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FIIs Investment Pattern BSE Sectoral Indices: An Empirical Analysis

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ABSTRACT:
FIIs are the investors who invest in bulk in Indian stock market. In order to know sector wise investment of FIIs and its impact on concerned sectorial index, an analysis has been made. The current paper studies in an attempt to examine the relationship and impact of FII on the sectoral market indices, of the Bombay Stock Exchange using simple statistical tools like Correlation coefficient and regression analysis. It was found that FIIs has significant impact on some of the sectoral indices in India. This has improved chances of financial integration, enabling the returns from the sectoral indices to be friendly for the investors. The primary aim of the survey is that the shock of foreign institutional investors on Sensex and its sectorial indices and to analyse the growth yield of different indices of BSE. The data related to FIIs investment and return from sectorial indices were collected on from 2007 to 2017. The stock market volatility can be analysed through Garch model. Grounded along the last 10 years data from 2007-2017.It was found that FII has significant impact or more focus on the banking sector and least concentrate on the information technology sector.

KEYWORDS: Investment pattern, Sectoral Indices, Stock exchange

INTRODUCTION

The Indian financial market has been working through a fascinating change and it opened up excellent business and investment opportunities in the financial sector. The development and development of the financial market led to the development of well-structured capital markets with attractive investment opportunities for the people. The growth of capital markets has contributed to the growth of regulatory bodies and development of various indices in order to offer reliable information to the investors. Financial deregulation and innovations have altered the whole construction and operation of the financial markets of many industrialized countries since 1990s. Initially the stock market index was formed and subsequently on the sectoral indices were developed and these are comprehensively providing the necessary information to the investors to invest their funds for productive use of the stock. Understanding the importance of the stock market indices, a study has been initialized to establish a relationship between the leading stock market index of the country, the Sensex, and major significant sectoral indices, which are of prime importance to the overall performance of the economy. The relation of Sensex with these indices has been calculated with the avail of the statistical tool like correlation and correlation analysis. Farther, the study has taken the financial year April, 2007-2017, as this has been the period which has witnessed the shock of global financial crisis.

Bombay Stock Exchange is located on Dalal street, Mumbai. BSE is the oldest stock exchange in India. In the beginning during 1855, some stock brokers were gathering under Banyan tree. But later on when the number of stock brokers increased, the group shifted in 1874. In 1875, the group became an official organization named as “The Native Chor and Stock Brokers Association”. In 1986, BSE developed its Index named as Sensex to measure the performance of the exchange. Initially, there was an open outcry floor trading system which in 1995 switched to electronic trading systems. The exchange made the whole transition in just fifty days. BSE Online Trading, known as BOLT is an automated, screen based trading platform with a capacity of 8 million orders per day. BSE offers a transparent and effective market for trading in equities, debentures, bonds, derivatives and mutual funds etc. It also provides opportunity to trade in the equities of small and medium-term initiatives. Around 5000 companies are listed in Bombay Stock Exchange. Some other services like risk management, settlement, cleaning, etc. The purpose of BSE automated systems and techniques are to protect the interest of the investor, to stimulate market and to promote innovations around the world. It is the first exchange across India and second across the cosmos to become an ISO 9000:2000 certification.

REVIEW OF LITERATURE

Trivedi et al. (2006) demonstrated that foreign investors can play the character of market makers and book their profits. Prasanna (2008) has empirically tested the contribution of foreign institutional investment, especially among companies included in BSE Sensex. The relationship between foreign institutional investment and firm specific characteristics in terms of ownership structure, financial performance, and stock performance, was also examined. Kumar (2006) emphasizes that FII inflows influences share price movements and various indices. He also asserts that the apparent motion of the indices in Indian markets depends on the business deal done in a circumscribed number of funds leading to unpredictability. Sandhya et al. (2005) touched on foreign capital flow and stock market volatility. The study found that unexpected flows have a greater impact than the expected flows on the stock indices. A study conducted by Kumar (2002) on the role of FIIs in Indian stock market found that FIIs and Indian mutual funds combined together is the most powerful force in driving the Indian market.

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OBJECTIVE OF THE STUDY

To analyse the yield and volatility of BSE Sensex index and its sectorial indices.

To study the impact of foreign institutional investors on Sensex and its sectorial indices.

RESEARCH METHODOLOGY

The current paper takes in an endeavour to examine the relationship and impact of FIIs on sectoral indices of Bombay Stock Exchange using different statistical tools based on the last 10 years data from 2007-2017. The information of the stock market indices are taken from the website of Bombay Stock Exchange and the data on FII is taken from the handbook of statistic of Indian economy. Initially the return and risk of BSE Sectoral indices are statistical techniques like mean and standard deviation. The shock of foreign institutional investors on sectoral indices can be studied with the help of Regression and correlation analysis. Unpredictability of the stock market can be studied with the help of GARCH (1, 1) model.

LIMITATIONS OF THE STUDY

The study is based on secondary data.

The field is applicable only to BSE index and sectoral indices.

VOLATILITY OF INDIA STOCK MARKET: GARCH (1,1) MODEL

The Generalized Autoregressive Conditional Heteroscedasticity (GARCH) Model. This study empirically investigates the volatility pattern of Indian stock market based on time series data which consists of monthly return of Index of ten years period from April 2007 to 2017. In this model, the conditional variance is represented as a linear function of its own lags. The simplest mode specification is the GARCH (1, 1) model. In this example, the mean equation is written as a function of constant with an error condition. Since the variance equation is the one – period ahead forecast variance based on past information, it is sent for the conditional variance. The conditional variance equation specified as a affair of three conditions:

A constant term:

News about volatility from the previous period, measured as the lag of the squared residual from the mean equation: (the ARCH term)

Last period forecast variance: (the GARCH term).

Table 1: Garch (1,1) model

Dependent Variable: AVERAGE_SENSEX_RETURN				
Method: ML ARCH - Normal distribution (BFGS / Marquardt steps)				
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*GARCH(-1)				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.908156	0.425587	2.133891	0.0329
Variance Equation				
C	0.867483	1.167901	0.742772	0.4576
RESID(-1)^2	0.195202	0.099454	1.962749	0.0497
GARCH(-1)	0.786236	0.101079	7.778457	0.0000
R-squared	-0.000168	Mean dependent var		0.834118
Adjusted R-squared	-0.000168	S.D. dependent var		5.737298
S.E. of regression	5.737780	Akaike info criterion		6.117366
Sum squared resid	3884.810	Schwarz criterion		6.210782
Log likelihood	-359.9833	Hannan-Quinn criter.		6.155299
Durbin-Watson stat	1.376514			

The above table 1 is to look into the behaviour of S&P Bombay Stock Exchange (BSE) volatility patterns using the GARCH model. The results of the Garch (1, 1) model exhibits in Table .Above Table presents that value of Arch and Garch is highly significant and sum of the both is less than 1. So it is interpreted that model is valid. ARCH value shows that the recent news has a positive impact on the current market volatility. Historical volatility impact is represented by GARCH which is also positive and equal to recent news impact. ARCH and GARCH measures the degree of persistence of volatility shocks. It is also found from the analysis that the sum of Arch and Garch coefficients (α + β) is very close to one, indicating that volatility shocks are quite persistent and long memory in the conditional variance in all country's stock market. The co-efficient of the GARCH term is larger than ARCH term, which indicates that effect of past volatility is higher than the recent past information. The total of Arch and Garch term is less than one, which presents that model is perfectly structured.

Table 2: Regression analysis of FIIs and Sensex return

Dependent Variable: AVERAGE_SENSEX_RETURN				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.292639	0.435369	0.672163	0.5028
FIIS_NET_INVESTMENT	0.000341	4.41E-05	7.731465	0.0000
R-squared	0.338144	Mean dependent var		0.834118
Adjusted R-squared	0.332487	S.D. dependent var		5.737298
S.E. of regression	4.687457	Akaike info criterion		5.944321
Sum squared resid	2570.754	Schwarz criterion		5.991029
Log likelihood	-351.6871	Hannan-Quinn criter.		5.963288
F-statistic	59.77555	Durbin-Watson stat		1.329449
Prob (F-statistic)	0.000000			

Regression analysis between FII and BSE Sensex Regression has been applied to find out the intensity of the relationship between FII and Sensex. R-square value is 0.33 which means model explains the 33% variation. In other words, independent variable FIIs is able to explain 33 % variation of the dependent variable BSE Sensex. The table reveals that the F-Statistics (59.77) is very moderate and the corresponding P value is highly significant P value is highly significant. This suggests that the impact of FII's on the cause of BSE Sensex is significant.

SECTORAL INDICES

In order to equip the investors with more comprehensive and reliable information, the BSE has launched various sectoral indices, which contemplate the functioning of that particular sector. To construct indices, the scrips of the companies working in the particular sector will be chosen on the basis of several elements like trading frequency, market capitalization, etc. As these indices give a picture of the independent sector, it was decided to analyze the sectoral indices. The leading sectors of the Indian economy like IT, Fmcg, Oil & Gas, Bank, Metal and Reality sectors have been selected for the subject area. All the indices were presently playing with a free float methodology of calculation only even though some of them were initially established with full market capitalization methodology. In short, The Market Sector Indices summarize the performance of stocks grouped by specific market sectors. Therefore, we analyses the role of FIIs in sectoral index's return in Indian stock market. The following board depicts a comprehensive delineation of the specifications of indices selected for the psychoanalysis. All these 20 sector indices are listed on the Bombay stock exchange and monthly data for these indices for the study period has been obtained from the official website of Bombay stock exchange.

Table 3: Name of sector specific BSE indices

Sr.no	Name of index	Name of the index considered in present study
1	S&P BSE auto	auto
2	S&P BSE bankex	bank
3	S&P BSE basic materials	basic materials
4	S&P BSE capital goods	capital goods
5	S&P BSE consumer discretionary goods & service	consumer discretionary goods & service
6	S&P BSE consumer durables	consumer durables
7	S&P BSE energy	energy
8	S&P BSE finance	finance
9	S&P BSE fast moving consumer goods	fast moving consumer goods
10	S&P BSE health care	health care
11	S&P BSE industrials	industrials
12	S&P BSE information technology	information technology
13	S&P BSE metal	BSE metal
14	S&P BSE oil & gas	oil & gas
15	S&P BSE power	power
16	S&P BSE reality	reality
17	S&P BSE teck	teck
18	S&P BSE telecom	telecom
18	S&P BSE utilities	utilities
20	S&P BSE PSU	PSU

Table 4: Descriptive Statistics of Sectoral Indices									
Variables	Mean	Median	Maximum	Minimum	Std. Devi	Skewness	Kurtosis	J B Coefficient	P - Value
Bank	1.54	0.92	45.26	-23.69	9.91	0.67	5.8	48.15	0.0000
BASIC M	1.18	0.57	42.27	-35.88	10.02	0.12	5.84	40.32	0.0000
Capital Good	0.97	-0.37	50.73	-33.67	10.66	0.85	7.13	99.46	0.0000
CDGS	1.09	1.3	42.49	-29.87	8.48	0.3	8.16	133.98	0.0000
Consumer Durable	1.68	1.6	56.92	-29.23	10.29	0.772	9.98	253.56	0.0000
Energy	0.84	1.16	28.91	-31.76	8.02	-0.067	5.62	34.12	0.0000
Finance	1.48	1.11	44.40	-23.63	9.46	0.6	6.21	58.69	0.0000
FMCG	1.49	1.23	21.01	-16.7	5.09	-0.125	5.15	23.38	0.0000
HEALTH	1.4	2.29	15.58	-24.33	5.92	-1.01	5.98	64.28	0.0000
Industrials	1.02	1.15	52.18	-35.13	10.2	0.79	8.47	161.5	0.0000
IT	0.89	0.91	20.53	-21.97	7.52	-0.1	3.55	1.75	0.4150
metal	0.87	-0.74	57.98	-40.3	11.98	0.64	7.23	97.24	0.0000
Oil & Gas	0.89	1.02	28.11	-31.45	7.98	-0.12	5.4	29.03	0.0000
power	0.45	0.39	36.37	-29.94	9.25	0.61	6.23	59.25	0.0000
PSU	0.62	0.22	43.72	-26.91	8.72	0.82	7.98	136.36	0.0000
REALITY	0.05	-1.76	79.30	-43.67	15.91	1.11	7.71	134.97	0.0000
AUTO	1.55	1.9	31.79	-26.92	7.95	0.02	5.44	29.55	0.0000
TECK	0.58	0.81	17.11	-18.28	6.56	-0.17	3.74	3.38	0.1830
TELECOM	0.07	0.28	22.10	-31.38	8.75	-0.36	4.01	7.64	0.0210
UTILITIES	0.76	-0.19	33.82	-28.64	9.19	0.45	5.33	31.19	0

Table 5: Regression analysis of FIIs on sectoral indices								
Indices	**R-Square**	**Coefficient**	**Std.Error**	**t-Static**	**Sig.**	**BPG Test**	**DW Test**	**BG Serial Correlation**
bank	0.330061	0.000582	7.66E-05	7.592281	0.0000	0.1446	1.755397	0.1446
BASIC M	0.317075	0.000576	7.82E-05	7.370342	0.0000	0.9271	1.487367	0.0055
Capital Good	0.290295	0.000587	8.49E-05	6.917885	0.0000	0.2372	1.572645	0.0698
CDGS	0.32381	0.000493	6.59E-05	7.485211	0.0000	0.9168	1.641576	0.1312
Consumer Durable	0.243114	0.000518	8.45E-05	6.130312	0.0000	0.9743	1.698504	0.2567
Energy	0.241464	0.000403	6.60E-05	6.102831	0.0000	0.4683	1.685989	0.1735
Finance	0.332376	0.000557	7.30E-05	7.632055	0.0000	0.4735	1.650147	0.0813
FMCG	0.160443	0.000208	4.41E-05	4.728556	0.0000	0.2925	2.16598	0.1149
HEALTH	0.189286	0.000263	5.04E-05	5.226591	0.0000	0.134	2.1486	0.5451
Industrials	0.32148	0.000591	7.94E-05	7.445404	0.0000	0.33	1.489637	0.0231
IT	0.119055	0.000265	6.67E-05	3.97643	0.0001	0.4015	1.869415	0.5057
metal	0.242585	0.000603	9.85E-05	6.121501	0.0000	0.6886	1.570148	0.0023
Oil & Gas	0.23952	0.000399	6.57E-05	6.070436	0.0000	0.3971	1.719815	0.1969
power	0.266728	0.000488	7.48E-05	6.523719	0.0000	0.4702	1.578462	0.072
PSU	0.266863	0.00046	7.05E-05	6.525969	0.0000	0.4758	1.842882	0.5801
REALITY	0.268517	0.000842	0.000129	6.553556	0.0000	0.4561	1.793375	0.5297
AUTO	0.31065	0.000453	6.23E-05	7.261211	0.0000	0.838	1.751254	0.1618
TECK	0.223124	0.000317	5.47E-05	5.79683	0.0000	0.4811	1.804246	0.5641
TELECOM	0.232037	0.00043	7.24E-05	5.945679	0.0000	0.9134	2.177008	0.618
UTILITIES	0.220705	0.000441	7.66E-05	5.756358	0.0000	0.7506	1.58634	0.0765

The descriptive statistic table 4 shows the basic features of all variables (sectoral indices) of the study. The above board presents the descriptive statistics of the sectoral indices in Indian stock market. It serves to identify which sector was bullish and which sector was bearish. The above table shows the descriptive statistic of the sectoral indices in Indian stock market. This analysis serves to identify which sector is likely to give the best or maximum return and which sector gives the minimum return. As noted in the above table the highest mean returns are described by the bank index followed by FMCG and finance while the minimum mean return is reported by telecom and reality sector. Highest return (Average return) during the entire period is bank sector (1.54 per month) and the lowest return during the entire period is a telecommunication and reality sector (0.05 per month). Further the volatility in terms of standard deviation is found highest in reality and FMCG and health sector have shown least volatility during the full stop. Among these most complex and dynamic sectors is reality sector because the standard deviation is very high compared to other Indices. The descriptive statistics shows the skewness and kertossis analysis. The join test (skewness and kurtosis) of normal distribution, i.e the jarque-bera statistics has shown that the all sectors specific indices have non- normal distribution in their return series.

REGRESSION ANALYSIS

After analysing the grounds of the ascendancy of India stock market on the investment decision of foreign institutional investors the following section analyses the impact of FIIs on sectoral indices in India. Table 5 analyses the relationship and impact of FIIs on sectoral indices of BSE by using regression analysis. Regression analysis tries to explore the causal relationship between foreign institution investors and stock market indices.

FIIs have a substantial influence on the Indian financial market indices. The empirical analysis clearly states that there exists a direct relationship between FIIs and stock market indices. This inherently means that FIIs and stock market return will move in the same way. In further evaluating the relationship between FIIs and sectoral indices, it was set up that the FIIs flows have a substantial impact on these indices. There survives a direct relationship between FIIs and these sectoral indices as well.

On the basis of regression analysis all sector specific indices have pointed toward significant relationship with foreign institutional investors in India. Then the value of R –square explains the change in depended variables a result of change in the independent variable. The empirical analysis leads to understand that FIIs has an impact on most all the sectoral indices at varying grade. The higher the R-square the better model is able to explain the movement. The highest R-square value is bank sector. Thus, we conclude that FIIs are more focused on the banking sector and least concentrate on the information technology sector.

CONCLUSION

The present research aims to realize the impact of FII on the sectoral stock market indices. It was found out that the markets are influenced by FIIs. Most of the sectoral indices move according to the trend of FII pattern received in the country having a strong bearing on the returns of the companies. This automatically has influence on the market expectations of the listed companies as reflected by the returns generated from these scrips. This analysis will be helpful to investors in creating s portfolio and also to policy makers in the light of policy implementations. Since these funds form a part of forex reserves of India, a sudden outflow can lead to a major decline in reserves leading to exchange rate fluctuations and vulnerability. The cantering of the policy makers should be on preserving strong macroeconomic benchmarks, relatively higher returns, lesser volatility, and overall stability of markets through appropriate institutional reforms.

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