

## FOREIGN INSTITUTIONAL INVESTOR'S IMPACT ON STOCK PRICES IN INDIA

ANAND BANSAL

Punjabi University Guru Kashi Campus  
Damdama Sahib-151302, Punjab  
Phone: +919417326733; Fax: +911652501299.  
Email: preetmillie@yahoo.com

J.S. PASRICHA

Department of Commerce  
Punjabi University Patiala-147001-Punjab  
Phone: +919217794090; Fax: +911753046208.  
Email: jspasrichal@rediffmail.com

### *Abstract*

*This paper studies the impact of market opening to FIIs, on Indian stock market behavior. India announced its policy regarding the opening of stock market to FIIs for investment in equity and related instruments on 14<sup>th</sup> September 1992. Using stock market data related to Bombay Stock Exchange, for both before and after the FIIs policy announcement day. An empirical examination has been conducted to assess the impact of the market opening on the returns and volatility of stock return. We found that while there is no significant changes in the Indian stock market average returns, volatility is significantly reduced after India unlocked its stock market to foreign investors.*

**Keywords:** *Foreign Institutional Investors; Stock Prices Return; Stock Prices Volatility; Foreign Investments.*

### 1. INTRODUCTION

The remarkable economic growth during the past two decades in most of the emerging countries had been stimulated by foreign capital inflows from developed countries. The post 1990s period witnessed sharp augment in flows of foreign private capital and official development finance lost its predominance in net capital inflows. Most of the developing countries opened their capital markets to foreign investors either because of inflationary pressures, widening current account deficits, exchange depreciation, increase in foreign debt or as a result of economic policy. There was a surge in capital inflows into India too since 1992 as

in India, the purchase of domestic securities by FIIs was first allowed in September 1992 as part of the liberalization process that followed the balance of payment crisis in 1990-91 (Gordon and Gupta, 2003). Now days, a significant portion of Indian corporate sector's securities are held by Foreign Institutional Investors, such as pension funds, mutual funds and insurance companies. These investors are often viewed as sophisticated investors as these institutional investors are better informed and better equipped to process information than individual investors (Han and Wang, 2004). As the share of foreign investors in emerging markets has risen, they have influenced the assets prices considerably. Consequently, policymakers have become increasingly concerned about the factors determining international investment, the performance of foreign capital investments, and the impact of foreign investment on local turnover and on the volatility of stock prices (Tesar and Werner, 1995). The impact study of FIIs flows on domestic stock market is important from government as well as investor point of view, for example, does the opening up of the market for FII increase speculation in the market and thus make the market more volatile and more vulnerable to foreign shocks (Li, 2002).

The immediate impact of market opening to FIIs is the surge in trading volume and capital inflows to domestic stock markets, result of which the boom in stock prices. The stock market boom, typically, does not last for the entire period is of capital inflows. It usually starts with the initial surge in capital inflows and ends before the episode of capital inflows completely subsides (Calvo and Mendoza, 2000). Henry (2000) reports the two possible consequences of market liberalization in the light of international asset pricing models. First outcome of market liberalization (because of its impact on the cost of capital) is an increase in a country's equity prices because market learns that domestic markets will liberalize more in near future. The second impact of market liberalization is on physical investment that will increase because of fall in cost of capital as new entrepreneurs will initiate more investment projects. The second effect of market liberalization will definitely increase the rate of economic growth. Similarly Gompers et al. (2001) prove that institutional investors invested in liquid and large stocks having low returns during the previous year. So an increase in the institutional demand in share market will affect stock market prices and returns if supply and demand curves for that particular share are not perfectly elastic. Han et al. (2004) also analyze the impact of institutional investors on stock prices from a different perspective. They studied the impact on stock prices because of the investment constraints on institutional investors by their unit holders. Institutional constraints some time refrain from selling or purchasing of stock about which they have even some good/bad news. So they conclude that higher institutional investment constraints have strong price momentum on the shares. Similarly Lin et al. (2006) conclude that the investment performance of FIIs high holding stocks is significantly better than that of FIIs low holding stocks. They presented the evidence that FIIs trading behavior has generated better returns and portfolio performance since the stock market's full liberalization. Li (2002) studies the impact of market opening to foreign investors on Taiwan stock market behavior and found no significant changes in stock market return after market opening. But author agreed that the impact on return should be there because large international

investors tend to study companies more thoroughly. The involvement of foreign investors disseminates information better hence leads to more efficient market. Richards (2004) analyze data of six Asian emerging equity markets and found two interesting findings. The trading behavior of foreign investors was largely influenced by the return in global market that is positive feedback trading. The price impact associated with foreign investors trading was much large than estimated earlier.

In the present paper we look at the impact of FIIs entry on the stock market behavior. For this purpose, changes in market return and volatility have been examined. Section 2 of this paper will introduce the data and methodology. Section 3 presents the outcomes of study and is followed by certain final observations and remarks in Section 4.

## 2. DATA AND METHODOLOGY

Bombay Stock Exchange (BSE) is the only surviving oldest exchange in India. BSE is considered as the barometer of Indian economy. The data related to its prominent market index, SENSEX (consisting of 30 blue chip stocks) has been used in this paper to empirically compare the market behaviour before and after the Indian market opening day (the event day). Exclusively we study the change of market return and volatility after the entry of FIIs to Indian capital market. Though FIIs were allowed to trade in the Indian stock market from 14<sup>th</sup> September 1992 but they made first investment in the month of January 1993. Thus the 14th September 1992 has been chosen as event day because there would have been a boost in market activity upon the announcement regarding market opening to FIIs. We used the market index data from 23<sup>rd</sup> January 1991 to 29<sup>th</sup> March 1994. Our data set covers about two years period that included data of 330 trading days before the event day and 330 trading days after the event day.

Period before event date	23 <sup>rd</sup> January 1991 to 11 <sup>th</sup> September 1992 (Total 330 trading days)
Period after event date	15 <sup>th</sup> September to 29 <sup>th</sup> March 1994 (Total 330 trading days)
Name of Stock Exchange	Bombay Stock Exchange
Index used to calculate daily return and volatility	BSE SENSEX
Frequency of Data	Daily

*Table 1: Description of daily data used in study*

## 2.1. STOCK PRICES RETURN

To evaluate the impact of Indian stock market opening to FIIs on stock prices, average return before and after the event day has been calculated for different sub sample days. The return has been calculated by taking the difference in the natural logarithm of the closing index values for two consecutive trading periods. Symbolically, the rate of return has been calculated as follows:

$$R_t = \log_e \left[ \frac{P_t}{P_{t-1}} \right] \times 100 \quad (1)$$

$R_t$  stands for the rate of return for a given period t, where  $\log_e()$  is the natural logarithm,  $P_t$  is the closing value of stock index (SENSEX in our case) on date t and  $P_{t-1}$  is the closing value of stock index . On the basis of daily return, average market return has been calculated for k trading days before and k days after the event day. If the average returns for k days before and k days after event days are represented by  $(r_{11}, r_{12}, \dots, r_{1k})$  and  $(r_{21}, r_{22}, \dots, r_{2k})$  respectively, we can test the null hypothesis of equal average return as:

$$\text{Null Hypothesis } H_0 : \mu_1 = \mu_2 \quad (2)$$

(There is no difference in Indian stock prices return before  $\mu_1$  and after  $\mu_2$  the entry of FIIs)

## 2.2. STOCK PRICE VOLATILITY

The change of volatility in the Indian stock prices has been examined by comparing the variance of the returns of sub sample days before and after the event day. Standard deviation is the statistical tool used to measure the volatility in the returns of various markets. Thus, volatility can be calculated as:

$$S.D = \sqrt{\frac{1}{n-1} \sum (r_t - \bar{r})^2} \quad (3)$$

Here, n is the number of observations (no of trading days in a sub sample),  $r_t$  is the daily rate of return in a sub sample,  $\bar{r}$  is the average return in a sub sample. Let  $\sigma_i$  denote the variance of both periods that is before and after event, then the hypotheses to be tested can be written as:

$$\text{Null Hypothesis } H_0 : \sigma_1 = \sigma_2 \quad (4)$$

(There is no difference in stock prices volatility before  $\sigma_1$  and after  $\sigma_2$  the entry of FIIs).

### 3. EMPIRICAL RESULTS

#### 3.1. IMPACT OF FIIS INVESTMENT FLOWS ON STOCK PRICES RETURN:

The calculated average returns for before and after sub samples are reported in table II. Wilcoxon-Mann-Whitney test, also called the rank sum test or U test, is the measure which has been used to check the significance of differences in the average market returns of the all sub sample with same – and + event days. Wilcoxon-Mann-Whitney test is used to test the null hypothesis that two sub samples are identically distributed or not. The Mann Whitney U statistic is defined as:

$$U = n_1 \cdot n_2 + \frac{n_1(n_1 + 1)}{2} \sum R_i \quad (5)$$

(Here  $n_1$  and  $n_2$  are sample size and  $\sum R_i$  is sum of ranks)

$$\text{The mean of U statistic is: } \mu_U = (n_1 \cdot n_2) / 2 \quad (6)$$

$$\text{Standard error (or standard deviation): } \sigma = \sqrt{\frac{n_1 \cdot n_2 (n_1 + n_2 + 1)}{12}} \quad (7)$$

If the sample size is more than 8, with the given level of statistical significance, the test will report whether the calculated value of U test statistic falls within the acceptance region or not. The U test statistic can further be interpreted by using the Z statistic as Z is a standard normal deviate whose significance can be checked from tables of the normal distribution. If the calculated Z (ignoring signs) value does not equal or exceed the critical Z value of 1.96 (critical Z value for a two-tailed test at 5%), then it can be assumed that the null hypothesis is correct and there is no difference between two groups of sample. However if the Z value exceeds 1.96 then there is sufficient evidence to reject the null hypothesis and accept the alternative hypothesis.

	Return Before	Return After	Z	Significance Level
±30	0.1866	-0.2496	-1.922	.055
±60	0.0307	-0.1950	-.950	.342
±90	-0.0167	-0.0858	-.395	.693
±120	0.1687	-0.1290	-1.692	.091
±150	0.1548	-0.1093	-1.798	.072
±180	0.1326	-0.1005	-1.865	.062
±210	0.1404	-0.0460	-1.614	.107
±240	0.1634	-0.0324	-1.897	.058
±270	0.1515	0.0061	-1.439	.150
±300	0.1433	0.0286	-1.228	.219
±330	0.1516	0.0189	-1.555	.120

*Table 2: Testing the Average Return Change*

The daily mean return for the 30 days, prior to the entry of FIIs has been calculated at 0.1866, while for the 30 days period following the event day is – 0.2496. When the mean return for 60 days before and after FIIs entry to India are matched, the mean return following FIIs entry day are found declining from 0.0307 to -0.1950. Similarly for the post FIIs entry sub samples of 90, 120, 150, 180, 210, 240 days have shown negative returns as compared to positive returns for these sub sample days before the entry of FIIs. From 270 days onward after entry, return has again become positive but still found significantly less than the return before the FIIs entry for the same periods.

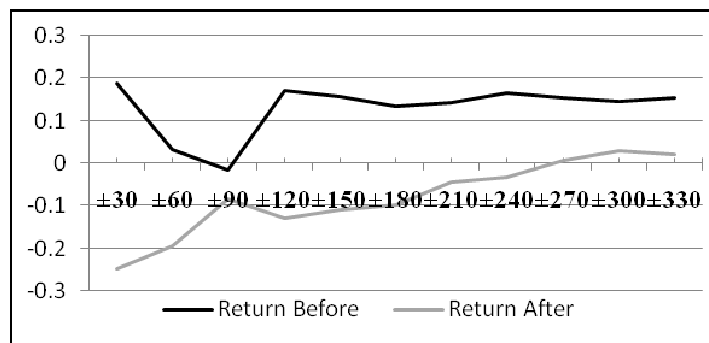


Figure 1: Stock prices return before and after the entry of FIIs

Using the Mann-Whitney Test (Wilcoxon Rank Sum Test) and a significance level of  $\alpha = 0.05$  (5%), there is enough evidence to conclude that there is no significant difference in mean daily return before and after the announcement date for the entry of FIIs in Indian market. Evidence is strongly in the favor of null hypothesis as the two tail probability levels (0.055, 0.342, 0.693 and so on) for all the sub sample is more than 0.05 and the values of Z (ignoring signs) are also less than 1.96 (tabulated values of Z at 5%). We have to accept our null hypothesis that there is no difference in Indian stock prices return before ( $\mu_1$ ) and after ( $\mu_2$ ) the entry of FIIs.

### 3.2. IMPACT OF FIIS INVESTMENT FLOWS ON STOCK PRICES VOLATILITY:

The change in stock price volatility level has been studied by comparing the variance of returns, before and after the entry of FIIs. Our null hypothesis for testing is  $\sigma_1 = \sigma_2$  and alternative hypothesis is  $\sigma_1 \neq \sigma_2$ , where  $\sigma_1$  is the variance before the announcement, and  $\sigma_2$  is the variance after the announcement of FIIs policy in India. Levene (1960) proposed the statistical test of equality of variance which has been used here for study. The Levene's test uses the average of the absolute deviations, instead of the mean square of deviations, so the avoidance of

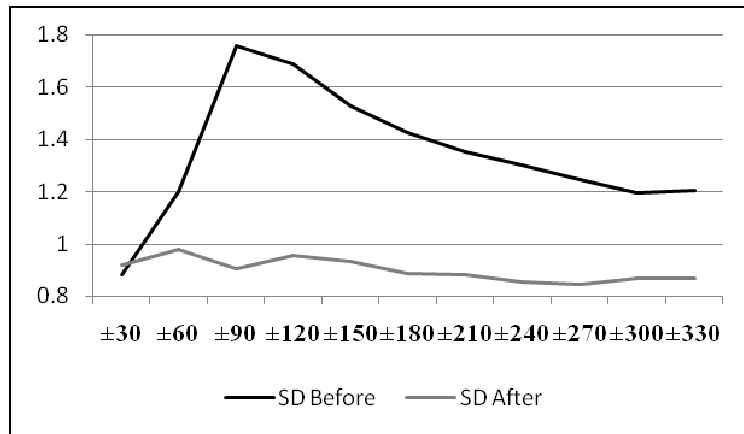
squaring makes the test criterion much less sensitive to non-normal distributions (Chukwuogor and Chiaku, 2007). Literature suggests that no assumption of normality is required while using Levene’s test. A low value of significance associated with the Levene’s test indicates that both sub samples have unequal variances and the null hypothesis is false.

The table III presents the volatility of stock prices return for various sub sample periods before and after the event day. The daily volatility for the first sub sample i.e. 30 days prior to the event day has been 0.8844, while for the 30 days after the entry of FIIs has been 0.9213. Similarly the subsequent values for 60 days and 90 days are 1.2019, 0.9773 and 1.7555, 0.9070 respectively. As it can be seen from Table III, all sub sample standard deviations after the entry of FIIs have been smaller than the corresponding counterparts before the entry of FIIs except for the 30 days case.

Days	SD Before	SD After	Levene Statistic	Significance Level
±30	0.8844	0.9213	0.017	0.896
±60	1.2019	0.9773	0.768	0.383
±90	1.7555	0.9070	15.318	0.000
±120	1.6866	0.9562	12.391	0.001
±150	1.5244	0.9312	7.868	0.005
±180	1.4259	0.8882	8.433	0.004
±210	1.3526	0.8822	8.262	0.004
±240	1.3000	0.8554	9.652	0.002
±270	1.2440	0.8442	8.205	0.004
±300	1.1971	0.8683	4.798	0.029
±330	1.2047	0.8697	5.806	0.014

*Table 3: Testing the market volatility change*

By using the Levene test, we find that the volatility changed significantly for different periods. The Levene’s statistic and its significance levels which have been presented in the table III showed that first two samples were not within acceptable region at 5% level of significance, but afterward, the values turned within acceptable region at 5% significance level. This outcome suggests that by the entry of FIIs in Indian market, the market volatility did not change for the immediate two months period. However after two months volatility reduced significantly, so the null hypothesis of  $\sigma_1 = \sigma_2$  stands rejected in the favor of  $\sigma_1 \neq \sigma_2$ .



**Figure 2:** Stock prices volatility before and after the entry of FIIs

The figure 2 here plots the mean volatility for all the sub sample periods. It can be clearly witnessed here that volatility after the passage of 30 days started declining in comparison to the same period before the entry of FIIs. These results are identical with the earlier empirical work conducted on the other emerging markets. For example, Li (2002) found that while there was no significant changes in the stock mean returns, volatility was significantly reduced three months after Taiwan opened its stock market. Bekaert et al. (1997) reveal that most countries that have experienced liberalization had reduction in volatility. However, De Santis et al. (1997) did not find any evidence about the impact of market opening on stock return volatility. Kim et al. (2000), on the other hand, found that stock returns increased immediately after market opening but fell subsequently and there was no accompanying increase in the volatility of stock returns.

#### 4. CONCLUSION

On the basis of above discussion, it can be said that while return declined reasonably after the entry of FIIs, the volatility has been reduced significantly after their entry. Besides, FIIs investment flows, there may be other reasons as well that may have some degree of influence on market volatility and return. While the FIIs investment flows and contemporaneous SENSEX, NIFTY, market capitalization and market turnover have been strongly correlated in India, the correlation between FIIs investments and market volatility and market return has been comparatively low. It means volatility in Indian market is not the function of FIIs investment flows. There may be some other reasons which induced the volatility in Indian market over the time.

**5. REFERENCES**

- Bekaert, G. and Harvey, C.R. (1997). Emerging equity market volatility. *Journal of Financial Economics*, Vol. 43, 29-77.
- Chukwuogor, Chiaku (2007). An econometric analysis of African Stock Market: Annual returns analysis, day-of-the-week effect and volatility of returns *African Journal of Accounting, Economics, Finance and Banking Research*, Vol. 1, No. 1, 26-43.
- Calvo, G.A. and Mendoza, E.G. (2000). Rational contagion and the globalization of securities markets. *Journal of International Economics*, Elsevier, Vol. 51, No.1, 79-113.
- De Santis, G. and Imrohorglu, S. (1997). Stock returns and volatility in emerging financial markets. *Journal of International Money and Finance*, Elsevier, Vol. 16, No.4, 561-579.
- Gompers, P.A. and Metrick, A. (2001). Institutional investors and equity prices, *Quarterly Journal of Economics*, Vol. 116, No. 1, 229-259.
- Gordon, J.P. and Gupta, P. (2003). Portfolio flows into India: Do domestic fundamentals matter, *IMF 2003, Working Paper No, 03/20*.
- Han, B. and Wang, Q. (2004). Institutional investment constraints and stock prices. *Dice Center for Research in Financial Economics 2004, Working Paper No, 2004-24*
- Henry, P.B. (2000). Stock market liberalization, economic reform, and emerging market equity prices. *Journal of Finance, American Finance Association*, Vol. 55, No.2, 529-564.
- Kim, E. H. and Singal, V. (2000). Stock market openings: Experience of emerging economies. *Journal of Business*, University of Chicago Press, Vol. 73, No.1, 25-66.
- Levene, H. (1960). Robust tests for equality of variances. In I.Olkin (Ed.), *Contributions to probability and statistics (pp. 278-292)*, Palo Alto, California: Stanford University Press.
- Li, Q. (2002). Market opening and stock market behaviour: Taiwan's experience. *International Journal of Business and Economics*, Vol. 1, No. 1, 9-15.
- Lin, A. and Chen, C.Y. (2006). The impact of qualified FII on Taiwan's Stock Market. *Web Journal of Chinese Management Review*, Vol.9, No.2, 1-27.
- Richards, A. (2004). Big fish in small ponds: The momentum investing and price impact of foreign investors in asian emerging equity markets. *Journal of Financial and Quantitative Analysis*, Vol. 40, No. 1.
- Tesar, L.L. and Werner, I.M. (1995). U.S. equity investment in emerging stock markets. *World Bank Economic Review*, Oxford University Press, Vol. 9, No.1, 109-29.