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MARKET VALUE ADDED AND SHARE PRICE BEHAVIOUR

AN EMPIRICAL STUDY OF BSE SENSEX COMPANIES

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INVESTORS, world over, are currently demanding more shareholder value than just high returns. Maximising shareholders value has always been the ultimate aim of every company. Investors are very keen in assessing the corporate financial performance that correlate with shareholders wealth particularly the market price of a share. Traditional performance measures like return on investment, earnings per share, etc., have been used as the most important measure of shareholder value creation. But in the recent years, value based measures which measure performance in terms of change in value have received a lot of attention. There are several value based measures such as Cash Flow Return on Investment (CFROI), Shareholder Value Added (SVA), Economic Value Added (EVA), Market Value Added (MVA) and Cash Value Added (CVA). This paper attempts to examine the relationship between share price and Market Value Added in relation to other performance measures like Return on Investment, Return of Net Worth and Earnings per share with particular reference to BSE Sensex companies.

MVA and its Characteristics

Value based management and shareholder value analysis are well known concepts in the 1980's, but there is now a renewed interest in them and also newer related concepts such as MVA. Market value added is the difference between the Company's market and book value of shares. According to Stern Stewart, if the total market value of a company is more than the amount of capital invested in it, the company has managed to create shareholder value. If the market value is less than capital invested, the company has destroyed shareholder value.

Market Value Added = Company's total Market Value – Capital Invested

With the simplifying assumption that market and book value of debt are equal, this is the same as

Market Value Added = Market Value of equity – Book value of equity

Book value of equity refers to all equity equivalent items like reserves, retained earnings and provisions. In other words, in this context, all the items that are not debt (interest bearing or non-interest bearing) are classified as equity. Market value added (MVA™) is identical in meaning with the market–to–book ratio. The difference is only that MVA is an absolute measure and market–to–book ratio is a relative measure. If MVA is positive, that means that market–to–book ratio is less than one. According to Stewart, Market value added tells us how much value the company has added to, or subtracted from, its shareholders investment. Successful companies add their MVA and thus increase the value of capital invested in the company. Unsuccessful companies decrease the value of the capital originally invested in the company. Whether a company succeeds in creating MVA or not, depends on its rate of return. If a company's rate of return exceeds its cost of capital, the company will sell on the stock market with premium compared to

the original capital. On the other hand, companies that have rate of return smaller than their cost of capital sell with discount compared to the original capital invested in company. Whether a company has positive or negative MVA depends on the rate of return compared to the cost of capital.

Market value added can also be defined in relation to Economic Value Added (EVA™). EVA measures whether the operating profit is enough compared to the total cost of capital employed. Stewart defines EVA as the surplus of Net Operating Profit After Taxes (NOPAT) after adjusting for capital cost, where NOPAT = Profit after depreciation and taxes but before interest costs and Capital Cost = Weighted average cost of capital X capital employed or EVA = (ROI – WACC) x Capital employed. He further defines the connection between EVA and MVA as :

Market Value Added = Present Value of All future EVA

By increasing EVA, a company increases its market value added or in other words increases the difference between Company's value and the amount of capital invested in it. The relationship of MVA with EVA has its implication on valuation. By rearranging the formula, market value of equity can be defined as :

Market value of equity = Book value of equity + Present value of all future EVA.

MVA is essentially the difference between the company's current market value, as determined by its stock price, and its economic book value. For example, in the case of General Electric, which was the top U.S. performer at the end of 1994, the total market value of GE's debt and equity at that time was $101 billion. And since the adjusted book value of that capital was only $46 billion, GE's MVA amounted to $55 billion.

MVA is a far more revealing figure than a simple rise in market capitalisation, because the latter fails to consider the money investors put up. For example, if a company increased its market capitalization by Rs.500 crore over five years, but at the same time ploughed back Rs.600 crore in retained earnings, it actually has destroyed Rs.100 crore of shareholder wealth.

For instance, the MVA of Infosys Technologies Ltd for the year ending 31st March 1994 to 1998 is given below :

(Rs. In lakhs)

	1994	1995	1996	1997	1998
a. Market value of equity	19,101.50	34,842.00	35,567.10	73,104.17	2,96,342.20
b. Value of Debt.	—	633.91	426.06	—	—
c. Enterprise value (a+b)	19,101.50	35,475.91	35,993.16	73,104.17	2,96,342.20
d. Average capital employed	1,786.87	4,801.44	7,644.80	9,846.75	14,289.67
e. MVA(c-d)	17,314.63	30,674.47	28,348.36	63,257.42	2,82,052.53

From the above it could be observed that the MVA has increased tremendously and that is reflected in the increase of the share price of Infosys Technologies in the stock market. Thus, investors should focus on MVA instead of market capitalisation, as market capitalisation is a misleading indicator of success. For instance, the 1994 results of CocoCola and IBM , as given below, indicate that on the basis of market capitalisation IBM may be perceived to be doing well and only $9 billion it is behind Cococola. But MVA shows that it is far behind Cococola as it has destroyed shareholders wealth to the tune of $17 billion.

	CocoCola	IBM
Market capitalisation	$61 billion	$52 billion
Investor's Capital	$ 8 billion	$69 billion
MVA	$53 billion	$ 17 billion

Objectives

- ✍ An attempts is made in this study to (i) compute the MVA and MVA per share of BSE sensex companies(ii)examine the relationship between MVA and other traditional measures of corporate performance.
- ✍ examine the relationship of share price with MVA, MVAPS, EPS, ROCE, and RONW.

Data and Methodology

The sample comprises 27 BSE sensex companies for a period of three financial years between 1997 and 1999. The required financial data has been collected the from a database package 'Capitaline 2000'. The Bombay Stock Exchange (BSE) share prices of the Sensex Companies has been collected from Capitastock Ole.

The values of ROCE, RONW and EPS have been taken as given in the database while MVA has been computed using the Stern Stewart formula, where MVA is difference between the market value of equity and book value of equity. The MVA per share has been computed by dividing the MVA by the total number of shares.

The share price of the 27 scrips has been taken as the average of the high, low and opening and closing values of that financial year. Since no huge transitions had occurred in the trends of stock prices over the period considered, the fluctuations are not far off from the obtained average value.

The relationship between MVA and other traditional measures was examined using Pearson's coefficient of correlation. Stepwise Regression Analysis has been used to examine the relationship of MVA, MVAPS, EPS, ROCE & RONW with share price. The data has been computer analysed using SPSS package and MS-Excel.

Limitation

The limitations of this study are that it is based on only 3 year data and the sample comprises only the BSE sensex companies. The impact of performance measures such as EPS, ROCE, RONW and MVA on stock price variation has been measured while there are other variables like dividend per share, price-earnings ratio, etc., which have not been considered for analysis as the purpose is to only find out if MVA should also be considered along with other performance measures or not. Moreover, the association of EVA as a performance measures has also not been examined.

Results

MVA and Traditional measures of performance

The MVA of the selected companies shows that (as given in Table 1), during the year ending 1999, 18 companies have positive MVA. Hindustan Lever, ITC, TELCO, MTNL, Bajaj Auto and BHEL are the top 6 companies having high MVA while the other companies have low MVA. 9 companies have negative MVA and have destroyed shareholder value. The worst being SAIL, followed by ACC, IPCL and Arvind Mills.

During the financial year 1998, 22 companies have shown positive MVA while 5 companies have negative MVA. TELCO, HLL, ITC, MTNL, Reliance, BHEL and Bajaj Auto are the top 7 companies with high MVA.

A KPMG – BS study (1998) of 100 top companies on EVA, MVA, PAT and Sales criterion showed that ONGC, Hindustan Lever, Bajaj Auto, VSNL and BPCL are the front runners in creating shareholder value (60 in number) and SAIL, TISCO, L&T and Essar Steel in destroying shareholder value (38 in number). 24 companies have destroyed shareholder value by reporting negative MVA.

Correlating the traditional measures with MVA show that the relationship in positive but it is very low and moderate with EPS (0.306), RONW (0.4823) and ROCE (0.4335). This may be due to the fact that the very basic definition MVA separates it from the other three measures and the traditional measures do not reflect the real value of shareholders. Hence, MVA has to be measured to have an idea about shareholder value.

In order to have a better inference, the MVA per share (MVAPS) which is a relative measure, was calculated and the relationship of MVAPS to EPS, RONW & ROCE were ascertained through correlation analysis. The results show that

MVAPS & EPS	r = 0.1810
MVAPS & ROCE	r = 0.7716
MVAPS & RONW	r = 0.7636

There is low and moderate association between MVAPS and EPS but there is high association between MVA & ROCE and MVAPS & RONW.

A number of studies have been done by Stern Stewart to see which measures of performance are most closely linked not with market value but with MVA. Measures like earnings, EPS and earnings growth all have some trival relationship to MVA. They found that MVA is explained by ROE only to the extent of 35%, while EPS explain 18%, dividend growth 16%, sales growth 9% and EVA 50%. The reason for greater strength of correlation with EVA is, EVA, unlike other measures, corrects the accounting distortions and specifies a required rate of return that must be earned on capital employed.

In the KPMG-BS (1998) study the relationship between the ranks on four criterion variables (Economic Profit (EP), PAT, Sales, MVA) for 98 companies were studied by using Spearman's rank correlation coefficient. The result show that rank correlation of EP and PAT, EP and MVA are statistically significant, but it is not substantial. There is high degree of positive correlation between PAT and MVA. However, the variation explained is quite low.

EP & PAT	=	Rs.0.246
EP & MVA	=	Rs.0.360
Sales & MVA	=	Rs.0.441
PAT & MVA	=	Rs.0.666

MVA and share price behaviour

On examining the relationship between MVA and share price and MVAPS and share price it is found that share price is highly correlated to MVAPS (r=0.8779) while it is moderately correlated to MVA (r=0.4991). Hence, MVAPS is a better measure for examining the relationship with share price than MVA.

In order to find out which of the performance measures influence share prices, a step wise regression analysis was performed. This method was chosen, so that only those variables which influence the share prices will be included in estabilshing the regression model. Regression analysis of share prices with EPS, RONW, ROCE and MVA (Table 2) shows that only 3 variables EPS, MVA and ROCE are included in the final analysis and they collectively expalin a variance of 71.9% of the share price and are statistically significant at 0.01 level of significance. However, the most influencing variable is ROCE (b = 0.555) followed by EPS

(b=0.372) and MVA (b=0.213). Thus, MVA is the third most influencing variable in influencing share price.

The relationship was further examined by substituting MVAPS for MVA and a regression analysis of share price with EPS, RONW, ROCE & MVAPS (Table 3) shows that EPS and MVAPS are the two variables accounting for 92% of the variance in share prices and are statistically significant at 0.01 level of significance. The MVAPS is the most significant variable influencing share price with a beta value of 0.806 followed by EPS with a beta value of 0.392. Both MVAPS and EPS are poorly correlated with a coefficient of 0.181, thus revealing they are independent variables and add credibility to the regression results.

Bennet – Stewart (1991) experimented on data obtained from 618 U.S. companies and observed that EVA and MVA are related to a high degree with each other and they both explain share price variation. Lehn & Makhija (1996) took a sample of 241 U.S. Companies and found that both these measures correlate positively with stock return and the degree of correlation is higher than with traditional perfromance measures like Return on Assets, Return on equity, Return on Sales etc.

O'Byrne of Stern Stewart & Co., has found that EVA explains 31% of the variance in the market value, which is turn in directly related to share price. According to Dodd and Chen (1996), a regression analysis of EVA and stock returns gave a R^2 value of 20.2% while regression between stock returns and traditional measures like EPS, ROE, etc., showed a R^2 value of 5% to 7%. However, a study by Teleranta (1997) on Finnish stock market showed that EVA and MVA are no better meatures to predict stock returns.

Conclusion

The study shows that market value added and market value added per share are better performance measures influencing the share price behaviour. However, neither MVA/MVAPS nor any single measure alone could explain stock price variance more satisfactorily. This implies that a combination of performance measures have to be used to understand the impact on share price behaviour. The MVAPS performance measure seems to be a very strong measure influencing share prices and hence attempt should be taken by companies to improve MVAPS to improve the stock prices. As far as investors are concerned MVAPs is an important measure which should be considered while making their stock market decisions compared to the other traditional measures of performance. Hence, companies and investors should change their mindset and focus on MVAPS, for assessing the corporate performance.

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Table 1 : MVA, EPS, RONW, ROCE, & Share Price of BSE Sensex Companies

Company	Year	EPS	RONW	ROCE	MVA(Cr)	Share Price
Arvind Mills	199603	11.4	10.74	11.28	-708.40	38.28
Arvind Mills	199703	12.22	12.58	12.69	-389.32	75.80
Arvind Mills	199803	9.75	9.02	7.53	381.78	145.25
ACC	199730	53.21	7.9	11.74	-891.17	-99.39
ACC	199803	8.32	-0.03	5.37	-841.67	111.32
ACC	199903	39.89	4.58	8.75	-853.14	-110.65
Bajaj Auto	199703	54.35	27.81	38.15	3973.62	559.12
Bajaj Auto	199803	38.08	23.93	32.05	3264.65	450.86
Bajaj Auto	199903	44.39	22.43	28.11	5058.94	644.95
BHEL	199603	14.31	25.08	30.08	3447.32	266.87
BHEL	199703	18.72	26.45	38.31	5756.51	341.75
BHEL	199803	29.15	31.53	37.42	4446.12	261.56
BSES Ltd	199703	14.79	13.73	12.24	126.43	149.90
BSES Ltd	199803	18.23	15.01	14.17	891.24	190.31
BSES Ltd	199903	18.5	13.52	14.84	1485.08	218.75
Colgate-Palmolive	199603	5.7	32.8	60.71	1989.57	167.90
Colgate-Palmolive	199703	5.67	31.56	56.84	3298.57	264.12
Colgate-Palmolive	199803	5.59	29.04	45.37	3502.08	276.50
Glaxo (India)	199612	8.01	19.59	33.39	2861.32	532.81
Glaxo (India)	199712	6.24	20.73	31.94	2185.43	410.75
Grasim Industries	199603	45.89	18.71	17.9	-14.77	177.50
Grasim Industries	199703	37.32	11.39	13.11	664.00	318.18
Grasim Industries	199803	31.24	10.36	12.26	-556.00	387.81
Great Eastern	199703	4.44	11.99	12.04	49.89	22.77
Great Eastern	199803	5.31	11	10.73	-60.45	43.42
Great Eastern	199903	4.18	10.49	10.16	1187.67	38.18
Gujarat Ambuja	199606	19.72	23.01	16.22	1024.14	304.55
Gujarat Ambuja	199706	17.22	15.35	13.6	1309.73	272.17
Gujarat Ambuja	199806	16.26	13.37	13.33	389.38	298.75
Hindalco Industries	199703	52.05	18.51	21.11	2313.56	489.50
Hindalco Industries	199803	66.11	19.72	20.62	3726.91	678.93
Hindalco Industries	199903	75.46	18.9	21.37	28684.82	807.87
Hindustan Lever	199612	20.15	41.75	53.61	28684.82	1525.18
Hindustan Lever	199712	26.44	46.14	60.87	21551.39	1145.37
Hindustan Lever	199812	38.03	54.57	65.87	-144.55	216.90
Hindustan Petroleum	199703	28.96	20.37	26.39	5777.20	449.25
Hindustan Petroleum	199803	31.17	18.44	19.71	4565.28	359.68
Indian Hotels	199703	31.7	22.1	25.84	665.41	344.62
Indian Hotels	199803	29.73	18.04	19.42	1770.40	572.56
Indian Hotels	199903	25.47	14	17.02	2311.40	671.25
IPCL	199603	24.25	26.97	28.59	-842.12	87.75
IPCL	199703	20.09	18.95	16.84	-1345.27	67.38
IPCL	199803	9.39	8.23	10.3	428.07	133.43

Company	Year	EPS	RONW	ROCE	MVA(Cr)	Share Price
ITC Ltd	199703	13.74	29.66	39.52	19418.27	879.56
ITC Ltd	199803	20.99	35.28	37.84	14383.89	655.12
ITC Ltd	199903	24.8	32.29	35.77	7720.63	367.12
Larsen & Toubro	199703	15.95	14.01	14.88	1294.70	199.50
Larsen & Toubro	199803	20.73	13.45	11.39	2085.74	219.81
Larsen & Toubro	199903	18.23	11.24	10.91	2514.84	224.00
Mahanagar Telep.	199603	12.16	30	15.25	4841.10	179.87
Mahanagar Telep.	199703	15.35	29.73	15.64	10099.95	250.26
Mahanagar Telep.	199803	17.65	25.98	15.24	11278.65	246.93
Mahindra & Mah	199703	20.06	20.91	23.99	649.83	206.37
Mahindra & Mah	199803	23.77	20.95	18.99	1622.73	285.06
Mahindra & Mah	199903	21.51	16.28	15.4	2436.21	341.43
Nestle India	199612	5.63	22.67	21.63	3321.47	373.12
Nestle India	199712	7.11	29.32	26.15	2221.51	257.25
Ranbaxy Laboratories	199703	30.67	16.19	16.58	550.75	353.87
Ranbaxy Laboratories	199803	33.76	15.69	16.82	405.73	305.52
Reliance India	199703	28.85	15.86	10.52	2962.787	131.85
Reliance India	199803	16.94	18.78	13.23	6706.188	168.65
Reliance India	199903	17.56	18.3	13.05	-5529.66	125.55
SAIL	199603	3.19	17.89	10.24	-4396.81	6.27
SAIL	199703	1.22	6.21	7.28	-4567.19	9.66
SAIL	199803	0.31	1.56	6.25	202.38	21.00
Tata Chemicals	199703	13.31	17.5	18.15	-56.44	89.62
Tata Chemicals	199803	15.32	19.05	17.73	1034.38	145.51
Tata Chemicals	199903	9.5	10.84	12.46	1723.15	174.81
TELCO	199703	20.01	25.15	25.64	8868.94	181.62
TELCO	199803	10.97	7.96	11.13	33932.56	279.35
TELCO	199903	3.48	-0.26	5.87	52898.86	349.25
TISCO	199703	12.32	12.16	11.91	44.36	114.37
TISCO	199803	8.36	8.01	8.22	1108.46	140.70
TISCO	199903	7.23	3.77	5.89	2543.09	177.25
Tata Power	199703	9.91	8.87	14.12	-311.61	89.53
Tata Power	199803	13.92	11.11	14.67	107.71	115.32
Tata Power	199903	14	10.37	12.69	408.34	132.06

Source: *Capitaline 2000*

Table 2 : Stepwise Regression Results of Share Price with EPS, ROCE, RONW and MVA

Multiple R	-	**0.84796**
R Square	-	0.71904
Adjusted R Square	-	0.70750
Standard Error	-	138.55711

Analysis of Variance

	DF	Sum of Squares	Mean square
Regression	3	3586716.66810	11195572.22270
Residual	73	1401459.23778	19198.07175

F = 62.27564 Significance F = 0.0000

Variables in the Equation

Variable	B	SE B	Beta	T	Sig T
EPS	6.283458	1.083867	0.371918	5.797	0.0000
MVA	0.006416	0.002073	0.213368	3.096	0.0028
ROCE	11.043714	1.407932	0.555114	7.844	0.0000
(Constant)	-76.880749	33.150270		-2.319	0.0232

Variables not in the Equation

Variable	Beta in	Partial	Min Toler	T	Sig T
RONW	0.091388	0.078121	0.205304	0.665	0.5082

Table 3 : Stepwise Regression of Share Price with EPS, ROCE, RONW AND EVAPS.

Multiple R	-	0.95897
R Square	-	0.91962
Adjusted R Square	-	0.91744
Standard Error	-	73.610459

Analysis of Variance

	DF	Sum of Squares	Mean square
Regression	2	4587205.55148	2293602.77574
Residual	74	400970.35441	5418.51830

F=423.28966 Signif F = 0.0000

Variables in the Equation

Variable	B	SE B	Beta	T	Sig T
EPS	6.629843	0.566178	0.392420	11.710	0.0000
MVAPERSH	0.646496	0.026852	0.806856	24.077	0.0000
(Constant)	59.711223	14.241100	-	4.193	0.0001

Variables not in the Equation

Variable	Beta in	Partial	Min Toler	T	Sig T
ROCE	0.051838	0.114328	0.390999	0.983	0.3287
RONW	-0.033796	-0.073783	0.383127	-0.632	0.5293