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An Analysis of Foreign Institutional Investors' impact on Volatility of Indian Stock Market.

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Abstract: *As we know Indian stock market is vast and attract investors as a hotspot of investment .The Indian market is steadily growing and had allured domestic investors community and foreign investors group in the past .the major part of investment in Indian stock market is attributed to institutional investors among whom foreign investors are of primary importance. The investment by Foreign Institutional Investors (FIIs) has become a dynamic force in the development of Indian stock market and a cause of stock market volatility. In order to ascertain the link between the two. present study makes an attempt to develop an understanding of the FIIs investment and its impact on stock market volatility. The study is conducted using monthly time series on NIFTY, SENSEX and FIIs activity for a period of fifteen years spanning from January, 2002 to December, 2016. In present study, statistical tools like mean, variance, standard deviation, skewness and correlation analysis are used to examine the impact of FIIs impact on Indian stock market volatility. The study reveals that there is significant relationship between FIIs capital flows and stock market volatility. Moreover, FIIs investment has statistically significant influence on volatility of NIFTY and SENSEX, used as proxy to Indian stock market.*

Keywords: *Volatility, FIIs Capital Flows, NIFTY SENSEX , FII, Indian stock market , correlation and regression , Trends of FII in India etc.*

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I. Introduction

With rapid changes in the world economy because of liberal economic policies and fast pace changes due to globalisation, Indian stock market has become a focus point for foreign investors. Organisations tend to target for large volume of trade in this era of globalisation. Trade flows are indeed one of the most visible aspects of globalization. FII refers to the investment made by resident of one country in the financial capital and asset of another country It facilitates and persuades large productivity and help in shaping up balance of payments. FII flows in India have continuously grown to a remarkable extent.

Volatility is defined as the degree of price variation between the share prices during a particular period and is a symptom of a high liquid market. Though some quantum of volatility is desirable because it highlights the changing values across economic activities and it facilitates resource allocation, yet volatility created by the flow of funds by FIIs is detrimental for stock markets and investors. Volatility characterizes the stability or instability of any random variable. It is a common statistical measure of depression around the average of any random variable such as earnings, market-to-market values, market value, losses due to default etc. Volatility has an adverse impact on the investors' decisions pertaining to the effective allocation of resources and thereby on investment in stock markets. Volatility makes investors averse to hold various stocks due to increased uncertainty in stock markets. Investors, in turn demand higher risk premium so as to cover increased risk resulted because of market volatility. In Indian stock market significant portion of investment comes through FII mode. The FIIs and its outflow all depends on the return and sentiment of the stock market. The inflow of investment by them swell up the stock market indices and their exit brings down the market indices and as such creates huge fluctuations in the stock market of host country, resulting in volatility. present study has been undertaken to analyze the influence of FIIs investment on stock market volatility.

II. Review Of Literature

1-Kumar etal (2002) studied the role of FIIs investment in Indian equity market and concluded that FIIs and Indian mutual funds are the powerful force in shaping the market. Similarly, Rao (1999) also ascertained FIIs investment is influential force in the Indian stock market.

2- Kulwantraj, 2004 has shown that stock market returns and ex-ante risk are major determinants of FIIs investment and this study has also stated that the investment by FIIs has no positive impact on the real economy. In recent times FIIs trading activities in Indian stock market has increased significantly and high turnover in stock market is mainly attributed to FIIs trading

3-Banerjee and Sarkar, (2006). FIIs buy when the market increases and sell when the market falls, such a behavior push the stock prices away from fundamentals as revealed by studies on contemporaneous relation between FIIs investments and equity returns, based on monthly data.
4-Krishna (2009) reveals in his study that the liquidity as well as volatility was highly influenced by the FIIs investment. The inflow of FIIs investment depends on stock market returns, rate of inflation and ex- ante risk.
5-Behera (2010) studied the effects of FIIs investment on equity return and volatility using ordinarily least squares GARCH model. The study found that FIIs investments have a positive impact on both liquidity and returns and GARCH estimates suggest FIIs investments increase volatility in Indian stock market.
6-Gupta (2011) examined the rise or fall of Indian stock market due to FIIs investment and her study covered the period from April 2006 to February 2011. She used linear regression analysis and Granger Causality Test to examine the cause or effect of FIIs on Indian stock market. The results of her study showed that FIIs investment flows are unpredictable and its movement depends on market sentiment, hence it was observed that increased volatility associated with FIIs investments results in severe price fluctuations in Indian stock market.
7-Mamta etal (2012) examined the impact of foreign institutional investment on stock market using statistical tool of Karl Pearson's coefficient of correlation. The study attempted to examine the pattern of FII s and its effect on volatility of BSE Sensex . It was observed that there is highly positive correlation between FIIs investment and Sensex.
8-Anubha (2013) in his research studied the influence of FIIs investment on Indian stock market by utilizing daily FIIs investment data and daily reruns of Sensex and Nifty for the period from 2001 to 2010. The study used correlation and regression techniques and observed that FIIs investment have significant positive impact on stock market and on major stock indices. The findings also show that the degree of impact of FIIs varies among various sectors of the economy.
9-Sultana and Pardhasaradhi (2014) examined the impact of flow of FDI and FIIs on Indian stock market by analyzing the impact on Sensex and Nifty. They used secondary data for the period of 11 years from 2001 to 2011 and used multiple regression and correlation analysis. The study found that there is high degree of statistically significant positive correlation between foreign capital flows and Indian stock market.
From the above review of literature it is evident that FIIs investments play a significant role in the Indian stock market, influences the stock prices, in turn do give rise to volatility and destabilize the market occasionally. However, sometimes FIIs investment do not have destabilizing power but effects the liquidity of the market. Furthermore, foreign capital flows have great contribution to impact the economic behavior of the countries in a positive way.

Objective of the study
The present study has been undertaken with the following objectives:
1. 1-To analyze the trend investment by FIIs in Indian stock market.
2. 2-To understand the relation between FIIs investments and stock market volatility.
3. 3-To analyze the factors influencing volatility.
4. To find out the relationship between FII and Indian Stock Market.
5. To determine the behavior and trend of FII's on Indian stock market
6. To determine the factors that influence investment decision of FII's.
7. To examine whether FIIs have any influence on various BSE indices

III. Research Methodology

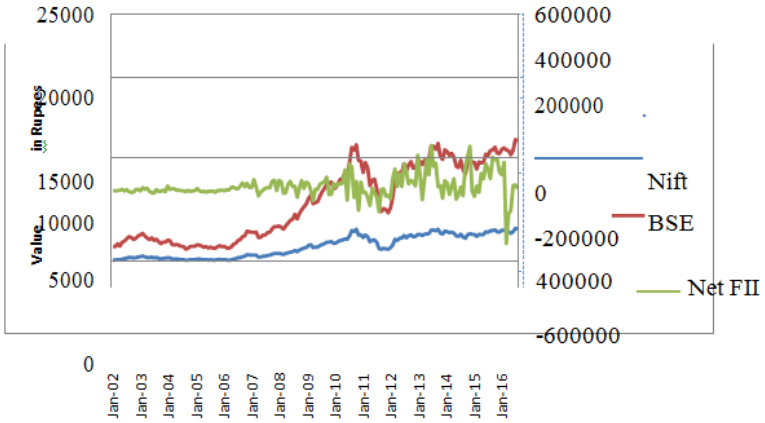
This study examines the trend and impact of FIIs on the volatility of Indian stock market. The scope of the research comprises of information derived from secondary data from various sources e.g. economic intelligence, SEBI, websites, journals and reports. The Sensex and Nifty was selected as the representative of the Indian stock market as they are most widely used indexes by market participants as benchmark indexes and account for the major market capitalization of listed companies and data for these two indices was collected from the websites of Bombay Stock Exchange (BSE) and National Stock Exchange. The study is descriptive in nature. The monthly data was collected for a period of fifteen years from January, 1999 to December, 2013. Monthly closing index values were taken for this period and the influence of FIIs was assessed.
Firstly, with the help of correlation analysis the relationship between FIIs investment and selected stock market indices has been analyzed.
Secondly, the yearly volatility for selected indices was computed.
Thirdly, study has tested stationary of time series through unit root test.

Empirical Results and Findings:

1 Trend Analysis

The trend analysis presented in Figure-1 suggests that FIIs capital flows have grown significantly in last one and half decade and this analysis depicts that FIIs have shown good interest in Indian stock market because of tremendous investment opportunities available in the Indian economy. The FIIs investment has increased over the years with fluctuating trend depending on the market sentiment. The present study has taken NIFTY and SENSEX as representative to Indian stock market because they are both well recognized at national and international level. The trend of NIFTY, SENSEX and monthly Net FIIs flows in last fifteen years is presented in the grape reveals all three variables have moved together over the period of study but the fluctuations of FIIs flows is more pronounced than NIFTY and SENSEX. It is also observed from the graph that fluctuation in NIFTY and SENSEX follows same pattern as is observed in case of FIIs flows but reverse is not true for the same. This lime lights that trend in fluctuation in indices is corroborating with fluctuation in FIIs flows pattern, however, every time fluctuation in net FIIs is not matching with the trend in indices.

Graph-1 Trend of Net FII's, NSE Nifty and Bse Sensex



2 **Volatility Analyses**

Stock market volatility indicates the degree of price variation between the share prices during a particular period. A certain degree of market volatility is unavoidable, even desirable, as the stock price fluctuation indicates changing values across economic activities and it facilitates better resource allocation. But frequent and wide stock market variations cause uncertainty about the value of an asset and affect the confidence of the investor. The risk averse and the risk neutral investors may withdraw from a market at sharp price movements. Extreme volatility disrupts the smooth functioning of the stock market. The literature on stock market volatility is voluminous, but, some general conclusions on common stock risk have emerged from this research. The overall stock market volatility has fluctuated over the time with no discernible trend and some authors have argued that volatility is higher during the bear markets. Volatility of Indian stock market with reference to NIFTY and SENSEX which are very real representative of Indian capital market and volatility of Net FIIs flows has been analyzed by traditional measures i.e. variance, standard deviation and extreme volatility measure of skewness. The modeling of volatility will be done in next section which analyses the influence of FIIs flows on volatility together with other internal shocks of time series influencing volatility.

3 Traditional Volatility Analysis

The Table 1 contains the descriptive statistics of three series viz. NIFTY Returns, SENSEX Returns and Net FIIs Flows to India. This analysis presents an insight into the average; volatility, in terms of variation in the returns and distribution of the three time series data.The analysis presented in the table reveals that yearly mean of all the series is showing the upward trend and variance too has shown increasing trend. The standard deviation shows that there is variability among yearly standard deviation among the NIFTY, Net FIIs Flows. The standard deviation is highest in case of FIIs followed by SENSEX and NIFTY. The FIIs flows has witnessed highest monthly volatility during the years 2013, 2015 and 2016 and comparatively lowest volatility in the year 2002, and this connotes that FIIs flows have become much more volatile than past.The volatility of SENSEX and NIFTY also started to increase at an alarming rate since 2010 and reached highest level in 2012 and this period shows highest volatility in study period and volatility started to decrease from the year 2010. Except few years in between the skewness for most of the years is positive for the all the three series. The positive skewness implies that the observations are distributed on the above side of the means i.e., higher probability of obtaining positive observations and vice versa.

Table: 1-Descriptive Statistics of FII's

Year	Mean			Variance			Standard Deviation Deviation			Skewness		
	FII's	Nifty	Sensex	FII's	Nifty	Sensex	FII's	Nifty	Sensex	FII's	Nifty	Sen-sex
2002	5796	1220	4167	706,48,576	35,851	4,13,386	8405	189	643	-0.26	-.16	-.31
2003	5749	1390	4502	1805,82,231	19,636	2,82,492	13438	140	532	0.4	.36	.35
2004	10859	1117	3476	1500,85,692	17,968	1,99,598	12251	134	447	1.65	.78	.78
2005	3015	1045	3231	646,34,721	4,174	37,782	8040	65	194	1.32	-.16	.05
2006	29875	1264	3968	4128,06,318	89,909	8,61,742	20318	300	928	0.75	.84	.78
2007	34898	1750	5552	14619,08,463	29,223	2,82,407	38235	171	531	0.11	.19	.33
2008	35467	2297	7498	20467,87,060	81,078	10,78,157	45241	285	1,038	-0.44	.57	.52
2009	34752	3420	11648	26872,47,806	1,19,560	17,63,932	51839	346	1,328	-0.7	.40	.47
2010	67511	4681	15901	84403,32,533	6,88,387	69,72,254	91871	830	2,641	0.24	.81	.72
2011	-34773	4199	14,029	54447,71,570	8,26,869	98,41,587	73789	909	3,137	-0.66	-.57	-.49
2012	74136	4183	13941	81056,93,256	8,13,297	102,08,667	90032	902	3,195	-0.03	-.63	-.64
2013	149604	5462	18208	150802,92,310	1,93,359	21,18,747	122802	440	1,456	0.09	.38	0.43
2014	31126	5320	17724	59976,14,158	1,49,099	16,21,952	77444	386	1,274	0.81	-.50	-.47
2015	137904	5411	17831	164058,65,279	89,914	9,38,217	128085	300	969	0.26	.47	.43
2016	371	590	197	410606.0	68.485	7,73.52	202634	26	880	-1.06	.18	.70

Source: (News letter of BSE and NSE from 2002 to 2016)

4 Correlation Analysis

Pearson correlation analysis is used to study the degree of statistical relationship between the Net FIIs flows, NIFTY and SENSEX. Table 2 presents the output of correlation analysis, run for the 15 yearly monthly data of Net FIIs flows, NIFTY returns and SENSEX returns. Based on the results it can be deduced that there is moderate positive but highly significant correlation between FIIs flows and NIFTY (.337) and SENSEX (.331). The correlation is significant at 1 per cent level of significance. The exhibit reveals that FIIs investment has significant and positive relationship on the stock market volatility.

Table: 2 -Correlations Analyses

		Net FII Flows	NIFTY Monthly Close	SENSEX Monthly Close
Net FII Flows	**Pearson Correlation**	1	.337**	.331**
	Sig. (2-tailed)		.000	.000
	N	180	180	180
**. Correlation is significant at the 0.01 level (2-tailed).				

Source: (News letter of BSE and NSE from 2002 to 2016)

5-Augmented Dickey Fuller (ADF) Test

Stationary of data is a precondition for the application of any econometric model. So first data series are tested whether it is stationary or not and Augmented Dickey Fuller (ADF) test has been applied for this purpose. First the check stationary of NIFTY and SENSEX returns is taken. The two null hypotheses are framed about the monthly returns of NIFTY and SENSEX which are tested at 1 per cent, 5 per cent and 10 per cent level of significance. The results generated by the test are exhibited in the Table 3.

The results of ADF test reveals that null hypothesis is rejected because the computed ADF test statistics is -12.61024 and -12.52275 for NIFTY returns and SENSEX return respectively are smaller than critical values -2.577945, -1.942614,-1.615522 at 1 per cent, 5 per cent and 10 per cent level of significance respectively, therefore the null hypothesis is rejected. Hence, it is concluded that the NIFTY and SENSEX monthly returns do not have a unit root problem and the series is stationary, which is significant at 1 per cent, 5 per cent and 10 percent level of significance.

Table: 3-Stationary Test

Null Hypothesis: NIFTY RETURN contains a unit root and SENSEX RETURN contains a unit root			
Augmented Dickey-Fuller (ADF) test statistic		**t-Statistic**	**Prob.***
	NIFTY return	-12.61024*	0.0000
	SENSEX return	-12.52275*	0.0000
Test Critical Values	1% level	-2.577945	
	5% level	-1.942614	
	10% level	-1.615522	

Source: (News letter of BSE and NSE from 2002 to 2016)

*indicates significant at 0.1, 0.05 and 0.01 marginal level.

IV. Conclusion

Much of the perception about the adverse effects of trading by FIIs and volatility is based on hearsay and plausible conjectures, but there have been very few systematic studies of the relationship between FIIs trading and volatility. It was ascertained that that volatility of NIFTY and SENSEX has increased over a period but volatility has reached maximum during the financial crisis period then it again came down. The volatility of FIIs also has increased over the period particularly during crises period. Correlation analysis revealed that there is moderate low positive correlation between Net FIIs and NIFTY and SENSEX. So results suggest that volatility of Indian stock market and FIIs has increased over the period of study but the volatility was maximum during financial down turn and then normalized to moderated levels.

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