



**INDUSTRY WISE COMPARATIVE PERFORMANCE EVALUATION
OF BSE SENSEX STOCKS FOR THE FISCAL YEAR 2015-16**

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Abstract

If stock market index is any indication of economic performance of a country, it can be concluded that financial year 2015-16 is a worst year for Indian corporates and Indian economy. During FY 2015-16, of the 30 blue chip stocks listed in BSE Sensex only one fourth reported positive annualized returns and 75% of stocks plunge. Highest reported annualized return is 28 percent and worst is -70%. Automobile industry was the only promising industry, remaining eight industries stocks performed disappointingly. The study failed to find any dissimilarity in the stock price mean returns of different companies. The ANOVA test results support the argument that mean returns of all stock in each industry are analogous.

1. Introduction

Both individuals and institutional investors consider stock market as a place to earn higher returns. Many a times it's a proven fact. However, high returns in stock markets are associated with higher risk also. In other investment avenues like bank deposits, fixed deposits, debentures and bonds at least investors' principal amount is secure. Whereas, in stock markets, the probability of losing principal amount is also high, still investors prefer stocks to bonds, term deposits, mutual funds etc. The reasons for this are stocks provide high liquidity, day trading, margin trading, settlement period, higher returns etc. Investors perceive that stock prices out perform any other available investment options. Sometimes this may be true, but not all the time.

2. Methodology

2.1 Objectives of the study

1. To measure the performance of BSE Sensex stocks for the fiscal year 2015-16
2. To compare the performance of stocks listed in each industry
3. To compare the performance of 9 industries categorized in BSE Sensex
4. To suggest investment strategies

2.2 Hypothesis of the Study

H_0 : The mean returns of stocks belonging to each industry will be same.

2.3 Sample and Study Period

For this study I considered all the 30 stocks listed in BSE Sensex for Fiscal Year 2015-16. These 30 stocks are categorized into nine industries. Highest number of stocks in a particular industry is five and least is one. During the year 2015-16 Infosys has a stock split of 1:2. For



this company analysis is carried out on split adjusted data. In all there are 247 trading days in FY 2015-16.

2.4 Method

Before running any analysis, I tested the data by plotting daily close price of each stock on line chart. This helps me to find out outliers, stock splits etc. I found stock split in Infosys stock, so close prices before stock split date were adjusted with split ratio. Next, I calculated daily returns using natural log returns. Log return values smoothens the data and meets normality assumption. Results of normality tests (Skewness & Kurtosis) support the normality of data. After calculating daily returns, I calculated daily standard deviations, using these two I calculated annualized returns and annualized standard deviations of all the 30 stocks. In addition, I also calculated Holding Period Return (HPR), to know whether there is any difference in returns earned by long term investors or investors who adapt buy and hold strategy. To understand how these stocks are associated with market, I calculated beta coefficients (systematic risk) for each stock. To understand the relationship between mean returns of stocks pertain to each industry I run cross order correlation analysis. At the end I computed ANOVA test to draw similarity in mean returns of stocks connected to each industry. Results of data analysis are presented in next section.

3. Results

Table 1 provides holding period return, annualized return, annualized risk and systematic risk values of automobile, capital goods, and consumer goods industries for fiscal year 2015-16. When automobile industry performance is taken into consideration, its annualized return is negative -1.48. Among the five stocks from automobile industry, Tata Motors (-38%) hurt bitterly. Remaining four stocks report positive returns and lead by Bajaj Auto (17.5%), followed by Hero Motor Corp (10.36%). Annualized risk of all stocks hanged around 28 percent. Automobile industry beta is 1.05 and three of the stocks have beta less than 1 and two have beta above 1. This specifies that all the automobile stocks more or less moved along with BSE Sensex.

Table 1

Automobile Industry Stocks				
Scrip	HPR	Annualized Return	Annualized SD	Beta
Bajaj Auto Ltd	19.12	17.49	28.60	0.93
Hero MotoCorp Ltd	10.91	10.36	25.67	0.87
Mahindra & Mahindra Ltd	0.72	0.71	28.41	1.01
Maruti Suzuki India Ltd	1.96	1.95	26.58	0.88
Tata Motors Ltd	-31.56	-37.93	40.38	1.55
Industry Average	0.23	-1.48	29.93	1.05
Capital Goods Industry Stocks				
Scrip	HPR	Annualized Return	Annualized SD	Beta
Adani Ports	-22.74	38.19	38.19	1.38



Bharat Heavy Electricals Ltd	-50.65	-70.62	39.70	1.29
Larsen & Toubro Ltd	-29.84	-35.44	28.36	1.22
NTPC Ltd	-12.79	-13.69	26.31	0.87
Reliance Industries Ltd	25.02	22.33	28.13	1.15
Industry Average	-18.20	-11.85	32.14	1.18
Consumer Goods Industry Stocks				
Scrip	HPR	Annualized Return	Annualized SD	Beta
Asian Paints Ltd	5.68	5.53	27.21	0.83
Hindustan Unilever Ltd	-1.58	-1.60	23.26	0.59
ITC Ltd	-1.26	-1.27	25.82	0.85
Industry Average	0.95	0.89	25.43	0.76

When I observed holding period returns of Capital Goods industry, excluding Reliance Industries (25%) returns of all other stocks shrink. Bharat Heavy Electricals Limited drowns investors' investments to the tune of 51 percent. Remaining three stocks also badly hit. Volatility is also high (32%) in capital goods industry. The average beta of industry is 1.18 not including NTPC all stocks have beta greater than 1. This result concludes that, Capital Goods stocks are more aggressive than Sensex. When stocks have higher beta values they over react to market conditions. They yield higher returns when market is in bull phase, and suffer hefty losses when there is bear run in the market.

Consumer Goods industry stocks are conservative stocks and are good for long term investment. Asian Paints reported annualized return of 5.53%, whereas the FMCG behemoths (HUL & ITC) returns are in red. Industry beta is 0.76 and all the three are has beta value less than 1. HUL beta is meager 0.59. Stocks with low beta are considered as safe bet when market is saddling.

Analysis results of Financial Services, Health Care, and Information Technology industries are presented in Table 2. Banking industry stocks shrink by 19%. The down turn is lead by SBI (-29%), ICICI bank (-27%), Axis (-22%). Whether it's a private bank or public sector bank, they competed in reporting negative annualized returns. HDFC bank is the odd man out. It give small hope to investors by reporting 3.60 % gain. In FY 2015-16 banking stocks prices oscillated heavily in the market. Beta values of all banking stocks are above 1. Three of them has beta near to 1.5. High beta values represent over reaction of stocks to market. They move very faster than the market.



Table 2

Financial Services Industry Stocks				
Scrip	HPR	Annualized Return	Annualized SD	Beta
Axis Bank Ltd	-22.03	-24.89	34.18	1.43
HDFC Bank Ltd	3.67	3.60	17.28	0.81
Housing Development Finance Corp	-17.31	-19.01	27.87	1.17
ICICI Bank Ltd	-26.77	-31.15	34.08	1.50
State Bank of India	-28.96	-34.20	36.09	1.47
Industry Average	-18.28	-21.13	29.90	1.27
Health Care Industry Stocks				
Scrip	HPR	Annualized Return	Annualized SD	Beta
Cipla Ltd/India	-27.85	-32.65	28.02	1.00
Dr Reddy's Laboratories Ltd	-14.11	-15.21	33.47	0.79
Lupin Ltd	-27.40	-32.02	34.24	0.74
Sun Pharmaceutical Industries Ltd	-24.15	-27.65	36.24	0.92
Industry Average	-23.38	-26.88	32.99	0.86
Information Technology Industry Stocks				
Scrip	HPR	Annualized Return	Annualized SD	Beta
Infosys Ltd	12.08	11.41	26.92	0.67
Tata Consultancy Services Ltd	-0.88	-0.88	20.06	0.61
Wipro Ltd	-10.89	-11.53	21.27	0.60
Industry Average	0.10	-0.34	22.75	0.63

There is not even an iota of ray of hope in Healthcare stocks. All the four stocks panned poor. Industry average loss is approximately 27%. Industry leaders (Cipla and Lupin) reported 32% dent in their share price followed by Sun Pharma and Dr. Reddy's -28% and -15% respectively. Fluctuations in stock prices are also high. The annualized risk stood at 33%. Industry beta is 0.86 and three stocks beta values less than 1.

Among Information Technology stocks Infosys reported positive annualized return of 11.41%. Remaining two stocks are in red. Wipro lost almost 11 percent of investment value. Beta value of I T industry is low at 0.63 and I T stocks are also having similar beta around 0.60. IT stocks can be considered in bear run and for long term investments.

Results of Metals and Mining, Oil and Gas, and Telecom industries are presented in Table 3. All these three industries drive investors down. They reported loss on investments between 12% and 22%. Investors who invested money in any of the five stocks in these industries



burnt their hands. Industry beta values are also greater than 1 except of telecom. Bharti Airtel is the only representative of Telecom industry. It has beta of 0.65.

After analyzing the 30 stocks listed in BSE Sensex, it is concluded that, only four stocks gave double digit return to its investors. Another four stocks gave single digit results. Twenty two stocks reported losses. Automobile industry is the only industry that rendered helping hand to individual and institutional investors. Pharma and Banking stocks made investors swallow bitter pills. Metals and mining, Oil and Gas stocks gave sleepless nights to investors. Overall, no industry spared investors.

Table 3

Metals and Mining Industry Stocks				
Scrip	HPR	Annualized Return	Annualized SD	Beta
Coal India Ltd	-19.57	-21.78	30.94	0.85
Tata Steel Ltd	-1.22	-1.23	44.40	1.64
Industry Average	-10.40	-11.50	37.67	1.24
Oil and Gas Industry Stocks				
Scrip	HPR	Annualized Return	Annualized SD	Beta
Gail India Ltd	-7.38	-7.67	35.25	1.20
Oil & Natural Gas Corp Ltd	-30.14	-35.86	34.70	1.23
Industry Average	-18.76	-21.76	34.97	1.21
Telecom Industry Stocks				
Scrip	HPR	Annualized Return	Annualized SD	Beta
Bharti Airtel Ltd	-12.80	-13.70	26.67	0.65
Industry Average	-12.80	-13.70	26.67	0.65

Table 4: Hypothesis Testing Results

Industry	No. of Stocks	No. of Observation	Average Correl	df	F	P-value	F Crit
Automobile	5	1230	0.38	(4,1225)	0.50	0.74	2.38
Capital Goods	5	1230	0.42	(4,1225)	1.07	0.37	2.38
Consumer Goods	3	738	0.26	(2,735)	0.02	0.98	3.01
Financial Services	5	1230	0.57	(4,1225)	0.24	0.92	2.38
Health Care	4	984	0.35	(3,980)	0.06	0.98	2.61
I T	3	738	0.45	(2,735)	0.25	0.78	3.01
Metals & Mining	2	492	0.28	(1,491)	0.14	0.70	3.86
Oil & Gas	2	492	0.40	(1,491)	0.32	0.57	3.86



In this study I propose to test whether mean returns of sample stocks listed in each industry are similar or is there any deviation among companies. As all stocks in same industry are prone to similar kind of business environment and their stock prices are expected to move in same direction. On the other hand, levels of operations, revenues, management efficiency, brand value, expected returns, market demand vary from company to company. There is a possibility that investors may perceive them as different and take investment decisions. Depending on above two different schools of thought, I theorize that, it is market conditions, general economic factors, investors expectations, and investors behavior that are more influential on stock prices traded in the market. Based on this assumption, for this study I hypothesize that mean returns of companies listed in each industry are similar. To test this hypothesis, I run one way analysis of variance. Results of ANOVA test are presented in Table 4.

Hypotheses test result can be deduced by observing F value, F critical value, and P-value. Observed F value is compared with F critical value, when observed F value is lower than F critical value null hypothesis is accepted, and when observed F value is greater than F critical value null hypothesis is rejected. Similarly when p-value is greater than set alpha or significance value, null hypothesis is accepted, and when p-value is less than set alpha value, null hypothesis is rejected. For this study I considered 5% as significance value. The ANOVA test results reveal that p-values of all industries are greater than alpha value of 0.05, at the same time observed F values of all industries are less than F critical values. Relying on these results I accept the null hypothesis of mean returns of all stocks listed in each industry are similar. I find small deviations in the mean square (both within, and between groups) however; these deviations are not statistically significant to prove that the mean returns are different. The ANOVA test simply tests whether the mean returns of stocks in particular group are similar or different, it will not tell which two stocks differ and why they differ. Results of ANOVA test confirms that stocks belonging to each industry are considered as similar for investment by investors. At the same time there may be little deviations in the mean returns and risk perceptions. But they may not be statistically significant.

4. Conclusion

This study is performed to appraise performance of BSE Sensex stocks for the fiscal year 2015-16. By taking daily close prices of 30 stocks for one year period, I analyzed those using annualized returns, annualized risk, holding period return, and systematic risk. In continuation to this I also run cross order correlations to find out the relationship between stocks grouped by industry. Finally, I tested the similarity of mean returns for each group. Of the 30 stocks only eight stocks give positive returns to investors. 22 stocks made investors lose money. Automobile industry is the only industry that yielded better returns to investors. Pharma, Metals & Mining, Oil & Gas, Telecom, Banking, Capital Goods industries are worst performers. There is no correlation between mean returns of sample stocks. The study failed to reject the null hypothesis of equal mean returns among sample stocks. It is the market factors that drive stock prices and represented the general mood of investors.



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