

Foreign Institutional Investors and Stock Market Volatility: Evidence from India

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Abstract:

Foreign Institutional Investors (FIIs) has emerged as a mine of funds for Indian stock market. FIIs contribute to the development of Indian Stock Market but on the other hand FII unexpected inflows and outflows, sometimes leads to the precariousness in the market. The aim of this study is to examine the volatility in Indian stock market with respect to Gross Purchase & Gross Sales of equity and debt by FIIs for the period January 2002- September 2017. To measure the effect on Indian Stock Market by FIIs or vice versa, Johansen Co integration test, Vector auto-regression (VAR), vector error correction model (VECM), Granger Causality test are used. The innovation or shock effect on gross purchase of equity is highly affected by variation of Sensex in short run with 11.6% and 11.67% in long run. Further, gross sale of equity is affected due to variation in Sensex which is 22.197% & 22.6% in short and long run respectively. The result come ups with the long term co integration between variables and the Indian stock market returns affects FIIs. The gross purchase of debt put very less effect on Sensex in short as well as in long term with 0.30% and 0.90%. The effect of gross sale of debt is also very less in short run and long run. The study thus reveals that there is an effect of sale and purchase of equity on Sensex whereas impact of debt is very less.

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1. Introduction

Current competition era, funds are required for the development of any economy. Foreign capital flows helps in resolving the problem of requirement of funds by emerging economies. The scarcity of funds in emerging countries can be fulfilled by foreign capital. India is also an emerging economy; it has opened its gate for foreign funds since in the year 1991. The introduction of liberalization privatization and globalization policy welcomed foreign flows and witnessed the exposure at global platform. After 1991, FIIs starts investing in their money in the Indian Stock Market. The decisions of the institutional investors are backed by various experts and after analysis the highs and lows of stock market, they invest in highly profitable stocks. FIIs follow the herding behavior as when

they observe some withdrawals by their fellow investors and view that market is going down, they started withdrawing funds. This behavior affects the stock market (Gupta A., 2011).

The market of today's world is interconnected and the effect of one market put some impact on the other market related to it. Due to information technology, computerized world, multinational companies, inter connectivity between nations in terms of trading in goods and services, buying and selling of securities, the flow of funds from one country to another takes place and which certainly leads to volatility in the stock market (Karmakar, 2006). Moreover FIIs are aspirant of investing their funds in emerging markets. As said by the JMF-2004, the FIIs hold very large assets of emerging markets.

The bubble burst 2008, the Asian region shows the market capitalization at dollar 9.9 trillion in 2008 and almost 15 % turn down has been witnessed. In India, the foreign capital flows in 2008-2009 where 45811 crores and portfolio flows as a percentage of GDP at market prices were 1.2 mp. There was a slowdown in the year of 2002-2006 but the year 2007 was the time of investment by FIIs and market touches new highs but the turmoil of 2008-09 again slows down the market and there was decrease in investment by FIIs in Information Technology and FMCG sector. The gross purchases and sales of debt and equity decrease by 35.2% and 25.11% in 2008-09 with comparison to 2007-08 respectively. But Indian market was not much impacted by the crisis as compare to other economies of the world (**Kulshrestha, 2014**).

Considering the volatility in the Indian stock market, it is required to understand the meaning of the volatility. It means fluctuations or it specifies the strength behind a price move. It is necessary to measure the change in price and its impact on the relative variables. The volatility arises from various determinants that trigger the prices of the stock in Indian Market. There are different methods of know the association between variables and to know whether they are integrated or not. Thus, it is necessary to know the position of FIIs in Indian stock market(**Srinivas, 2016**).

The current study helps in analyzing the behavior of FIIs with the volatility of Index of Indian Stock market with reference to Sensex(SNX) for the period of January 2002- September 2017. The study analyses the reason behind the gross purchase and the gross sale of equity and debt investment by FIIs and checks its integration with the prices of SNX. The study leads us toward the effects of returns of the SNX on the investment of FIIs. The rest of the paper is structured as follows: Second Section includes the Review of previous work on the concerned topic, Third section explains the alternative hypotheses, followed by section fourth which explains the database and research methodology of the work and the section fifth explains the results & discussions. Section sixth describes scope of the current study. The

conclusion of this study is shown in the last section.

2. Review of Literature

New Economic Policy of India 1991 was the new phase in Indian economy. Various changes have been made at that time and Liberalization, Globalization and Privatization was one of the outcomes of New Economic Policy. Liberalization has removed the obstruction of investing funds from one country to another country. India is a rising economy and world has its eye on this economy for making investment. So does the FIIs. FIIs bring large sum of money which is used for the development of developing economy like India. The progress of developing nations cannot be fulfilled by domestic resources only; country needs foreign sources to meet its requirement(**Jain and Ohri, 2017**).

It's being a very important part of stock market and therefore provides large amount of funds to India. But the funds brought by FIIs are not risk free; they bring lots of fluctuations with them. The FIIs have capacity to destabilize the market and leads to various crisis like Mexican crisis 1994 and Thailand problem 1997. Thus, the participation of other investors like domestic investors are also necessary so that the FIIs tendency of destabilizing will be reduced and the equity market development is done by keeping a check on the investment of FIIs (**Kishor, 1997**).

The Indian market started its makeover in the early 1980s and reforms taken by Rajiv Gandhi in 1984 were quite market oriented and it enhanced the growth of Indian stock market and in that period time varying volatility was also found. The reforms helped the Indian economy and volatility of cross border investment is quite less than other emerging economies in Asia. The reform started to revive the market very early before liberalization and after liberalization; the market showed high efficiency in that period and volatility have been viewed after investment of FIIs in Indian stock market(**Basu and Morey, 1998**).

The volatility is based on the inflows and outflows of funds by FIIs. The foreign investment decision

of inflow and outflow of fund is based on critical analysis and preferences of FIIs. Some FIIs prefer large firms with liquidity and international market preference which can be measured in terms of sales done outside the country or listing on another Stock Exchange which give the impression of foreign holding better than size of a firm alone. They do not consider only the size of the firm in which they are going to invest rather other factors also (**Dahlquist and Robertson, 2001**).

Moreover, it was studied that there are various determinants related to FIIs decision which stabilize and destabilize the stock market. However it was found that FIIs are positively related to BSE sensex. FIIs inflows were affected by seasonality and inflows were significantly higher in the starting month of calendar year. The capital flows and short term debt were highly volatile in nature which was curbed by efficient management of the Indian stock market (**Singh, 2004**).

Now the Indian market is among major economies and deals not only in equity & debt but various other categories were being introduced like pension funds, hedge funds, mutual funds, insurance firms in which FIIs can easily invest their funds. FIIs have a large share in companies and this shareholding is large enough due to the standards laid down by the stock market, governance is also improvised and various amendments were made by government of India. It was studied that market is affected by mutual funds investment also same as it is affected by FIIs investment in equity and debt only (**Panda, 2005**).

The time span of liberalization was a crucial stage in Indian stock market history, the financial liberalization provides growth development and efficiency to the market but post liberalization the investment by FIIs is concentrated in few sectors and firms only because of higher turnover in these firms. But the less marketability of other shares leads to misallocation of funds and thus high risk and low returns makes the market more volatile. The volatility in market was found in post liberalization period but without corresponding

higher returns thus pretends greater risk and instability in the eyes of the investor. Market was negatively skewed and high level of instability was quite harmful for investors in the long run. This instability needs measures which thus improve quality in mechanism of investment by FIIs (**Biswas, 2006**).

Likewise, it was analyzed that cause and effect relationship among the investment of FIIs and Indian stock market. The prices of stock moves up and down by repeated buying and selling by the FIIs and the huge investment leads the market towards BULL & huge withdrawal towards BEAR. The net FII flows were quite volatile during crisis but later the market starts reviving (**Mishra et al., 2009**).

However, it has been investigated that there is a co-integration and causality between the Indian stock market and FIIs returns. It is suggested that price band and volume proportion are the instruments which should be applied by Indian economy. As soon as the economy is revitalizing these instruments should be relaxed and in the boom time the tools should be applied with greater intensity. FIIs investments can be curb with the help of these tools and hedging mechanisms (**Goudarzi and Ramanarayanan, 2011**).

Today, India is the most attractive destinations for investment by FIIs among Asian economies. It is not always that FIIs volatile the market, it also provides liquidity to the market and Indian market is providing good quality equity products to FIIs which thus leads to reduce volatility and encourage FIIs to make more investment in Indian stock market through the channel of instruments by stock market. Volatility declines after opening the gates of FIIs by Indian economy. The time to time comparative analysis is being done and it was concluded that SENSEX and turnover & SENSEX and net investment are related to each other (**Garg and Bodla, 2011**).

Whereas the positive impact was found by the investment done by FIIs on Sensex and which shows that Sensex starts moving up with inflow of funds and lower investment tends to remain Sensex down (**Joshi and Saxena, 2011**). Most of

the researchers have examined that volatility increased after liberalization. The volatility spillover effect was being done to make sure that whether there is any method to transfer risk between Market & FIIs. Thus it was found that the urgent needs is to encourage innovative products in the market, broaden infrastructure, widen investor base & educating investor is the need of the hour to make Indian stock market highly and perfectly competitive and the movement of FIIs & Indian stock market will be moved by positive net investment by FIIs (**Rajput et al, 2012**).

The changes in the movement of Indian stock market and investment of FIIs are highly correlated. The investment of FIIs has significantly related to the movement of Market and high level of volatility was being credited by foreign institutional investments(**MohanamaniandSivaganasithi, 2012**). Subsequently there is a need to develop an understanding of the conduct of FIIs and its consequence on the Indian equity market and the debt market. The study is performed using data of BSE and FII action and it has been noticed that there is an association between FII movement and its cause on Indian Capital Market. The movements in the Indian Capital Market are fairly explained by the FII net inflows (**Lomba, 2012**). There are different categories of investors available in the capital market and the comparison is done between these investors such as individual investors, foreign investors, foreign institutional investors and the local investors. The study revealed that institutional investors and foreign investors outperform due to institutional sophistication whereas individual investors and domestic investors has few disadvantages. The behavior of investor plays a peculiar role in stock market anomalies and the investor behavior is caused by prediction of return on the basis of some public happening, fluctuations for short period of time, reverse anomalies for long term period, high instability in the prices of assets and short run earnings stock. These important causes leads the investor towards biasness and the behavioural biases become the reason for stock market up and down (**Shahidet al, 2013**).

Relatively the behavioural decisions of FIIs effects the flows and thus it impacted market liquidity, market capitalization, quantity and price of stock traded in Indian stock market(**Kaur and Kaur, 2015**). FIIs invest in bulk thus little change in gross purchasing and selling effects the stock market liquidity in negative direction and if there is an increase in the purchases by FIIs that would notably reduce future market liquidity(**Prasanna and Bansal, 2014**).

FIIs have escalated the yield of the industry and efficiency of labor and construct foreign trade procedures and governance in Indian stock market. FIIs are free and they are unpredictable, they are always on the toes to book profits from dynamic portfolios across different emerging & developing economies. The returns for FIIs & net investment made by them are significantly and it is important to know when they withdraw funds & at what time they make investment because there are lot more determinants which effects the investment of FIIs in India and such determinants are risk oriented and associated with the economy as well as type of market in which investment is made (**Arora and Kumar, 2015**).

Thus the literature supports us that FIIs play an important part in Indian Stock Market and the decision of liberalization was the important decision among Indian financial history. On the one hand it provides funds and destabilizes it on the other hand. In the present study, the data of FIIs is taken to examine whether FIIs affect Stock Market or vice versa in the prescribed period of the study. It is essential to keep a check on the investment made by FIIs as it is being the very important investor in the Indian Economy so that volatility can be reduced and the development of market can be done with the help of various measures taken by Indian market. The objectives of the study include the association of investment made by FIIs and Indian stock market and to analyze the effects of the returns of Indian stock market on the investment decision of FIIs.

3. Hypotheses

Following are the hypothesis formed to study the impact of foreign institutional investment on the volatility of Indian stock market

H_{1a}: There is a long term association between FIIs and Sensex.

H_{1b}: There is an effect of the returns of Sensex on the decisions of FIIs.

4. Database and Research Methodology

Time Period: -The time period of the present study is January 2002 to September 2017. The monthly data has been taken. This period was taken into account because in this period various amendments like single approval process of SEBI, setting debt limit, bubble burst of 2008, participation of FIIs in interest rate futures, abolition of MAT (Minimum Alternate Tax),

restrictions on p-notes are done in these period. Moreover the current data is taken to know the current scenario related to FIIs in Indian Stock Market.

Sources of Data: - The data is composed from the sources of secondary means such as from the website of NSDL, websites for historical data are Moneycontrol and Investing.

Variables: -The variables used in the study are investment made by gross purchasing and selling of equity and debt by FIIs & the major index of BSE SENSEX. SENSEX is the index of BSE top 30 stocks. Whereas, the time period of the study is represented by t.

Table 1: Overview of variables

Variables	Description	Explanation & Sources
GP_D	Gross purchase of debentures	The gross purchase of debentures is taken as logarithm of average inflow of investment made by FIIs in purchasing debentures during the particular month over the purchase made during the previous month. $GP_D = \log (DP_t / DP_{t-1}) * 100$. (Prasanna and Bansal, 2014)
GS_D	Gross sale of debentures	The gross sale of debentures is taken as logarithm of average outflow of investment made by FIIs in sale of debentures during the particular month over the sale made during the previous month. $GS_D = \log (DS_t / DS_{t-1}) * 100$. (Prasanna and Bansal, 2014)
GP_E	Gross purchase of equity	The gross purchase of equity is taken as logarithm of average inflow of investment by FIIs in purchase of equity shares throughout the particular month over the purchase made during the previous month. $GP_E = \log (EP_t / EP_{t-1}) * 100$. (Prasanna and Bansal, 2014)
GS_E	Gross sale of equity	The gross sale of equity is taken as logarithm of average outflow of investment by FIIs in sale of equity shares for the duration of the particular month over the sale made during the previous month. $GS_E = \log (ES_t / ES_{t-1}) * 100$. (Prasanna and Bansal, 2014)
SNX	BSE Sensex	The average monthly index is taken as logarithm of average monthly index during the particular month over the purchase made during the previous month. $SNX = \log (I_t / I_{t-1}) * 100$.

The software used is E-view 9.5. The variables are tested by applying the Unit Root with Schwarz Info Criterion, Johansen Co-integration Test, VAR, VECM, Variance Decomposition Analysis, Impulse Response test, Granger Causality Test, on

the data to examine the validation of variables taken in the current study.

5. Results and Discussions

To check the validation and responsiveness of variables, the various tools of statistics are being

applied to get productive resultant. The data is collected for the period of 15 years and 9 months. Various major reforms and events took place in this period, therefore to examine the effects of FIIs investment on Sensex and vice versa, it is required to analyse data. Moving forward, the first step comes up with the stationarity of data whether the variables has unit root or not. The stationarity of sample time series has been checked by applying **Augmented Dickey Fuller, 1981**. The stationarity was also checked by **Phillips and Perron, 1988** for time series.

Augmented Dickey Fuller Test

Table 2: Analysis of Unit root.

Null Hypothesis	t-statistic	Probability
GP_D has a unit root	-17.95638	0.0000
GP_E has a unit root	-13.16155	0.0000
GS_D has a unit root	-33.97215	0.0001
GS_E has a unit root	-14.02865	0.0000
SNX has a unit root	-12.48324	0.0000

Source: Formulated from the result of e-views

The Schwarz info criteria is applied with intercept and considered that variables and considered that variables has a unit root in null hypothesis. The TABLE2 above refers to the p value is less than the 0.05 value, which thus shows that we should reject null hypothesis and accept the alternate hypothesis that variables have no unit root and data is stationary and follow no trend.

Johansen Co-integration test

Co-integration technique is used to determine the long run relationship between the sample series. The determinants of economic, political, social, effects the decision of FII's, but the deviation between prices of stock market is calculated by using co-integration. It shows the extent to which two variables moved together towards long term equilibrium. It also allows for divergence of respective market from long run equilibrium (Schreiber and Schwartz, 1988).

Augmented Dickey Fuller Test (ADF) is the unit root to check the stationarity of the data in the time series data set. The null hypothesis used for ADF is that the variables have unit root whereas alternative hypothesis is used as data is stationarity. If the data is not stationary at level then first difference is taken to make the data stationary.

The basic regression model for constant and follow no trend can be explained as-

$$\Delta y_t = \alpha + Y y_{t-1} + V_t$$

Co-integration minimizes the deviation that occurs in long run equilibrium whereas these deviations can be due to shocks information spillover or arbitrage process. Co-integration thus helps in removing the stochastic trends, and thus, formed a stationery series with long run equilibrium.

Lag length plays a very important role in applying co-integration because it can create problem of over parameterization or under parameterization and most important is there should not be serial correlation in the residuals.

The lag length is checked from lag length criterion, where it can be selected from various criterion like Akaike Information criterion (AIC) or Schwarz info criterion (SIC), but in this study AIC is taken to find optimum lag length.

Sample: 2002-2017, Unrestricted Co-integration Rank test (Trace)

Table 3: Analysis of Johansen Co-integration.

Series: SNX GP_D GS_D GP_E GS_E
Lags interval (in first differences): 1 to 4
Unrestricted Co integration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigen value	Trace Statistic	Critical Value at 5% significance	Prob.**
None*	0.383859	299.6825	69.81889	0.0001
At most 1*	0.315799	210.5750	47.85613	0.0000
At most 2*	0.281339	140.7462	29.7907	0.0001
At most 3*	0.249349	79.95906	15.49471	0.0000
At most 4*	0.137349	27.18512	3.841466	0.0000
Trace test indicates 5 co integrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**Mackinnon-Haug-Michelis (1999) p-values				

Inferences - Trace test indicates 5 co integrating equation(s) at the 0.05 level. Thus the assumption in null hypothesis is that there is no Co-integrating equation (None*) between the variables is rejected and the alternate that is there are Co-integrating equation between the variable is accepted. It shows that there are various equations of integration between the BSE Sensex and FIIs.

Vector Autoregression Model

VAR is the autoregressive stochastic process used to check the interdependencies of variables. Each variable of the model is separately evaluated and have its lagged value & error term. Before applying VECM model, it is necessary to find out diagnostic checking criterions. Diagnostic criterions can be only from those series or whom long run relationship has confirmed.

The model of VAR can be described as

$$X_t = \mu + \phi D_t + \Pi_p X_{t-p} + \dots + \Pi_1 X_{t-1} + e_t$$

Where t is the time period, t=1... T and the period back observation is X_{t-1} is the lag and e_t is the error term.

While applying VAR, it is necessary to check normality and no serial correlation criterion among variables, in VAR model. The series is checked to be normal & no serial correlation exists between the variables, which are thus shown in TABLE 4.

Table 4: Analysis of Stability

Name of the series	Critical value	LAG
SNX	0.69	2
GP_E	4.41	2
GS_E	5.71	2
GS_D	-2.71	2
GP_D	1.733	2

Source: Formulated from the analysis on e-views

The stability test shows the stability of all the variables except GS_D with the lag length 2. The normality chi-square test shows the value of Jarque-bera as 30.1602 with the p-value as 0.2213 with the lag length 2. The test is considered to be normal.

Table 5: Analysis of Breush Godfrey LM Test

Breush Godfrey Serial Correlation LM Test

F- Statistics	2.224763	prob F(2, 174)	0.1110
Obs* R Squared	4.510392	prob chi square (2)	0.6808

Source: Formulated from the analysis on e-views

The results in Table 5 shows that there is no serial correlation between the variables.

Vector Error Correction Method (VECM)

Vector Error correction shows the momentum at which our derived model returns to balance by following the exogenous intervention. Thus, the TABLE 4 & TABLE 5 shows that the condition of

normality and no serial correlation are satisfied which thus makes sure that there is long run equilibrium present. Now, VECM can be applied which thus can be formed by equation with lag term and which leads to short run adjustment

towards long run. VECM can also help us in making price discovery which moves the market returns to equilibrium. It corrects the disequilibrium from one period to another. Also, it makes the relative magnitude of adjustment through which equilibrium is achieved.

The VEC model is described as

$$\Delta y_{1,t} = \alpha_1(y_{2,t-1} - \beta y_{1,t-1}) + e_{1,t}$$

$$\Delta y_{2,t} = \alpha_2(y_{2,t-1} - \beta y_{1,t-1}) + e_{2,t}$$

The VEC helps to form short run adjustment dynamics by restricting the long run behavior of co-integrating of the endogenous variables. The co-integration term is also known as error correction term since the deviation from long run equilibrium is corrected gradually through a series of partial short run adjustments.

Table 6: Analysis of VECM

Variables	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.005844	0.003304	-1.768948	0.0787
C(2)	-0.648520	0.086934	-7.459948	0.0000
C(3)	-0.342946	0.087739	-3.908713	0.0001
C(4)	-0.002518	0.001800	-1.398557	0.1637
C(5)	-0.001398	0.001538	-0.909144	0.3645
C(6)	0.106091	0.054513	1.946181	0.0532
C(7)	0.065867	0.033589	1.960981	0.0515
C(8)	0.001770	0.007305	0.242257	0.8089
C(9)	0.003819	0.003420	1.116577	0.2657
C(10)	-0.122749	0.055716	-2.203106	0.0289
C(11)	-0.065729	0.033723	-1.949124	0.0529
C(12)	0.021456	0.235622	0.091061	0.9275

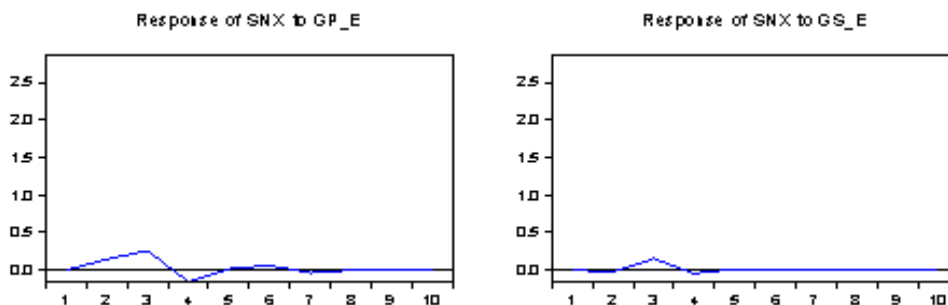
Source: Formulated from the result of e-views

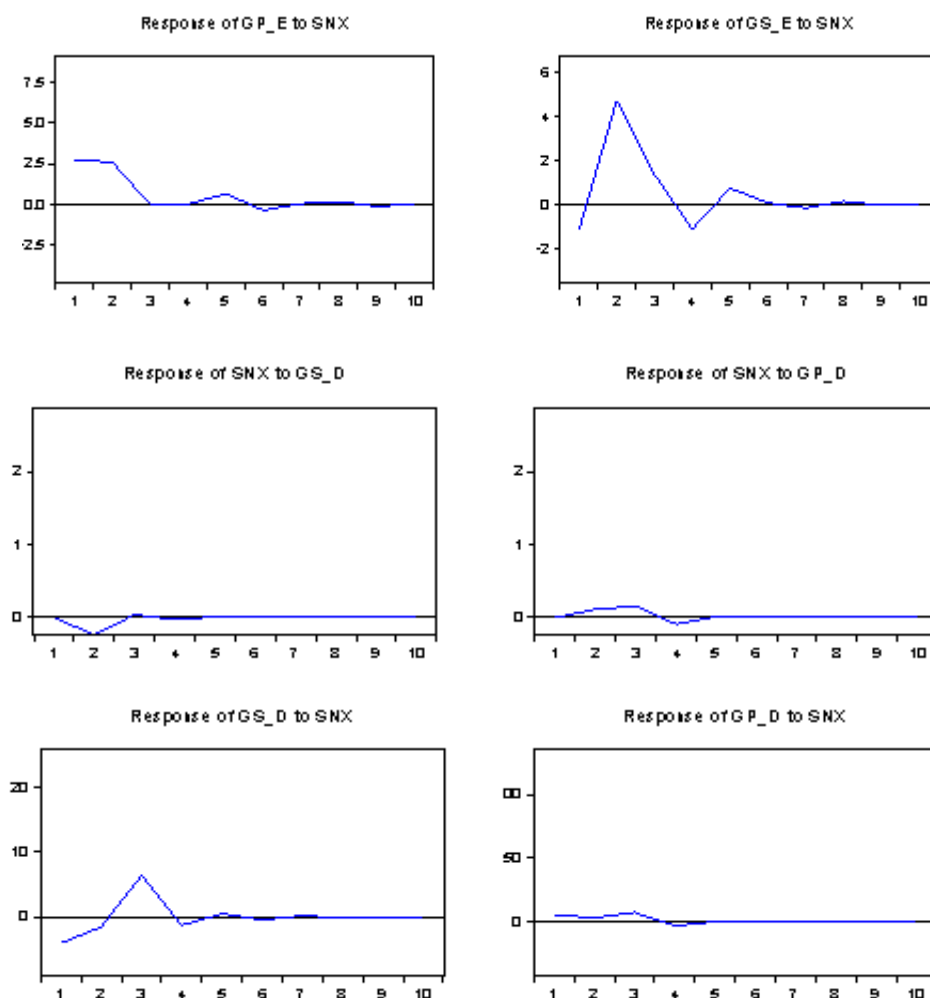
VECM is applied by checking the lag length from the lag length criterion on the basis of AIC. The negative term indicates that model is moving back towards equilibrium whereas positive indicates shows the going away from equilibrium. The negative value of C (1) should be negative and significant which thus determine the long run causality between the variables.

Impulse Response Analysis

Impulse Response Analysis traces the response of particular variable to the shock. It shows the accumulated response which is the accumulated response of the impulse responses. The graphical representation thus helps in analyzing the shocks more appropriately.

Figure1: Analysis of Impulse Response





Source: Formulated from the result of e-views

The impulse response of GP_E to SNX is quite high whereas SNX response to GP_E is not much significant. On the other hand, GS_E & GS_D response to SNX is quite higher whereas SNX response to GS_D, GP_D is not much significant. It is also seen that GP_D is not much effected by the fluctuation in SNX.

Variance Decomposition Analysis

Variance decomposition is used to evaluate the reaction of variable to the shock when it passes through some other variable. It is helpful in forecasting the response of variable when it goes through some innovation or shock.

Table 7: Analysis of Variance Decomposition

Variance decomposition analysis using Cholesky:

Period	SNX	GP_E	GP_D	GS_D	GS_E
SNX					
Short term	97%	1%	0.18%	0.81%	0.43%
Long term	96%	1%	0.34%	0.82%	0.43%
GP_E					
Short term	11.60%	83.90%	1.07%	0.77%	2.52%
Long term	11.60%	82.60%	1.08%	0.80%	2.80%
GP_D					

Short term	0.30%	2.27%	94.20%	0.30%	2.80%
Long term	0.90%	2.41%	92.80%	0.32%	3.45%
GS_D					
Short term	6.70%	1.00%	11.70%	79.40%	0.94%
Long term	8.40%	1.21%	12.00%	76.70%	1.46%
GS_E					
Short term	22.1975	47.30%	1.80%	0.23%	28.72%
Long term	22.60%	48.17%	1.90%	0.23%	27.06%

Source: Formulated from the result of e-views

The innovation effect on one variable due to fluctuation in another variable was seen in TABLE 7 and the following inferences can be drawn from the analysis:

In the short run and long run impulse effect on SNX is 97% and 96% respectively with variation of fluctuation in SNX. It can be called as own shock of SNX whereas short run effect is quite less on GP_E, GP_D, GS_D, GS_E is 1%, 0.18%, 0.81%, 0.43% respectively when there is fluctuation in SNX. The innovation or shock effect on GP_E is higher only in the case of SNX, which means that Gross purchase of equity is highly affected by variation of SNX in short run with 11.6% and 11.67% in long run.

The impulse effect on Gross purchase of debt is not affected by the fluctuation in SNX which is

0.3% & 0.9% in the short run and long run respectively. The impulse response of GS_D due to variation in SNX which is 6.7 % & 8.4% in the short run and long run respectively. The GS_E is affected due to variation in SNX which is 22.197% & 22.6% in short and long run respectively.

Granger Causality Test

The granger causality is used to identify the cause and effect relationship between the two or more time series. It is given by **Clive W Granger (1969)**. It only suggests that the logic does not precede cause. Granger Causality is a method which helps in finding out whether one time series is helpful to estimate another time series.

Table 8: Analysis of Granger Causality

Pair wise Ganger Causality Tests

Sample: 2002M01 2017M09

Null Hypothesis:	Observations	F-Statistic	Prob.
GP_D does not Granger Cause SNX	187	0.44640	0.6406
SNX does not Granger Cause GP_D		0.47761	0.622
GS_D does not Granger Cause SNX	187	0.38650	0.68
SNX does not Granger Cause GS_D		4.78696	0.0094
GP_E does not Granger Cause SNX	187	1.57570	0.2097
SNX does not Granger Cause GP_E		18.59040	5.E-08
GS_E does not Granger Cause SNX	187	1.87328	0.1566
SNX does not Granger Cause GS_E		35.0980	1.E-13

Source: Formulated from the result of e-views

It analyses the causal relationship between FII investment in GP_E, GP_D, GS_D, and GS_E. It does not suggest that the effect of the statement is y or result of the statement is x when the statement is “x Granger Cause y”. The results of granger causality shows that GP_D does not Granger

Cause SNX which means that gross purchase of debt by FIIs does not affect the SNX whereas SNX also do not lead the FIIs to gross purchase of debt with the significant level of 5%. Whereas, GS_D does not Granger Cause SNX which refers that gross selling of debt does not affect the

change in the index of BSE whereas fluctuations of SNX do effect the selling of debenture is determined by the probability value less than the significance value of 5%.

GP_E does not Granger cause SNX is accepted with the prob. value of 0.2097 which is more than 5% and SNX does not Granger Cause GP_E is rejected with the prob. value of 5.E-08 which is less than 5%. The values show that fluctuation in SNX does affect gross purchase of equity. Whereas, GS_E does not Granger Cause SNX which refers that gross selling of equity does not affect the change in the index of SNX whereas the fluctuations in SNX leads the GS_E which means fluctuation in SNX leads the equity holders to sell their holding at 1.E-13 at the significant level of 5%.

Thus the result shows that it is necessary to evaluate Sensex data as it would definitely leads to gross purchase and gross sale of equity and debt. One time series is required to forecast another time series in the above mentioned case.

6. Conclusion

In the nutshell after reviewing the literature and analysis being done, it has been concluded that FIIs plays a very crucial role in Indian stock market. The scope of the study is limited to the behavior & integration of FIIs towards BSE-Exchange of Indian stock market. The issues of stock market is discussed which effects the FII's decision and volatility is being checked.

While analyzing the inflows of FIIs, it has been determined that there is Co-integration between the FIIs and BSE Sensex. The resultant thus leads to the fact that the inflow and outflow of investment by FII in the period taken for the study will not Granger Cause Sensex whereas there is unidirectional relationship between Sensex and FIIs. The Sensex of Indian stock market pulls the investment and thus the stability of the market is necessary to attract the foreign investment. The determinants of the market such as GDP, political factors, Inflation rate are the vital factors which effect the growth of economy and investment of foreign investors. Time to time reforms has to be

taken by Government of India, which will help the market to new heights.

The economic and political factors consequently lead to the fluctuations in Indian stock market and thus this effect is forwarded to the FIIs investment. FIIs behaviors are biased due to some factors of stock market which effects their investment decisions. The empirical test such as Granger causality test and VECM framework is done to check the volatility of Indian stock market. If the market is bull it definitely catches the attention of foreign investors and if the market is bear market then it result in opposite direction. FIIs are the important source of money which thus leads the pool of money towards India which is the need of hour of a developing country for its development and up gradation of nation.

There are few aspects like firm characteristics while making investment in a particular company by FIIs are left under this study. Though, there is another way of foreign investment i.e. Foreign Direct Investment which is not discussed in the study through which the foreign investors can also invest in others country. Thus there is the scope for other researches to work on it and elaborate the gap.

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