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FIIs and Volatility: An Indian Evidence

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Abstract

Foreign Institutional investors are one of the major players in the Indian capital market. This research work aims to study the influence of FIIs on the volatility in the Indian capital market. CNX Nifty 500 index returns are regarded as being indicative of stock market returns in India. Daily data has been taken for five-year period beginning from April 2018 to March 2023. Correlation results suggest a positive relationship (significant at 1%) between volatility in the Indian capital markets and net FIIs. Garch model has been applied to study the volatility in the India capital market. The results indicate that capital flows through FIIs are one of the reasons for volatility in the Indian capital market and hence, it is concluded that FIIs activity significantly impacts the volatility.

1. Introduction

In 1991 when the New economic policy was implemented, Liberalization, Privatization and Globalization of the Indian economy took place wherein the financial markets became open for investment from foreign countries. There are two types of investment namely foreign institutional investment (FIIs) and foreign direct investment (FDIs) Foreign institutional investment refers to investment by foreigners in the

stock/securities of a country whereas foreign direct investment refers to the direct investment in another country by setting up a particular business. The capital flows by both these forms have a major impact on the countries. FIIs affect the stock markets and FDIs have an effect on the economy's expansion through business development. Thus, an understanding of the FIIs and FDIs is crucial. The capital flows from the developed economies to the developing economies due to globalization. This results in the overall growth and development of both economies. In this context, it is necessary to understand the influence of the FIIs on the Indian capital market. The most common effect which can be seen is that these FIIs could bring some degree of volatility in the Indian capital markets. Volatility refers to the variation in the stock returns. Some degree of volatility is considered to be desirable but higher volatility increases the risk of uncertainty and the investors lose confidence in holding particular financial assets. Thus, higher risk perception among investors increases the risk premium (cost of capital) and may result in lower capital flows. This would mean that the investors are unwilling to buy such volatile stocks and thereby the growth of the company is affected. It is therefore imperative to study the influence of the FIIs on the volatility in the Indian capital market.

2. Literature Review

Ansari (2023) examined the investment behaviour of DIIs and FIIs and how it affects volatility. The study also focuses on the cause and effect relationship between BSE Sensex returns, DIIs and FIIs. For this, the study employs correlation analysis, the vector autoregression model (VAR) and the Granger causality test. This research paper concludes that domestic institutional investors (DIIs) are equally important in the light of current scenario and act as a resilience towards the uncertainties. Also, FIIs are no longer the main drivers of the volatility in stock returns.

Bhatia & Kishor (2013) also studied the cause and effect between the stock price movements, Net FII flows as well as Foreign Exchange Reserves (FERs) over a period of 20 years. BSE (Bombay Stock Exchange) Sensex index was used as a proxy for stock market returns. Granger Causality test results suggest that there is bi-directional relationship between FII flows & market returns as well as FII & FERs.

Jain & Biswal (2022) explored the impact of FII trade volume (individual stocks) on the volatility of these stocks. The study applies conditional volatility-EGARCH model using daily data of the stocks. The results conclude that FII activity (purchases /sales) have a significant impact in lowering/increasing volatility in individual stocks. **Bansal (2021)** studied the investment behaviour of domestic (DIIs) and foreign institutional investors (FIIs) and their influence on the volatility of capital market in India. The study has been conducted over a period of 13 years using time series data. Granger Causality and VAR test have been applied using Eviews. The results depict presence of a significant relationship of investment patterns of DIIs and FIIs with the volatility in the Indian capital market.

Jalota (2017) studied the behavioural relationship between foreign institutional investors (FIIs) and Domestic institutional investors (DIIs). Since the announcement of demonetization, investors bear a positive perception regarding investment in India and

see growth opportunities in the country. Thus, the study highlights the behavioural aspects in this regard. This study was conducted over five-year period beginning from January 2012 to March 2017. Correlation and One way ANOVA were applied. The results conclude that FII movements have a negative correlation with DII movements and exhibit significant relationship.

Dadhich, Chotia, & Chaudhry (2015) examined the effect of FII flows on Indian capital market volatility. This research work highlights the effect of news using ARCH-GARCH process on the stock market volatility over a ten-year period from 2004-2014. Results show that there exists leverage effect and volatility persistence in Indian securities market. It was also concluded that FIIs activity contributes significantly to the Indian stock market volatility. Additionally, it was noted that between 2004 and 2014, relative to FIIs' gross sales, gross purchases had a greater impact on stock market volatility. **Coondoo & Mukherjee (2004)** tested three characteristics of volatility, namely, duration, persistence and strength with the FII movements in India. The results indicate presence of high extent and duration of volatility between the day-to-day movements of FIIs and returns.

Rajput et al. (2012) aimed to study volatility persistence post introduction of financial liberalization in India. Volatility spill over as well as information spillover was studied from 1992-2011. The study concludes the presence of bidirectional volatility and informational spillover. Also, clustering and persistence of volatility was found. **Shukla et al. (2011)** concluded that FIIs impact price trends and market sentiments excessively in the Indian stock market. Also, small and midcap companies are most affected by the FIIs activity.

Joo, B. A., & Mir, Z. A. (2014) studied the impact of FII activity on NIFTY and SENSEX indices for a period of fifteen years starting January, 1999 to December, 2013. Monthly time series data was used for the purpose of the study. Several statistical tools were used in the study including Augmented Dickey-Fuller (ADF), correlation analysis and standard deviation. Conditional volatility capturing model-GARCH was applied to study the volatility in the Indian capital markets. The FII variable was incorporated in the model to study the impact on the volatility. The results conclude that stock market volatility is significantly impacted by the FII capital flows. **Garg & Bodla (2011)** studied the relationship between FII and Sensex for a very long duration (22 years) beginning from January 1986 to December 2007. The results of GARCH Model suggests decline in volatility after the stock market was opened for FIIs.

3. Data

For this study, CNX Nifty 500 Index has been considered as a proxy for market returns. Daily data has been retrieved from NSE website for five years ranging from 1st April 2018 to 31st March 2023. The data relating to FII capital flows has been taken from moneycontrol.com.

Log returns have been calculated using the formula:

LN(P1/P(-1))

3.1 Research Methodology

After collecting the data, filtering and cleaning was done using MS Excel. Augmented Dickey-Fuller test was applied to check for the stationarity of the stock returns data. Stationarity of the data suggests that the stock returns are mean-reverting and hence can be used in the analysis for drawing inferences. Correlation between FIIs (Net) and CNX Nifty 500 index returns has also been computed. The returns data has been tested for the presence of conditional volatility using heteroskedasticity test. After this only, Garch model has been applied (Gujarati, 2009). The following equations have been used-

Where;

$$\mathbf{R_t = C_0 + C_1\, R(-1) + \varepsilon_t}$$

Where-

R_t-asset return (time t)

R(-1)-return (lagged)

ε_t-returns (residual)

Variance equation

$$\mathbf{\sigma_t^2 = \alpha_0 + \alpha_1 u^2_{t-1} + \beta\, \sigma^2_{t-1} + Net\_FII_t}$$

σ_t^2 = Conditional Variance

u^2_{t-1} = News coefficient (ARCH)

σ^2_{t-1} = last period forecast (GARCH)

Net_FII_t = Net FII investment in rupees crores

4. Results and Findings

Table 1 shows the descriptive statistic of the time series data of FIIs and Nifty 500 index companies. The mean returns on the Nifty index are 0.037%. The minimum value of return is-0.13% and maximum return is 0.07%. The value of skewness is-1.75 suggesting that the Nifty index returns are highly negatively skewed. The kurtosis value is very high (23.17) implying that the distribution is Leptokurtic. The Jarque-Bera statistics of Nifty index returns and FIIs indicates the time series is normally distributed. The mean value of Net FIIs is Rs-314.357 crores (negative) indicating that the sales exceed purchases by FIIs. However, the minimum value is-8295.17 and maximum value is 28739.17. The value of skewness is 2.56 indicating that the series is highly positively skewed. High kurtosis value suggests Leptokurtic distribution.

Table 2 shows the correlation coefficients between the CNX Nifty 500 index companies and Net FII capital flows in the Indian stock market. There exists highly significant positive correlation of moderate degree (0.3) between the two variables under study. This clearly highlights that FII activity and Nifty returns are correlated with each other.

Figure 1 shows the graph of FIIs and CNX Nifty 500 index returns. It is clear from the graph that the Nifty 500 index shows an upwards trend during the five-year period. The Index reached its lowest during 2019-2020 owing to Covid-19. The implementation of lockdown in the world resulted in a decline in buying and selling activities as well as investment activities. The future was unpredictable and the entire world was going through the lowest phase in terms of economic activities. Sooner, the situation got better

and the Index gained momentum and showed upward trend due to an increase in economic activities worldwide. The graph of FII shows volatility clustering. There are a few peak points as well where the Net FII reached its highest point (May 2020 and Feb 2021) and then fell back. Thus, it is concluded that the markets are volatile and activity of FII can be closely associated with market movements.

Testing the time series data for stationarity is the first step before starting any analysis in econometric modelling. A Stationary time series indicates that the series has no unit root. This implies that time series data is mean reverting and hence, will not give spurious results. In order to test the Nifty index returns time series data for stationarity, Augmented Dickey-Fuller test has been applied as shown in Table 3. The null hypothesis is rejected as $p<0.05$ that the series has a unit root.

Heteroskedasticity test was conducted as shown in Table 4 to test for the existence of ARCH effects in the CNX Nifty 500 index returns time series. The null hypothesis is rejected as the $p<0.05$ that there is no arch effect. Thus, the results suggest there exists ARCH effects in the Nifty index returns and can be modelled by applying the ARCH family models. For this purpose, GARCH has been applied as shown in Table 5. Also, the impact of FIIs have also been analysed by incorporating Net FIIs in Rs crores as one of the independent variables in the model.

Variance equation given in Table 5 shows that News coefficient represented by RESID(-1)^2, last period forecast represented by (GARCH) and NET_FII are significant as the p value< 0.05. Hence, it is inferred that the volatility in the Nifty index returns is caused by the market news, its own previous value as well as net purchase / sales by foreign institutional investors.

Table 1: Descriptive Statistics

	RETURN	**NET_FII**
Mean	0.000376	-314.357
Median	0.001199	-309.62
Maximum	0.074094	28739.17
Minimum	-0.13706	-8295.17
Std. Dev.	0.011952	2180.731
Skewness	-1.75354	2.565738
Kurtosis	23.17825	35.20218
Jarque-Bera	21549.82	54671.99
Probability	0	0
Sum	0.4636	-387916.6
Sum Sq. Dev.	0.17598	5.86E+09
Observations	1233	1234

Source: Authors' Computation

Table 2: Correlation Coefficients

	RETURN	**NET_FII**
RETURN	1	0.316449**
NET_FII	0.316449**	1

Significant correlation at the 1% significance level (2-tailed).
Source: Authors' Computation

Table 3: ADF Test

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-11.87062	0.0000
Test critical values:	1% level	-3.435471
	5% level	-2.863689
	10% level	-2.567964
*MacKinnon (1996) one-sided p-values.		

Source: Authors' Computation using Eviews

Table 4: Heteroskedasticity Test: ARCH

F-statistic	72.65570	Prob. F(2,1227)	0.0000
Obs*R-squared	130.2423	Prob. Chi-Square(2)	0.0000

Source: Authors' Computation using Eviews

Table 5: GARCH

Variance Equation				
Variable	**Coefficient**	**Std. Error**	**z-Statistic**	**Prob.**
C	4.24E-06	1.01E-06	4.200115	0.0000
RESID(-1)^2	0.116039	0.015312	7.578098	0.0000
GARCH(-1)	0.848122	0.019571	43.33526	0.0000
NET_FII	-6.13E-10	2.49E-10	-2.464572	0.0137

Source: Authors' Computation using Eviews

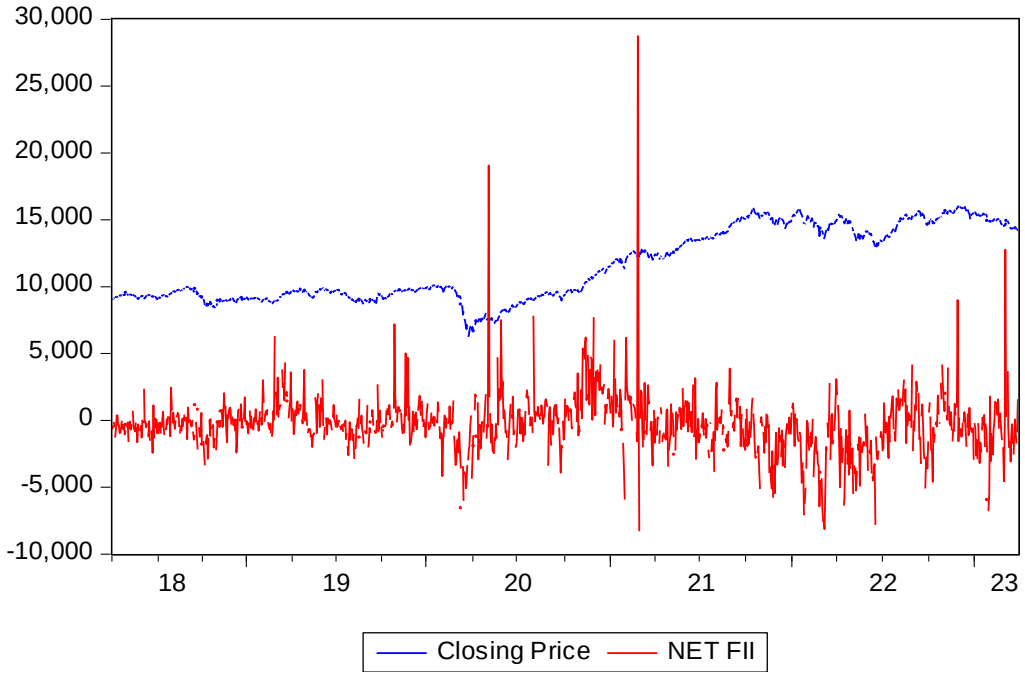

Figure 1: Graph-Trend (Net FIIs and Closing Price)
Source: Authors' Computation using Eviews

5. Conclusion

Understanding volatility has always been an important topic of discussion in finance. The world operates in the dynamic environment and changes keep on occurring which have an effect on the capital market. This impact needs to be analyzed for taking rational speculation / investment decisions. The study throws light on the effect of FII activity on the Indian capital market. Nifty 500 index return has been taken as the proxy for the market returns. The results of correlation analysis indicate a positive correlation (moderate) between NIFTY 500 index returns and Net FIIs. The trend graph highlights that the Nifty index 500 returns reached its lowest during 2019-2020 on account of Covid-19 outbreak. During this time FII activity has been quite volatile even showing peaks suggesting a rise in FIIs capital inflows. The results of GARCH suggest that the volatility in the Indian stock market is significantly affected by the news coefficient, previous period volatility as well as the FIIs capital flows. The study will provide a base for future researchers in accounting for volatility in the Indian Capital markets.

6. References

[1] Ansari, M. N. (2023). The Emergence of DIIs as a Strong Counterforce to FIIs in Changing Indian Securities Market-An Empirical Study. *International Journal of Financial Management*, *13*(1).

[2] Bansal, P. K. (2021). Critical study of Indian stock market relationship with domestic (DIIs) and foreign institutional investors (FIIs). *Materials Today: Proceedings*, *37*, 2837-2843.
[3] Bhatia, A., & Kishor, N. (2013). Impact of FII investments on stock market volatility and foreign exchange reserves: The Indian experience. *Transnational Corporations Review*, *5*(3), 26-45.
[4] Coondoo, D., & Mukherjee, P. (2004). Volatility of FII in India. *Money and Finance*, *2*(15), 85-102.
[5] Dadhich, G., Chotia, V., & Chaudhry, O. (2015). Impact of foreign institutional investments on stock market volatility in India. *Indian Journal of Finance*, *9*(10), 22-35.
[6] Garg, A., & Bodla, B. S. (2011). Impact of the foreign institutional investments on stock market: Evidence from India. *Indian Economic Review*, 303-322.
[7] Gujarati, Damodar N. (2009). 'Basic Econometrics' Fourth edition, New York, Tata McGraw-Hill Education
[8] Jain, A., & Biswal, P. C. (2022). FII Trading Pressure and Stock Volatility in India. In *Studies in International Economics and Finance: Essays in Honour of Prof. Bandi Kamaiah* (pp. 633-646). Singapore: Springer Singapore.
[9] Jalota, Shikha. (2017): FII and DII in Indian stock market: A behavioural study. *International Journal of Research in Finance and Marketing (IJRFM)* 7, no. 5 pp. 20-28.
[10] Joo, B. A., & Mir, Z. A. (2014). Impact of FIIs investment on volatility of Indian stock market: an empirical investigation. *Journal of Business & Economic Policy*, *1*(2), 106-114.
[11] Rajput, N., Chopra, P., & Rajput, A. (2012). FII and its impact on stock market: A study on lead-lag and volatility spillover. *Asian Journal of Finance & Accounting*, *4*(2), 18-38.
[12] Shukla, R. K., Upadhyaya, A., & Jain, S. (2011). FII equity investment and Indian capital market-an empirical investigation. *Pacific Business Review International*, *4*(1), 62-69.