THE IMPACT OF FII FLOWS ON THE STOCK MARKET PERFORMANCE IN INDIA

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Abstract: Indian stock markets have seen unprecedented growth in the recent past. With increased development and growth, the patterns of foreign investment in the stock markets have also undergone significant changes. In this regard, the relationship between Foreign Portfolio Investment (FPI) or Foreign Institutional Investors (FIIs) is one that is increasingly being investigated by the academic community. This research paper focuses on analysing this relationship for a 15 year time period (2002-2017). The relationship between FPI and the returns on broad based market indices- SENSEX and NIFTY50 is analysed. The study makes use of ADF Unit Root Test, Correlation, Regression and Granger Causality Analysis for the purpose of determining the nature of association between the variables and the direction of causality. Upon analysis, this study reveals that FII flows have a significant impact on the stock market indices and there exists a uni-directional relationship between FII flows and SENSEX returns as well as NIFTY50 returns i.e. from FII flows to the index returns.

Index Terms: **SENSEX, NIFTY50, FII, Correlation, Regression, Granger Causality**

I. INTRODUCTION

Foreign Institutional Investors are those investors who invest in the financial assets of a different country from that in which these investors are based. These investments are made in the form of purchasing equity, bonds, etc. of organisations of a different country. According to the Securities and Exchange Board of India (Foreign Institutional Investors) Regulations, 1995, a "Foreign Institutional Investor" means an institution established or incorporated outside India which proposes to make investment in India in securities. FIIs mainly include insurance companies, hedge funds, pension funds and mutual funds.

Foreign Institutional Investments are very important for developing nations and have played a pivotal role in India by contributing to capital inflows. Even as FDI continues to be the most desired mode of inflow of foreign capital- FIIs have proven to be very valuable. FII was allowed in India in the year 1992 and since then, the investment pattern has seen a major shift. There have also been changes with regards to the governance framework for FIIs in India. According to a poll conducted by Bank of America - Merrill Lynch (BofA-ML) in 2015   in which 50 investors had participated; India was the most favourite equity market for the global investors for the year 2015 at 43 per cent, followed by China at 26 per cent. The total FII investment in India for the year 2017 in equities stood at INR 51,252 crores. This is primarily because investors aim to gain by investing in Indian Equity Markets thereby showing that FII investment and stock market performance appear to be related to an extent.

The pertinent question in regards to investing the relationship between FII investment and Stock Market performance is whether FII investments cause stock market performance to increase or whether increase in stock market performance leads to increased FII investment. This relationship has been a matter of continuous empirical and theoretical research work and this research paper aims to investigate this relationship. Thus, cause-effect relationship will be analysed after establishing an association between FII investment and Stock Market Performance as it is possible for variables to be related and still not have any cause-effect relationship.

Stock market performance can be determined by taking broad-based market indices and calculating the returns on them. For the purpose of this study, SENSEX and NIFTY have been chosen and data for a 15 year time period will be taken to carry out the analysis. FII data for 15 (2002-2017) years is also taken.

II. LITERATURE REVIEW

A strong relationship exists between stock market returns and macroeconomic variables such as industrial production, inflation and national output **(Fama, 1981)**

In the other research ,with using the data of 70 countries over the period 1985-1997,Randall Filler found that there was little relationship between stock market activity and future economic growth, especially for the lower income countries and stock market activity did cause currency appreciation **(Filler,2000)**

A study conducted to examine the nexus of relationship between economic growth and stock market development on low-income countries suggested that such a relationship is not seen in low-income countries. **(Durham, 2002)**

A study was conducted to analyse the impact of FDI and FII investments on the stock markets of India. It studied the investment patterns of FDI and FII on India as well as their impact on Sensex and Nifty. The study conducted yearly analysis of data for a period of 10 years. Using correlation, regression and ANOVA the study showed that FII trends do have an impact on Sensex and Nifty. **(Sulatana & Pardhasaradhi, 2012)**

Another study intended to investigate the impact of FII on the stock markets of India. The study made use of yearly closing stock of NSE & BSE and FII values for a time period of 10 years (2003-2013). Using chi-square as a statistical tool to validate the null hypothesis of association between stock market value and FII the study concluded that there exists a relationship between stock markets and FII. It also used correlation to find the extent of association between these two variables and found that there is a high correlation between FII Investments and Stock Market Performance. **(Aswini & Kumar, 2014)**

Another study investigated the relationship between FDI. FII and stock market performance in India. Based on 10 years data starting from 2002 to 2011, the study found that the flow of FDI had no significant impact on stock market but FII in India determined the trend of Indian stock market. The study had made use of correlation tests, regression analysis and ANOVA for the purpose of achieving the objectives set out. **(Kapoor & Sachan, 2015)**

A study was done to understand the relationship between FDI inflow and the stock markets in India as well as FII inflows and stock markets in India. This study also covered a time period of 10 years from 2005 to 2015 and used Regression Analysis and ANOVA toinvestigate the relationship. It concluded that FII Inflows have a positive relationship with Indian Stock Markets. **(Nagpal & Chandrika, 2016)**

Another attempt was made to study the relationship between FII inflows and stock market performance in India. The study covered the time period of 2008 to 2013 and made use of t-test, correlation, regression to identify the relationship. It found that there is a significant positive correlation between the variables which is moderate in nature. The regression analysis also concluded that FIIs do impact the Indian Stock Markets. **(Srinivas, 2016)**

III. DATA AND METHODOLOGY

3.1 STATEMENT OF PROBLEM

Analysis of general economic trends is undertaken as a part of fundamental analysis prior to making investment decisions. In this context, investors often analyse the trend of FIIs in a particular country. However, the exact nature of relationship between stock performance and FII investment remains unclear. Ample research exists to determine the impact of factors such as oil price movements, exchange rate, money supply etc. on stock performance. However, there isn't enough research to conclusively determine the relationship between FII investment and stock performance; especially for the Indian market. Even as research exists in this area, it does not determine the cause-effect relationship but merely the association.

3.2 RESEARCH OBJECTIVES

- To determine whether there exists a relationship between FII investment in India and Stock market performance.
- To examine the nature of such a relationship
- To determine the causal direction of such a relationship

3.3 DATA SPECIFICATION

- FII/ FPI Data – Monthly data has been obtained from the website of NSDL (National Securities Depository Limited). Data has been extracted from the yearly reports on FII investment.
- NSE Nifty 50 Index Data – Official NSE website. Monthly closing data has been taken which is then used to calculate returns.
- S&P BSE Index Data- Official BSE website. Monthly closing data has been taken which is then converted to quarterly data for the purpose of this study.

3.4 RESEARCH METHODOLOGY

A quantitative approach has been used by ascertaining variables and using statistical techniques to understand the impact of FII investment on stock market performance. The present study is empirical in nature as it is a data-driven research wherein proof is sought that certain variables affect other variables in some way

BASIC TESTS IN ECONOMETRICS

a. TEST FOR STATIONARITY OF DATA; AUTOMATED DICKEY-FULLER UNIT ROOT TEST

If the mean, variance and auto-covariance of a time series data are time invariant, it is said to be stationary. Stationarity of a data is a prerequisite for applying most advanced econometric techniques. Augmented Dickey Fuller (ADF) unit root test is used to test for presence of unit root. To conduct Regression Analysis and to apply Granger Causality Test data that is stationary series at level is required.

Hypothesis

H_0 - The time series data has a unit root (non-stationary)

H_1 – The time series data does not have a unit root (stationary)

b. CORRELATION

Correlation is used in statistics to determine the association between two variables. It is used to test the relationship between quantitative variables.

For the purpose of this study, linear correlation using Pearson's correlation Coefficient is being undertaken.

Hypothesis

H_0 - There is no relationship between the dependent variable x and independents variable y i.e. r = 0

H_1 - There is a relationship between the dependent variable x and independent variables y i.e. $r \neq 0$

Where x= Stock market indices- returns

y= FII Investments

c. REGRESSION ANALYSIS

Regression Analysis is undertaken to find out if the relationship between a dependent variable and an independent variable is statistically significant.

H_0 – There is no relationship between the dependent and independent variables.

H_1 – There is a relationship between dependent and independent variables.

d. GRANGER CAUSALITY TEST

It is an analytical hypothesis trial for determining whether a time series is convenient in estimating another (Granger, 1969). The causality association is grounded on two postulates: the cause happens prior to its effect and the cause has unique information about the future values of its effect. According to the Granger causality procedure is explained as follows; "the question of whether y causes x is to see how much of the current value of x can be explained by past values of x and test whether adding lagged values of y can improve these estimates. It is inferred that x is Granger caused by y, if x can be predicted from past values of x and y than from past values of x alone"

H_0 - Lagged x-values do not explain the variation in y i.e. y(t) doesn't Granger-cause x(t).

H_1 - Lagged x-values explain the variation in y i.e. y(t) causes Granger-cause x(t).

Where,

x= FII Investment

y= Return on Stock Market Index

IV. RESULTS AND DISCUSSIONS

Unit Root Test

The ADF test results are shown in Table 1. These show that FII Investment, Sensex Return and Nifty Return are stationary at level. Since the p value is less than 0.05 the null hypothesis of unit root is rejected in these cases and it is found that the series are stationary at level. Therefore these variables are integrated of order zero i.e. I(0).

Table 1: ADF Unit Root Test Results for different time series data

Variables	ADF statistics	1% level	5% level	10% level	Probability
FII	-8.6424	-3.4646	-2.8765	-2.5748	0.0000
SENSEX Returns	-12.6235	-3.4648	-2.8766	-2.5749	0.0000
NIFTY Returns	-13.0898	-3.4648	-2.8766	-2.5749	0.0000

Source: Author's Calculations

Correlation

Table 2: Results of Correlation Test for FII investment, Sensex Returns and Nifty Returns

Dependent Variables	Coefficient of Correlation with FII Investment
Sensex Returns	0.3423
Nifty Returns	0.3507

Source: Author's Calculations

The Coefficient of Correlation is not zero which implies rejection of the null hypothesis of no relation amongst the variables. In both the cases relationship exists which is positive and moderate in nature as the coefficient is a non-negative number. This implies that when one variable increases, the other also increases. Since the coefficient is 0.3 approximately- it implies moderate association. However the association is stronger is case of Nifty as compared to Sensex.

Linear Regression (Least Square Method)

Table 3: Results of Linear Regression Analysis (Lease Squares Method)

Dependent Variable	Coefficient	S.E	T-statistic	Probability	R-squared
Nifty	0.000178	3.4E	5.1487	0.00000	0.12301
Sensex	0.000169	3.8E	5.0083	0.00000	0.11717

Source: Author's Calculations

Using FII investment as the independent variable and the returns on stock market indices as the dependent variables the results of simple linear regression reveal that the relationship between the variables is statistically significant (p-values are less than 0.05 leading to rejection of the null-hypothesis of no relationship). The coefficients determine the degree of this association. In the case of Nifty50, one unit change in FII is associated with a 0.0000178 unit change in Nifty returns (same direction) and the R-squared values determine the fitness of the model suggesting that 12.03% of the variations in Nifty can be explained by FII investment. The results are almost similar for Sensex returns as well wherein the coefficient suggests that one unit change in FII investment are associated with a 0.000169 unit change in Sensex returns (same direction) and the R-squared values determine the fitness of the model suggesting that 11.72% of the variations in Sensex returns can be explained by FII investments.

Granger Causality

Table 4: Results of Granger Causality Test

Null Hypothesis	Observations	F-Statistic	Probability
NIFTY does not Granger Cause FII	189	0.26860	0.7647
FII does not Granger Cause NIFTY		9.29258	0.0001
SENSEX does not	189	0.26091	0.7706

Granger Cause FII			
FII does not Granger Cause SENSEX		7.74798	0.0006

Source: Author's Calculations

The results of the granger causality test signify that there is a significant relationship between FII and stock market indices which is unidirectional in nature and moves from FII Investment to Stock Market Index Returns, both in the case of SENSEX and NIFTY. In case of pairwise granger causality between Sensex and FII and between Nifty and FII- the p value is less than 0.05 which means that the null hypothesis of FII not causing Index Returns is rejected. This shows that there is causality. However it is not a bidirectional relationship as the p-value for the Index Returns causing FII is more than 0.05 and as such the null-hypothesis cannot be rejected.

Thus it implies that stock market performance is caused by FII Investments.

V. CONCLUSION

One of the most enduring debates in economics is whether capital inflows cause stock market performance to increase or whether capital inflows are a consequence of increased stock market performance. The present study investigates the direction of causality between stock market performance and FII investment in the Indian context by taking FII and analysing its effect of Sensex and Nifty returns. This is done using data from 2002 to 2017. Analysis done via correlation and regression show that there is association between the two variables. Analysis done via Granger Causality Test shows that there exists a uni-directional relationship between stock market performance and FII which moves from the foreign investment towards stock market returns. This finding is consistent with previous studies being conducted in the field.

Therefore, the present study recommends that the capital market regulators should implement effective policy frameworks towards the regulation of FII investments in the country since it is linked to the performance of the Indian Stock Market. IT also implies that careful checks and balances need to be in place to regulate such investment as the lack or dearth in such investment could impact the stock market in a negative manner. Further, 0the government0should prioritize0the development0of the stock market0through relaxing0laws and of listing requirements for investors so as to encourage more market participants on the stock exchange and thus increases competition and quality of securities investments resulting in a significant influence on capital market growth in India.

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