



## Trading Behavior of Domestic Institutional Investors and Volatility of Indian Stock Market

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### Abstract

Indian stock market has been heavily dependent on the flow of Foreign Institutional Investors and there have been many studies which are mainly concerned with the fund flow of Foreign Institutional Investors but very few studies focused on the role of Domestic Institutional Investors in Indian Stock Market. The paper focuses on the impact of Domestic Institutional Investors on Volatility of Indian Stock market (NIFTY). Various Econometric Tools have been used to examine the impact of Domestic Institutional Investor flows on Nifty return. The time period for the study is from 1st Jan 2009 to 31st March 2016.

The data has been taken from various sources such as the official website of Securities and Exchange Board of India (SEBI), Reserve Bank of India and Bombay Stock Exchange. By considering the two types of variables for the study, one is the net flows of Domestic Institutional Investors and another one is Nifty return, it is found that the flows of Domestic Investors increases the volatility of Indian Stock Market. The analysis includes Arch and Garch model which shows that DIIs are an important factor in increasing the volatility of Indian Stock Market.

**Keywords:** Arch, Domestic Institutional Investors, Garch, Nifty return

**JEL Classification:** B41, C01, G20

**Paper Classification:** Research Paper

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### Introduction

India has seen major financial sector reforms in 1991 and because of that huge investment have been done by Foreign Institutional Investors in Indian Equity market. But, on the other side the Domestic Institutional Investors were also playing an important role in channelizing the domestic savings into the financial market.

The study is different from the previous studies based on the fact that majority of the previous studies were mainly focused on Foreign Institutional Investors. But, this study specifically

focuses on the role Domestic Institutional investors play in the development of Indian stock market. Domestic Institutional investors include (Mutual funds, Insurance companies, Banks, Development Financial Institutions and funds invested in new fund scheme.). Before 2007, the consolidated data for Domestic Institutional Investors was not available but after 2007, SEBI has taken an initiative and provided the consolidated data of Domestic Institutional Investors. DIIs play a very important and crucial role in giving support to Indian Stock market especially when Foreign Institutional Investors become net sellers. The study assessed the impact of Domestic Institutional Investors on India Stock market. It tries to find out that whether the flows either positive or negative do have any impact on the Volatility of India Stock market. It means what role DIIs Net Investment play in enhancing or minimizing the volatility of Indian Stock Market.

Previous studies mainly focus on Foreign Institutional Investors buying and selling behavior and their impact on Indian Stock market. A few studies have also taken Mutual funds and try to find out its relationship with Sensex and Nifty.

### Literature Review

Garg and Chawla (2015) examined the trend analysis and relationship between Foreign Institutional Investors and Domestic Institutional Investors. It was found that both Foreign Institutional Investors and Domestic Institutional Investors are the major contributors in the Indian Stock Market. They are the main drivers of Indian Stock Market and have the potential to move the market in either way. The basic aim of the study was to analyze the trend and pattern of Institutional Investors investments in Indian Stock Market. It was found that there is negative correlation between the investments made by Foreign Institutional Investors and Domestic Institutional Investors. It means that if one institutional investor is the net buyer then most probably other will be the net seller. It is also evident from the study that Foreign Institutional Investors play an important and dominant role in the movement of Stock Market.

Goel and Kaur (2015) in their study basically found the relationship between Foreign Institutional Investors and Indian Stock Market. According to the study, a positive correlation exists between flow of funds by Foreign Institutional Investors and performance of Indian Stock Market. There exists a positive correlation between variables in consideration and nearly one tenth variation in stock performance was justified by Foreign Institutional Investors flows. The study concluded that with economic liberalization and entry of FIIs, Indian Stock market gets strengthened. Foreign Institutional Investors help to introduce liquidity in local markets and reduce volatility. So, in the long run it will be beneficial for Indian Stock Market to have sufficient number of FIIs available. But it is also important that one should understand the basic motive of any Foreign Institutional Investor who is investing in the market is return. So it should be ensured that quality stock should be available in the market.

Joo and Mir (2014) found the impact of Foreign Institutional Investors on volatility in Indian Stock Market. It was found that there is a significant impact of Foreign Institutional Investors on Indian Stock Market. Further, the study reveals that there is also a significant relationship between stock market volatility and the investments made by Foreign Institutional Investors. The trend analysis confirmed that the capital flow of Foreign Institutional Investors has grown significantly in last one year. It was seen that fluctuations in NIFTY and SENSEX follows same pattern as is observed in case of Foreign Institutional Investors capital flow but reverse may not be true in every case.

However, every fluctuation in FIIs flow need not represent the fluctuations in SENSEX and NIFTY. There are various external and internal factors which govern the flows of FIIs. Internal

factors include political environment prevailing in the country, performance of companies, their credit taking capabilities etc. Whereas, external factors include various investment opportunities prevailing in the market, currency fluctuations, and return on investments in shorter and longer period. As far as, Volatility is concerned yearly mean of all the series shows an upward trend along with variance. Standard deviation shows that there is variability among yearly standard deviation of NIFTY and SENSEX along with FIIs Flows.

Patnaik, Shah and Singh (2013) in their research tried to find out the actual behavior of Foreign Institutional Investors with main focus on Indian Stock Market. They tried to find out whether the Foreign Institutional Investors are under any kind of stress in Indian Equity market. They also wanted to know that under what circumstances they used to invest, how the good and bad news affect their decision patterns. They found that if the economy is going through its boom phase then foreign investors seemed to push more by inducing more capital in the Indian Stock Market. However, there is asymmetric behavior on very bad days in the local economy, as no significant effects are found.

It means a very interesting fact which came out from the study is that a very poor day of S&P 500 does not trigger off exit by foreign investors. They used daily data of FII net inflows, daily index of BSE and NSE and index of US S& P 500. From the study, it was also found that a large exit by Foreign Investors in the aftermath of a domestic crisis brought prices closer to their Fundamental value at which the prices should have been.

### Objectives of Study

- 1) To study the overall concept of Domestic Institutional Investors in Indian Stock Market.
- 2) To study the impact of Domestic Institutional Investors Net Investments on Volatility of Indian Stock Market.

### Hypothesis of Study

$H_{o1}$ : There is no significant impact of DIIs Net flows on Nifty Volatility

$H_{a1}$ : There is significant impact of DIIs Net flows on Nifty Volatility

### Research Methodology

The data have been based on secondary sources. Daily closing of Nifty has been taken for the period of January 2009 to March 2016 and after that it has been converted into return. Along with that, net investments of Domestic Institutional Investors have been taken either with positive or negative numbers. The daily stock index returns are continuously compounded rate of return, computed as the first difference of the natural logarithm of the daily stock index value. The return at time  $t$  is formed by:  $R_t = \ln(P_t/P_{t-1})$ .

For DIIs (Purchase, sales and net) data was available but net DIIs investment have been taken for the study. Since our data was time series it is important to make that data a stationary one. For that unit root test has been applied.

Firstly, it has been checked that whether the DIIs data is stationary or not by using Augmented-Dickey Fuller but the data was stationary since the probability value was .000 which was less than .05 and therefore no further test have been applied on it. After, that Nifty index has been analyzed and it has been seen that the Nifty series was also stationary. After seeing that both the series are stationary, the Garch test has been applied.

## Econometric Analysis

In the first step, Unit Root Test of DIIs (Net Investment) will be made followed by the Unit Root Test Analysis of return of Nifty.

**Table 1.1**

### ADF Test for output of DIIs (Net Investment)

Method: Trend and Intercept

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-11.52584	0.0000
Test critical values:	1% level	-3.963169	
	5% level	-3.412317	
	10% level	-3.128094	
@TREND			0.9566

Source: Scholar research generated by using Eviews 9.0

The output in Table 1.1 shows that trend is not significant as the probability value is more than 5% (95%). Therefore, it means that the model would be estimated again with “Only intercept” model. Although with respect to the t-statistics and absolute critical values, the series is stationary. This is because t value is more than critical value  $11.52 > 3.96$ ,  $11.52 > 3.41$ ,  $11.52 > 3.12$ .

**Table 1.2**

### ADF Test for output of DIIs (Net Investment)

Method: Intercept

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-11.53207	0.0000
Test critical values:	1% level	-3.433795	
	5% level	-2.862948	
	10% level	-2.567567	

Source: Scholar research generated by using Eviews 9.

The output is no longer contradictory as according to t-statistics and critical values, the series is stationary. This is because t value is more than critical value  $11.53 > 3.43$ ,  $11.53 > 2.86$ , and  $11.53 > 2.56$ .

**Table 1.3**

### ADF test for output of Nifty return

Method: Intercept

Null Hypothesis: NIFTYRETURN has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=24)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-40.04509	0.0000
Test critical values:	1% level	-3.433791	
	5% level	-2.862947	
	10% level	-2.567566	

Source: Scholar research generated by using Eviews 9.

The output shows that trend is significant because prob. value is less than 5% (000.). The ADF test has been applied and it has been seen that the series is stationary as the prob value is less than 5% i.e 0.000. Also, the absolute t statistic is more than critical values (40.04 > 3.43, 40.04 > 2.86, and 40.04 > 2.56). Thus, according to ADF test, the conclusion is that Nifty return is stationary at level and it is having order 0 i.e Nifty return I (0).

**Impact of DIIs (Net Flows) on Nifty Volatility**

GARCH (1, 1) model for daily stock return is:

$$Y_t = a + bY_{t-1} + \epsilon_t \dots \dots \dots 1.1$$

Variance equation is given as:

$$h_t = \omega + \alpha_1 \epsilon_{t-1}^2 + \beta_1 h_{t-1} + \lambda DIIN_t + v_t \dots \dots \dots 1.2$$

Where  $\omega > 0$ ,  $\alpha \geq 0$ ,  $\beta_1 h_{t-1} \geq 0$ .  $h_t$  is the conditional variance and  $h_{t-1}$  is the conditional variance based on past information. Using GARCH, it is possible to interpret the current fitted variance ( $h_t$ ) as a weighted function of a long term average value (dependent on  $\omega$ ), information about the volatility during the previous period ( $\alpha_1 \epsilon_{t-1}^2$ ) (Arch term) and the fitted variance from the model during the previous period ( $\beta_1 h_{t-1}$ ) (Garch term). DIINt stands for Net flows by Domestic Institutional Investors. The hypotheses for the study are as follows

**Impact of DIIs (Net flows) on Nifty Volatility**

The GARCH results of Nifty returns show that arch term which is information about volatility in previous period, is significant at 5 percent level of significance along with GARCH term and DIIs Net flows are also significant which indicates that current volatility is influenced by past volatility and Domestic Institutional Investors (net flows). So the volatility of Nifty return is influenced by previous day’s information about volatility, previous day’s volatility and DIIs Net flows. Thus, our Null hypothesis has been rejected.

**Hypothesis**

$H_{o1}$ : There is no significant impact of DIIs Net flows on Nifty Volatility

$H_{a1}$ : There is significant impact of DIIs Net flows on Nifty Volatility

**Table: 1.4****Garch Results**

Dependent Variable: NIFTYRETURN				
Presample variance: backcast (parameter = 0.7)				
GARCH = C(3) + C(4)*RESID(-1)^2 + C(5)*GARCH(-1) + C(6)*NET				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-1.35E-05	0.000165	-0.082226	0.9345
NIFTYRETURN(-1)	0.066343	0.035019	1.894480	0.0582
Variance Equation				
C	1.11E-05	1.92E-06	5.785028	0.0000
RESID(-1)^2	0.164852	0.033313	4.948584	0.0000
GARCH(-1)	0.587847	0.062927	9.341670	0.0000
NET	5.72E-05	7.03E-07	81.41425	0.0000
Log likelihood	6869.402			
Durbin-Watson stat	2.013126			

Source: Scholar research generated using Eviews 9.0

**Assumptions to be fulfilled after applying garch test**

1) Null: There is no serial correlation in the residual or error term

Alternate: There is serial correlation

For fulfilling this objective we have used Correlogram of Standardized Residuals Squared and the results are given below in Table 1.5. As, p value is more 0.05 in all lags so we can accept the null hypothesis that there is no serial correlation and first condition of best model is fulfilled.

**Table1.5****Correlogram of Standardized Residuals Squared**

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.000	0.000	0.0004	0.983
		2	-0.026	-0.026	1.1945	0.550
		3	-0.007	-0.007	1.2806	0.734
		4	-0.000	-0.001	1.2809	0.865
		5	-0.022	-0.022	2.1378	0.830
		6	-0.021	-0.021	2.9099	0.820
		7	0.032	0.031	4.7201	0.694
		8	0.000	-0.001	4.7201	0.787
		9	0.046	0.048	8.6141	0.474
		10	0.001	0.001	8.6171	0.569
		11	-0.013	-0.011	8.9025	0.631
		12	-0.021	-0.020	9.7375	0.639
		13	-0.009	-0.008	9.8869	0.703

			14	0.009	0.009	10.028	0.760
			15	-0.006	-0.004	10.088	0.814
			16	-0.016	-0.019	10.561	0.836
			17	0.042	0.041	13.786	0.682
			18	-0.011	-0.014	13.988	0.730
			19	0.000	0.003	13.988	0.784
			20	-0.022	-0.020	14.857	0.785
			21	-0.022	-0.022	15.727	0.785
			22	-0.025	-0.024	16.851	0.772
			23	-0.043	-0.044	20.292	0.624
			24	0.017	0.013	20.834	0.649
			25	-0.009	-0.011	20.996	0.693
			26	0.002	-0.003	21.007	0.742
			27	-0.002	-0.002	21.011	0.786
			28	-0.041	-0.043	24.029	0.680
			29	-0.026	-0.023	25.278	0.664
			30	0.028	0.031	26.708	0.639
			31	0.025	0.023	27.851	0.629
			32	-0.030	-0.025	29.447	0.596
			33	0.017	0.015	29.986	0.618
			34	0.062	0.056	36.972	0.333
			35	-0.016	-0.014	37.452	0.357
			36	-0.029	-0.024	38.991	0.337

Source: Scholar research generated using Eviews 9.0

2) Another condition or assumption that has to be fulfilled for best model is

Null Hypothesis: There is no Arch effect

Alternate: There is Arch effect

For fulfilling this objective, we have used ARCH test and the results are given below in Table 1.6. As, p value is more 0.05, so we can accept the null hypothesis that there is no Arch effect and Second condition of best model is fulfilled.

**Table: 1.6**

**Heteroscedasticity Test: ARCH**

F-statistic	0.167169	Prob. F(1,1792)	0.6827
Obs*R-squared	0.167340	Prob. Chi-Square(1)	0.6825

Source: Scholar research generated using Eviews 9.

## Findings

It can be concluded from the study that Domestic Institutional Investors do make an impact on the movement of Nifty. The results suggest that a strong positive relationship exists between stock market volatility and Domestic Institutional Investors measured as net flows or investments. The results are consistent with the results of Oh and Parwada (2005) for the Korean market. Another,

important finding is that Indian stock market has Arch and Garch effect it means the volatility of Indian Stock market is caused by previous day's information flow and previous day's volatility. The results of the study can be used by regulators, practitioners and especially Indian investor's.

### Conclusion

The relationship between institutional investment activities and stock market behavior has been intriguing in many financial researchers as well as discussed by various policy makers. This study empirically examines the dynamics of institutional investments and stock market movements for the Indian equity market with the help of GARCH Model spanning from 1st January 2009 to 31st March 2016. Domestic Institutional investors are also playing an important role in increasing the volatility of Indian stock market. In this condition, policy makers should make such policies which can be used to decrease volatility from the market.

### Direction for Future Research

As the research has been done on all components of Domestic Institutional Investors, further study can be done on role of individual institutional investors on Indian stock market like development financial institutional investors, banks, or even Life Insurance Corporation which is one of the largest domestic investor in Indian stock market. Further, a separate study can be done to understand the role of retail investors in Indian Stock Market. A separate study can be done to study the role and perception of Individual mutual funds on Indian Stock Market.

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