

# An Empirical Investigation of the FII activity on volatility in Stock Market – Indian Evidence

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## Abstract

Foreign institutional investors have gained a significant role in Indian stock markets. The dawn of 21st century has shown the real dynamism of stock market and the various benchmarking of sensitivity index (Sensex) in terms of its highest peaks and sudden falls. In this context present paper examines the contribution of foreign institutional investment in sensitivity index (Sensex). Also attempts to understand the behavioral pattern of FII during the period of 2007 to 2012 and examine the volatility of BSE Sensex due to FII. The data for the study uses the information obtained from the secondary resources like website of BSE sensex. We attempted to explain the impact of foreign institutional investment on stock market and Indian economy. Also attempts to present the correlation between FII and BSE sensex by the Karl Pearson' Coefficient of correlation test.

## Keywords:

FII (Foreign Institutional Investment), BSE Sensex, Correlation between FII & BSE Sensex, Regulation Relating to FII Operation

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## Introduction

Until the 1980s, there was a general reluctance towards foreign investment or private commercial flows as India's development strategy was focused on self-reliance and import substitution and current account deficits were financed largely through debt flows and official development assistance. A major development in our country, post 1991 has been liberalization of the financial sector, especially that of capital markets. After the launch of the reforms, foreign institutional investors (FIIs) from September 14, 1992, with suitable restrictions, were permitted to invest in all securities traded on the primary and secondary markets, including shares, debentures and warrants issued by companies which were listed or were to be listed on the Stock Exchanges in India and in schemes floated by domestic mutual funds. A positive contribution of the FIIs has been their role in improving the stock market infrastructure and the SEBI assured its contribution towards its development.

Hence, in this age of transnational capitalism, a significant amount of capital is flowing from developed world to emerging economies. Positive fundamentals combined with fast growing markets have made India an attractive destination for foreign institutional investors (FIIs). Although the Foreign institutional investors (FIIs), whose investments are often called 'hot money' because they can be pulled out at anytime, have been blamed for large and concerted withdrawals of capital from the country at the time of recent financial crisis, they have emerged as important players in the Indian capital market.

This study tries to analyze what role FIIs play in Indian stock market. Volatility of return, correlation of FIIs with Indian stock market is also studied.

### Objectives

1. To find out the relationship between the FII investment and Indian stock market
2. To know the return, volatility of BSE SENSEX with the comparison of FII flow
3. To study the behavioral pattern of FIIs in India
4. To find the investment pattern of FIIs in various sectors of economy
5. To analyze the movement of SENSEX in the context of FIIs.

### Scope of the Study

The scope of the research is confined to study how FIIs affects Indian stock market. The data of 5 years from 2007 to 2012 is analyzed.

### Literature Review

Stanley Morgan (2002) has examined that FIIs have played a very important role in building up India's forex reserves, which have enabled a host of economic reforms. Secondly, FIIs are now important investors in the country's economic growth despite sluggish domestic sentiment. The Morgan Stanley report notes that FII strongly influence short-term market movements during bear markets. However, the correlation between returns and flows reduces during bull markets as other market participants raise their involvement reducing the influence of FIIs. Research by Morgan Stanley shows that the correlation between foreign inflows and market returns is high during bear and weakens with strengthening equity prices due to increased participation by other players.

Agarwal, Chakrabarti et al (2003) have found in their research that the equity return has a significant and positive impact on the FII. But given the huge volume of investments, foreign investors could play a role of market makers and book their profits, i.e., they can buy financial assets when the prices are declining thereby jacking-up the asset prices and sell when the asset prices are increasing. Hence, there is a possibility of bi-directional relationship between FII and the equity returns.

P. Krishna Prasanna (2008) has examined the contribution of foreign institutional investment particularly among companies included in sensitivity index (Sensex) of Bombay Stock Exchange. Also examined is the relationship between foreign institutional investment and firm specific characteristics in terms of ownership structure, financial performance and stock performance. It is observed that foreign investors invested more in companies with a higher volume of shares owned by the general public. The promoters' holdings and the foreign investments are inversely related. Foreign investors choose the companies where family shareholding of promoters is not substantial. Among the financial performance variables the share returns and earnings per share are significant factors influencing their investment decision.

Gurucharan Singh (2004) highlighted that the securities market in India has come a long way in terms of infrastructure, adoption of best international practices and introduction of competition.

Today, there is a need to review stock exchanges and improve the liquidity position of various scrips listed on them. A study conducted by the World Bank (1997) reports that stock market liquidity improved in those emerging economies that received higher foreign investments.

Anand Bansal and J.S. Pasricha (2009) studied the impact of market opening to FIIs on Indian stock market behaviour. They empirically analyze the change of market return and volatility after the entry of FIIs to Indian capital market and found that while there is no significant change in the Indian stock market average returns; volatility is significantly reduced after India unlocked its stock market to foreign investors.

### Research Methodology

The study is descriptive in nature. The research methodology is based on secondary data for which Internet is the main source of information. The research is also done based on journals, research articles, government publications, Magazines, News papers. The time frame for the study is 5 years i.e., 2007 to 2012 and BSE is taken as the sample.

### Analysis Techniques

Pearson correlation analysis, standard deviation test is done to analyze the data. Help of SPSS software is taken to undertake the research activity.

### Data Analysis

#### Shareholding Pattern of FIIs

The most commonly used indicator of stock market development in size of market, measured by market capitalization ratio. The market capitalization ratio (Market capitalization of FII holdings/GDP) in the year 2006-07 was 13.14 per cent where as in 2007-08 it was 15.08 per cent. The ratio decreased to 6.8 per cent in the year 2008-09 with the result of great financial crisis which hit the entire globe. Indian markets crashed by more than 60 per cent as the outcome of this predicament.

During the financial year of 2009-10 the global uncertainty started to disappear and market recovered with the pace more than anticipated. FIIs inflow also increased and the capitalization ratio elevated to 12.68 per cent which is almost double of previous year.

In the year 2011 the promoters held 56.6 per cent of the total shares, whereas the non-promoters holding was 43.4 per cent. Individuals held 12.43 per cent while FII holding is around 10.45 per cent and remaining is other institutional holdings.

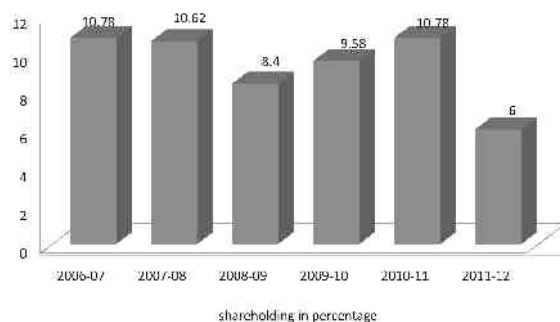
**Table: 3.1**  
Table showing overall shareholding pattern of FIIs in Indian stock market (in per cent)

Year	Shareholding
2006-07	10.78
2007-08	10.62
2008-09	8.4
2009-10	9.58
2010-11	10.78
2011-12	6

(Source: NSE ISMR report)

Graph: 3.1

Graph showing overall shareholding pattern of FIIs in Indian stock market.



(Source: Data based on Table: 3.1)

The above table and graph gives the clear depiction about the exposure of FIIs in Indian stock markets or in the economy. Out of total market capitalization share of FIIs is calculated and compared over last 5 years. The FIIs fund is considered as 'hot money' which can be withdrawn by the investors at any time. When the economy looks uncertain and adverse to invest fund is pulled out by the FIIs. This phenomenon can be examined during 2008-09 when the market was hit by global financial crisis. FIIs were the net sellers of Rs. 52,987.4 crores and the total shareholding decreased to 8.4 per cent from 10.62 per cent of previous year.

The shareholding of FIIs recovered in the next two years that is 2009-10 and 2010-11 with the holding of 9.58 per cent and 10.78 per cent. The unexpected comeback of the economy backed by strong fundamental of Indian economy specially banking sector

helped for this development. Although the market recovered from 2008's crisis, economy once again plunged into slowdown and this depicted in shareholding pattern of FIIs also. It decreased to 6 per cent which is less than FIIs shareholding during 2008-09. This figure is the least among all other financial year since 2006-07.

#### Shareholding Pattern in Different Sectors

Shareholding outline of FIIs in the entire economy is studied in the above part. The FIIs investment in each sector of the economy is also studied for the better understanding of how FIIs play the role in the Indian stock markets. The FIIs shareholding in different sectors of economy is identified and made the comparison with different time frame.

**Table: 3.2**  
Table showing share holding pattern of FIIs on different sectors during 2007 to 2012  
(Figures in Per cent)

Sectors	2011-12	2010-11	2009-10	2008-09	2007-08	2006-07
Banks	15.9	18.17	19.24	14.27	19.15	18.41
Engineering	5.1	9.3	9.24	7.34	10.63	11.45
Finance	8.4	19.2	22.63	13.01	17.44	18.18
FMCG	9.4	17	15.73	12.72	14.07	11.91
IT	7.3	17.07	10.47	12.44	16	14.53
Infrastructure	5.9	7.5	8.75	7.31	8.86	7.15
Manufacturing	4.8	9.6	8.99	7.28	9.46	9.57
Media and Entertainment	5.8	11.63	7.82	11.42	11.71	15.2
Petrochemical	4.5	6.49	6.35	4.77	4.73	5.83
Pharmaceutical	6.2	10.13	9.16	7.88	10.69	11.17
Service	5.4	9.5	8.82	8.39	10.7	13.09
Telecommunication	5.7	8.46	8.73	6.85	9.12	11.17
Miscellaneous	6.1	13.37	10.35	8.39	9.3	8.19
<b>Total holding</b>	<b>6.0</b>	<b>10.78</b>	<b>9.58</b>	<b>8.4</b>	<b>10.62</b>	<b>10.78</b>

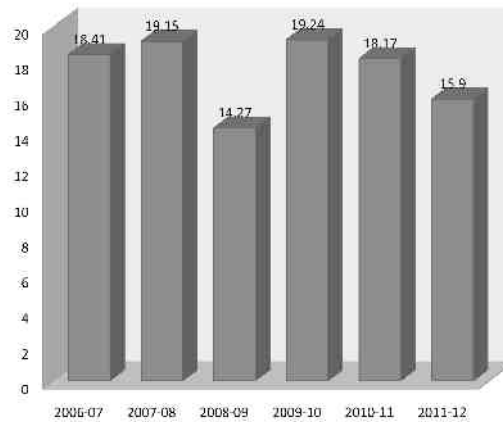
(Source: NSE ISMR report)

The above table gives the clear idea about how the FIIs invested in different sectors of the economy over the period of time. Banking sector is the one sector in which FIIs have maximum exposure in

the last 5 years of time. The sectors like Finance, FMCG etc media are the safe bet of the FIIs. Petrochemical, services, Infrastructure etc are the least preferred segment of the economy.

Graph 3.2

The following graph showing FIIs invest in banks from 2006-07 to 2011-12.



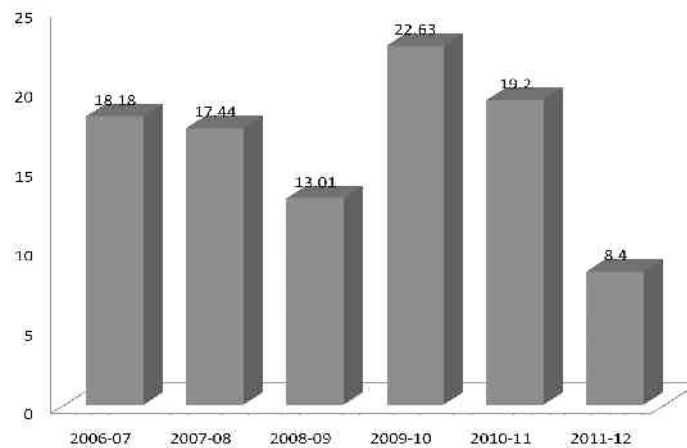
(Source: Data based on Table 3.2)

From the above graph it is evident that FIIs have stable holding in shares of Indian banking sector. Banking sector is the only sector in which FIIs have invested with stable investment. The average holding of FIIs in banks over 5 years is 18 per cent. It has decreased by 36 per cent in the year 2008-09. It is mainly due to global

financial crisis of 2008. Otherwise it can be said that banking sector is the one of the preferred bet for FIIs. It may be because of growth, stability, prudent regulatory system. The decrease in 2011-12 is may be because of uncertainty regarding GAAR, taxation issues etc.

Graph 3.3:

The following graph showing FIIs shareholding in Finance



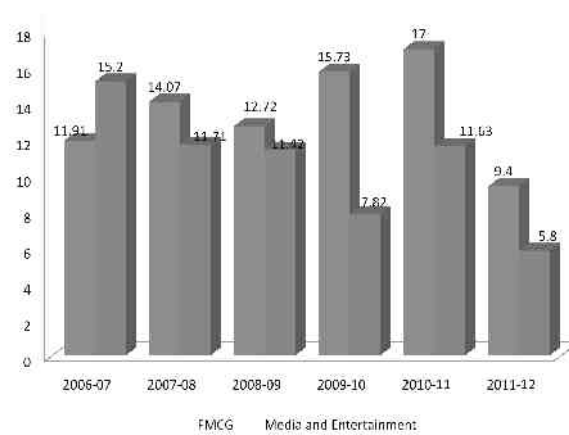
(Source: Data based on Table 3.2)

Finance sector is also another favorite sector for FIIs. During 2009-10 and 2010-11 FIIs had the share of 22.63 per cent and 19.2 per cent respectively in finance sector. FIIs had maximum per cent of shareholding in this sector in both the years compared to other

sectors. But this share decreased drastically in 2011-12. This fall is more than 2008-09's financial crisis. It may be because of global uncertainty like problems in Europe, U.S, other political problems within the nation, etc.

Graph: 3.4

The following graph showing FIIs shareholding in FMCG sector and Media and entertainment



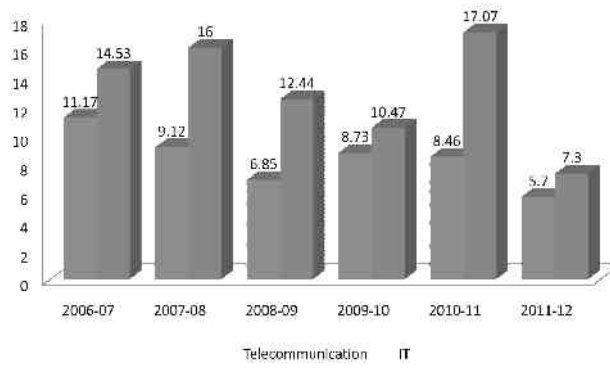
(Source: Data based on Table: 3.2)

Fast Moving Consumer Goods (FMCG) is also other segment of preferred of FIIs field of investment. It was a bullish bet for FIIs during 2009-10 and 2010-11. During other period it was not so attractive for investment for FIIs. But in 2011-12 compared to sector FIIs had holding of 9.4 per cent which is second highest after banking.

FIIs have invested substantial amount of fund in media and entertainment industry over a long period of time. In the year 2009-10 and 2011-12 the investment has plunged in the segment. Still there is scope for further investment from FIIs in Media and entertainment.

Graph: 3.5

The graph showing FIIs shareholding in IT and Telecommunication



(Source: Data based on Table: 3.2)

When the Information Technology (IT) sector is analyzed one important observation to be made is gradual decline in the investment from FIIs. It had recovered in 2010-11 but compared to other sector IT is not the safe bet for FIIs. Issues like United States of America's (USA) regulations regarding IT which is affecting Indian IT companies may be the reason.

Telecommunication sector is the one of the growing and dynamic industry. Customer base is increasing year by year, new technology is adopted and there is lot of scope of further

development. But when the FIIs investment in this sector is scrutinized, the per cent of shareholding is plunging. The regulatory issues of Telecom Regulatory Authority of India (TRAI) can be considered as the reason for this behavior.

**Number of FIIs and Amount of Net Investment**

It is important to analyze the number of FIIs registered with SEBI during last 10 years. This study tries to give some light on number of FIIs registered, its growth, and other relevant factors.

Table: 3.3

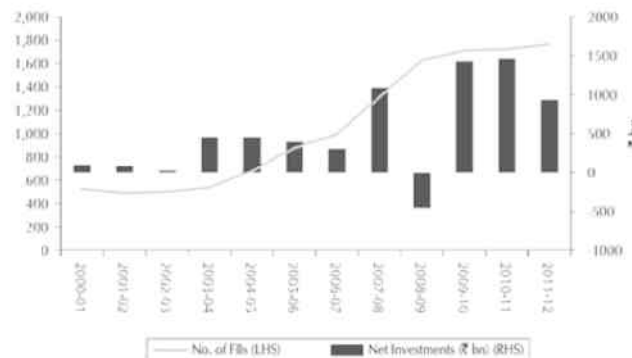
The following table showing number of FII registered in last 12 years  
(Absolute number)

Year	Number of Registered FIIs
2000-01	525
2001-02	493
2002-03	520
2003-04	582
2004-05	690
2005-06	890
2006-07	994
2007-08	1322
2008-09	1620
2009-10	1753
2010-11	1767
2011-12	1789

(Source: SEBI)

Graph: 3.6

The following graph showing the number of FIIs and net investment in Indian stock markets



(Source: NSE ISMR report)

From the above table it is understandable that number of FIIs has increased over last many years constantly. The number of FIIs registered with Security Exchange Board of India (SEBI) during 2000 to 2004 was almost constant. There was no much entrant to Indian stock exchanges for investment. During 2000-01, 2001-02, 2002-03 and 2003-04 total number of FIIs registered was 525,493,520 and 582 respectively. The growth of this number started to pick up from 2004-05. It was more than double at the time of 2007-08. There were total of 1322 FIIs registered with SEBI at the end of 2007-09. It again increased to 1620 in 2008-09 and to 1753 in the year 2009-10. The global recession of 2008 did not affect the number of FIIs registering with SEBI. It further increased to 1767 at the end of financial year 2010-11 and to 1789 in the year 2011-12. During the 2011-12 the growth rate of number of FIIs declined corresponding with the concerns like proposal of GAAR, taxing Participatory Notes etc.

In the above graph number of FIIs registered is superimposed to

the graph of net inflow of funds of FIIs. The flow of fund is fluctuates in each year. During the year 2008-09 FIIs were the net sellers but the number of registered FIIs remained high. There is no close correlation between FII net flow and number of registered FIIs.

### Risk Return Analysis

There are many literatures which try to find the impact of opening of FIIs into Indian economy. Dr. Ambuja Guptha (2011) concluded the research saying that FIIs net purchase or sale has the influence on fall or raise of stock market. FIIs is the cause for movement for stock market rather than effect. Bansal and Pasricha (2009) found that average return has not changed even after FIIs introduction.

With this background, risk return analysis of the Indian stock market is made in order to find change of market behavior after the FIIs investment in India. The changes in the volatility of the is also analyzed.

**Table: 3.4**  
**The following table showing historical returns, standard deviation and corresponding FIIs net investment.**

Date	Return	Standard Deviation	Net FII flow
1984	7.49%	0.001	-
1985	93.98%	0.432	-
1986	-0.55%	0.473	-
1987	-15.69%	0.076	-
1988	50.68%	0.332	-
1989	16.87%	0.169	-
1990	34.63%	0.089	-
1991	82.09%	0.237	-
1992	37.01%	0.225	-
1993	27.94%	0.045	2,595.1
1994	17.36%	0.053	6,791.2
1995	-20.79%	0.191	3,853.8
1996	-0.81%	0.100	10,803.6
1997	18.60%	0.097	5,760.2
1998	-16.50%	0.175	-739.8
1999	63.83%	0.402	6,578.4
2000	-20.65%	0.422	6,369.9
2001	-17.87%	0.014	11,970.4
2002	3.52%	0.107	3,629.6
2003	72.89%	0.347	30,459.4
2004	13.08%	0.299	38,965.8
2005	42.33%	0.146	47,181.9
2006	46.70%	0.022	36,540.2
2007	47.15%	0.022	71,486.3
2008	-52.45%	0.498	-52,987.4
2009	81.03%	0.667	83,424.2
2010	17.43%	0.318	133,266.3
2011			-2,714.20
2012			103272

It is surprising to note that Investors earned 93.98 per cent of return in the year 1985. The super normal profit of 50.68 per cent, 82.09 per cent in 1988 and 1991 can also be seen before financial market is liberalized to foreign investors. From the above table it is clear that return from the market has come down after the introduction of FIIs. Super normal growth or the return from the equity market cannot be seen after 1993. Only in 1999 and 2009 return of 63.83 per cent and 81.03 per cent respectively is achieved. Average return that investor got after FIIs investment in India is 17.35 per cent whereas return of 28 per cent is obtained during the time period of 1984 to 1992. Therefore it can be said that return from the stock market has come down after the introduction of FIIs.

Another important observation to make is regarding volatility of market return. Before FIIs started investing in Indian financial market, volatility of return was high. In this study standard deviation is used to measure the volatility of the market. Standard deviation of the market movement before FIIs come to India was around 0.25. But in the subsequent stage it has reduced to 0.15. This shows that FIIs have helped the market to stabilize in terms of

return even though return has come down. Volatility of market has drastically declined in the post FIIs phase of Indian financial market.

The global crisis of 2008 resulted in withdrawal of Rs. 52,987.4 crores by FIIs which resulted in the fall of market by more than 60 per cent. Although this created more volatility in the market, it can be considered as exception to general behavior.

From the above analysis it can be said that the opening up of FIIs fund to Indian economy resulted in decrease in the return slightly. The significant decline in the volatility of market is also observed in the post FIIs stock market movement.

#### **Correlation Analysis**

Activities in any stock exchange is affected by many factors such as economy aspects like GDP, IIP, inflation, employment level, movement of exchanges in global level etc. Direction of the stock exchange is also affected by FIIs. It is important to know how FIIs movement correlates to stock exchange. The study is conducted to find the correlation between net flow of FII and CNX index.

**Table: 3.5**  
The following table showing the correlation between FII and stock exchange

Particular	Changes in Index	Net FII flow
Change in Index: Pearson Correlation	1	.665
Net FII flow: Pearson Correlation	.665	1

(Source: Calculation using SPSS)

From the above table it can be analyzed that there is close correlation between behavior of FIIs and Indian stock market. FIIs infuse fund into market when economy is favorable towards development activities. When FIIs inject fund automatically market shoots up. During financial crisis of 2008 FIIs were the net seller of -52,987.4 crores which resulted in market crash. During 2012 FIIs infused 103272 crores of fund when economy showed

recovery from slowdown, uncertainty in global level. This also helped the market to revive and get bullish trend. This phenomenon can be observed since the introduction of FIIs. Return from the market goes hand in hand with FIIs fund inflow.

### FIIs in Global Context

The role of FIIs in the Indian context is analyzed

**Table: 3.6**

The following table showing the FIIs funds in BRICS nations

(USD Million)

Year	India	Indonesia	Korea	Taiwan	South Africa	Brazil
2000	1586	91	10127	3021	2474	-1161
2001	2748	428	5790	7494	3466	460
2002	707	872	-2259	-110	-622	-460
2003	6673	1121	11794	15887	-1	2509
2004	8623	2199	9316	8054	5208	662
2005	10702	3403	-2764	19185	7330	2208
2006	8372	1878	-11808	17108	10998	1170
2007	17824	3551	-29221	2244	8890	-1924
2008	-12173	1870	-33368	-15377	-5565	-12019
2009	17626	1385	24827	13720	8988	10028
2010	28711	2331	18595	8689	4834	3600
2011	-543	2600	-6716	-9340	-2002	3623
<b>TOTAL</b>	<b>90856</b>	<b>21729</b>	<b>-5687</b>	<b>70575</b>	<b>43998</b>	<b>8696</b>

(Source: Fact book, Department of Economics of Affairs, GOI, 2012)

From the above table it is clear that Indian has succeeded in attracting large amount of FIIs fund over many years. When compared to other BRICS nations Indian is the only the country which is most favorable to FIIs. Taiwan is in the second position next to India in terms of attracting investment from foreign investors. In the last 10 years of time Korea had failed to gain confidence of FIIs and FIIs were the net sellers. South Africa is also one more competitive nation which has potentiality to attract FIIs.

### Findings

The research has helped to find major aspects which are in line with the objective of the study. The findings are as follows:

- There is the positive correlation between FIIs net flow and Indian stock market changes
- The average return from the market has decreased slightly after the introduction of the FIIs

- The volatility of the market has declined significantly after the liberalization of financial market
- Indian stock market is more attractive to FIIs compared to other BRICS nations
- FIIs have more exposures to Banks, Finance, FMCG sector as the percentage of shareholding

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