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A study on relationship between Market Returns and Institutional Investor's in Indian context

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Abstract
The paper studies the relationship between the stock market return and foreign institutional investors in context of NSE Nifty. We applied ADF unit root test to check the stationarity of series. Granger causality test is applied to find the causal relationship between variables. The study is based on monthly values of variables includes NFII (net foreign institutional investments, FIIS (sales of foreign institutional investments, FIIP (purchases of foreign institutional investments and NiftyR (Return of Nifty) for the period of fifteen years, 2006-2020. We conclude that there is long term relationship exist between the Nifty and NFII; Nifty and FIIS; Nifty and FIIP. The granger causality results say (a) there is Unidirectional relationship exists between FIIP and nifty return; (b) Bidirectional relationship exist between NiftyR and FIIS; and (c) No relationship exists between NiftyR and NFII.

Keywords- *Volatility, Return, Stock Market, FIIs, Granger causality test.*

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I. Introduction

In financial liberalization processes emerging markets were involved in mid-80s (Lakshmi & Thenmozhi, 2018; Tripathy & Garg, 2013). With opening of market reforms, Investor have build more interest in emerging markets (Ngugen & Bellalah, 2008).However, in new liberalized countries, stock markets are also affected by various ways. The liberalization policies lead to change in market volatility and instability that is argued by some authors (Froot et al., 2001; Calvo and Reinhart, 1996; Borensztein and Gelos, 2001; Krugman, 1998; Murthy & Singh 2013; Adabag & Ornelas, 2004). On the other side, Participation of heterogeneous investor is witnessed by present global markets groups that focused on diverse purposes such as wealth creation, risk and portfolio diversification, higher returns at lower risk, Global savings etc. (Lakshmi & Thenmozhi ,2018; Tripathy & Garg , 2013; Rastogi and Husain, 2015; Saxena & Bhadauriya, 2011; Goudarzi & Ramanarayanan, 2011; Mukherjee at al., 2002; Chakrabarti, 2001).

The Economic Development of any country depends upon the existence of well-organized financial markets (Rastogi and Husain, 2015; Lakshmi, 2012; Dan, 2019; Baklaci, 2007). Stock markets establish one of the most important pillars of present global economy (Dan, 2019; Singhania & Anchalia, 2013). The institutional investor's flows have vast impact in financial markets during the current decades (Bohl, Brzeszczynski & Wilfling, 2009; Mukherjee and Roy, 2011). In late 1980s and early 1980s, Economies were opened for foreign portfolio capital flows by some developing countries (Ngugen & Bellalah, 2008; Bose & Coondoo, 2004; Anant & Ho, 2008; Saxena & Bhadauriya, 2011; Mukherjee at al., 2002).

In terms of risk and return, the matured markets has performed less as compared to emerging markets during pre Mexican crisis period (1990-1994) and Asian crisis (1995-2001) (Mukherjee et al., 2002; Chakrabarti, 2001; Anant & Ho, 2008; Sehgal & Tripathi, 2009).

Investments by Foreign institutional investors have increased over the years (Behera, 2012; Ngugen & Bellalah, 2008). The Foreign investment is defined as the investment of capital that flows from one country to another. In the capital scarce economies, there is encouragement of inflow of foreign investment because domestic investment is complemented and stimulated (Joo & Mir, 2014).Due to rapid maturation of institutional infrastructure, some significant changes were marked and the extensive growth of market is examined due to increase in investor interests in emerging market (Ngugen & Bellalah, 2008).As we all know that equities

belongs to emerging markets always have some diverse features than equities from developed markets. The main four unique characteristics are higher returns, higher volatility, and developed market returns having low correlation and having extra expected returns. Market returns and volatility are mainly focused in our Research (Bekaert & Harvey, 1997).

Stock market's fluctuation and trading volume are affected by flow of information (Mubarik & Javid, 2009). A clear idea is given by stock prices and trading volume about the investment making in direction of stock prices in stock market (Bajaj, 2014). The main indicators of current stock market are Trading volume (Tripathy, 2010).

Volatility is considered as most important factors determining the investment decisions. The investors used to trade abnormally in market as they are forced by unexpected information which affects market volatility. Trading behavior of investors has unusual effect on the different market areas (Chhimwal & Bapat, 2020; Tripathy & Garg, 2013; Karmakar, 2006). Investors, due to increased uncertainty in stock markets avoid holding various stocks (Joo & Mir, 2014; Rajput et al., 2012). India reveals high volatility in stock return data persistence for both daily and monthly data is its important feature (Batra, 2004). A greater risk involved in greater volatility, which threatens investor's assets and wealth (Karmakar, 2006). The global financial crises cause volatility in the Asian stock markets (Singhania & Anchalia, 2013; Rajput et al., 2012). FI increases or decreases due to destabilization, the volatility of stock prices and foreign exchange markets (Wang & Shen, 1999).

II. Literature Review

Parthapratim Pal (1998) studied the impact of Flls on Indian equity market by taking data from 1981-1995 of BSE index. **Rao and Rangnathan (1999**) conducted a study of developed market by taking the data for a period of 8 years (1990 to 1998). They suggest that FIIs investments would help the stock markets directly through widening investor base and indirectly compelling local authorities to improve the trading system. **Chakrabarti and Rajesh (2001)** analyzed FII flows and its relationship with other economic variables. Net FII inflows between January 1993 and December 1999 were taken for analysis. The empirical investigations of FII flows found that FII flows were correlated with returns in Indian market (BSE). **Ananthanarayanan *et al.* (2003)** examined the impact of trading of Foreign Institutional Investors on the major stock indices of India by employing Box Jenkis Test on the data (Jan. 1993 to June 2003). **Batra (2003)** using both daily data (January 2000- December 2002) and monthly data (January 1994 to December 2002) attempted to understand the trading behavior of Foreign inflows and return in Indian equity market through VAR model. **Bose and Coondoo (2004)** examined the impact of the FII policy reforms on FII portfolio flows to the Indian stock markets. **Mohan (2005)** studied the Shareholding Pattern used by the FIIs in Indian stock market at the End of March 2004 of Companies Listed at NSE and FII ownership matrix of BSE 200. They concluded that depending on investment horizons, investors would want to change their portfolios from one period to another in order to have the most efficient portfolio. **Chakraborty (2007)** underscores the fact that FII activities in Indian stock market have increased over the years. It is the result of better stock market returns rather than the cause of it. **Pavabutr and Yan (2007)** analyzed the impact of foreign portfolio flows on the volatility of emerging markets, using a unique dataset consisting of aggregate daily trading by foreign investors in the Thai stock market between 1995 and 2002 using Correlation and Autocorrelation Vector Autoregressive (VAR) Models. They found that the effect of foreign flows on the volatility of daily and weekly returns in the market comes primarily from the unexpected shocks to foreign flows. **Ayodeji *et al.* (2009)** investigated the monthly seasonal effect in the Nigerian stock market using the EGARCH-in-mean model in the light of banking reforms, insurance reform, stock market crash and the global financial crisis using daily returns over the period 4 January 2004 to March 2, 2009. **Sultana and Pardhasaradhi (2012)** attempted to study the relationship and impact of FDI & FII on Indian stock market using statistical measures correlation coefficient and multi regression. They considered Sensex and Nifty as the representative of stock market as they are the most popular Indian stock market indices. Based on 11 years data starting from 2001 to 2011, it was found that the flow of FDI & FII was moving in tandem with Sensex and Nifty. **Bhattacharyya *et al.* (2017)** compared the extent and nature of the impact of foreign portfolio investment (FPI) on the stock market volatility, particularly in the Southeast Asian emerging markets and compared that against the corresponding experience of Indian economy, in the context of a global financial crisis of the recent past. **Chattopadhyay *et al.* (2017)** explored the predictability of herding patterns of foreign institutional investors in the Indian market using high frequency data over a period from January 2003 to June 2014. **Lakshmi and Thenmozhi (2018)** studied the Impact of foreign institutional investor trades in Indian equity and debt market. They took time, frequency and persistence of the co-movements between FII trading activity and India's NIFTY index returns for the period between 2000 and 2015. The wavelet coherence findings suggest that persistent interdependence in volatility exists between purchase/ sale transactions of FIIs and NIFTY returns at varying frequencies with FII activity leading the volatility movement.

III. Research Methodology

The study covered the period from 1st April, 2006 to 31st March, 2020. The variables taken for the study includes NFII (net foreign institutional investments, FIIS (sales of foreign institutional investments, FIIP (purchases of foreign institutional investments and NiftyR (Return of Nifty). The NFII, FIIS, FIIP data is collected from SEBI (www.sebi.org) website. The returns for Nifty market indices are taken by the log difference in their price index. The ADF test is used to check the stationarity of the series, while the granger causality test is used to check the causal relationship.

Analysis and Interpretation

Descriptive Statistics: The section provides the analysis of descriptive statistics of the variables taken in the study. The descriptive statistics of Net FII, FII sales, FII purchases and Nifty return has been presented in the table 1

Table: 1 Descriptive Statistics

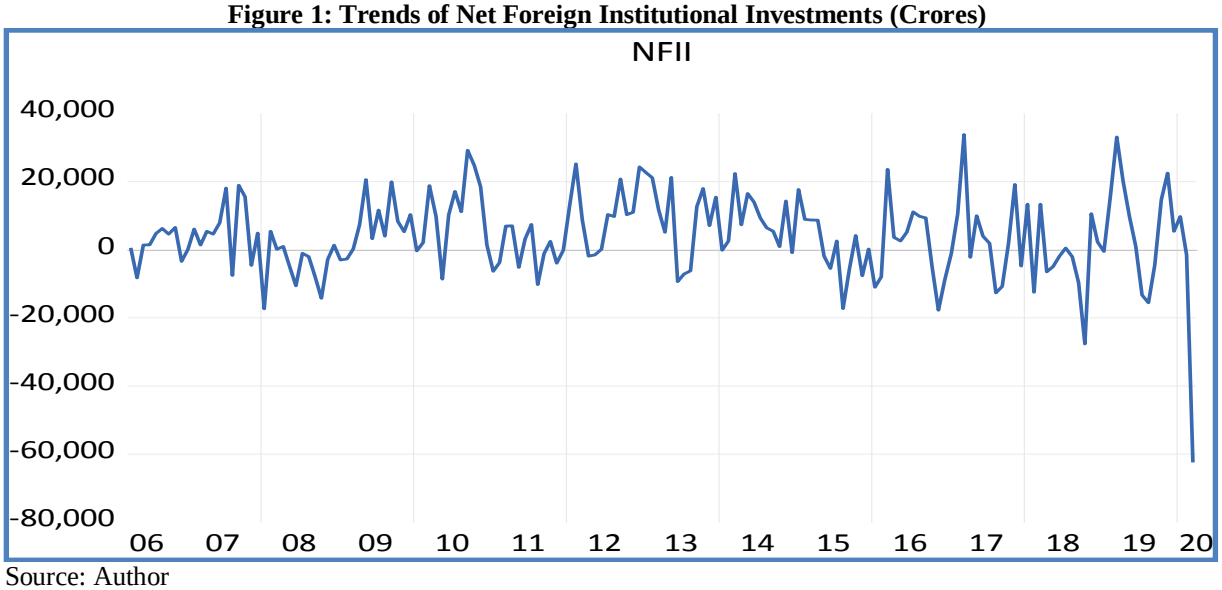
	FIIP (Crores)	FIIS (Crores)	NFII (Crores)	NiftyR (%age)
Mean	77758.68	73737.58	4021.105	0.276359
Median	70709.60	66031.25	3841.365	0.403270
Maximum	167760.7	23013.30	33781.93	7.880686
Minimum	21863.20	32231.00	-62433.51	-11.74049
Std. Dev.	30790.43	0.957466	11810.51	2443890
Skewness	0.529203	0.957466	-0.873775	-1.164072
Kurtosis	2.789698	4.928780	8.084446	8.411427
Jarque-Bera	8.15	51.71	202.33	242.92
Probability	0.016*	0.000000*	0.000000*	0.000000*
Observations	168	168	168	168

Source: Author

Note: ***** indicates significance at 0.05 level

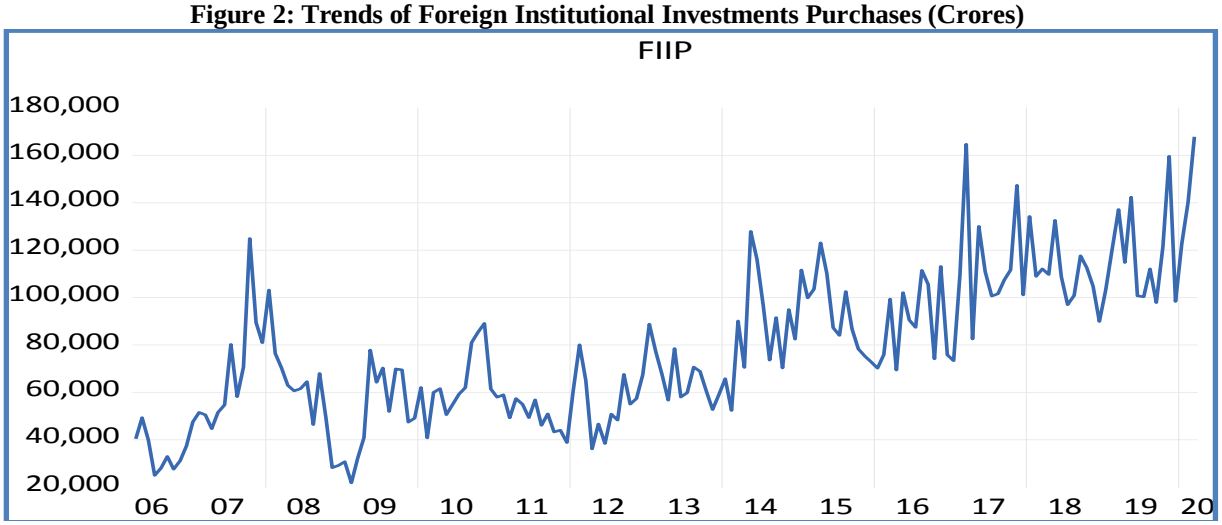
The mean value for the FIIP is much more than the FIIS states that investors have more interest in purchases than sale. The median represents the mid value where the series lies. All standard deviation values of all the variables showing positive trend. Skewness value shows that the Nifty return and Net FIIs are negatively skewed while other variables are positively skewed. FIIP series is platy-kurtic while other three series are lepto-kurtic. The significance value states that all variable series are normally distributed. The trends of all four variables are shown in Figure 1, Figure 2, Figure 3 and Figure 4.

Figure 1: Trends of Net Foreign Institutional Investments (Crores)



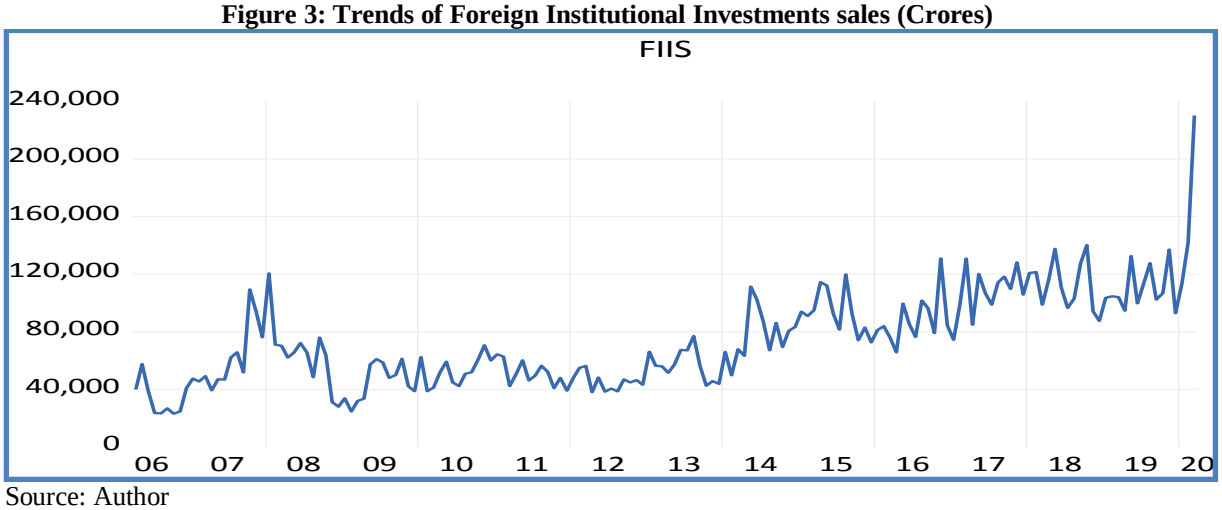
Source: Author

Figure 2: Trends of Foreign Institutional Investments Purchases (Crores)



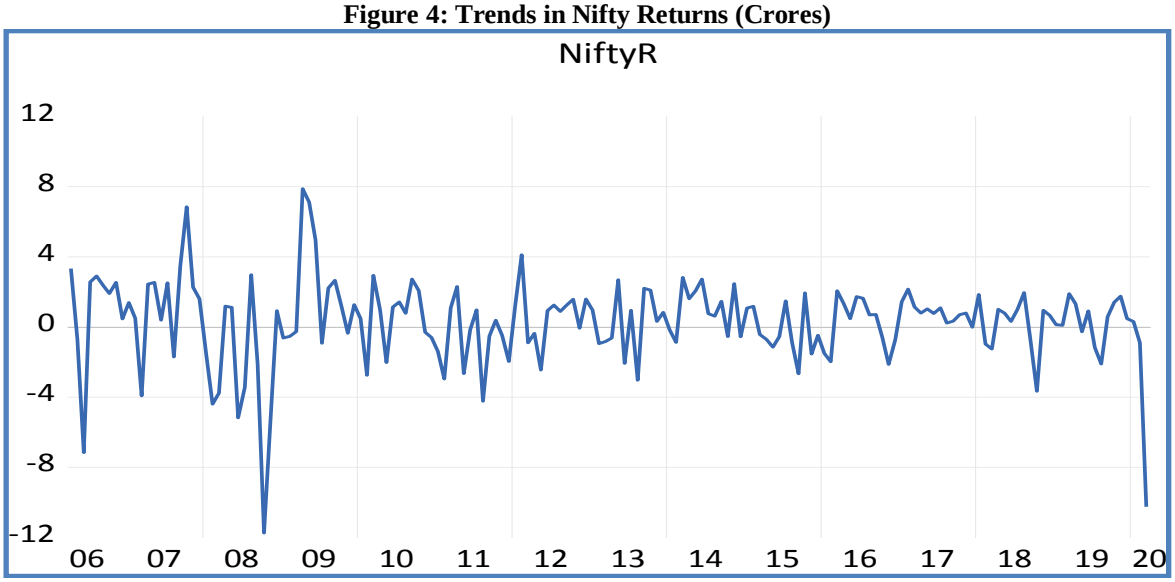
Source: Author

Figure 3: Trends of Foreign Institutional Investments sales (Crores)



Source: Author

Figure 4: Trends in Nifty Returns (Crores)



Source: Author

Unit Root test: ADF test is used to check the stationarity of the variables.

Table: 2: ADF Unit Root Test at level

Variables	T-Statistic	Sig. Level (0.05)	p–value	Result
FIIP	-1.756774	-2.878937	**0.4009**	Accept H_0
FIIS	-0.526686	-2.878937	**0.8817**	Accept H_0
NFII	-7.927708	-2.878937	**0.0000***	Reject H_0
Return	-9.153352	-2.878937	**0.0000***	Reject H_0

Source: Author

Note: ***** indicates significance at 0.05 level

The table 2 shows the results of Augmented Dickey Fuller Test. The variables NFII and nifty return are stationary at level as the p-values of all these are less than 5%,while the FIIS and FIIP are found to be non-stationary at level. So first differencing was done for FIIS and FIIP.

Table 3: ADF Unit Root Test at 1st Differencing

Variables	T-Statistic	Sig. Level	p–value	Result
FIIS	-13.36492	-2.878937	**0.0000***	Reject H_0
FIIP	-13.53036	-2.878937	**0.0000***	Reject H_0

Source: Author

Note: ***** indicates significance at 0.05 level

Table 3 shows the result of ADF, FIIS and FIIP are found to be stationary at 1st differencing.

Johansen Co-integration Test: The series became stationary with the help of ADF test, now next step is to apply the Johansen's unrestricted cointegration rank. The Johansen cointegration test is used to find out whether there is possibility of any long-term relationship between variables.

Table 4: Johansen Co-integration Test (NFII and NIFTYR)

HYPOTHESIZED NO.OF C E (s)	EIGENVALUE	TRACE STATISTICS	0.5 CRITICAL VALUE	Prob**
NONE*	0.173020	55.10559	15.49471	0.0000*
ALMOST 1*	0.126961	23.76066	3.841465	0.0000*

Source: Author

Note: ***** indicates significance at 0.05 level

The result of Table 4 shows that FIIS and Nifty return have long term relationship and have long term effect on the value of each other.

Table 5: Johansen Co-integration Test (FIIS and NIFTYR)

HYPOTHESIZED NO. OF C E (s)	EIGENVALUE	TRACE STATISTICS	0.5 CRITICAL VALUE	PROB.**
NONE*	0.154011	28.86355	15.49471	0.0003*
ALMOST 1*	0.009780	1.602048	3.841465	0.2056*

Source: Author

Note: ***** indicates significance at 0.05 level

The result of Table 5 shows that FIIP and Nifty return have long term relationship and have long term effect on the value of each other.

Table 6: Johansen Co-integration Test (FIIP and NIFTYR)

HYPOTHESIZED NO. OF C E (s)	EIGENVALUE	TRACE STATISTICS	0.5 CRITICAL VALUE	PROB.**
NONE*	0.2173182	35.01547	15.49471	0.0000*
ALMOST 1*	0.024347	4.017712	3.841465	0.0450*

Source: Author

Note: ***** indicates significance at 0.05 level

The result of Table 6 shows that FIIP and Nifty return have long term relationship and have long term effect on the value of each other.

Through Johansen Co-integration Test, we identified that there is long-term relationship exists between variables. Now next step is to find the causality exist between variables whether the causality is unidirectional or bidirectional. The Granger causality test is applied for same.

Granger Causality Test: The granger causality is used to find out the relationship exist between the variable whether the relation is unidirectional or bidirectional.

Table: 7 Granger Causality Test for NFII, FIIS, FIIP and NiftyR

Null Hypothesis	F- Statistic	p-value	Result	Relationship
NiftyR does not Granger causes FIIP	5.46331	0.0051*	Reject H_0	Unidirectional
FIIP does not Granger Cause NiftyR	1.46170	0.2349*	Accept H_0	
NiftyR does not Granger causes FIIS	12.1936	0.000005*	Reject H_0	Bidirectional
FIIS does not Granger Cause NiftyR	4.03607	0.0195*	Reject H_0	
NiftyR does not Granger causes NFII	0.13031	0.8779*	Accept H_0	No Relationship
NFII does not Granger Cause NiftyR	1.91421	0.1508*	Accept H_0	

Source: Author

Note: ***** indicates significance at 0.05 level

The Table 7 of Granger causality shows that there is unidirectional relationship exist between FIIP and nifty return; Bidirectional relationship exists between NiftyR and FIIS; and No relationship exists between NiftyR and NFII.

IV. Conclusion

Relationship between Market Returns and Institutional Investor's in Indian context is studied in this paper. ADF unit root test is applied to check the stationarity of series. Results of Johansen Co-integration Test suggested that there is long run relationship exist between NiftyR and FIIS; Nifty R and FIIP; NiftyR and NFII. Using Granger causality test, we concluded that (a) there is unidirectional relationship exists between FIIP and nifty return; (b) Bidirectional relationship exist between NiftyR and FIIS; and (c) No relationship exists between NiftyR and NFII.

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