

# FOREIGN INSTITUTIONAL INVESTMENT FLOWS AND EQUITY RETURNS IN INDIA

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*Since the beginning of liberalisation in financial markets in September 1992, India has opened her doors to foreign institutional investors. The institutional investors from abroad have been coming in expectations of high returns from the Indian equity market. The foreign institutional investment (FII) as a percentage of market capitalisation and floating stock has shown an improvement over the years. This paper therefore analyses the relationship between FII flows and equity returns in India during the period 2002-06. Cross-correlation and Granger-causality test have been applied to examine whether there exists a relationship between FII flows and S&P CNX Nifty returns. The major findings are that the gross FII purchase, gross FII sales, and net FII flows do have a relationship with the equity returns. The FII flows in India (i.e. gross purchase, gross sales and net FII) are not the cause rather they are the effect of high equity return in the Indian capital market.*

## I- Introduction

Since October 1992, Indian equity market has been receiving huge amounts of portfolio investment from foreign institutional investors (FIIs). These investors come to Indian equity market in expectation of high returns. This is reflected from the number of the registrations of FIIs with SEBI. The registrations have increased from 18 in 1993 to 1057 by June 29, 2007. The investment by FIIs has increased from \$1634 million in 1993 to \$10.11 billion in 2006. The foreign investors have been investing heavily on a day-to-day basis. The amount of investment was as big as Rs. 555 crores on September 28, 2006<sup>1</sup>. According to Securities and Exchange Board of India (Foreign Institutional Investor) (Second Amendment) Regulation 2006, a foreign institutional investor means an institution established or incorporated outside India, and the institution proposes to invest in Indian securities such as pension funds, mutual funds, investment trusts, insurance companies, reinsurance companies, international or multilateral agencies, foreign government agencies, foreign central banks, asset management company, investment manager

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<sup>1</sup> Website of SEBI

or advisor, nominee company, bank or institutional portfolio manager, trustee or power of attorney holder, university fund, endowments, foundations, charitable trusts, charitable societies, etc. Moreover, even overseas investment advisors, who were earlier directing their clients to buy participatory notes, have been allowed to register as FIIs, and set up their sub-accounts in Mauritius to enter India.

The liberalisation process of the Indian economy has been contributing to the growth of financial flows. These flows may not be affecting the production capacity directly, but they facilitate the transfer of funds to the enterprises with investment opportunities. Indian equity market through its reform process has shifted towards more market discipline and capital movement. This has helped to remove the barriers for the foreign investors in the Indian equity market. FIIs or their sub-accounts get registered with SEBI initially for five years, and operate after opening an office in India with a local company. Their daily transaction or trade is reported by the custodian to SEBI.

The FIIs as a percentage of market capitalisations have been improving. According to the NSE website, the daily market capitalisation, which was Rs. 3,63,350 crores in March 1995, increased to Rs. 33,67,350 crores at the end March 2007. During the period of the study, the amounts of market capitalisation were Rs. 8,63,481 crores, Rs. 12,27,550 crores, and Rs. 20,98,263 crores in 2003, 2004 and 2005 respectively. The net cumulative investments by FIIs on the 30<sup>th</sup> of September were: Rs. 73,037 crores, Rs. 1,11,573 crores, Rs. 1,65,762 crores and Rs. 1,98,256 crores in 2003, 2004, 2005 and 2006 respectively. During the study period, FIIs showed enthusiasm in investing in sectors like finance, FMCG, information technology and media and entertainment.

The role of FIIs in the host country's stock market has been subject of interest to academicians and policy makers. Studies have been conducted with little empirical analysis. The present paper attempts to develop an understanding of the relationship between FIIs investments in equity (excluding debt) and equity returns in the Indian stock market during the period from the 1<sup>st</sup> of October 2002 to the 30<sup>th</sup> of September 2006.

The rest of the paper is organized into six sections: Section- II gives a review of literature. Section-III specifies the testable hypotheses, Section- IV describes data and their sources, section- V presents the methodology, section-VI provides a detailed discussion of empirical results, and section-VII presents the conclusion.

## II- A Review of Literature

Various researchers have conducted contemporaneous studies to analyse the relationship between foreign institutional investment flows and equity return based on monthly data [Clark and Berko(1996), and Manntari(2005)]. Clark and Berko(1996) test whether foreign inflows of capital are causing the equity prices in Mexico to rise during 1989-96. Manntari(2005) analyse a similar behaviour in small Finnish Equity markets. They find no evidence that stock prices started falling because of the withdrawal of foreign equity investors. The behaviour of foreign portfolio investors before and during the 1997 Asian crisis did not destabilise the stock market [Kim and Wei(1999) and Karolyi(2001)]. Also, it is not necessary that inviting FIIs to the stock market would increase its volatility[Stultz(1997)]. Bekaert et al(2001) examine the effect of past returns and dividend yields on flows to test for the return chasing' and 'momentum investing. They find evidence of positive returns being followed by increased short-term equity capital flows, indicating a momentum effect.

Indian authors have analysed aggregate investment by FIIs on returns from stock indices [Chakrabarti(2000), Mukherjee *et. al.*(2002), and Batra(2003)]. Chakrabarti(2000) use monthly data to examine the nature and cause of FII flows to Indian equity market during 1993-99. He finds that net FII flows are correlated with equity returns, and that the FII flows are rather the effect than the cause on the returns. Mukherjee *et. al.*(2002) analyse the relationship between FII inflows and equity returns during 1999-02. They consider variables reflecting daily market returns and their volatility in domestic and international equity markets. The measures of co-movement of returns in these markets (the relevant betas), and macroeconomic variables are likely to affect foreign investors' expectations. The results show that FII flows are caused by returns in the stock market. Batra(2003) uses daily data on FII equity purchases and sales and equity returns from 2000-02 on BSE Sensex, and monthly data from 1994 to 2002. The analysis shows the evidence of FII adopting a positive feedback trading at the aggregate level on the daily returns with no such evidence on the monthly returns. Batra points out that FIIs tend to herd, and their trading behaviour does not destabilise Indian equity market. Thus, all these studies that equity returns on daily basis affect the FII inflows and their strategy of a positive feedback trading, and that possible herding does not appear to have a destabilising impact on the equity market.

### III- Data and their sources

The data consists of daily foreign institutional investment flows into Indian equity market and S&P CNX Nifty index values<sup>1</sup> over the period from October 1, 2002 to September 30, 2006, with the number of observations being 986. The data relates to FII constitute gross purchase, in rupees crores; gross sales, in rupees crores; and net inflow, in rupees crores. The data were taken from the website of Securities and Exchange Board of India, <http://www.sebi.gov.in>.

The index values were gathered from the website of National Stock Exchange, <http://nseindia.com>. The index values were converted into returns using the following formula:

$$R_t = \text{Ln} \left( \frac{P_t}{P_{t-1}} \right)$$

where,

Ln = natural logarithm,

$R_t$  = Nifty Return in the time period  $t$ ,

$P_t$  = Nifty index value in the time period  $t$ , and

$P_{t-1}$  = Nifty index value in the time period  $t-1$ .

Besides, the monthly data were collected on NSE market capitalisation for the period from September 2002 to August 2006. These monthly observations were obtained from the official websites NSE, <http://www.nseindia.com>. The series of FII flows is a proportion of previous month's market capitalisation.

### IV- Stationarity of data

The analysis is based on Batra(2003) and Ahmed *et al*.(2004). In order to test the hypothesis that the net equity demand by FIIs is driven by returns in the Indian equity market; we employ the techniques of Granger's causality and cross-correlation. While cross-correlation finds the relationship among the variables, Granger's technique tells about the direction of causality. For any analysis of time series, the data series must be stationary. Unit root test has been applied to show whether a series is stationary or not. Stationarity of our time series has been tested by means of Augmented Dickey Fuller (ADF) and Phillip-Perron (PP) tests[Gujarati(2003)].

The unit root test follows a (stochastic) process as under:

$$Y_t = \rho Y_{t-1} + u_t \quad (1)$$

where,

$u_t$  = a white noise

$\rho$  = a parameter

$Y_t$  is a stationary series if  $\rho$  is not equal to 1. If  $Y_t$  is a non-stationary series, the variance of  $Y_t$  will increase steadily with time and go to infinity. If the value of  $\rho$  is greater than one, the series becomes explosive. Therefore, the hypothesis to test the stationarity of the series can be whether the value of estimated  $\rho$  is strictly less than one (one-sided alternative).

$$H_0: \rho = 1$$

$$H_1: \rho < 1$$

Stationarity is tested by estimating the equation (1). If we subtract  $Y_{t-1}$  from both sides of the equation, we get,

$$\Delta Y_t = (\rho - 1)Y_{t-1} + u_t \quad (2)$$

or

$$\Delta Y_t = \Psi Y_{t-1} + u_t \quad (3)$$

$\Psi = 0$  implies a unit root in  $Y_t$

We can allow for a drift by including an intercept.

$$\Delta Y_t = \alpha_0 + \Psi Y_{t-1} + u_t \quad (4)$$

We can allow for a linear trend with a drift.

$$\Delta Y_t = \alpha_0 + \Psi Y_{t-1} + \alpha_2 t + u_t \quad (5)$$

The distribution theory supporting the Dickey-Fuller test assumes that the errors are statistically independent and have a constant variance. Phillip-Perron (PP) test allows for the disturbance to be weakly dependent and distributed heterogeneously. Augmented DF and PP tests have been applied to test the stationarity.

The ADF test works the same as the Dickey-Fuller test except that it makes a parametric correction for a higher order correlation by adding lagged difference terms of the dependent variable to the right hand sides of equations (3), (4), and (5):

$$\Delta Y_t = \alpha_0 + \Psi Y_{t-1} + \gamma_1 \Delta Y_{t-1} + \gamma_2 \Delta Y_{t-2} + \dots + \gamma_p \Delta Y_{t-p} + u_t \quad (6)$$

The augmented specification is then used to test the following:

$$\begin{aligned} H_0 &: \Psi = 0 \\ H_1 &: \Psi < 0 \end{aligned}$$

The causal linkages between FII flows and NSE returns have been studied using Cross-correlation and Granger's causality test.

#### V- Granger's Causality Test

Granger's causality test serves as a preliminary check for the direction of causality. The Granger causality test involves estimating the following pair of regressions:

$$Y_t = \sum_{i=1}^n \alpha_i X_{t-i} + \sum_{i=1}^n \beta_i Y_{t-i} + \mu_{1t} \quad (7)$$

$$X_t = \sum_{i=1}^n \alpha_i X_{t-i} + \sum_{i=1}^n \beta_i Y_{t-i} + \mu_{2t} \quad (8)$$

where,

$t$	=	1, 2, ..., n,
$X_{t-i}$	=	Equity returns in time period t-i,
$Y_{t-i}$	=	Foreign institutional investment flows in the time period t-i,
$\alpha_i$	=	parameter over the time period from 1 to n,
$\beta_i$	=	parameter over the time period from 1 to n, and
$\mu_{1t}, \mu_{2t}$	=	disturbance terms

Equation (8) postulates that current Y (FII as a proportion of preceding month's market capitalisation) is related to past values of itself as well as

that of X (Equity returns), and equation (9) postulates a similar behaviour for X (Equity returns).

This is the case of a bilateral causality where the coefficients of X and Y are statistically significantly different from zero.

These tests confirm that the variables used in the analysis are stationary and there is unidirectional causality running from equity returns to FII flows.

## VI- Empirical Analysis

The analysis begins with the descriptive statistics to display the characteristics of the variables. The computed statistics are given in the table below:

**Table- 1**  
**Descriptive Statistics for Scaled Daily Flows**

Scaled Flows	Obs.	Mean	Std. dev
FII Purchases as a prop. Of market capitalization	986	0.000596	0.000292
FII Sales as a prop. of market capitalization	986	0.000489	0.000236
Net FII as a prop. of market capitalization	986	0.000107	0.000239
NSE Returns	986	0.001434	0.014842

In terms of investment in equity via purchase, the FIIs have contributed to the extent of 0.06% to the economy. The FII sales were 0.05% during the sample period. The net FIIs have therefore not shown much increase and are at 0.01%. The standard deviation decides the variability of the data. Comparing the values of standard deviation among the scaled flows, the purchases show the highest variation with 0.0292%. This implies that the purchases are more volatile. There is no defined pattern of investment by FIIs. The standard deviation of scaled sales is 0.0236%. This implies a smaller variability compared to purchases.

ADF and PP tests have found that both FII flows and return are stationary. The results are shown in Table-2. The resulting values fall outside the range of critical value. The null hypothesis is therefore rejected. This implies that the values are stationary.

Table- 2  
Unit Root Test

Scaled by NSE market capitalization	ADF test statistics	PP test statistics
Purchase	-7.61664	-7.61664
Sales	-6.79864	-6.79864
Net FII	-19.32313	-19.32313
NSE Return	-27.90492	-27.90492
Note: Critical value for rejection of Hypothesis of unit root test at 5% is (-)1.9397		

Co-variability among the series is shown in Table-3. There is a high positive correlation between scaled FII purchase and scaled FII sales; scaled FII purchase and Net FII, there is a low correlation between FII purchase and Nifty Return. This implies that, when FII purchase increases, FII sales and Net FII also increase at the same pace. But, an increase in FII purchase does not correspond with the increase in Nifty Return. When nifty return increases, FIIs decline their sale decision and net FII increases, but it fails to catch up with NSE returns.

Table- 3  
Cross-correlation between FII Flows and Equity Returns in India

	Proportion of preceding month's NSE market cap.			Nifty Return
	FII Purchase	FII Sales	Net FII	
Scaled FII Purchase	1	0.6083543	0.6224744	0.0294719
Scaled FII Sales		1	0.2424696	-0.0001606
Scaled Net FII			1	0.0361905
Nifty Return				1

At 5 percent level of significance, the null hypothesis that Nifty Return does not Granger-cause FII purchase is rejected after lag 2, and the null hypothesis that the FII purchase does not Granger-cause Nifty Return is accepted [Table-4]. This indicates that Nifty Return Granger-causes FII purchase. FIIs do not rush to take the purchase decision. They wait for two days and invest only when they expect to get high returns.

**Table- 4**  
**Granger's Causality Test between**  
**FII Purchase Flows and Equity Return**

Lags→	2	3	4	5
Null Hypothesis	F-Statistic			
Nifty Return does not Granger-cause FII purchase	1.59392	2.04064	1.71751	1.50314
FII Purchase does not Granger-cause Nifty Return	0.51946	0.35358	0.26644	0.70514

In Table-5, the null hypothesis that Nifty Return does not Granger-cause FII sales is rejected, and the null hypothesis that the FII sales do not Granger-cause Nifty Return is accepted at lag 3, lag 4, and lag 5. This means that Nifty Return Granger-causes FII sales in India.

**Table- 5**  
**Granger's Causality Test between FII Sales and Equity Return**

Lags→	2	3	4	5
Null Hypothesis	F-Statistic			
Nifty Return does not Granger-cause FII sales	3.7708	10.5734	7.92696	6.53376
FII sales do not Granger- cause Nifty Return	2.06123	1.32750	0.89948	1.47810

At different lags in Table-6, the null hypothesis that Nifty Return does not Granger-cause net FII flows is rejected, and the null hypothesis that the net FII flows do not Granger-cause Nifty Return is accepted. This implies that Nifty Return Granger-causes FII flows in India [Chakrabarti(2001)].

**Table- 6**  
**Granger Causality Test between Net FII and Equity Return**

Lags→	2	3	4	5
Null Hypothesis	F-Statistic			
Return does not Granger- cause net FII flows	25.5187	25.4469	9.5207	15.8625
Net FII flows does not Granger-cause Nifty Return	1.28686	0.63486	0.20668	0.17569

## VII- Conclusion

The results reveal that FIIs have been attracted to India as an important investment destination. After the initiation of economic reforms, the movement of capital inflows has been tremendous, though the attraction was due to Indian equity return. This unidirectional relationship has been confirmed by both cross-correlation and Granger causality test. There is, however, a weak evidence of causality running the other way. That is to say, FII inflows cause equity returns. It is possible that this relationship is averaged out at the level of Nifty Index, but exists at the level of individual stock. Different players in the stock market get to know the information on the FII trades at different points of time. Therefore, the impact of the information is weak and is spread over a couple of days. More detailed disaggregate analysis at the level of individual stock for a longer period of time may statistically confirm the bi-directional relationship. The results indicate that the FIIs follow a positive feedback trading strategy as their activities are affected by previous and next trading day returns. They plan to purchase equity or stop selling when they expect future returns to move up.

The main policy implication of our findings is that a move towards a more liberalised regime in the emerging market economies should be accompanied by further improvements in the regulatory system of the financial sector. Our result also suggests that, in the case of India, the prime focus should be on the regaining of investors' confidence in the equity market so as to strengthen the domestic investor base of the market. But, once this is achieved, a built-in cushion against possible destabilising effects of sudden reversal of foreign inflows might develop.

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