVA as a sound financial metric in explaining the performance of companies as compared to conventional measures like ROE, ROA, ROCE, EPS etc. According to Damodaran (2012), the stock price is the real measure of shareholder wealth in a publicly traded company. The study conducted by Stewart (1994) argued that stock prices correlate with EVA better than conventional accounting measures like EPS. Further EVA was considered as an effective proxy for Market value added (Stewart, 1991). Kumar and Sharma

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(2011) examined the superiority of EVA in explaining the market value of shares of Indian companies and found EVA to have more incremental information content than traditional accounting measures by applying pooled regression to a sample of 873 firm's year observations. Likewise, Vijaya kumar (2010) claimed in his study that MVA had a positive relationship with EVA. The study was carried out in selected sectors of Indian automobile industry. In all the sectors, EVA and MVA were positively associated.

Lehn and Makhija (1996) had done a study on EVA and MVA who opined that both these performance measures have significant relationship with stock price movements. Further evidence of significant relationship between EVA and MVA was provided by Panahi, Preece, Zakaria and Rogers (2014). They examined the relationship between stock price behaviour of companies and value based measures like EVA and MVA in Tehran stock market. The research demonstrated that by enhancement of EVA and MVA in the company's financial performance, their stock price in Tehran stock market increased and vice versa.

The study carried on by Banerjee (1997) examined the superiority of EVA over ROI by conducting an empirical research of companies belonging to ten industries. Biddle, Bowen and Wallace (1997) analysed in their study if EVA has greater correlation with share prices than net profits. The study results showed that profits have higher correlation with share prices than EVA. Chen and Dodd (1997) studied the relation between share prices and different metrics such as EVA, ROE, ROS, EPS etc. The study proved that all these metrics have low correlations with share prices.

Biddle (1998) analysed the reason for the lesser explanatory power of EVA compared to earnings in explaining stock returns. The major cause was attributed to the errors made in calculating capital charge (WACC) as compared to the market. The study concluded that managers responded to EVA incentives but there lacked evidence to support the claim that EVA was more associated to firm value than net income.Thus, the empirical researches carried out during the past have found that share prices are associated with EVA with a minimum effect.

STATEMENT OF THE PROBLEM

The main aim is to provide a better explanation for understanding the relationship between EVA and share prices. In the past, many studies have ascertained the superiority and applicability of EVA in evaluating the performance of companies. But little attention has been given in analysing the effect of EVA on the share prices of the companies belonging to key sectors in India. Thus, the focus of our study is on the validity and to ascertain ability of EVA in explaining the changes in share prices of corporate companies belonging to different sectors.

OBJECTIVES OF THE STUDY

The main objectives of the study are as follows:

- To compute EVA for the selected companies and appraise whether the companies have created value for their shareholders.
- To examine the relationship between EVA and share prices of the selected companies in BSE-SENSEX.

HYPOTHESIS OF THE STUDY

H1: There is no significant relationship between EVA and Share prices of selectedcompanies in BSE-SENSEX.

RESEARCH METHODOLOGY

BSE-SENSEX includes 30 top companies belonging to key sectors which best indicates the economic growth of India. Among these 30 companies, six belonging to key sectors were selected for the study purpose. The study was done by collecting financial information of selected companies in BSE-SENSEX. The companies selected were Bharat Heavy Electricals Ltd., Hindalco Industries Ltd., ITC Ltd., Cipla Ltd., NTPC Ltd, and Tata Motors Ltd. The annual reports comprising balance sheet, P&L A/c and the share prices of these companies & BSE-SENSEX for the period of 2008 to 2013 were collected from PROWESS database. The relationship between EVA and share prices of the companies was analysed using trend percentages and correlation.

The calculation of EVA involves the following steps:

(1) EVA = NOPAT - WACC * Capital;

where NOPAT = Net Operating Profit After Tax;

WACC = Weighted Average Cost of Capital;

(2) NOPAT = Operating Profit(1-t) where " t " is the marginal tax rate;

(3) WACC = E/E+D * K_e + D/E+D * K_d;

where E = Equity capital;

D = Long term Borrowings or Debt;

K_e = Cost of Equity;

K_d = Cost of Debt;

(4) Cost of Equity (K_e) is calculated using CAPM Model;

$K_e = R_f + \beta(R_m - R_f)$;

Where R_f = Risk free rate (yield on10 year government bond was taken)

β = Covariance (Stock return, Market return)/Variance (Market return)

R_m = (Current Index - Previous Index)/ Previous Index * 100

(5) Cost of Debt (k_d) = Interest Expense/Borrowings * (1-t);

(6) Return on Invested Capital (ROIC) = NOPAT / Invested Capital;

(7) EVA (%) = ROIC - WACC;

- Tax rate was taken as 30% applicable to companies;
- Beta (β) is the sensitivity of return of a stock to changes in market return.
- Market rate of return (R_m) is calculated from yearly returns of BSE-SENSEX Index.

RESULTS AND DISCUSSION

Theaverage yield on 10 year government bond was taken as the risk free rates for every year. The market returns were negative during the year 2008 and 2011, due to the crash of market indices as an impact of financial crisis and European sovereign debt crisis respectively. As an outcome of negative market return, even cost of equity calculated as per CAPM model exhibits negative values. The share prices used for the study were based on the average adjusted closing prices of the selected companies.The EVA (Economic Value Added), ROIC (Return on Invested Capital) and EVA% (Percentage of EVA to Invested Capital) were computed and analysed for each of the selected companies during the study period.

Table 1: Risk Free Rate and Market Return

Year	Risk Free Rate (R_f)	Market Return (R_m)
2008	7.9 %	-52.86%
2009	7.6 %	75.38%
2010	7.2 %	16.80%
2011	7.9 %	-24.83%
2012	8.4 %	25.19%
2013	8.2 %	7.39%

Table 2: EVA & Share Price of Bharat Heavy Electricals Ltd. (Rs. in Crores)

Year	Capital	Kd	Ke	WACC	NOPAT	Share price	EVA	ROIC	EVA%
2008	13088.18	0.144	-0.419	-0.412	3159.71	242.58	8558.54	0.241	65.39%
2009	16045.14	0.184	0.631	0.628	4334.09	302.08	-5740.44	0.270	-35.78%
2010	20317.18	0.235	0.151	0.151	6049.51	378.08	2974.15	0.298	14.64%
2011	25566.22	0.172	-0.189	-0.187	7073.10	309.40	11841.85	0.277	46.32%
2012	31944.00	0.020	0.222	0.212	6644.40	222.40	-131.15	0.208	-0.41%
2013	35780.21	0.028	0.075	0.072	3536.64	165.73	970.89	0.099	2.71%

Fig.1: Trend of EVA % for Bharat Heavy Electricals Ltd.

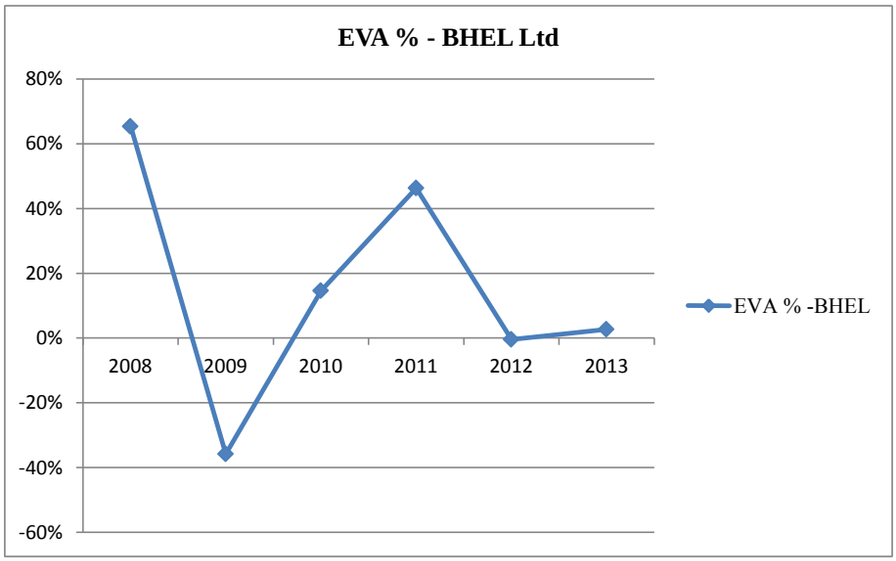


Table 3: EVA & Share Price of Hindalco Industries Ltd. (Rs. in Crores)

Year	Capital	Kd	Ke	WACC	NOPAT	Share price	EVA	ROIC	EVA%
2008	32082.20	0.023	-0.990	-0.727	2424.08	114.26	25746.01	0.075	80.25%
2009	34267.87	0.028	1.268	1.038	2096.41	88.09	-33483.99	0.061	-97.71%
2010	38739.99	0.016	0.241	0.188	2281.20	170.58	-5018.40	0.059	-12.95%
2011	46605.91	0.014	-0.497	-0.337	2449.71	164.46	18160.99	0.053	38.97%
2012	58479.98	0.012	0.379	0.225	1996.81	120.69	-11173.53	0.034	-19.11%
2013	63752.04	0.017	0.068	0.046	1909.23	104.70	-1039.71	0.030	-1.63%

Fig. 2: Trend of EVA % for Hindalco Industries Ltd

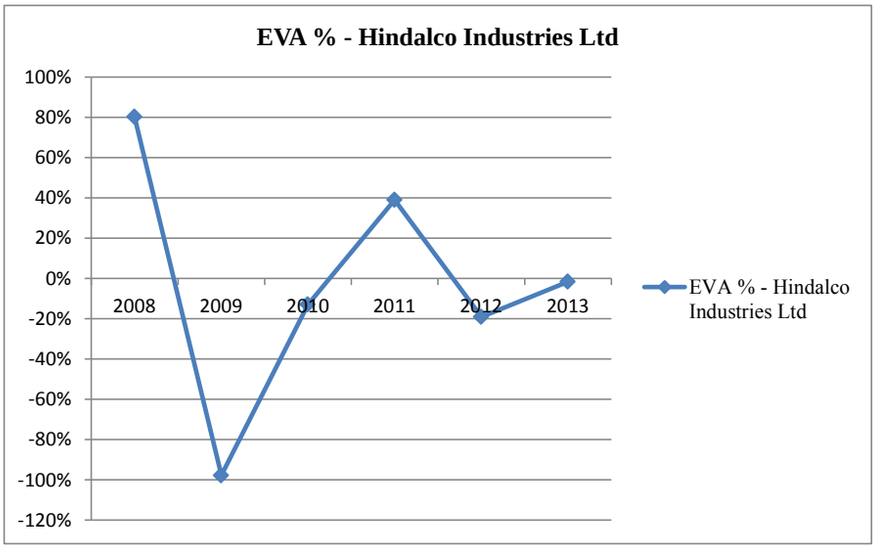


Table 2 shows that EVA of Bharat Heavy Electricals Ltd. has been fluctuating during 2008 to 2013. The company had created maximum value to their shareholders during the year 2011 with an EVA of 11841.85crores. The percentage of EVA has been the highest with 65.4% in the year 2008. The percentage of ROIC (Return on Invested capital) has been the highest with a return of 29.8% in 2010. In 2013, the company's EVA was 970.89 crores and EVA% was 2.7%. The fluctuating trend in EVA% can be accounted due to the increase in capital charge and market volatility.

Table 3 shows that EVA of Hindalco Ltd. was highest with 25746 crores and percentage of EVA was 80.3% during the year 2008. During 2009, there had been a drastic downfall in EVA to -33483.99 crores. The company was able to create a positive contribution to shareholders wealth with a EVA of 18160.99 crores during 2011. But the company could not sustain that level of EVA andit decreased to-11173.53 crores in 2012. Even the percentage of ROIC (Return on Invested capital) has registered a downfall during the study period

Table 4: EVA & Share Price of ITC Ltd. (Rs. in Crores)

Year	Capital	Kd	Ke	WACC	NOPAT	Share price	EVA	ROIC	EVA%
2008	19985.28	0.112	-0.193	-0.190	3287.43	78.15	7086.39	0.164	35.45%
2009	23498.14	0.474	0.379	0.380	4112.70	96.29	-4808.05	0.175	-20.47%
2010	25970.60	0.412	0.115	0.116	5029.03	139.66	2014.15	0.194	7.75%
2011	29525.95	0.526	-0.067	-0.066	6209.85	182.74	8147.80	0.210	27.59%
2012	34626.39	0.595	0.159	0.160	7465.18	243.27	1922.27	0.216	5.55%
2013	39776.12	0.031	0.078	0.078	8815.96	315.31	5701.98	0.222	14.33%

Fig. 3: Trend of EVA % for ITC Ltd.

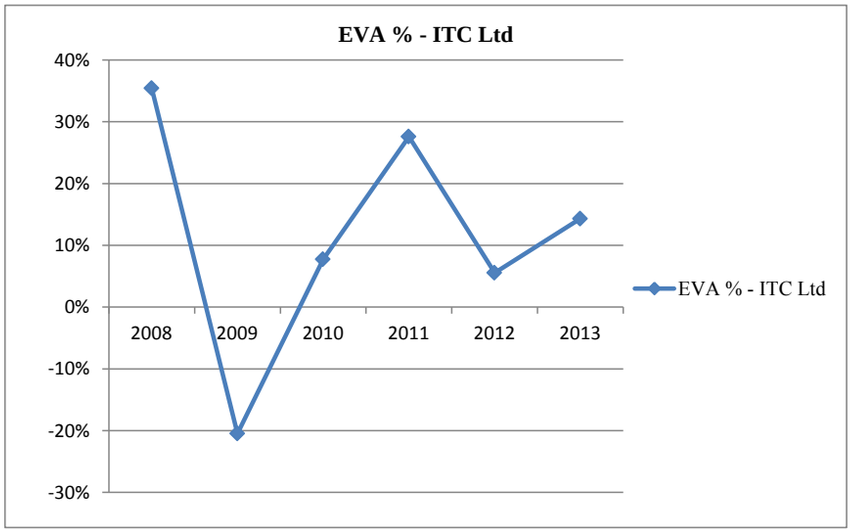


Table 5: EVA & Share Price of Cipla Ltd. (Rs. in Crores)

Year	Capital	Kd	Ke	WACC	NOPAT	Share price	EVA	ROIC	EVA%
2008	5282.02	0.025	-0.277	-0.223	799.87	200.35	1977.94	0.151	37.45%
2009	5947.24	0.381	0.473	0.472	1097.56	249.40	-1710.09	0.185	-28.75%
2010	7074.62	0.008	0.128	0.120	963.99	323.94	113.71	0.136	1.61%
2011	7579.18	0.224	-0.113	-0.111	1132.45	304.91	1973.12	0.149	26.03%
2012	9859.93	0.019	0.182	0.166	1526.04	345.33	-107.90	0.155	-1.09%
2013	10999.01	0.029	0.077	0.073	1414.82	394.64	609.50	0.129	5.54%

from 7.5% to 3%. The decreasing trend in EVA% can be accounted due to the gradual increase in the capital charge during the study period.

Table 4 shows that during 2008, ITC Ltd. had a positive EVA of 7086.39 crores and 35.45% of percentage of EVA to Invested capital. Soon after in 2009, the company had failed to contribute positively to shareholders wealth andhad a negative EVA of -4808.05 crores. The negative EVA can be accounted due to the increase in the capital charge during the study period. Thereafter, the company's Net Operating Profits increased and EVA increased to 8147.80 crores in 2011. The percentage of EVA has been in a fluctuating trend. The company's ROIC (Return on Invested capital) has been the highest with 22.2% during the year 2013.

Table 5 shows that EVA of Cipla Ltd. has been fluctuating with a positive EVA of 1977.94 crores in 2008. Later in 2009, EVA of the company decreased to -1710.09 crores. The company's percentage of EVA to Invested Capital was

Table 6: EVA & Share price of NTPC Ltd (Rs. in Crores)

Year	Capital	Kd	Ke	WACC	NOPAT	Share price	EVA	ROIC	EVA%
2008	94493.1	0.020	-0.147	-0.086	8901.02	149.98	17008.50	0.094	18.00%
2009	100229.7	0.020	0.328	0.212	9477.85	177.46	-11751.64	0.095	-11.72%
2010	111084.6	0.020	0.108	0.074	9961.62	178.14	1789.39	0.090	1.61%
2011	123573.5	0.021	-0.043	-0.017	10285.48	158.14	12357.25	0.083	10.00%
2012	138551.0	0.026	0.146	0.096	14135.39	151.28	846.93	0.102	0.61%
2013	152988.3	0.024	0.079	0.055	12593.42	138.15	4197.14	0.082	2.74%

Fig. 4: Trend of EVA % for Cipla Ltd

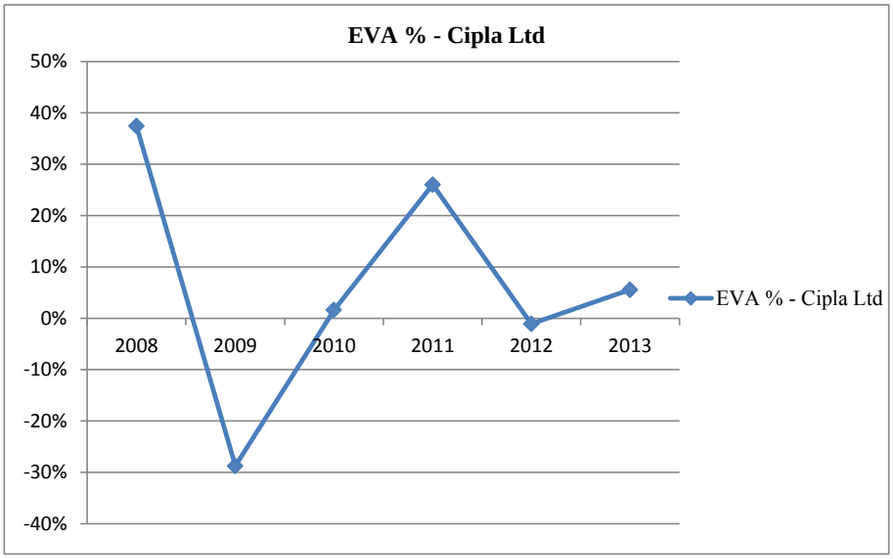
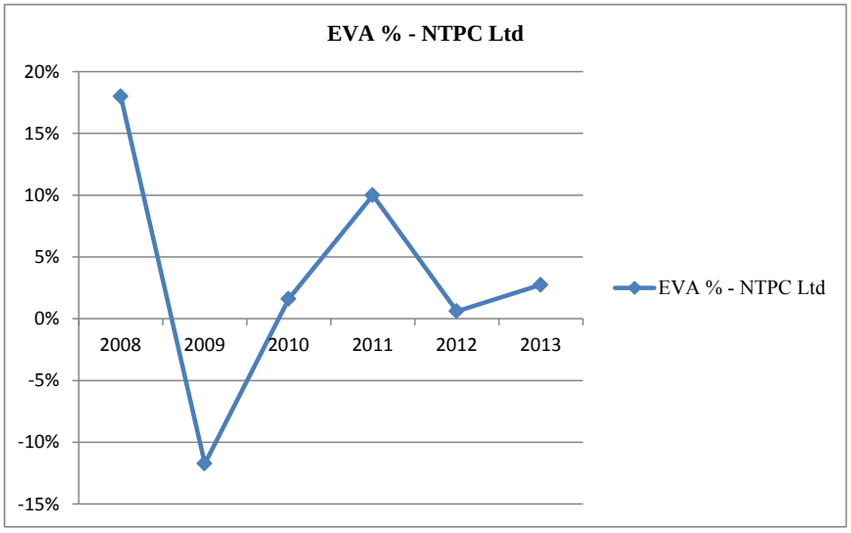


Fig. 5: Trend of EVA % for NTPC Ltd



highest in 2008 with 37.45%.The Return on Invested Capital was highest with 18.5% in 2009. The EVA of the company increased to 1973.12 crores in 2011.But the company was not able to sustain that level and EVA reduced to -107.90 crores.The reduction in EVA can be accounted due to the increasing capital charge during the study period. Overall, the trend of EVA% has been fluctuating during the study period.

Table 6 shows that the EVA of NTPC Ltd. had been highest in 2008 with 17008.50 crores. The Return on Invested Capital was highest in 2009 with 9.5%. The company's EVA decreased to -11751.64 crores which can be accounted due to the increase in capital charge. Later in 2011, the EVA of the company increased to 12357.25 crores. Overall, the percentage of EVA has recorded a fluctuating trend during the study period.

Table 7 shows that EVA of Tata Motors Ltd. was highest with 22203.71 crores in 2008 whereas there had been drastic changes afterwards and it had negative EVA of -28766.01 crores in 2009. Though the company hadan increase in EVA in 2011, it could not sustain the same level and there had been a drastic downfall in EVA to -10766.17 crores in 2012. It is quite evident that the company could not make productive use of shareholder's wealth. The Return on Invested Capital

Table 7: EVA & Share priceof Tata Motors Ltd. (Rs. in Crores)

Year	Capital	Kd	Ke	WACC	NOPAT	Share price	EVA	ROIC	EVA%
2008	25532.74	0.026	-1.713	-0.816	1362.66	60.71	22203.71	0.053	86.96%
2009	31535.38	0.032	2.075	1.000	2769.46	63.60	-28766.01	0.088	-91.22%
2010	35904.54	0.040	0.355	0.216	2453.69	157.35	-5289.18	0.068	-14.73%
2011	35586.03	0.037	-0.887	-0.465	1838.32	183.67	18392.45	0.052	51.68%
2012	36211.30	0.043	0.579	0.326	1039.31	257.35	-10766.17	0.029	-29.73%
2013	34456.24	0.045	0.058	0.052	1108.62	316.48	-698.18	0.032	-2.03%

Fig. 6: Trend of EVA % for Tata Motors

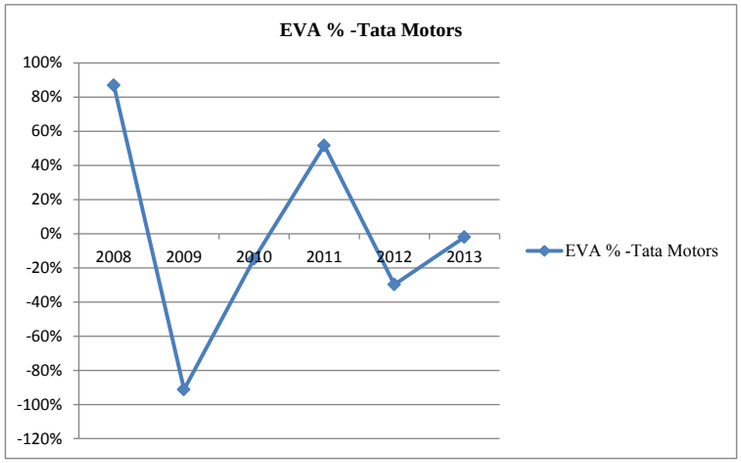


Table 8: Correlation between EVA and Share Price (Year - 2008 to 2013)

Name of the Company	Correlation Value (r)	Significance value (p)
Bharat Heavy Electricals Ltd.	0.115	0.828
Hindalco Industries Ltd.	0.434	0.390
ITC Ltd.	0.277	0.595
Cipla Ltd.	-0.112	0.833
NTPC Ltd.	-0.545	0.264
Tata Motors Ltd.	-0.008	0.988

and percentage of EVA to Invested Capital was 3.2% and -2.03% in 2013 respectively. Overall, the percentage of EVA has recorded a decreasing trend during the study period.

Table 8 shows that the significance value of correlation has been more than 0.05 in all the cases which implies that there is no significant relationship between EVA and share prices of all the companies during the study period. Also, there has been an inverse relation between the EVA and share prices of certain companies. This implies that whenever there is a rise in EVA, there has been a fall in share prices of these companies.

CONCLUSION

The study was able to determine that EVA and share prices of the selected companies were not related and inverse relationship was noticed between EVA and share prices in certain companies. Thus, the variation in share prices of the companies under study is not well explained by EVA. The results of the study reveal that investors' decision are not always rationale and due to the speculation in the stock markets, there exists uncertainty and a company's EVA doesn't influence them much in their investment decision. But the fact that EVA of a company can improve and contribute productively towards shareholder's wealth cannot be overridden in the long run.

IMPLICATIONS FOR FUTURE RESEARCH

The implications for future research would give directions for further research in this area.

1. The present study focussed only on EVA and its effect on share prices. There are many possibilities for the future researchers to study the effectiveness and role of other value based measures of performance like Cash Flow Return on Investment (CFROI), Shareholder Value Added (SVA), Cash Value Added (CVA) in conjunction with traditional metrics and analyse their effect on share prices in the Indian stock market.
2. Researchers may also explore and compare the performance of those companies that have effectively implemented an EVA system to those which have not, thereby providing valuable information to the investors.

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