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A study on impact of FIIs and DIIs on the Indian stock market NSE Nifty

Prateek Kumar Bansal[1], Dr. PV Rao[2]
[1] Research Scholar, Jiwaji University, Gwalior, Madhya Pradesh, India
[2] Professor, Department of Commerce and Management, Maharani Laxmi Bai Government College of Excellence, Gwalior, Madhya Pradesh, India

Abstract
Investment can be done by different institutions one is Foreign Institutional Investors (FIIs) and Domestic institutional investors (DIIs). There are a lots of study has been conducted already in the area of Foreign investors but very few study was conducted for the domestic investors. In this present study the relationship among investors (FIIs and DIIs) and stock market (NSE Nifty) tried to examine. To examine the relationship daily data has been collected from April 2007 to April 2018 by using the various tools like descriptive analysis, correlation, vector autoregressive (VAR) test and Granger causality test. Time series data required to be stationary so to check whether the collected data are stationary or not unit root test has been applied Augmented Dickey-Fuller (ADF) test and Phillips-Perron (PP) test. The study finds that there is strong negative correlation exists between them and the casual relation are found between them.

Keywords: DIIs, FIIs, NSE, VAR, Granger causality test

Introduction
After the decision in 1991, India Govt. open doors for the foreign investment. In 1992 Govt. allow the investors to invest in the equity market of Indian economy, and from September 1993 foreign investors started their investment. After the successful investment done by the investors more investors are registered after that and they show positive trend from year to year.

As we more study about the Foreign investors that they play an important role in collecting and maintain the Balance of Payment (BOP) but we also have to study an another important factors called Domestic institutional investor means "they are those institutions which undertakes the investment in the securities where they belong to (Home Country) which includes different Banks, Mutual funds, Insurance Companies, Pension scheme and Development Financial institution (DFIs).

Literature Review
Jalota Shikha (2017) [6] studied behavioural study of FIIs and DIIs in the Indian stock market and found that there was strong negative correlation exists between two series of investment, if FIIs investment goes upward then DIIs investment foes downward. To find out the result they have collected secondary data of FIIs and DIIs from January 2012 to March 2017 and used ANOVA and correlation techniques to get the results. Researcher concluded this study as they seem that when the FIIs tool back their money under the situation of volatility in the Indian stock market on the other hand they impact to the decision behaviour of DIIs.

Saluja and Shaikh (2017) [8] tried to decode the pattern of Investment by the FIIs and DIIs by using the Decision tree approach. In this study they examined that timing is very important for the decision making for the successful investor you must be invest in the proper time so this can be the reason that retail investors are not able to earn more money as compared to the big investors. They concluded that FIIs investment are more predictable as compared to the Domestic investors.

Bamne and Jagtap (2017) [4] by using this research they want to understand the flows of FIIs and DIIs with special reference to the price earnings ratio of nifty. They have collected monthly data from April 2007 to October 2017 and find that FIIs buy mostly in the lower market condition and sell at the higher market valuation and as compared to the DIIs they have buy at the higher market valuation and sell at lower market valuation in the India equity market.

Bose (2012) examine the relationship between the domestic mutual fund, Foreign investment and stock return and they try to extend their research that whether domestic mutual funds can be substitute for the Foreign investment or not. To find this relationship they have collected data from 2008 to 2012 and by using the statistical tools they analysis the pre and post crisis effect and concluded that FIIs are having causal relationship with the stock market return and domestic mutual funds are having a tendency to look on their old investment pattern. Researcher also find the strong negative relationship exist between the net investment and both the classes of investors and in conclusion of all the objectives they concluded that Domestic mutual fund investors are not a good substitute for this foreign investment.

Themozhi and Kumar (2009) in this study they examine the volatility between the indexes and the relationship of mutual funds flows on the stock market return. They have collected data of S&P, CNX, NIFTY index from January 2001 to April 2008. And found that there was a positive relation exists with

the mutual fund and stock market return and this measures as stock purchase and sale. They found that if all other factors are controlled than after the relationship exists between the stock market volatility and mutual fund and they found this positive. Some other findings of this research are that there is a strong correlation exists between them.

Research Methodology

The main objective of this study are:

- To study the trend of DIIs and FIIs in Indian stock market
- To determine the casual relationship between the FIIs and DIIs with Indian Stock Market Return NSE Nifty
- To study the impact of FIIs and DIIs on the Indian Stock Market

The Null Hypothesis of this study are:

- There is no relationship between FIIs and Indian Stock Market NSE Nifty
- There is no relationship between DIIs and Indian Stock Market NSE Nifty
- There is no impact of FIIs on the performance of Indian Stock Market NSE Nifty
- There is no impact of DIIs on the performance of Indian Stock Market NSE Nifty

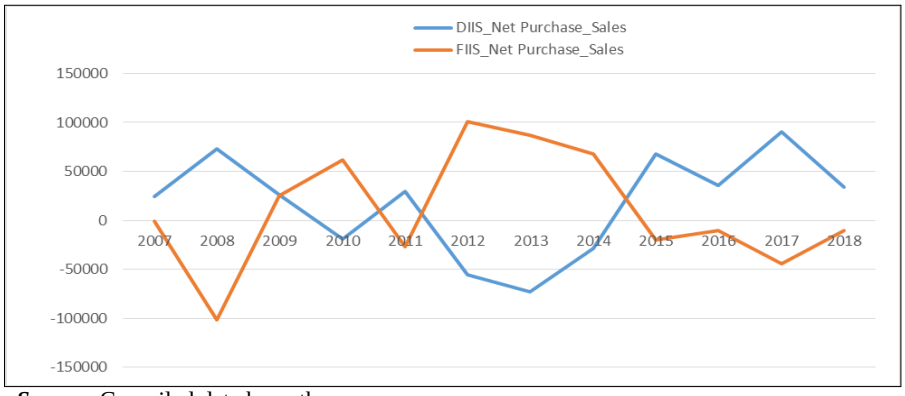
This study is based on the secondary source of data which has been collected from different websites i.e. moneycontrol.com, nseindia.com and bseindia.com The Daily data of Domestic Institutional investors (DIIs), Foreign Institutional investors (FIIs) and National Stock Exchange Index NIFTY 50has been collected to complete the study. Data have been taken for the period of April 2007 to April 2018. Daily data before the April 2007 was not available so to complete this study this time period has been consider.

To determine the trend been all these variable Microsoft office Excel has been used to represent in the fig and to determine the relationship among them Correlation, regression analysis has and Granger Casualty test been used by using E-Views software.

Data has been collected over a time period so this data is time series data and before applying any test it is required to check it for the stationarity. So to check weather data is stationary or not augmented Dickey–Fuller test (ADF) test and Phillips-Perron (PP) Unit Root Tests have been applied.

Data Analysis and Interpretation

Trend Analysis



***Source*:** Compiled data by author

Fig 1: Net Investment (Purchase and Sale) by FPIs and DIIs

Form the above fig 01 which shows the investment made by the FIIs and DIIs. By using this fig be can easily understand that when the FIIs are making investment then DIIs withdrew their money or when the DIIs invest money then FIIs withdrew their money. So we can say that they are having negative relation in respect of their investment.

Unit Root Test result

Table 1: show the unit root test result of Augmented Dickey-Fuller (ADF) test and Phillips-Perron (PP) test

Test Name →	ADF		PP Test	
Variables ↓	t-Statistic	Prob.	t-Statistic	Prob.
DIIs Net Purchase and Sale	-12.31117	0.0000	-41.40355	0.0000
FIIs Net Purchase and Sale	-12.91305	0.0000	-48.66542	0.0000
NSE Nifty Return	-47.67405	0.0000	-47.51345	0.0000

Source: Compiled by the author

Data was collected for the time period and same series data has been collected for the long period of time, so collected data is time series data. This is the first condition for time series data to check the stationarity of data. For checking the unit root test ADF and PP test has been applied and the results are shown in table 01. Prob. Value shows that this series have no unit root means all the given data set are stationary.

Descriptive Analysis

Table 2: show the Descriptive statistics for all the variable

	DIIS_NET	FIIS Net	NIFTY Return	Sensex Return
Mean	75.52074	47.27056	0.000359	0.000375
Median	40.78000	50.41500	0.000593	0.000462
Maximum	5196.600	17488.73	0.159900	0.163343
Minimum	-5631.990	-9690.840	-0.116044	-0.130142
Std. Dev.	594.7323	983.9923	0.014392	0.014384
Skewness	0.302775	2.575549	0.196996	0.090398
Kurtosis	11.28919	50.90279	13.55048	14.75870
Jarque-Bera	7745.298	260362.5	12502.98	15512.62
Probability	0.000000	0.000000	0.000000	0.000000

To begin analysis first, we discuss about the basic characteristics of the data. For this descriptive analysis has been done and results are shown in Table 02

Correlation

Table 3: show the Correlation test result with respect to DIIs and FIIs

Variable →	DIIs_NET		FIIs_NET	
Variable ↓	Pearson Correlation	Sig.	Pearson Correlation	Sig.
NSE_Return	-.080**	0.000	.295**	0.000

Source: Compiled by the author

From the above table 03 results are shown for correlation between them and shows that DIIs and NSE Nifty are having strong negative correlation between them and NSE Nifty and FIIs are having less but positive correlation.

VAR test

To apply VAR test in this study they divided in to two parts: in one of the study FIIs are taken and in second study DIIs have to be consider. VAR first step is to decide the leg length criteria. So check this Akaike information criterion (AIC) and Schwarz information criterion (SC) criteria was used as the minimum value is the best value of lag selection. the results are shown in Table 04, it is to be decided by using AIC criteria that 8 lag is the optimum lag value for the FIIs and Nifty return and from table 05, is to be decided by using AIC criteria that 7 lag is the optimum lag value for the DIIs and Nifty return

Table 4: show the Leg Length Criteria for the VAR with respect to FIIs and Nifty Return

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-14607.99	NA	183.2719	10.88673	10.89112	10.88831
1	-14366.87	481.6821	153.5900	10.71004	10.72322	10.71481
2	-14293.57	146.3374	145.8594	10.65840	10.68036	10.66634
3	-14244.23	98.42730	141.0136	10.62461	10.65536	10.63573
4	-14223.97	40.37413	139.3158	10.61250	10.65203*	10.62680
5	-14209.99	27.84641	138.2836	10.60506	10.65338	10.62254
6	-14195.78	28.27776	137.2358	10.59745	10.65456	10.61811*
7	-14191.58	8.359459	137.2150	10.59730	10.66319	10.62114
8	-14185.42	***12.24013****	***136.9944****	***10.59569****	10.67037	10.62271
* indicates lag order selected by the criterion						

***Source*:** Compiled by the author

Table 5: show the Leg Length Criteria for the VAR with respect to DIIs and Nifty Return

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-13321.46	NA	72.65446	9.961469	9.965874	9.963063
1	-12829.33	983.1741	50.43831	9.596505	9.609720	9.601286
2	-12718.13	221.9766	46.55361	9.516359	9.538384	9.524327
3	-12681.09	73.89278	45.41758	9.491653	9.522488	9.502809
4	-12660.54	40.95331	44.85919	9.479283	9.518928	9.493626
5	-12639.92	41.07349	44.30516	9.466855	9.515310*	9.484386*
6	-12635.71	8.367889	44.29840	9.466702	9.523968	9.487421
7	-12626.85	***17.63024****	***44.13757****	***9.463065****	9.529140	9.486971
8	-12625.17	3.337717	44.21422	9.464800	9.539685	9.491894
* indicates lag order selected by the criterion						

***Source*:** Compiled by the author

After Deciding the lag criteria next step is to estimate VAR. The results are shown in appendix. Where appendix 1 shows the estimate VAR of FIIs and Nifty Return and Appendix 2 shows the estimate VAR of DIIs and Nifty Return.

After estimating the VAR this is to check whether there is any serial correlation exits between the lags or not. To check the Serial Correlation VAR Residual Serial Correlation LM Tests has been applied. Results of FIIs and NSE return are shown in table 06

Table 6: show the VAR Residual Serial Correlation LM Tests

VAR Residual Serial Correlation LM Tests					
FIIs and Nifty Return			**DIIs and Nifty Return**		
Lags	LM-Stat	Prob	Lags	LM-Stat	Prob
1	9.516642	0.0494	1	3.174889	0.5290
2	3.951702	0.4126	2	7.259128	0.1228
3	10.61990	0.0312	3	8.349432	0.0796
4	8.333792	0.0801	4	8.959414	0.0621
5	8.987022	0.0614	5	9.218163	0.0559
6	8.930666	0.0629	6	4.308439	0.3659
7	12.17715	0.0161	7	7.688273	0.1037
8	8.552210	0.0733	8	2.793267	0.5930
9	4.493179	0.3434	-	-	-
Probs from chi-square with 4 df.					

***Source*:** Compiled by the author

Table 06 shows that there is no serial correlation exists between the lags so the model which we have applied are fit according to his test

Table 7: show the VAR stability condition

VAR stability condition			
FIIs and Nifty Return		**DIIs and Nifty Return**	
Root	Modulus	Root	Modulus
0.869130	0.869130	0.898969	0.898969
-0.739582	0.739582	-0.604203 0.347134i	0.696824
-0.473533 - 0.553306i	0.728273	-0.604203 + 0.347134i	0.696824
-0.473533 + 0.553306i	0.728273	0.471620 - 0.479521i	0.672581
0.527501 - 0.492132i	0.721423	0.471620 + 0.479521i	0.672581
0.527501 + 0.492132i	0.721423	0.391610 - 0.525943i	0.655725
-0.078127 - 0.669456i	0.674000	0.391610 + 0.525943i	0.655725
-0.078127 + 0.669456i	0.674000	-0.101646 - 0.636542i	0.644606
0.661872	0.661872	-0.101646 + 0.636542i	0.644606
0.412194 - 0.509437i	0.655309	-0.134709 - 0.607887i	0.622634
0.412194 + 0.509437i	0.655309	-0.134709 + 0.607887i	0.622634
0.049770 - 0.646816i	0.648728	-0.556777 - 0.248629i	0.609768
0.049770 + 0.646816i	0.648728	-0.556777 + 0.248629i	0.609768
-0.503694 - 0.353099i	0.615131	0.536618	0.536618
-0.503694 + 0.353099i	0.615131	-	-
-0.430180	0.430180	-	-

***Source*:** Compiled by the author

After checking the serial correlation between the lag the VAR stability condition has been checked and result are shown in table 07 and have found that No root lies outside the unit circle and VAR satisfies the stability condition in both the test with FIIs and DIIs.

Granger Causality test

Table 8: show the Granger Causality test between both the FIIs and DIIs with the NSE Return

Pairwise Granger Causality Tests		
	F-Statistic	Prob.
Nifty Return does not Granger Cause FIIS net	57.7620	3.E-25
FIIS NET does not Granger Cause Nifty Return	0.26452	0.7676
Nifty Return does not Granger Cause DIIS net	46.7105	1.E-20
DIIS Net does not Granger Cause Nifty Return	0.66851	0.5126

Source: Compiled by the author

Using table 08 results of Granger Causality we cannot reject the hypothesis that Nifty return does not causes FIIs Net means that Granger Causality runs one way from FIIs Net to Nifty Return. And on the other hand one-way causality from the DIIs to Nifty Return.

Conclusion

For exploring the relationship this study has been carried out and found that there was strong negative relationship exists between the DIIs and Nifty Return and are having positive relationship with the FIIs. In respect of Granger Causality relationship between FIIs, DIIs and Nifty return then it was found that there is uni-directional relationship exists between the FIIs → Nifty Return and DIIs → Nifty Return. The study has confirmed with the previous research that there is negative relationship in the trading behaviour of FIIs and DIIs.

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