SHAREHOLDER VALUE CREATION INDEX OF SENSEX COMPANIES (SVCI)

Research Report presented to Bombay Stock Exchange

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INTRODUCTION

Globalisation has brought in a paradigm shift in the management of organisations and measurement of the performance. India witnessed the highest increase of corporate form of business since 1991. The number of corporate form of business organisations in India increased 10 folds from 1991 till 2004 (Bhargava, 2005). This threw a new challenge in the form of competition for capital in a fund deficient economy like India. The Board of Directors, as agents of shareholders, had to not only add value to the wealth of shareholders but also prove their mettle convincingly to them. Hence, the issue of finding suitable measure of wealth gained significance. Traditionally, the academicians and analysts depended on the Historical Accounting measures like Net Profit after Tax(NPAT), Return on investment (RoI), Return on Equity (RoE), Operating Profit after Tax (OPAT), Return on Assets (RoA), Return on Networth (RoNW), Return on Capital (RoC), Earnings Per Share (EPS),etc.

The use of the above traditional accounting tools of measuring corporate performance started getting questioned on various counts. "*They can be used for past analysis but not for future decision making*" said Rappaport in 1995. Consequently, a lot of new measures that the international business community were using started to gain acceptance in India. Economic Value Added (EVA), which is a registered trademark of Stern, Stewart & Co., was one such technique that gained recognition in the Indian Corporate world, as it was present in Annual Reports of all SENSEXcompanies for the financial year ending 31st March, 2011.

Academic research moved on to another measure of Corporate Performance by critique of certain parameters used in EVA. Models like the Pablo Fernandez Model (PFM), with

Shareholder Value calculations based on market value, were propounded in the West as they were closer to reality.

With respect to the above developments, this paper seeks to ascertain the applicability and the suitability of these models to Indian Financial Markets, which, compared to the developed nations, may at best be in growing stages of maturity.

LITERATURE REVIEW

Hawley (1886) was one of the first to list out methods of measuring business performance. He suggested that Profit after Tax was a good method to measure corporate efficiency but can get biased due to loading of non operating incomes and expenses. He, thus, professed the concept of Net Operating Profit after Tax to be a better measure than mere Profit after Tax. Other accounting measures such as Return on Asset, Return on Net Worth, and Return on Capital Employed, etc. were being used with reference to the concepts of profit as well as operating profit to reflect corporate performance.The ratios and percentages were also used with these concepts like Net Profit Margin, Return on Net Worth, Return on Capital Employed, etc.

The traditional methods are criticised because they only consider cost on Debt Capital while calculating returns but do not consider cost of Share Capital - Equity & Preference- as they are a part of appropriation and are not debited to Profit & Loss Account. It was the economist Alfred Marshall in 1890, who first spoke about the notion of economic profit, in terms of the real profit that a company makes, when it covers, besides the various operating costs, the cost of its invested capital. With corporate form of business organisation growing in number, Cost of Equity cannot be ignored (Tully, 1994).

Thus, under the traditional approach, two companies that have the same ROE would be considered as equally successful, whereas under the Shareholder Value Creation (SVC) approach, the same conclusion could not be reached if these two firms had different cost of capital, in other words if their economic profit or residual income was different (Kyriazism and Anastassis, 2007).

EVA™ - Economic Value Added

The conventional measures also concentrated on the short term objective of Profit Maximisation. This hindered the growth of the company as the decisions were all aimed at

the short term goal. Stern and Stewart modified the concept of Residual Profit as professed by Alfred Marshall and propagated a new measure of corporate efficiency namely Economic Value Added (EVA) in 1991. They annually publish EVA of 1000 US based companies. EVA is defined as an excess of Operating Profit after Tax over Cost of Capital.

EVA™ or Economic Value Added is excess of Net Operating Profit after Taxes over the Cost of Capital. In equation form:

$$EVA = NOPAT - (WACC \times CE) \tag{1}$$

Where NOPAT is Net Profit after Tax, WACC is Weighted Average Cost of Capital and CE is Capital Employed. WACC is calculated as cost of Debt and Share Capital with respect to Total Debt, Total Preference Capital and Market Value of Equity Capital. The costs are weighted as per the proportion in the Capital Structure.

$$\mathrm{WACC} = \frac{\mathrm{Kd}(1-\mathrm{T})\mathrm{D}}{\mathrm{V}} + \frac{\mathrm{KeE}}{\mathrm{V}} + \frac{\mathrm{KpP}}{\mathrm{V}} \tag{2}$$

Where,

1. WACC = Weighted Average Cost of Capital;
2. K_d = Cost of Debt (Coupon Rate);
3. T = Corporate Tax Rate;
4. V = Total Debt + Total Preference Share Capital + Market Value of Equity Capital (D+MVE+P);
5. D = Total Debt Capital;
6. Ke = Cost of Equity calculated using CAPM model;
7. E = Market Value of Equity Capital;
8. K_p= Cost of Preference Capital (Coupon Dividend)
9. P = Preference Capital

Cost of Equity (K_e) is calculated using Capital Asset Pricing Model (CAPM) given below:

$$K_e = r_f + \beta(r_m - r_f) \tag{3}$$

Where,

1. Ke = Cost of Equity;
2. r_f = Risk Free Rate of Return (using Interest Rate on 90 days T-Bills);
3. β = Beta Coefficient;
4. r_m = Market Return (Using SENSEX as benchmark index)

Stern & Stewart recommend 165 manipulations while calculating NOPAT & Capital Employed. Not all adopters of EVA method use all the manipulations. The adoptions are from 5 to 35 in regular course of working (Weaver, 2001).In this research, operating profits before Interest & Deferred Tax but after Income Tax & Fringe Benefit Tax (FBT) is used as NOPAT.

Arguments for EVA

Tham and Pareza (2004) supported the use of EVA by questioning that while choosing a project, if the managers concentrated on the Cash Flows as discounted by the cost of capital, then why the same managers ignored the cost of capital while measuring corporate performance. Chong et al (2008) found that EVA could be used to manage portfolios, as the EVA-based stock portfolios were found to be similar to the S&P 500 Index, yet produced positive alphas across subsamples, an indication that EVA contained information beneficial to increasing shareholder wealth, even in bear markets. On closer examination of the EVA-based stock portfolios, it was suggested that in times of market upswings, one should construct a portfolio based on lower EVA-ranked stocks, while switching to higher EVA-ranked stocks during market downturns.

Many studies such as Tsuji (2006), Stern and Stewart (1994), Biddle, Bowen, and Wallace (1997), Farslo, Degler, Degner (2000) have investigated EVA's correlation with excess returns, back-testing it against the underlying companies' actual wealth creation, as evidenced by subsequent stock price increases, or comparing it to market value added (MVA).

Arguments against EVA

One major critic of the EVA is its methodology. Horngren, et al (1997) caution that more than 160 adjustments were expected to calculate EVA, which made the process cumbersome and tedious. The researchers such as Kramer and Pushner (1997) concluded that market value added was not predicted in a significant way by EVA. Latin American scientist Pablo Fernandez (2002), criticised EVA on the basis that it is a method based on the historical accounting and thus, cannot be used as a measure of value creation and corporate performance.

Merit of Market Value Added

Market Value Added (MVA) is calculated as Market Value of Equity Shares minus the Book Value of the Equity Shares (Kramer, 1997). Various authors like Kramer, Kyriazis and Anastassis (2007), Bacidore (1997), Ignacio Vélez-Pareja (2003), Weissenrieder (2004) have noted that the corporate performance and expected corporate performance must get reflected in the company's share price. Hence, they have used MVA as a measure to reflect the corporate performance. MVA is also considered to be a good measure following the Efficient Market Hypotheses (EMH) which states that all the available information is already reflected in the market price. The stakeholders, therefore, need a measure of corporate performance that would get reflected in the Market Value of the company. The concept of Shareholder Value Creation was first introduced in United State of America. This has resulted in a stronger US economy and better business environment (Tsuji, 2006). The background of this clearer focus on the maximization of corporate value as a central goal of management in USA is (i) activation of buying and selling of management rights such as by M&A, (ii) popularization of stocks for individual investors, and (iii) avoiding bankruptcy in pension plans(Tsuji, 2006). The creation of shareholder value leads not only to the more effective management of those corporations, but also to increases in labour productivity, job opportunities, and real per capita GDP (Copeland et al.2000).

MVA is thus, market-generated number calculated by subtracting the capital invested in a firm (C) from the sum (V) of the total market value of the firm's equity and the book value of its debt, which in simple terms is the excess of Market Value over Book Value. It is calculated as:

$$\mathrm{MVA_t} = \mathrm{V_t} - \mathrm{C_t} \qquad (4)$$

PFM

Pablo Fernandez formulated a model in 2001, namely the Pablo Fernandez Model (PFM) where he calculates the Shareholder Value as excess of Shareholder Return (based on the market returns) over the cost of Equity.

His model is as follows:

$$SVC = (r_{sh} - k_e) \times MV_t \qquad (5)$$

Where

1. Shareholder Return

$$r_{sh} = SVA \div MV_{t-1} \qquad (6)$$

   - Shareholder Value Added

$$SVA = \Delta MV + \sum_{t-1}^{t} DIV + \sum_{t-1}^{t} P - \sum_{t-1}^{t} OC - \sum_{t-1}^{t} Conv \qquad (7)$$

   Where,

   1. $\Delta MV = MV_t - MV_{t-1}$ (8)
      - Where MV_t= Current Market Value &;
      - MV_{t-1} = Market Value 1 year back;
   2. DIV = Dividends paid during the year. Also stock dividend;
   3. P = Other payments to shareholders during the year like discount on par values, share buybacks
   4. OC = Outlays for capital increases like issue of new shares, GDRs, etc.
   5. Conv = Conversion of convertible debentures, creditors, etc to share capital

2. K_e = Cost of Equity as calculated by CAPM model given in eq. (3) above;
3. MV_t = Current Equity Market Value as explained in eq. (8) above.

Borde and Hegde Desai, 2012 have shown using EVA and PFM that Shareholder Value Creation is a better proxy of corporate performance in comparison to traditional accounting measures. They have concluded that PFM, being Market based variable, is more suitable for Portfolio Managers or Strategic decisions and EVA being based on historical accounting, is more relevant to company's internal assessment purposes.

Shareholder Value Creation measures like EVA are also useful for the companies to pay Managerial Remuneration (who take strategic decisions like MD, CEO, CFO, etc). This is a usual practice in the West where companies like Coca-Cola, AT&T, etc use EVA to pay managerial compensation. There are empirical studies that show that when Managerial Compensation is related to the Shareholder Value Created, the performance of the managers improve (Riceman, Cahan and Lal, 2002).

Ramesh and Borde, 2012 have concluded that the portfolio created using PFM helps in earning returns higher in comparison to the benchmark index and also at the same reduces the risk as measured by Portfolio beta.

This research, thus, makes a case for the use of PFM and EVA as measure of performance, for better portrayal of corporate results in Indian markets. This may particularly be useful to throw light on the Shareholder Value Creation by Sensex companies which form the cream of Indian Markets. Hence, the research aims at creating a Shareholder Value Creation Index for Sensex companies' using the tools of EVA and PFM.

THE OBJECTIVES OF THE RESEARCH

The research endeavors to create a Shareholder Value Creation Index of Sensex Companies. The process would start by calculating Shareholder Value Creation of Sensex Companies using EVA as well as PFM for a period of fifteen years. For the purpose of creating an Index, the base period will be same as that of Sensex, namely, 1999-2000. The index will be a weighted average of thirty Sensex companies, with each company having the same weight as in Sensex, every year. Thus, two Indices, one using EVA and the other using PFM will be created. This will explicitly elaborate the value created in each year.

The objectives therefore, are

1. To create a Shareholder Value Creation Index using EVA for Sensex Companies
2. To create a Shareholder Value Creation Index using PFM for Sensex Companies

RESEARCH METHODOLOGY

Sample

This study considers 30 SENSEX companies and calculates Shareholder Value Creation Index (SVCI) from 1st April, 2000 to 31st March, 2014. It replicates the Sensex and also incorporates changes with respect to the companies being added or removed during these years.

Data Source

The data is collected from BSE website, Reserve bank of India website, Securities Exchange Board of India website and Capitaline database. Traditional accounting measures are taken from Capitaline database and SVC measures such as EVA and PFM are computed using the above mentioned formulae.

A visit to BSE for the purposes of interacting with the authorities for confirmation of finer nuances, especially with respect to indexation will be made.

Data Analysis

Index Numbers are used and a free float weighted average shareholder value creation index is created.

The process

The companies as on 31st March, 2000 in sensex are chosen and shareholder value creation as measured by EVA and PFM are calculated. Whenever any company is added and removed it is replaced. Then a weighted average is calculated, where, the free floating market capitalisation is used as weights. 1999-2000 is used as a base year instead of 1078-79 as in sensex as the data for companies and their financial data was difficult to get in the desired time.

Why is an Index of Shareholder Value Creation necessary?

The importance of a concept such as Shareholder Value Creation is enumerated in the literature review section above. The proponents of "Efficient Market Hypothesis" may argue that the market price reflects the fundamentals and sentiments, including the expected return.

However, one realises from the study of Borde& Desai (2012) that while making investment decisions, there is a lot of emphasis laid on the return, but very little evaluation done of the risk attached with cost of capital. Thus, it is important to verify whether the companies are generating return over their cost of capital (equity included). The analysis of return generated over the cost of capital could ensure that the companies have actually created a shareholder value.

It can so happen that company may have generated a positive return on the market but may have been a Shareholder Value destroyer in reality, which is, the returns are well below the expected return on the same security. This was evident from the study of Ramesh &Borde (2012) that when a portfolio is created using Shareholder Value Creation as the basis, the portfolio has generated higher returns, reducing the risk as calculated by the beta of the security.

Construction of SVCI

The companies in sensex as on 1st April, 1999 are considered. Their EVA and PFM values are calculated using the formulae given above and weighted average is calculated using free float market capitalisation as the weights. The companies are added or removed as when Exchange adds or removes a company. Table -1 below gives us the list of companies added and removed.

Table -1 : List of Companies added or removed to and from Sensex during the period

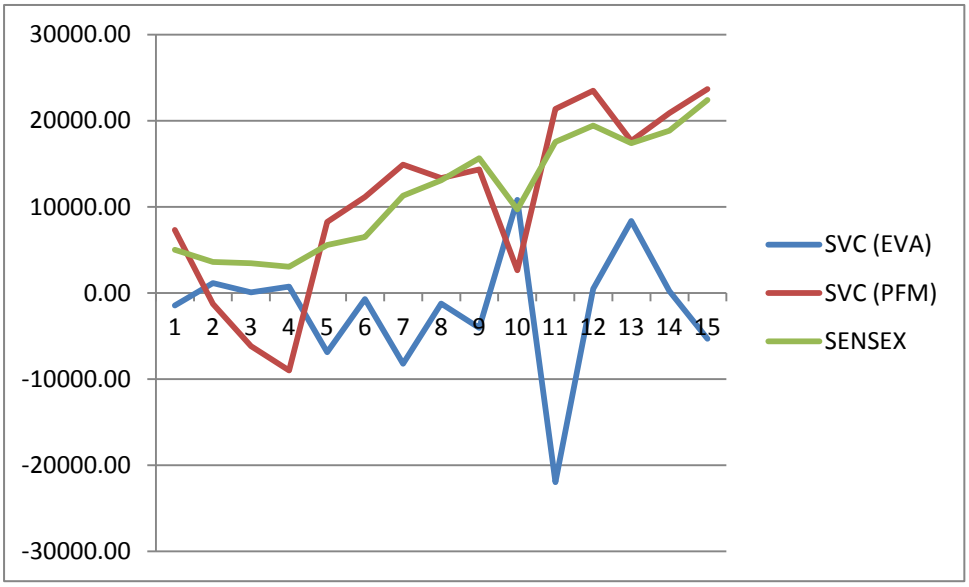
Date	Outgoing Scrips	Replaced by
16.11.1998	Arvind Mills	Castrol
	G. E. Shipping	Infosys Technologies
	IPCL	NIIT Ltd.
	Steel Authority of India	Novartis
10.04.2000	I.D.B.I	Dr. Reddy's Laboratories
	Indian Hotels	Reliance Petroleum
	Tata Chem	Satyam Computers
	Tata Power	Zee Telefilms
08.01.2001	Novartis	Cipla Ltd.
07.01.2002	NIIT Ltd.	HCL Technologies
	Mahindra & Mahindra	Hero Honda Motors Ltd.
31.05.2002	ICICI Ltd.	ICICI Bank Ltd.
10.10.2002	Reliance Petroleum Ltd.	HDFC Ltd.
10.11.2003	Castrol India Ltd.	Bharti-Tele-Ventures Ltd.
	Colgate Palomive (India) Ltd.	HDFC Bank Ltd.
	GlaxoSmithklinePharma. Ltd.	ONGC Ltd.
	HCL Technologies Ltd.	Tata Power Company Ltd.
	Nestle (India) Ltd.	Wipro Ltd.
19.05.2004	Larsen & Toubro Ltd.	MarutiUdyog Ltd.
27.09.2004	Mahanagar Telephone Nigam Ltd.	Larsen & Toubro Ltd.
06.06.2005	Hindustan Petroleum Corp Ltd.	National Thermal Power Corpn. Ltd.
	Zee Telefilms Ltd.	Tata Consultancy Services Ltd.
12.06.2006	Tata Power Ltd.	Reliance Communication Ventures Ltd.
09.07.2007	Hero Honda Motors Ltd.	Mahindra & Mahindra Ltd.
19.11.2007	Dr. Reddy's Laboratories Ltd.	DLF Ltd.
14.03.2008	Bajaj Auto Ltd.	Jaiprakash Associates Ltd.
28.07.2008	Ambuja Cements Ltd.	Sterlite Industries Ltd.
	Cipla Ltd.	Tata Power Co. Ltd.

Source:bseindia.com

Shareholder Value Creation Index has a base period of 1999-2000 is a free float market capitalisation weighted index.

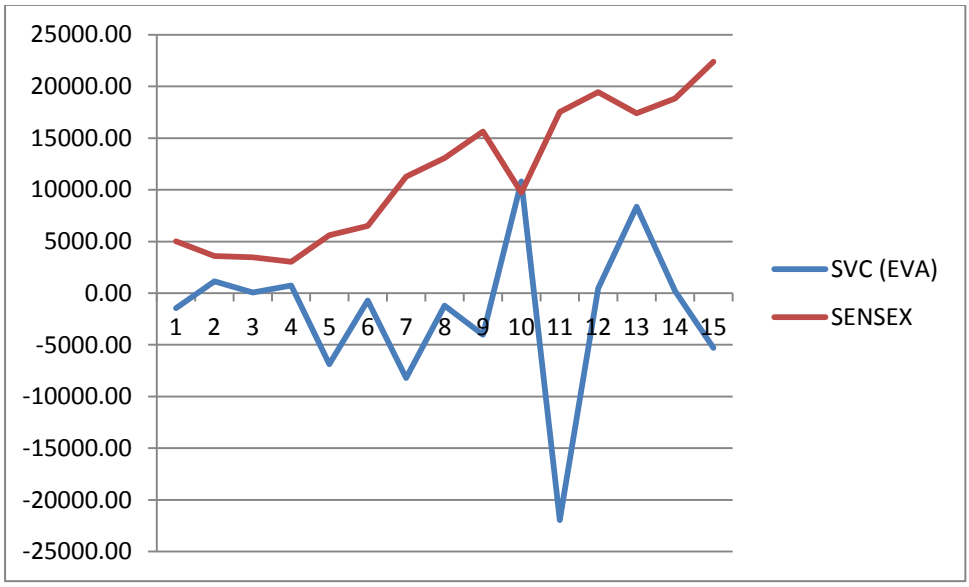
Discussion

Figure 1: SVCI (EVA) & SVCI (PFM) with SENSEX



The above figure reveals that Sensex moves closer to Shareholder Value Creation Index as computed using PFM model than the one using EVA. The substantial divergence in index using the two modes of computation, namely PFM and EVA is seen clearly in the figure 2 given below. The correlation is negative and quite low (See table 1 below).

Figure 2: SVCI (EVA) & SVCI (PFM)



The high correlation (0.90 as stated in table 1 below) between the SVC Index computed using PFM and Sensex can be observed in the figure 3 given below: It shows that even after adjustments made for cost of capital, the SVC Index using PFM moves closely with Sensex.

Figure 3 SVC (PFM) and Sensex

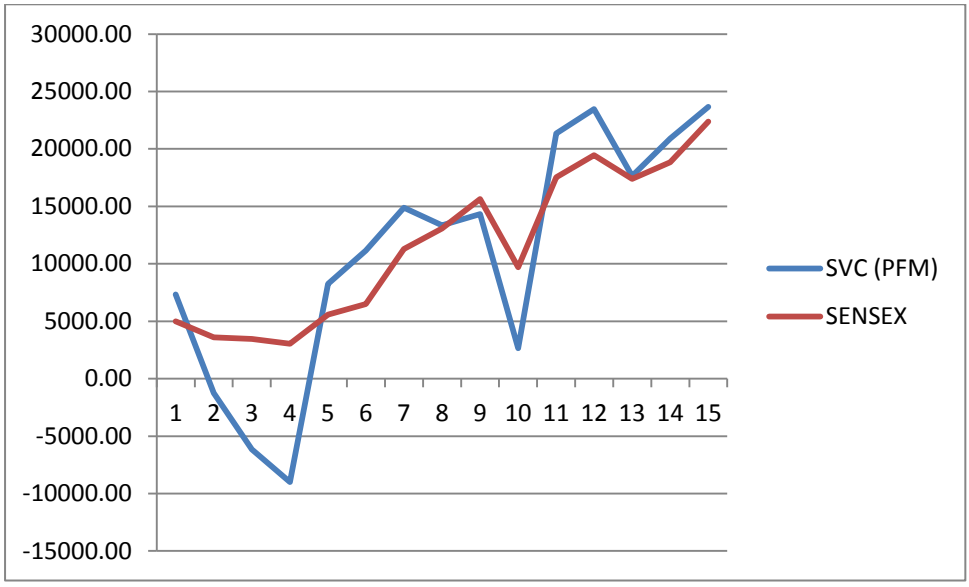


Table 1 Correlations

Correlation Sensex & PFM	**0.901508638**
Correlation Sensex & EVA	**-0.191386709**
Correlation SVC (PFM) & SVC (EVA)	**-0.347509685**

The Indices can be used for clear analysis of the market value added after deducting there from the cost of capital. Thus, they present the true value added. SVC using PFM is closer to Sensex whereas the historical cost and accounting profits will be reflected in the index using EVA.

MANAGERIAL IMPLICATIONS

As shareholder value creation is a measure that can be used by investors to make cross company, cross industry, cross currency and cross country comparisons, it shall be easier for the international investors to make decisions of fund allocation to respective countries based on this Index. This shall help in taking the Indian stock market from Semi –strong efficiency

to strong efficiency market, due to the transparency in the information generated by the Index.

This index shall further help the markets:

1. In terms of liquidity;
2. In terms of new product development as the markets shall be in a position to create derivative products based on the index for hedging

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