

IMPACT OF FINANCIAL INDICATORS ON BSE SENSEX

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Abstract Risk and uncertainties are synonymous to investment in the stock market. Evaluating equities or equity market is open-ended terminology in the financial market. This is a debatable issue among economist and investors. Valuation of equity ultimately depends on one's own perceptions on evolving variables of a country. An investor has to make an apt decision on buying or selling of the shares by examining various financial indicators in the market which influence the market index.

The present study makes an attempt to examine the relationship between the market price and selected four variables namely EPS, price-earnings ratio, price to book ratio, and dividend yield in BSE sensex. Understanding the impact of various financial indicators on market price index is very much fruitful to investors as it will help them in making profitable investment decisions. The necessary information is collected by using PROWESS online database provided by the Centre for Monitoring Indian Economy (CMIE). The tenure considered in study is twelve years i.e. 2000-2012. The scope of the study is confined only to selected explanatory variables in BSE sensex. Correlation, regression, and ANOVA are used for analyzing the relationship between the market price and selected independent. The finding suggests that Earning per Share (EPS) and Price to book Value (P/B) are behaving as a significant factor at 0.05 level of significance. Moreover, other independent variables such as Price Earnings ratio (P/E) and Dividend Yield (Yield) seems to be statistically insignificant in explaining the market price index.

Keyword: Market Index Price, Explanatory or Independent Variable, Equity Shares, BSE Sensex

INTRODUCTION

Risk and uncertainties are the synonymous to the investment in equity market. Evaluating equities or equity market is neither straight forward nor is there any 'correct' valuation of it. Equity valuation ultimately depends on one's own views on evolving different variables of a country. Investment is the primary factor for the growth of economy. The basics of any investment lie in attaining the maximum return at a given level of risk or minimising the risk at a given level of return. In order to achieve this objective, investor has to make an apt decision at right time with respect to his investment. There are many companies available with different securities in the market for investment. Retail investors who do not have the needed time and expertise to evaluate equities or equity markets end up often investing at wrong time or in wrong security. Many of them never get proper return from equity markets.

Among the various options of investment, one of the popular forms is to make the investment in equity shares. The investor has to make a choice of investing in a particular company or sector by analysing different internal factors which might influence the performance of the company.

Ultimately the uncertainty of outcome coupled with the difficulty of valuing equity markets results in a good number of retail investors investing their savings instead in fixed deposits of banks or bonds. For them lower returns on fixed deposits or bonds come with the benefit of higher certainty rather than those equity investments. The efforts of financial community at large and regulators should be to provide retail investors with such tools and guidance to enable them to invest in the equity markets at appropriate time so that they can get proper returns from the securities' investment.

There are various micro and macro factors which the affect the price of shares in the stock market. Micro factors that influence the share price might include demand and supply of the market which determine the increase or decrease in the price of scrips. Positive news about a company can increase buying interest in the market while a negative press release can ruin the scene of any stock. Price/Earnings ratio is the most important factor for deciding the health of any company and it influences the buying tendency in the market resulting in the increase in the price of that particular stock. The P/B ratio and dividend yield give fair idea of how a company's share price compares to its earnings.

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REVIEW OF LITERATURE

Zahir, M.A. and Khanna, Y. (1982) studied the determinants of stock prices in India in 101 industrial giants in the private sector with the help of multiple linear regression model. Dividend per share emerged as a significant determinant of share price, yield also emerged highly significant determinant with its negative association with market price of share. The coefficient of book value was positive throughout and highly significant except during 1977-78.

Balakrishnan (1984) interprets the inter-relationship in the explanatory variables, i.e. dividend per share, earning per share, book value, yield, and cover with market price of share. A linear regression model was used to study the inter-relationship of these variables. Book value per share and dividend per share are proved to be the most significant determinants of market price.

Malhotra. M. and Prakash. N. (2001) brought out analysis of the market price determinants of 'A' group and 'B' group shares during 1989-90 to 1998-99, using correlation analysis and regression analysis as the tools. The study wraps up that the price behaviour of B group share is determined mainly by book value per share, earning per share, dividend per share, P/E ratio and market price, to book value ratio. The price of A group shares is determined by the same factors except P/E ratio which was found significant only in case of four years out of ten years taken for study.

Christopher, S.R.O. Rufus, A.I. and Ezekiel, O.J. (2009) have conducted a study on information factors or market indices that affect the stock prices by using linear regression, WASSA and multi-collinearity by taking a sample of 130 companies' shares being traded on Nigeria Capital Market. They found that EPS and stock price are significantly related.

Nasif AL-Shubri, Faris. (2010) identified whether there is a significant relationship between market price and selected micro economic factors, Dividend and earnings per share during the period of 2005-2008. He found that there is highly significant positive relationship between dividends, earnings per share and market price.

Sharma, Sanjeet (2011) examined the relationship between equity share prices and explanatory variables like book value per share, dividend per share, earnings per share, price earnings ratio, dividend yield and pay out. He has taken a sample of 6 industries and studied the relationship with the help of correlation and regression analysis and bring into being that dividend per share, earnings per share and book value per share showed a positive correlation with market price throughout all the years of the study.

Bayezid Ali, Mohammad (2011) observed the relationship between Dhaka stock exchange and a set of four micro variables like dividend yield, price earnings ratio, average

market capitalisation and market price earnings. He found that there is a relationship between the stock exchange and market price earnings multiples.

Nirmala, P.S., Sanju, P.S. and Ramachandra, M. (2011) attempted to classify the determinants of share prices in the Indian market during the period of 2000-2009. The sample of three sectors namely auto, healthcare and public sector undertakings is taken. Through unit root tests and co-integration, he found that variables like dividend per share, price earnings ratio and leverage are significant determinants of share prices for all the sectors taken in the study.

Ozlen, Serife and Ergun, Ugur (2012) studied the impact of internal determinants on stock price movements on sector basis by taking a sample of eight companies belonging to 2 sectors. They found that the results of price earnings ratio have significant positive coefficients for Industrial and service sectors.

OBJECTIVES AND HYPOTHESIS OF THE STUDY

Objectives: The main objective of the study is

- To identify the relationship among selected variables on market price of index at BSE.
- To analyse the impact of explanatory variables i.e. EPS, P/B ratio, P/E ratio and dividend yield on market price of Index.

Hypothesis of the Study:

Ho: Null Hypothesis

1. There is no significant relationship between market price and EPS at BSE sensex.
2. There is no significant relationship between market price and P/B ratio at BSE sensex.
3. There is no significant relationship between market price and P/E ratio at BSE sensex.
4. There is no significant relationship between market price and dividend yield at BSE sensex.

RESEARCH METHODOLOGY

Research Design: A research design is the arrangement of methods and procedures for acquiring the needed information. Exploratory research design is used in the present study. It mainly seeks to extract information about the influence and relationship between market price and selected variables of BSE sensex.

Sources of Data: The data are collected by using secondary sources. Prowess database of Centre for monitoring Indian

economy (CMIE) and the official website of RBI and BSE INDIA are used in collecting data relating to the selected variables. The data is collected for a period of twelve years i.e. 01-04-2000 to 31-03-2012. The sample selected for the study includes 30 scrips listed at BSE sensex.

Analytical Tools: The present study attempts to study the relationship between market price and selected variables of selected companies in BSE sensex by using coefficient of correlation, analysis of variance and regression analysis.

Purpose of the study: The main purpose of this study is to find relationship and impact of selected variables on market price of BSE sensex. This study helps in identifying the relationship between market price and selected variables which helps the analyst and the individual retail investors to make an appropriate investment decision.

Scope of the study: The study is restricted only to selected variables as independent variable and “ Market Price of Index (MPI)” as dependent variable in sensex. Three independent variables are selected to identify how they affect on determination of market value of share.

Variables are:

1. Earning per share (EPS)
2. Price Earnings Share (P/E ratio)
3. Price to Book Ratio (P/B ratio)
4. Dividend Yield

Model: In this study we have framed three regression models which were used for data analysis. The models are:

$$MPI = \alpha + \beta_1 (EPS) + \beta_2 (P/E) + \beta_3 (P/B) + \beta_4 (Yield) + \epsilon_t \dots\dots\dots (1)$$

$$MPI = \alpha + \beta_1 (EPS) + \beta_2 (P/E) + \beta_3 (P/B) + \epsilon_t \dots\dots\dots (2)$$

$$MPI = \alpha + \beta_1 (EPS) + \beta_3 (P/B) + \epsilon_t \dots\dots\dots (3)$$

where,

α = constant

$\beta_1, 2...3$ = coefficients of predictors

MPI: Market Price Index

EPS: Earning per share

P/E: Price Earnings share (P/E ratio)

P/B: Price to Book Ratio (P/B ratio)

Yield: Dividend yield

ϵ_t : Error term

The statistical regression coefficients have been computed. The coefficient of determination is figured to determine the

percentage variation in the dependent variables explained by independent variables. The test of significance at one, five and ten percent level of significances is calculated.

In the present study, the dependent and independent financial indicators are used to measure the market price index. The statistical analysis has been applied using Financial Ratio analysis. The market price index has been taken as the dependent variable and other factors have been taken as explanatory or independent variables.

In the context of securities, market price is different from book value because the market takes into account future growth potential. In the present study, arithmetic means of opening and closing market price of share during the financial year of the firm has been taken. Mathematically it is calculated as:

where P_o is the opening market price, P_i is the Closing market price during the year which relates to ‘t’ period.

Earning per share or EPS is considered as an indicator for selecting the stocks for investment. It is believed that a higher EPS is a sign of a profit making company. Therefore, while choosing the stocks for investment EPS is a vital parameter that you cannot miss. EPS is calculated as:

A ratio used to compare a stock’s market value to its book value. It is calculated by dividing the current closing price of the stock by the latest quarter’s book value per share. It is also known as the “price-equity ratio” and is calculated as:

$$P/B\text{Ratio} = \frac{\text{Stock Price}}{\text{Total Assets - Intangible Assets and Liabilities}}$$

A lower P/B ratio could mean that the stock is undervalued. However, it could also mean that something is fundamentally wrong with the company.

A valuation ratio of a company’s current share price compared to its per-share earnings. Also sometimes known as “price multiple” or “earnings multiple”, it is calculated as:

In general, a high P/E suggests that investors are expecting higher earnings growth in the future compared to companies with a lower P/E.

A financial ratio that shows how much a company pays out in dividends each year relative to its share price. In the absence of any capital gains, the dividend yield is the return on investment for a stock. Dividend yield is calculated as follows:

$$= \frac{\text{Annual Dividends Per Share}}{\text{Price Per Share}}$$

Table 1: Empirical Analysis

Variables	MPI	EPS	PE	PB	DIVD
Market Price Index	1	.966** (.000)	.721** (.008)	.653* (.021)	-.872** (.000)
Earning Per Share		1	.575 (.051)	.466 (.127)	-.755** (.005)
Price Earning			1	.751** (.005)	-.899** (.000)
Price to Book Value				1	-.800** (.002)
Dividend Yield					1

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

CORRELATION ANALYSIS

Table 1 reveals that EPS holds a positive relationship with the market price of a share at 1% level of significance. P/E ratio holds a positive relationship with the market price of a share at a 1% level of significance. P/B ratio holds a positive relationship with market price of a share with 5% level of significance. Dividend yield a negative relationship with market price of a share at 1% level of significance.

The findings show that there is a significant relationship between market price index and the variables-EPS, Price-Earning ratio and Price to Book value. The result suggests that dividend yield is inversely associated with all the explanatory variables.

REGRESSION ANALYSIS

This study implies regression analysis to assess the relationship between one dependent variable (DV) and several independent or explanatory variables (IVs). We have considered MPI as dependent variable in this study.

The regression model was used for data analysis. The models are:

$$MPI = \alpha + \beta_1 (EPS) + \beta_2 (P/E) + \beta_3 (P/B) + \beta_4 (Yield) + \epsilon t \dots\dots\dots (1)$$

$$MPI = \alpha + \beta_1 (EPS) + \beta_2 (P/E) + \beta_3 (P/B) + \epsilon t \dots\dots\dots (2)$$

$$MPI = \alpha + \beta_1 (EPS) + \beta_3 (P/B) + \epsilon t \dots\dots\dots (3)$$

Table 2: Regression Analysis

Variables	Regression		
	Model 1	Model 2	Model 3
Constant	6.629 {4.14} (.004)	5.860 {7.38} (.000)	7.323 {68.041} (.000)
EPS	0.002 {12.004} (.000)	0.002 {18.384} (.000)	0.002 {18.384} (.000)
P/B	0.124 {2.551} (.038)	0.139 {3.492} (.008)	0.188 {5.637} (.000)
P/E	0.377 {0.770} (0.466)	0.581 {1.855} (0.101)	-
Dividend Yield	-0.214 {0.562} (0.592)	-	-
R	0.995	0.995	0.993
R Square	0.990	0.990	0.985
Adj. R Square	0.984	0.986	0.982
Durbin- Watson	1.337	1.281	1.529
F Stats	173.432	252.748	296.853
Model Sig.	.000	.000	.000

a Dependent Variable: MPI

b Coefficient; {} – Denotes t- Statistics; () – denotes Significance.

Hence, the regression equation taken from Table 2 will be:

$$\text{MPI} = 6.629 + 0.002 (\text{EPS}) + 0.377 (\text{P/E}) + 0.124 (\text{P/B}) - 0.214 (\text{Yield}) \dots \dots \dots (1)$$

$$\text{MPI} = 5.860 + 0.002 (\text{EPS}) + 0.581 (\text{P/E}) + 0.139 (\text{P/B}) \dots \dots \dots (2)$$

$$\text{MPI} = 7.323 + 0.002 (\text{EPS}) + 0.188 (\text{P/B}) \dots \dots \dots (3)$$

The analysis showed in Table 2 is that the explanatory variables, Earning per Share (EPS) and Price to book Value (P/B) are found statistically significant at 0.05 level. However, other independent variables such as Price-Earnings ratio (P/E) and Dividend Yield (Yield) seem to be statistically insignificant in explaining the market price Index. In model 1 and 2, the R Square (R²) is 0.99 while R² is 0.98 in model 3 which indicates if there is a 100% change in any independent variables, then market price index will also be affected. The analysis shows that F is significant at 0.05 level in all the three models. It means that market price is significantly affected by changes in EPS, P/E, P/B and Yield is proved to be statistically significant. So, we can reject the null hypothesis 1 and 2 while null hypothesis 3 and 4 will be accepted as Price Earnings ratio (P/E) and Dividend Yield (Yield) show statistically insignificant relationship in explaining the market price index. Hence, we can summarize that the model 3 is statistically best model for explaining the dependent variable.

It was depicted from Table 2 that F is statically significant in all models. Through statistics of Durbin Watson test and R² value we can summarize that model 3 is the best fit model in the research study. EPS and P/B ratio are highly significant, whereas P/E and Yield proved to be more insignificant throughout.

CONCLUSION

The present study examined the various determinants of market price in India. It reveals that there were some empirical relationship between market price index and other explanatory variables. The correlation matrix showed positive relationship between MPI and all explanatory variables. The result demonstrates that market price is significantly affected by changes in EPS, P/E, P/B and Yield, and is proved to be statistically significant. The null hypothesis 1 and 2 are rejected while null hypothesis 3 and 4 will be accepted as Price Earnings ratio (P/E) and Dividend Yield (Yield) seem to be statistically insignificant in explaining the market price index. The study is considered significance for the regression models formed because the table reflects the significance for all model.

Hence, we can conclude that it is beneficial for the Investors to examine the financial ratios such as EPS, P/E, P/B and Dividend Yield before investing in the stock market at BSE sensex.

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ANNEXURE**LIST OF 30 MAJOR COMPANIES LISTED AT BSE SENSEX**

Serial No.	Company	Industry
1	Housing Development Finance Corporation	Consumer finance
2	Cipla	Pharmaceuticals
3	Bharat Heavy Electricals	Electrical equipment
4	State Bank Of India	Banking
5	HDFC Bank	Banking
6	Hero Motocorp	Automotive
7	Infosys	Information Technology
8	Oil and Natural Gas Corporation	Oil and gas
9	Reliance Industries	Oil and gas
10	Tata Power	Power
11	Hindalco Industries	Metals and Mining
12	Tata Steel	Steel
13	Larsen & Toubro	Conglomerate
14	Mahindra & Mahindra	Automotive
15	Tata Motors	Automotive
16	Hindustan Unilever	Consumer goods
17	ITC	Conglomerate
18	Sterlite Industries	Metals and Mining
19	Wipro	Information Technology
20	Sun Pharmaceutical	Pharmaceuticals
21	GAIL	Oil and gas
22	ICICI Bank	Banking
23	Jindal Steel & Power	Steel and power
24	Bharti Airtel	Telecommunication
25	Maruti Suzuki	Automotive
26	Tata Consultancy Services	Information Technology
27	NTPC	Power
28	DLF	Real estate
29	Bajaj Auto	Automotive
30	Coal India	Metals and Mining