TOM JACOB "IMPACT OF FOREIGN INVESTMENT FLOWS ON INDIAN ECONOMY IN THE POST LIBERALISATION ERA." THESIS. RESEARCH DEPARTMENT OF COMMERCE ST THOMAS' COLLEGE (AUTONOMOUS), UNIVERSITY OF CALICUT, 2019.

Chapter 6

Impact of Foreign Investment in the Indian Capital Market

In the preceding chapter it is the comprehensive impact of foreign investment on the macroeconomic variables of Indian economy are analyzed by taking foreign investment as a whole i.e., both FDI and FPI. But this chapter is devoted to the analysis of the specific impact of foreign investment on the capital market[218] mainly because of three reasons. Firstly in the Indian economy, the capital market has great significance. It is the chest of the economy and whatever the impacts foreign investment or other sources make on the capital market will trickle down to the other parts of the economy in manifold ways. Secondly capital market is the major and most vibrant area of foreign investment in India occupying almost an average thirty six percent of the total foreign investment in India. And thirdly it is in the capital market that the danger zone of foreign investment - volatility - is mainly located.

The depth of foreign investment in the capital market of India is already presented in chapter 3 and especially in Table 3.13 and Figure 3.15. Here an attempt is made to examine how strong is the influence of this flow of foreign investment on the various aspects of the capital market of India like

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[218]Capital market also known as stock market or equity market is that part of a financial system concerned with raising capital by dealing in shares, bonds, and other long-term investments. Foreign investment in the capital market which is also known as foreign portfolio investment, is often identified as investment by Foreign Institutional Investors (FIIs).

stock return, sectoral indices return, and areas of the development of capital market viz size of the market (market capitalization), market liquidity, P.E. Ratio, reduction of transaction costs, increase of corporate governance etc. and above all how the volatility of foreign investment influence the capital market in particular and the economy in general.

6.1   Foreign Investment and Stock Return

Foreign investment has the potential to impact the stock return (stock market return or stock prices). It is in the following way that foreign investment influences the stock return. Foreign investment helps in obtaining capital at a lower cost and provides access to cheap global credit. It thus increases money supply in the country and the increased money supply leads to an excess demand for stocks and increased demand for stocks leads to an increase in the stock prices (Friedman and Schwartz 1963)[219].

Mukherjee and Naka (1995)[220] also expressed the same view in a slightly different way. According to them, a positive money supply would positively affect economic activities, and the increase in economic activity implies increase in the cash flow among the public, which is ultimately expected to raise the demand for stocks. Due to the increase in demand for stocks, the prices of stocks are likely to go up. Other studies like that of Sohail and Hussain (2009)[221] agreed with the view that a positive money supply increases stock prices and a fall in money supply reduces the stock prices. In the light of the above arguments, the impact of foreign investment on the stock return in the Indian context is studied by taking, Stock Market Return (SMR) or Sensex Return from 1995-2018 as dependent variable and variables like Exchange Rate (NEER), Inflation (WPI), Index of Industrial Production (IIP), Interest Rate (IR) and Gold Price

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[219]Friedman, M., and Schwartz, A. (1963). Money and Business Cycle. *Review of Economics and Statistics*, 45(1), 52-64.

[220]Mukherjee, T.K., and Naka, A. (1995). Dynamic Relations between Macroeconomic Variables and the Japanese Stock Market: An Application of a Vector Error Correction Model. *Journal of Financial Research*, 18(2), 223-237.

[221]Sohail, N., and Hussain, Z. (2009). Long-run and Short-run Relationship between Macroeconomic Variables and Stock Prices in Pakistan: The Case of Lahore Stock Exchange. *Pakistan Economic and Social Review*, 47(2), 183-198.

(GP) as independent variables with the help of Auto Regressive Distributed Lag (ARDL) Model.

Majority of the variables selected are macroeconomic variables and they are selected for the analysis because of the reciprocal relationship between macroeconomic variables as a whole and stock return. Capital market is highly sensitive to macroeconomic variables and it is the leading indicator of economic activity. It reflects the macroeconomic conditions and vice versa. Similarly macroeconomic variables influence capital market and predicts the stock return and current economic activities can explain stock market return as the capital market reflects macroeconomic variables.

In the same way each of the other macroeconomic variables selected for the analysis is also related to stock return. For example it is possible to see the impact of exchange rate on stock return. But the influence of exchange rate will be different in the case of exporting and importing firms. According to Fama (1981)[222], the exchange rate is a double edged weapon. A depreciation of the domestic currency improves the competitiveness of exporting companies that leads to increases in stock performance and stock return and vice versa. On the other hand an appreciation of the domestic currency will decrease the cost of imported goods, which may be beneficial for the country that has substantial trade relations with foreign market. But for exporters it will have a reverse influence. Other scholars like Kim (2003)[223] also agreed with this argument.

Similarly it is also possible to notice the impact of inflation on stock return. Inflation, which is measured through the wholesale price index influences the stock return directly through changes in the price level and indirectly through the policies designed to control it. Geske and Roll (1983)[224], Pal and Mittal (2011)[225] and Naka et al. (1998)[226] point out a significant negative relation be-

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[222]Fama, E., (1981). Stock Returns, Real Activity, Inflation and Money. *American Economic Review*, 71(4) 545-565.

[223]Kim, K. (2003). Dollar Exchange Rate and Stock Price: Evidence from Multivariate Co-integration and Error Correction Model. *Review of Financial Economics*, 12(3), 301-313.

[224]Geske, R., and Roll, R. (1983). The Fiscal and Monetary Linkage between Stock Returns and Inflation. *The Journal of Finance*, 38(1), 1-33.

[225]Pal, K., and Mittal, R. (2011). Impact of Macroeconomic Indicators on Indian Capital Market. *The Journal of Risk Finance*, 12(2), 84-97.

[226]Naka, A., Mukherjee, T., and Tufte, D. (1998). *Macroeconomic Variables and the Performance of the Indian Stock Market*. Department of Economics and Finance, Working Paper No. 15, University of New Orleans.

tween inflation and stock return. A rise in the inflation rate leads to restrictive monetary policies which would increase the interest rate and thus have a negative effect on stock market activity and stock return. Moreover the inflationary tendency would decrease the purchasing power of the people. A high rate of inflation increases the cost of living and there will be shift of resources from stock market instruments to consumables. This leads to reduction in demand for market instruments, which tends to reduce the volume of trading. Another reason why inflation negatively impact stock price is that the investor shift their portfolio towards real assets if the expected inflation becomes remarkably high. Moreover high rate of inflation can cause uncertainty about future price and trigger precautionary saving. Higher precautionary saving will impact consumption and hence corporate sales growth. In short stock return are generally negatively influenced by inflation.

Another macroeconomic variable which impacts stock return is interest rate. A high interest rate will cause increase in the cost of capital (borrowing) and it will lead to increase of corporate costs and the consequent fall of profits which will lead to the fall of stock price. Several studies found that interest rate and stock price are negatively related (Gjerde and Saettem 1999)[227], (Alam and Uddin 2009)[228].

Similarly the macroeconomic variable Index of Industrial Production (IIP) which measures economic growth, affects stock prices by way of its influence on expected future cash flows. The IIP and stock prices are positively related because an increase in the IIP results in an increase in production of industrial sector and leading to an increase in the profit of industries and corporations and thereby the increase of stock price. Besides, a strong Index of Industrial Production by exhibiting the strength of the economy will lead to the increase of foreign investment in the capital market which in turn will increase stock return. Again an increase in the production of industrial sectors implies increases in the profit of the industries which implies increase of stock return (Srivastava

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[227]Gjerde, O., and Saettem, F. (1999). Causal Relations among Stock Returns and Macroeconomic Variables in a Small Open Economy. *Journal of International Financial Markets Institutions and Money*, 9(1), 61-74.

[228]Alam, M.M., and Uddin, M.G.S. (2009). Relationship between Interest rate and Stock price: Empirical Evidence from Developed and Developing Countries. *International Journal of Business and Management*, 4(3), 43-51.

2010)[229], (Levin and Zervos 1996)[230].

Though not purely a macroeconomic variable but a variable which can highly influence other macroeconomic variables and stock return is the gold price. Gold price influences the stock return in the following way. When other investments are risky, people usually tend to invest in gold and when money is investing in gold, the price of gold will increase but when other investments become safe, people disinvest from gold and enter into other investments, resulting in the decline in demand for gold, thereby decreasing the price of gold. Therefore, a negative relationship exists between gold prices and stock prices. Ratnapakron and Sharma (2007)[231] found that the gold prices and the stock or bond prices are negatively correlated which means that when gold prices are rising, the stocks or bond markets are on the decline.

These expected relationship between the above variables and the stock return are presented in Table 6.1.

Table 6.1: Expected Relationship between Macroeconomic Variables and Stock Return

Dependent Variable	Independent Variables	Expected Relationship
SMR	FII	Positively related
	NEER	Positively or Negatively related
	IR	Negatively related
	WPI	Negatively related
	IIP	Positively related
	GP	Negatively related

6.1.1 Empirical Model

The model of macroeconomic determinants of Stock Market Return (SMR) in India is formulated with the above mentioned six independent variables - Foreign Institutional Investment (FII), Exchange Rate (NEER), Wholesale Price

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[229]Srivastava, A. (2010). Relevance of Macro Economic Factors for the Indian Stock Market. *Decision*, 37(3), 69-89.

[230]Levine, R., and Zervos, S. (1996). Stock Market Development and Long-run Growth. *World Bank Economic Review*, 10(2), 323-339.

[231]Ratanapakorn, O., and Sharma, S.C. (2007). Dynamic Analysis between the US Stock Returns and the Macroeconomic Variables. *Applied Financial Economics*, 17(5), 369-377.

Index (WPI), Index of Industrial Production (IIP), Interest Rate (IR) and Gold Price (GP) on the basis of this the following linear equation model is developed.

$$SMR= f(FII, NEER, IR, WPI, IIP, GP, \epsilon)$$

where,

SMR = Stock Market Return

FII = Foreign Institutional Investments

$NEER$ = Nominal Effective Exchange Rate

IR = Interest Rate

WPI = Wholesale Price Index

IIP = Index of Industrial Production

GP = Gold Price

ϵ = Error Term

6.1.2 Stationarity Test

When the stationarity of the time series is checked with the help of the Augmented Dickey-Fuller Unit Root Test, it is found that Stock Market Return (SMR) or Sensex Return, Foreign Institutional Investors (FIIs) and Interest Rate (IR) are stationary at level i.e., I(0). At the same time Wholesale Price Index (WPI), Index of Industrial Production (IIP), Gold Price (GP) and Exchange Rate (NEER) are stationary at first difference i.e., I(1) as shown in Table 6.2. Since some variables are at I(0) and others at I(1). ARDL model is used to analyse the various determinants of stock return.

6.1.3 ARDL Model

The long run relationship and dynamic interaction of stock market return with macroeconomic variables, are estimated by the Auto Regressive Distributed Lag (ARDL) Model as shown in Table 6.3 and the following equation is developed on its basis.

Table 6.2: Augmented Dickey-Fuller Unit Root Test for Determinants of Stock Return

Variables	Level						I Difference						Result
	Intercept		Intercept & Trend		None		Intercept		Intercept & Trend		None		
	t-stat	p-value	t-stat	p-value	t- stat	p-value	t- stat	p-value	t- stat	p-value	t- stat	p-value	Stationarity
SMR	-12.82227	0.001	-12.80107	0.001	-12.56661	0.001	-12.34971	0.001	-12.32396	0.001	-12.37415	0.001	I(0)
FII	-10.52438	0.001	-11.18362	0.001	-5.381466	0.001	-13.25486	0.001	-13.22712	0.001	-13.28264	0.001	I(0)
NEER	-1.244568	0.6555	-3.384999	0.0556	-1.994339	0.0444	-12.90082	0.001	-12.88259	0.0	-12.72284	0.001	I(1)
WPI	0.580273	0.989	-1.963988	-1.963988	4.38	1	-9.446943	0.001	-9.497427	0.001	-8.02	0.001	I(1)
IR	-5.863164	0.001	-6.046713	0.001	-1.636045	0.0961	-14.939	0.001	-14.918	0.001	-14.963	0.001	I(0)
IIP	-0.400662	0.9057	-1.713438	0.7427	2.228	0.994	-3.954859	0.002	-3.945539	0.0117	-2.83	0.004	I(1)
GP	0.51	0.9868	-1.803	0.7007	2.3408	0.9956	14.903	0.001	-14.9747	0.001	14.592	0.001	I(1)

Source: Compiled by the Researcher

$$
\begin{aligned}
SMR = {} & \alpha + \beta_1 SMR_{t-1} + \beta_2 FII_t + \beta_3 FII_{t-1} + \beta_4 FII_{t-2} + \\
& \beta_5 NEER_t + \beta_6 NEER_{t-1} + \beta_7 IR_t + \beta_8 IR_{t-1} + \beta_9 IR_{t-2} + \\
& \beta_{10} IR_{t-3} + \beta_{11} IR_{t-4} + \beta_{12} WPI_t + \beta_{13} WPI_{t-1} + \beta_{14} WPI_{t-2} + \\
& \beta_{15} WPI_{t-3} + \beta_{16} WPI_{t-4} + \beta_{17} IIP_t + \beta_{18} GP_t + C
\end{aligned} \tag{6.1}
$$

Where $t-1$ is variables' lagged value by one period and $t-2$ is variables' lagged value by two period and $t-3$ is variables' lagged value by three period.

6.1.4 Optimum Lag Length Selection Criteria

Akaike Information Criterion (AIC) is used to choose the optimum lag length of the model and it shows the 20 best models with lowest AIC values. Therefore the optimal lag length is ARDL (1, 2, 1, 4, 4, 0, and 0) as shown in Figure 6.1.

6.1.5 ARDL Bound Test Approach for Co-integration

ARDL Bound Test is used to investigate the co-integration or long run relationship between macroeconomic variables and stock return. It can be seen from the Table 6.4 that computed F-statistic value is 25 which is more than the upper bound critical value at 5 percent level. It indicates that there is a long run relationship or co-integration between variables of this model. i.e., a long-run co-integration or relationship between stock market return and variables like

Table 6.3: ARDL Model for Determinants of Stock Market Return

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
SMR(-1)	0.201924	0.060817	3.320207	0.001
FII	0.032152	0.005229	6.149051	0.001
FII(-1)	0.004222	0.005689	0.742097	0.4588
FII(-2)	-0.012232	0.005068	-2.413515	0.0165
NEER	0.522024	0.222325	2.348026	0.0197
NEER(-1)	-0.568133	0.221766	-2.561861	0.011
IR	-0.101583	0.135449	-0.749973	0.454
IR(-1)	-0.013365	0.139234	-0.095987	0.9236
IR(-2)	-0.115902	0.136251	-0.850654	0.3958
IR(-3)	0.361646	0.135147	2.675937	0.008
IR(-4)	-0.259441	0.12718	-2.039956	0.0424
WPI	-0.980165	0.571065	-1.71638	0.0874
WPI(-1)	0.025329	0.597166	0.042415	0.9662
WPI(-2)	-0.598829	0.58985	-1.015223	0.311
WPI(-3)	1.63097	0.590135	2.763723	0.0062
WPI(-4)	-1.547871	0.56155	-2.756427	0.0063
IIP	-0.017445	0.021791	-0.800592	0.4242
GP	-7.33E-005	0.000109	-0.669904	0.5036
C	9.236356	6.547078	1.41076	0.1596
R-squared	0.33965	**Mean dependent var**		1.018919
Adjusted R-squared	0.290124	**S.D. dependent var**		6.127300
S.E. of regression	5.162504	**Akaike info criterion**		6.191250
Sum squared resid	6396.348	**Schwarz criterion**		6.452175
Log likelihood	-782.7668	**Hannan-Quinn criter.**		6.296157
F-statistic	6.857982	**Durbin-Watson stat**		2.040443
Prob(F-statistic)	0.001			
Dependant Variable: SMR				

Note: p-values and any subsequent tests do not account for model selection.

economic growth, inflation, exchange rate, interest rate, foreign institutional investment and gold price.

The long run coefficient results illustrated in Table 6.5 indicates that the coefficients of Foreign Institution Investors (FIIs) are statistically significant and have a positive impact on the capital market in India. Likewise, the Wholesale Price Index (WPI) is found as another extremely important variable to the stock market performance and its impact is found adverse. On the other side, it
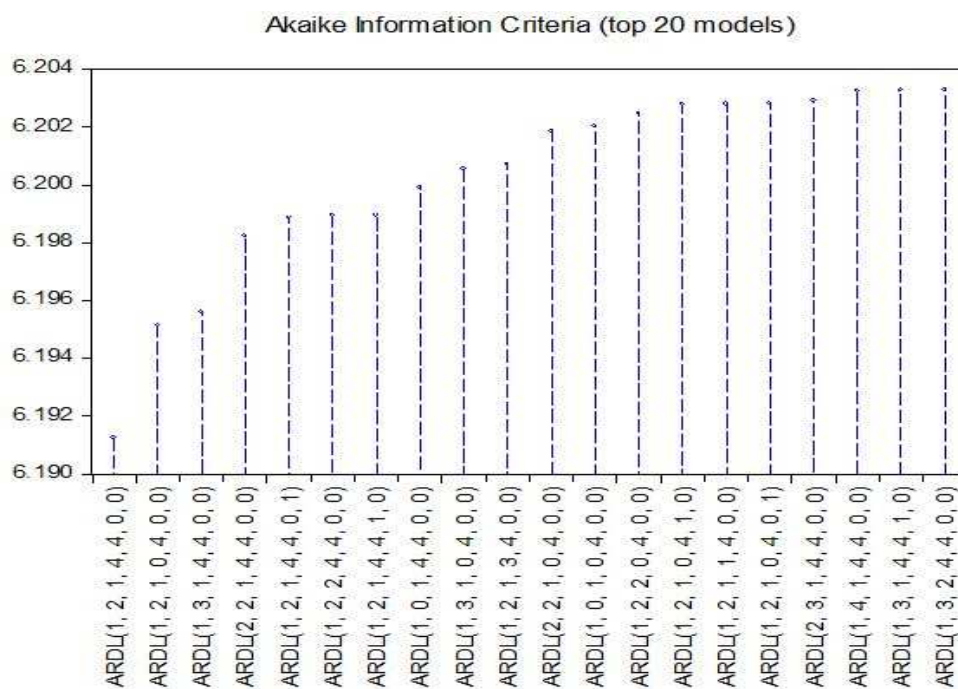
Figure 6.1: Akaike Information Criterion (AIC)

is found that the impact of Exchange Rate (NEER), Interest Rate (IR), Index of Industrial Production (IIP) and Gold Price (GP) are statistically insignificant for the performance of Stock Market Return (SMR) in India. This finding agrees with the finding of Ibrahim (2003)[232], Chaudhuri and Smiles (2004)[233], and Buyuksalvarci (2010)[234].

6.1.6 Short Run Coefficient and Error Correction Term

The Short Run Coefficient and Error Correction Term (ECT) of the macroeconomic variables on Stock Market Return (SMR) are presented in Table 6.5. It shows that the short run coefficient of Inflation (WPI), Exchange Rate (NEER), Interest Rate (IR) and Foreign Institutional Investment (FII) are statistically significant but the coefficient of Economic Growth (IIP) and Gold Price (GP) are seen statistically insignificant. Similarly the Coefficient of Error Correc-

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[232]Ibrahim, H., and Aziz, H. (2003). Macroeconomic Variables and the Malaysian Equity Market: A View Through Rolling Subsamples. *Journal of Economic Studies*, 30(1), 6-27.

[233]Chaudhuri, K., and Smiles, S. (2004). Stock Market and Aggregate Economic Activity: Evidence from Australia. *Applied Financial Economics*, 14(2), 121-129.

[234]Buyuksalvarci, A. (2010). The Effects of Macroeconomic Variables on Stock Returns: Evidence from Turkey. *European Journal of Social Sciences*, 14(3), 404-416.

Table 6.4: ARDL Bound Test for Determinants of Stock Return

| Test Statistic	Value		k	
F-statistic	25.02986		6	
Critical Value Bounds:				
Significance	**I(0) Bound**		**I(1) Bound**	
10%	2.12		3.23	
5%	2.45		3.61	
2.50%	2.75		3.99	
1%	3.15		4.43	
Null Hypothesis: No long-run relationships exist				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(FII)	0.031728	0.005239	6.055796	0.001
D(FII(-1))	0.012251	0.005076	2.413465	0.0166
D(NEER)	0.535477	0.221126	2.421586	0.0162
D(IR)	-0.104658	0.136009	-0.769493	0.4424
D(IR(-1))	0.013124	0.158944	0.082568	0.9343
D(IR(-2))	-0.106801	0.147155	-0.725773	0.4687
D(IR(-3))	0.258668	0.127627	2.026746	0.0438
D(WPI)	-0.95031	0.578539	-1.642604	0.1018
D(WPI(-1))	0.551666	0.716093	0.770384	0.4418
D(WPI(-2))	-0.095869	0.636132	-0.150706	0.8803
D(WPI(-3))	1.574406	0.560552	2.808671	0.0054
C	9.094066	6.633704	1.370888	0.1717
FII(-1)	0.024046	0.007397	3.250826	0.0013
NEER(-1)	-0.045208	0.052321	-0.864051	0.3884
IR(-1)	-0.127341	0.143663	-0.88639	0.3763
WPI(-1)	-1.448329	0.865781	-1.672859	0.0957
IIP(-1)	-0.017448	0.022051	-0.791244	0.4296
GP(-1)	-7.12E-005	0.000111	-0.64312	0.5208
SMR(-1)	-0.799092	0.060981	-13.1039	0.001
R-squared	0.572644	**Mean dependent var**		0.018571
Adjusted R-squared	0.540593	**S.D. dependent var**		7.618765
S.E. of regression	5.163969	**Akaike info criterion**		6.191817
Sum squared resid	6399.977	**Schwarz criterion**		6.452742
Log likelihood	-782.8403	**Hannan-Quinn criter.**		6.296724
F-statistic	17.86627	**Durbin-Watson stat**		2.039316
Prob(F-statistic)	0.001			
Dependent Variable: D(SMR)				

Source: Compiled by the Researcher

Table 6.5: Estimated Co-Integrating Term and Long-Run Coefficients Using ARDL Approach for Determinants of Stock Return

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(FII)	0.032152	0.005229	6.149051	0.000
D(FII(-1))	0.012232	0.005068	2.413515	0.0165
D(NEER)	0.522024	0.222325	2.348026	0.0197
D(IR)	-0.101583	0.135449	-0.749973	0.454
D(IR(-1))	0.115902	0.136251	0.850654	0.3958
D(IR(-2))	-0.361646	0.135147	-2.675937	0.008
D(IR(-3))	0.259441	0.12718	2.039956	0.0424
D(WPI)	-0.980165	0.571065	-1.71638	0.0874
D(WPI(-1))	0.598829	0.58985	1.015223	0.311
D(WPI(-2))	-1.63097	0.590135	-2.763723	0.0062
D(WPI(-3))	1.547871	0.56155	2.756427	0.0063
D(IIP)	-0.017445	0.021791	-0.800592	0.4242
D(GP)	-0.000073	0.000109	-0.669904	0.5036
CointEq(-1)	-0.798076	0.060817	-13.122659	0.000***
Cointeq = SRM - (0.0303*FIIs - 0.0578*NEER - 0.1612*IR - 1.8426*WPI - 0.0219 *IIP -0.0001*GP + 11.5733)				
Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
FII	0.030251	0.008696	3.478542	0.0006***
NEER	-0.057776	0.064499	-0.895762	0.3713
IR	-0.161194	0.178773	-0.901671	0.3681
WPI	-1.84264	1.087481	-1.694411	0.0915*
IIP	-0.021859	0.027256	-0.802007	0.4233
GP	-0.000092	0.000137	-0.671491	0.5026
C	11.573277	8.157512	1.418726	0.1573
Dependant Variable: SRM				

* Significant at 10%   ***Significant at 1%

tion Term of the model is also found significant and negative. The estimated equilibrium of Error Correction Term is -0.7980 with proper sign (negative) and highly significant at 1%. The high absolute value of coefficient of Error Correction Term indicates the very high speed of adjustment to equilibrium following short run shock, the 0.79% of the disequilibrium caused by the previous months' shock converges back to long-run equilibrium in the current month. It is an evidence of co-integration (long-run relationship) among all the variables in the model.

This relationship between foreign investment and stock return is also reflected in the relation between foreign investment (FIIs) and the return of the two indices of the Indian capital market[235] i.e., Sensex and Nifty.
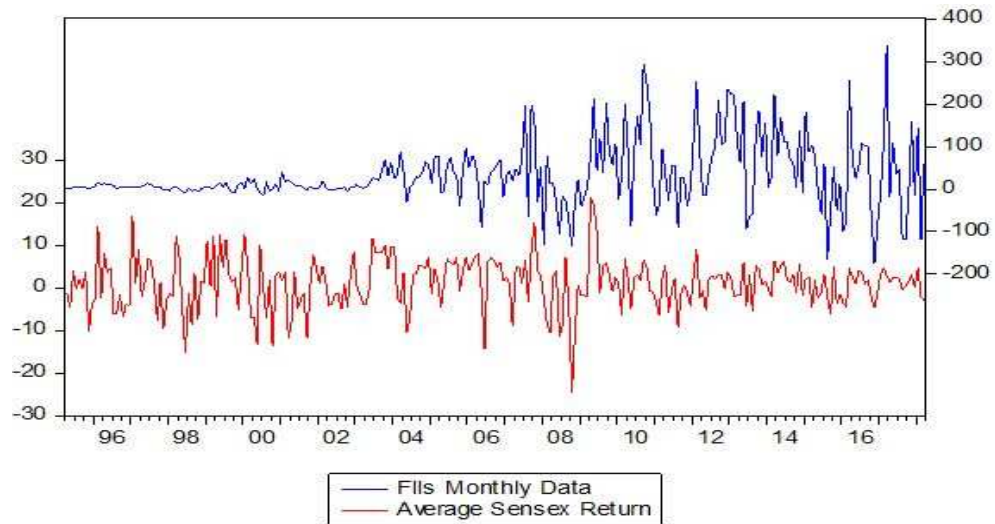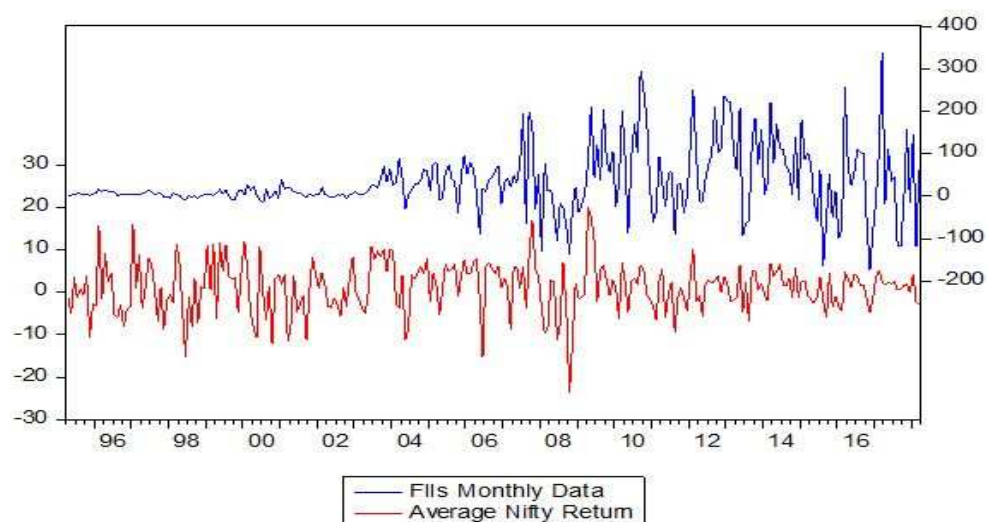

Figure 6.2: Foreign Institutional Investment and BSE Sensex Return

The relationship between foreign institutional investment and the Sensex Return is demonstrated in Figure 6.2. It shows the increase of the Sensex return in accordance with the increase of foreign institutional investment implying the positive correlation between foreign investment and Sensex Return in India (Appendix D.1). Same relation exist between FIIs investment and Nifty Return also as can be seen in Figure 6.3. It shows the increase of Nifty Return in accordance with the increase of foreign institutional investment implying the positive correlation between foreign institutional investment and Nifty Return (Appendix D.2).

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[235]Most of the share trading in the Indian equity market takes place through two stock exchanges i.e., Bombay Stock Exchange of India (BSE) and National Stock Exchange of India (NSE). The index of the former is known as Sensex and the index of the later as Nifty.

Figure 6.3: Foreign Institutional Investment and NSE Nifty Return

6.2 Impact of Foreign Investment on the Different Sectors of the Indian Capital Market

The impact of foreign investment on the capital market is further illustrated by analyzing its impact on the different sectors of her capital market. In order to equip the investors with more comprehensive and reliable information, the BSE has launched various sectorial indices[236], which contemplate the functioning of that particular sector. To construct indices, the scrips of the companies working in the particular sector will be chosen on the basis of several elements like trading frequency, market capitalization etc. As these indices give a picture of each sector, it is decided to analyze the sectorial indices by taking the 20 sector indices listed on Bombay Stock Exchange and monthly data for these indices for the study period (2007-2018) which has been obtained from the official website of Bombay Stock Exchange.

Table 6.6 reveals the bullish and bearish sectors of the Indian capital market i.e., it reveals which sector is likely to give the best or maximum return and which sector gives the minimum return. Accordingly the highest mean return is described by the Bank Index (1.5 per month) followed by FMCG and Finance while the minimum mean return is reported by Telecom and Reality sectors

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[236]The Market Sector Indices summarize the performance of stocks grouped by specific market sectors. Sectoral indices of the Indian capital market are given in Appendix D.3.

(0.05 per month). Similarly Reality sector is found as the most volatile, most complex and most dynamic sector while FMCG and Health sectors are the least volatile during the entire period.

Table 6.6: Descriptive Statistics of Sectoral Indices

Variables	Mean	Median	Maximum	Minimum	Std. Devi	Skewness	Kurtosis	J B Coefficient	P - Value
Bank	1.54	0.92	45.26	-23.69	9.91	0.67	5.8	48.15	0.0
Basic Materials	1.18	0.57	42.27	-35.88	10.02	0.12	5.84	40.32	0.0
Capital Good	0.97	-0.37	50.73	-33.67	10.66	0.85	7.13	99.46	0.0
CDGS	1.09	1.3	42.49	-29.87	8.48	0.3	8.16	133.98	0.0
Consumer Durable	1.68	1.6	56.92	-29.23	10.29	0.772	9.98	253.56	0.0
Energy	0.84	1.16	28.91	-31.76	8.02	-0.067	5.62	34.12	0.0
Finance	1.48	1.11	44.4	-23.63	9.46	0.6	6.21	58.69	0.0
FMCG	1.49	1.23	21.01	-16.7	5.09	-0.125	5.15	23.38	0.0
Health Care	1.40	2.29	15.58	-24.33	5.92	-1.01	5.98	64.28	0.0
Industrials	1.02	1.15	52.18	-35.13	10.2	0.79	8.47	161.5	0.0
IT	0.89	0.91	20.53	-21.97	7.52	-0.1	3.55	1.75	0.415
Metal	0.87	-0.74	57.98	-40.3	11.98	0.64	7.23	97.24	0.0
Oil & Gas	0.89	1.02	28.11	-31.45	7.98	-0.12	5.4	29.03	0.0
Power	0.45	0.39	36.37	-29.94	9.25	0.61	6.23	59.25	0.0
PSU	0.62	0.22	43.72	-26.91	8.72	0.82	7.98	136.36	0.0
Reality	0.05	-1.76	79.3	-43.67	15.91	1.11	7.71	134.97	0.0
Auto	1.55	1.9	31.79	-26.92	7.95	0.02	5.44	29.55	0.0
Teck	0.58	0.81	17.11	-18.28	6.56	-0.17	3.74	3.38	0.183
Telecom	0.07	0.28	22.1	-31.38	8.75	-0.36	4.01	7.64	0.021
Utilities	0.76	-0.19	33.82	-28.64	9.19	0.45	5.33	31.19	0.0

Source: Compiled by the Researcher

6.2.1 Foreign Investment and Sectoral Indices Performance

There is a close relationship between foreign institutional investors and the performance of the different sectors of the Indian capital market. The empirical analysis clearly shows that there exist a direct relationship between FIIs and stock market indices indicating that FIIs and the return from different sectors of the capital market will move in the same direction. It implies that the FIIs have a substantial impact on the performance of the stock market indices and the existense of a direct relationship between them.

As per the Regression Analysis shown in Table 6.7 all sector specific indices have pointed toward significant relationship with Foreign Institutional Investors at varying degree. It is found that Banking Sector has the highest R-square value, where the FIIs are more focused. It is also learnt that they are least concentrated on the Information Technology Sector.

Table 6.7: Regression Analysis of FIIs Impact on Sectoral Indices Performance

Indices	R-Square	Coefficient	Std.Error	t-Static	Sig.	BPG Test	DW Test	BG Serial Correlation
Bank	0.330061	0.000582	7.66E-005	7.592281	0.0	0.1446	1.755397	0.1446
Basic Materials	0.317075	0.000576	7.82E-005	7.370342	0.0	0.9271	1.487367	0.0055
Capital Good	0.290295	0.000587	8.49E-005	6.917885	0.0	0.2372	1.572645	0.0698
CDGS	0.32381	0.000493	6.59E-005	7.485211	0.0	0.9168	1.641576	0.1312
Consumer Durable	0.243114	0.000518	8.45E-005	6.130312	0.0	0.9743	1.698504	0.2567
Energy	0.241464	0.000403	6.60E-005	6.102831	0.0	0.4683	1.685989	0.1735
Finance	0.332376	0.000557	7.30E-005	7.632055	0.0	0.4735	1.650147	0.0813
FMCG	0.160443	0.000208	4.41E-005	4.728556	0.0	0.2925	2.16598	0.1149
Health Care	0.189286	0.000263	5.04E-005	5.226591	0.0	0.134	2.1486	0.5451
Industrials	0.32148	0.000591	7.94E-005	7.445404	0.0	0.33	1.489637	0.0231
IT	0.119055	0.000265	6.67E-005	3.97643	0.0	0.4015	1.869415	0.5057
Metal	0.242585	0.000603	9.85E-005	6.121501	0.0	0.6886	1.570148	0.0023
Oil & Gas	0.23952	0.000399	6.57E-005	6.070436	0.0	0.3971	1.719815	0.1969
Power	0.266728	0.000488	7.48E-005	6.523719	0.0	0.4702	1.578462	0.072
PSU	0.266863	0.00046	7.05E-005	6.525969	0.0	0.4758	1.842882	0.5801
Reality	0.268517	0.000842	0.000129	6.553556	0.0	0.4561	1.793375	0.5297
Auto	0.31065	0.000453	6.23E-005	7.261211	0.0	0.838	1.751254	0.1618
Teck	0.223124	0.000317	5.47E-005	5.79683	0.0	0.4811	1.804246	0.5641
Telecom	0.232037	0.00043	7.24E-005	5.945679	0.0	0.9134	2.177008	0.618
Utilities	0.220705	0.000441	7.66E-005	5.756358	0.0	0.7506	1.58634	0.0765

Source: Compiled by the Researcher

6.3 Impact of Foreign Investment in the Development of the Indian Capital Market

A developed capital market is one which has high liquidity, huge volume of business (market capitalization), high Price Earnings Ratio, large number of listed companies, minimum transaction costs, good corporate governance etc.

(Pagano 1993)[237], (Demirguc-Kunt and Levine 1996)[238], (Levine and Zervos 1998)[239] and (Beck et al. 1999)[240]. As per this criteria it can be seen that Indian capital market is a developed capital market. The following analysis substantiates the role of foreign investment in this development.

6.3.1 Liquidity of the Indian Capital Market

Liquidity[241], the easiness to convert stock to cash, is an important indicator of stock market development because only in a developed capital market that stocks can be rapidly sold and converted into cash with little impact on the stock price. It is found that there is a positive correlation between FIIs investment and turnover of the Indian capital market (Appendix D.4). It is seen that when foriegn institutional investment increases turnover of the Indian capital market also increases and vice versa. Figure 6.4 also demonstrates that foriegn institutional investment are able to create an upward movement in Indian stock market liquidity.

The impact of FIIs on the liquidity of the Indian capital market is tested with the help of Granger Causality Test taking stock market turnover as the dependent variable and foriegn institutional investment flows as the independent variable.

6.3.1.1 Empirical Model

A linear equation model is formulated on the basis of the relationship between stock market turnover and FII flows in the following way.

$$TO = f(FII)$$

[237]Pagano, M. (1993). Financial Markets and Growth: An Overview. *European Economic Review*, 37(2), 613-622.

[238]Demirgue-Kunt, Asli and Ross Levine (1996). Stock Market Development and Financial Intermediation; Stylized Facts. *The World Bank Economic Review*, 10(2), 291-321.

[239]Levine, R., and Zervos, S. (1998). Stock Markets, Banks and Economic Growth. *The American Economic Review*, 88(3), 537-558.

[240]Beck, T., Demirguc-Kunt, A., and Levine, R. (1999). *A New Database on Financial Development and Structure*. World Bank Working Paper No. 2146, World Bank.

[241]Liquidity of the capital market is usually measured in terms of the turnover of the capital market.
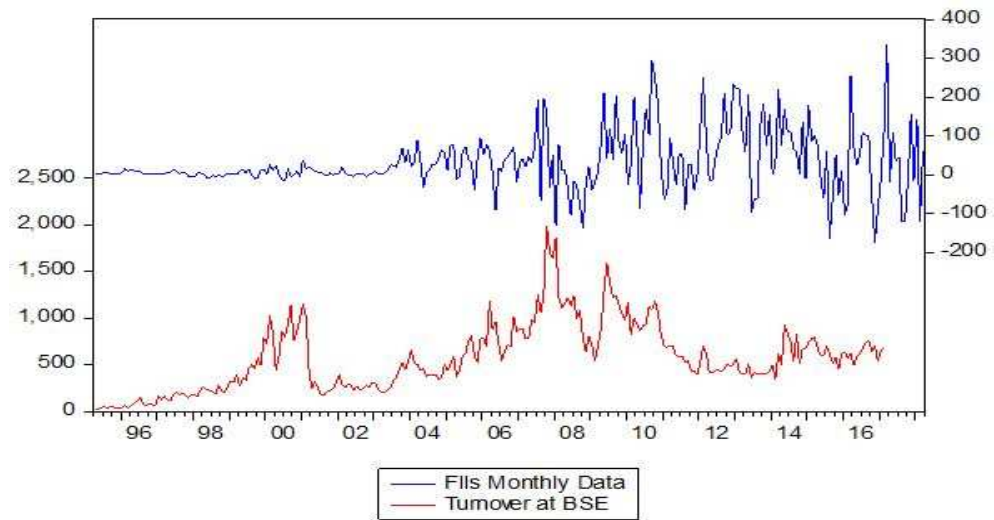
Figure 6.4: Relationship between FIIs Investment and Market Liquidity

where,

TO = Stock Market Turnover

FII = Foreign Institutional Investment

6.3.1.2 Optimum Lag Length Selection Criteria

In this empirical test the optimal lag is selected on the basis of the minimum value of AIC, according to which the lower the value of AIC, better the model. It is found that, as can be seen in the Table 6.8 the optimum lag length of the model is 2.

6.3.1.3 Granger Causality Test

As per the Granger Causality Test, as shown in Table 6.9, foreign institutional investment have significant positive impact on market liquidity. (At the same time it is found that market liquidity have no significant impact on the flows of foreign institutional investment to the Indian capital market.)

Table 6.8: Lag Order Selection Criteria of the Liquidity of the Indian Capital Market

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-3305.442	NA	6.32e+08	25.94072	25.96850	25.95190
1	-3049.905	505.0616	87936954	23.96788	24.05121*	24.00140
2	-3040.408	18.62117	84227029*	23.92477*	24.06364	23.98063*
3	-3038.201	4.292404	85421505	23.93883	24.13326	24.01704
4	-3036.837	2.632145	87208494	23.95951	24.20948	24.06006
5	-3030.515	12.09903*	85638638	23.94129	24.24681	24.06419
6	-3028.07	4.640162	86695734	23.95349	24.31456	24.09873
7	-3025.221	5.364187	87489734	23.96251	24.37913	24.13010
8	-3024.121	2.052086	89514083	23.98526	24.45743	24.17519

* indicates lag order selected by the criterion

LR: Sequential Modified LR Test Statistic (each test at 5% level)

FPE: Final Prediction Error

AIC: Akaike Information Criterion

SC: Schwarz Information Criterion

HQ: Hannan- Quinn Information Criterion

**Table 6.9:** FIIs Investment and Liquidity of the Capital Market - Granger Causality Test

Null Hypothesis:	F-Statistic	Prob.
FIIs does not Granger Cause Turnover (BSE)	5.90457	0.0031***
Turnover (BSE) does not Granger Cause FIIs	1.35623	0.2595

*** Significant at 1%

6.3.2 Foreign Investment and Market Capitalization

Market capitalization[242] i.e., size of the market is another parameter or component of stock market development. The Figure 6.5 depicts the basic trend and progress of market capitalization and foreign investment in the Indian capital market. It shows that there is a positive relationship between the two as the increase in FII was followed by market capitalization (Appendix D.5).

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[242]Market capitalization is the aggregate valuation of the company based on its current share price and the total number of outstanding stocks. It is calculated by multiplying the current market price of the company's share with the total outstanding shares of the company.
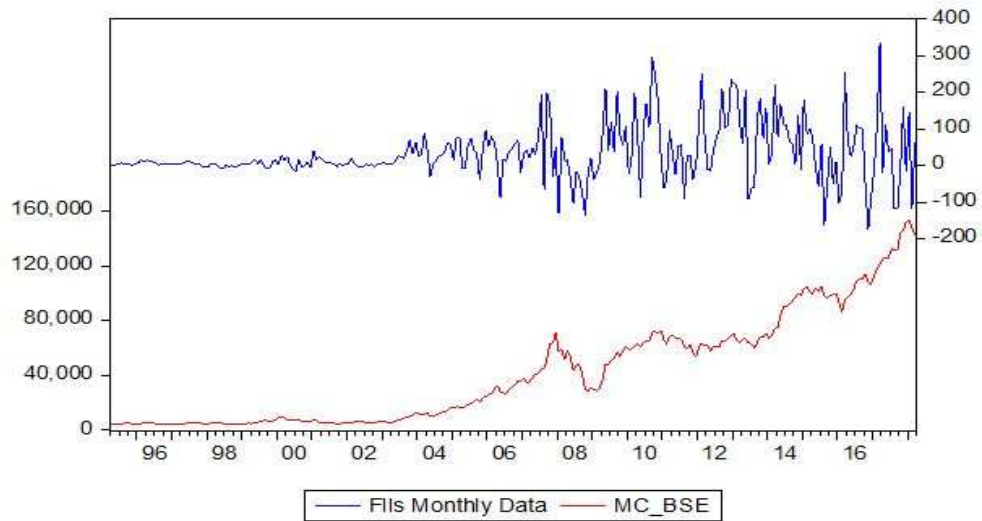
Figure 6.5: Relationship between FII and Market Capitalization

6.3.2.1 Impact of Foreign Investment on the Different Types of Companies in India

On the basis of the market capitalization Indian companies are classified into three - large cap companies [243], mid cap companies[244] and small cap companies[245]. As noted in the Table 6.10 the highest mean return is seen in the large cap companies followed by mid cap companies and the minimum mean return is reported by small cap companies. That is during the period under study the large cap companies showed the highest return (average return) i.e., 1.25 percent per month and small cap companies showed the lowest return i.e., 1.05 percent per month. Similarly the volatility in terms of standard deviation is also found highest in small cap companies whereas large cap companies showed the least volatility during the entire period.

Table 6.11 shows that all the three types of companies in India have signifi-

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[243]Large Cap Companies are big and well-established companies. Most of the large cap companies are leaders in their sector and have a huge market presence. Majority of the large cap companies are listed in Sensex 30 and Nifty 50. Since these companies have very large capitalization they can survive in adverse economic conditions.

[244]Mid Cap Companies represent mid-sized companies that are relatively more risky than large cap as investment options, yet they are not considered as risky as small cap companies. These companies have a potential to become a large cap in few years and have enough finance to survive harsh economic conditions.

[245]Small Cap Companies have small market capitalization and usually include the start-ups or companies in the early stage of development. Small cap stocks are potentially big gainers as they are yet to be discovered within the sector. However, the risk level is high while investing in small cap companies.

Table 6.10: Descriptive Statistics of Companies Based on Market Capitalization

Variables	Mean	Median	Maximum	Minimum	Std. Devi	Skewness	Kurtosis	J B Coefficient	P - Value
large cap	1.25	0.73	29.11	-25.18	6.8	0.04	6.19	50.6	0.0
mid cap	1.12	2.48	43.9	-33.3	8.6	0.2	8.85	170.9	0.0
small cap	1.05	2.04	51.91	-32.49	9.9	0.7	8.92	183.65	0.0

Source: Compiled by the Researcher

Table 6.11: Regression Analysis of the Impact of FII on Large Cap, Mid Cap and Small Cap Companies

Indices	R-Square	Coefficient	Std.Error	t-Static	Sig.	BPG Test	DW Test	BG Serial Correlation
large cap	0.371	4.00E-004	5.16E-005	8.311274	0.0	0.9459	1.676788	0.2104
mid cap	0.334	5.00E-004	6.68E-005	7.65394	0.0	0.9319	1.46458	0.0141
small cap	0.273	5.00E-004	7.98E-005	6.62281	0.0	0.8939	1.504396	0.0249

*Source: Compiled by the Researcher*

cant relationship with foreign institutional investment but with varying grade. As the highest R-square value is found in large cap companies and the lowest R-square value in small cap companies, it follows that FIIs are more focused on the large cap and least concentrated on the small cap companies.

6.3.3   Price Earnings Ratio (P.E. Ratio)

The P.E. Ratio[246] the tool used to estimate the fair value of the capital market and the most widely used financial ratio analysis for long term investment, is also found impacted by foreign institutional investment and there is a positive relationship between foreign institutional investment and P.E. Ratio of the Indian capital market (Appendix D.6).

The Figure 6.6 illustrates that an increase in the foreign institutional investment leads to an increase of P.E. Ratio. This relationship between foreign investment and P.E. Ratio is tested with the help of the Granger Causality Test and it further substantiates the impact of foreign institutional investment on P.E. Ratio.

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[246]P.E. Ratio is used to evaluate how expensive or cheap, the stock market/stock may be at any given time. Price to Earnings Ratio = (Price per Share) / (Earnings per Share).
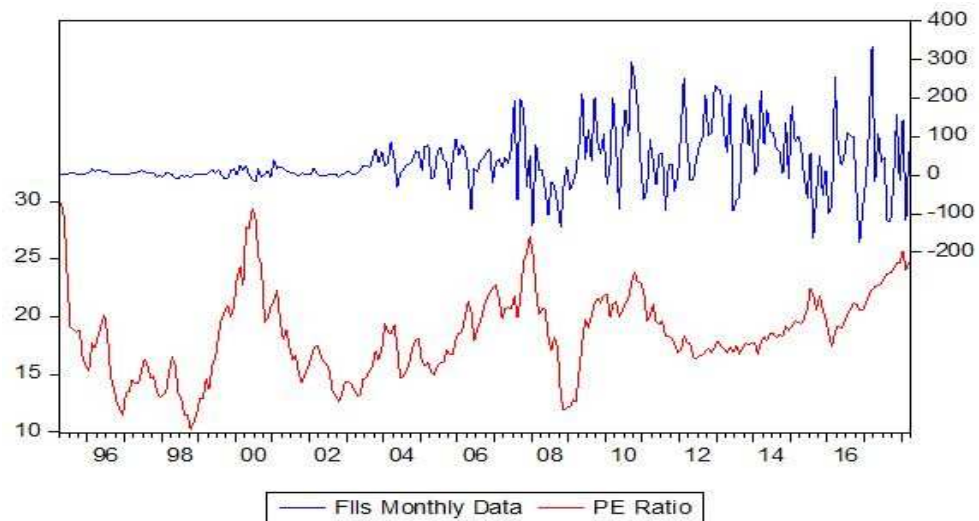
Figure 6.6: Relationship between FIIs and P.E. Ratio

6.3.3.1 Empirical Model

The Granger Causality Test is conducted on the basis of the following linear equation.

$$P.E.Ratio = f(FII)$$

where,

P.E. Ratio = Price Earnings Ratio

FII = Foreign Institutional Investment

6.3.3.2 Optimum Lag Length Selection Criteria

As per the AIC criterion since the lower the value of AIC, better the model, the optimum lag length value is found as 2 as seen in Table 6.12.

6.3.3.3 Granger Causality Test

The result of the Granger Causality Test is given in Table 6.13 and it shows that the foreign institutional investment have significant positive impact on the Price Earnings. (Though the Price Earnings of the Sensex thirty companies

Table 6.12: Lag Order Selection Criteria of Foreign Investment and P.E. Ratio

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-2125.337	NA	60429.96	16.68499	16.71277	16.69617
1	-1818.765	605.9309	5631.477	14.31188	14.39520	14.34540
2	-1805.78	25.45946*	5248.353*	14.24141*	14.38029*	14.29727*
3	-1803.466	4.502031	5318.286	14.25463	14.44906	14.33284
4	-1802.407	2.042312	5442.577	14.27770	14.52767	14.37825
5	-1797.781	8.853489	5416.170	14.27279	14.57831	14.39568
6	-1797.049	1.388733	5557.191	14.29843	14.65950	14.44366
7	-1796.281	1.446019	5700.393	14.32377	14.74039	14.49135
8	-1794.337	3.628570	5793.785	14.33990	14.81207	14.52983

* indicates lag order selected by the criterion

LR: Sequential Modified LR Test Statistic (each test at 5% level)

FPE: Final Prediction Error

AIC: Akaike Information Criterion

SC: Schwarz Information Criterion

HQ: Hannan- Quinn Information Criterion

are not the major attraction for the FIIs to choose India as their investment destination.)

Table 6.13: FIIs Investment and P.E. Ratio of the Capital Market - Granger Causality Test

Null Hypothesis:	F-Statistic	Prob.
FIIs does not Granger Cause P.E. Ratio	3.07756	0.0478**
P.E. Ratio does not Granger Cause FIIs	2.31252	0.1011

** Significant at 5%

6.3.4 Foreign Investment and Reduction of Transaction Costs

Transaction costs, the costs which incur during the buying or selling of stocks, is the indicator of the efficiency and development of a capital market. After the liberalization, foreign investments have drastically reduced the transaction costs in the Indian capital market. Now, transaction costs in the Indian capital market are almost at par with the best in the world. This reduction of the

transaction costs occured after the entry of the foreign investment in the capital market as illustrated in Table 6.14.

Table 6.14: Foreign Investment and Reduction of Transaction Costs

Transaction Cost Trading (%)	1994	2018	Global Best
Fees	2.5	0.25	0.25
Impact Cost Clearing	0.75	0.25	0.2
Counter Party Risk Settlement (%)	Present	Nil	Nil
Paper Work	0.75	0.1	0
Bad Delivery	0.5	0	0
Stamp Duty	0.25	0	0
Total (%)	>4.75	0.6	0.45

Source: Compiled from Indian Securities Markert Review, 2018

When the transaction costs such as trading fee, bad delivery, counterparty risk, impact cost and stamp duty etc. in the Indian capital market are taken together, it can be seen that there has been a drastic reduction - from around 4.75 percent in 1994 to 0.6 percent in 2018. This is a reflection of substantial improvement in the market efficiency and in this field foreign investment has made significant contribution.

6.3.5 Foreign Investment and Other Developments of the Indian Capital Market

Besides, some qualitative developments in the Indian capital market like improvement in the transparency of business, knowledge flows, management efficiency, modernization etc, though cannot be quantitatively analyzed, can also be attributed to the foreign investment as these developments have taken place after the arrival of foreign investment in the capital market. Similarly other recent developments in the Indian capital market like increase in the number of the listed companies, improvement in the corporate governance, online trading etc. can also be attributed to the advent of the foreign investment in the capital market. For example in 1992 there were only 100 listed companies but this

number began to increase in proportion to the foreign investment. And this is a clear indication of the development of the capital market, occurred since the foreign investment flows. It is also possible to argue that the advent of the foreign investors with their expertise, presence of fund managers etc. necessitated the improvement of corporate governance in India to a very great extent.

6.4 Foreign Investment and the Volatility of the Capital Market of India

Foreign investment brings to the host economies a friend and a foe - non debt capital and volatility respectively. Both impact the economy, the former positively and the latter negatively. Foreign investment which has been used as a synonym for capital inflows is not a uni-dimensional capital flows confined to mere capital inflows only. It has a dangerous aspect too i.e., capital outflows, perhaps more dangerous, risky, and liability creating than short term loans. Capital outflows, after impacting directly the capital market transmit and spread this impact to the whole economy. It is this aspect of the foreign investment in the capital market which mainly makes it controversial, unattractive and disadvantageous to the host economies. Therefore the role of the foreign investment in the Indian economy can be assessed and evaluated properly only if this aspect of capital flows that is capital outflows too will be analyzed. Hence this aspect is examined by

a. Analysing the general trend of the foreign investment flows (inflows and outflows) from the Indian economy during the period under study

b. Analysing the flow of foreign investment to and from Indian capital market during the days of Indian economy's stress and strain and

c. Testing the volatility of foreign investment flows statistically.

6.4.1 Analysis of the General Trend of Foreign Investment Inflows and Outflows in Indian during the Period 1992 to 2018

As mentioned above volatility of foreign investment not only affects capital market but also the whole economy and Indian economy too is not free from the phenomena of the volatility of foreign investment. Table 6.15 which shows the inflows and outflows of foreign investment during the period of the study indicates that during the last two decades for every capital inflows there was a significant and opposite flows of capital that is capital outflows declaring that foreign investment in Indian capital market too is not free from volatility.
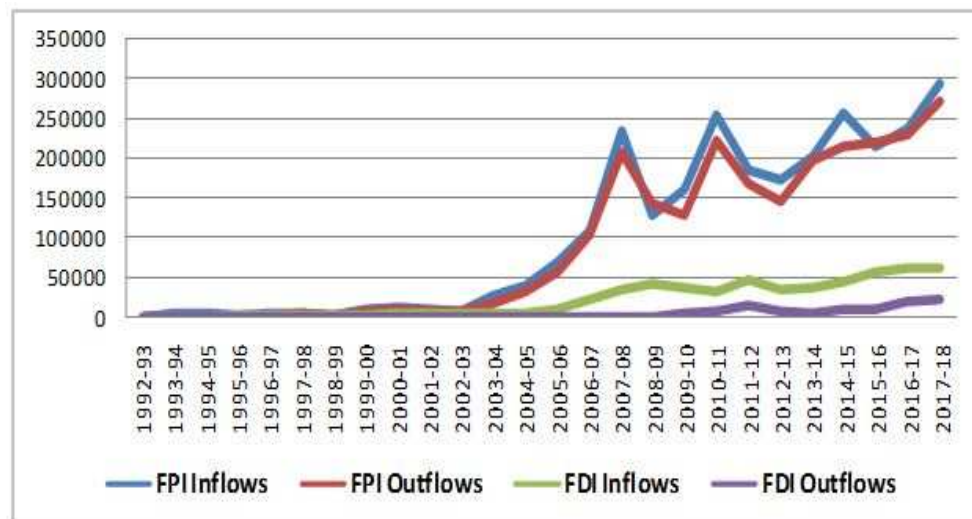
Figure 6.7: Comparison between Foreign Investment Inflows and Outflows

The Figure 6.7 demonstrates that when compared to FPI there is less foreign investment outflows in the case of FDI. But this is not the case of the outflow of foreign investment from the capital market and inflows and outflows of foreign investment from the capital market are highly correlated and the correlation between these two is 0.99. So in India also FPI is more volatile than FDI.

Table 6.15: Comparison between Foreign Investment Inflows and Outflows

| Year	FPI Inflows (US $ Million)	FPI Outflows (US $ Million)	FDI Inflows (US $ Million)	FDI Outflows (US $ Million)
1992-93	244	0	345	30
1993-94	3958	391	651	65
1994-95	4402	578	1351	8
1995-96	3456	708	2174	30
1996-97	4953	1641	2864	22
1997-98	5573	3745	3596	34
1998-99	3225	3286	2518	38
1999-00	9951	6925	2170	3
2000-01	13619	10859	4031	0
2001-02	9259	7238	6130	5
2002-03	8833	7854	5095	59
2003-04	28218	16841	4322	0
2004-05	40847	31532	6052	65
2005-06	68120	55628	8962	61
2006-07	109534	102531	22826	87
2007-08	233564	206293	34844	116
2008-09	128511	142366	41903	166
2009-10	159897	127521	37746	4637
2010-11	253175	221704	32902	7018
2011-12	184747	167338	46552	13599
2012-13	173762	145992	34298	7345
2013-14	202332	197304	36047	5284
2014-15	256048	213854	45147	9864
2015-16	215707	219349	55559	10652
2016-17	237514	229748	60220	18005
2017-18	293529	271364	60974	21544

Source: RBI Database

6.4.2 Foreign Investment Flows during the Days of Indian Economy's Stress and Strain

The performance of the flows of the foreign investment cannot be assessed correctly simply by assessing their performances during normal times. On the contrary it is only by assessing their performance during the times of crises that one can identify their role in the economy and know whether they are friends or foes to the economy. Therefore the performance of foreign investment during the seven major crises of the post reform period - the East Asian Crisis of 1997, the Pokhran Nuclear Explosion in 1998, the Stock Market Scam of 2001, the

Black Monday of May 17th 2004, the Global Market Meltdown in 2006, the Global Financial Crisis of 2008 and the Brexit is examined here.

6.4.2.1 Foreign Investment in India during the East Asian Crisis

During East Asian Crisis[247] which started in July 1997 and continued till early 1998, the foreign investors behaved almost panically as can be seen in Table 6.16 and Figure 6.8. During this crucial period of roughly nine months Indian capital market witnessed an erosion of capital in an unprecedented manner and in January 1998 foreign portfolio investment became negative, i.e., outflow of FPI exceeded its inflow.
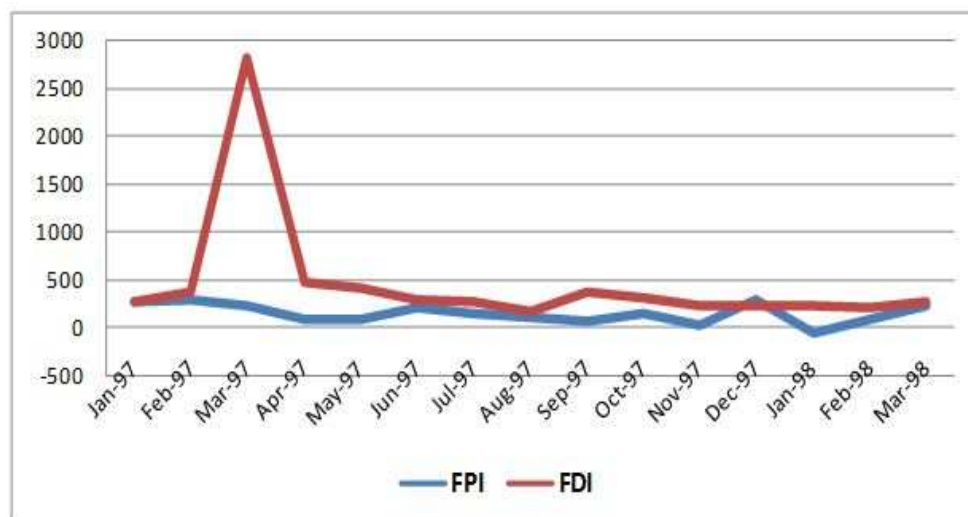
Figure 6.8: Erosion of Foreign Capital from the Indian Economy during the East Asian Crisis

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[247]South Korea, Philippines, Malaysia, Indonesia, Thailand, Singapore, Hong Kong and Taiwan came to be known as the Asian Tigers due to their sustained growth over a long period of time. The early part of the 1990s saw huge capital flows into these economies. These capital flows led to massive investment and high growth in the economies. Suddenly, by mid 1990s the macroeconomic fundamentals, particularly the current account of these economies began to deteriorate. The crisis began with the crash of the Thai Baht, which led to a currency crisis in the Tiger economies. By the end of 1997, Malaysian ringitt, the Indonesian rupiah, the Philippine peso and the Korean won lost between 44 and 56 per cent of their values against the American dollar.

Table 6.16: Erosion of Foreign Capital from the Indian Economy during the East Asian Crisis

Month	FPI (US $ Million)	FDI (US $ Million)
January 1997	276	262
February 1997	282	359
March 1997	230	2821
April 1997	78	473
May 1997	78	408
June 1997	200	283
July 1997	150	271
August 1997	110	163
September 1997	70	359
October 1997	152	297
November 1997	21	231
December 1997	287	225
January 1998	-57	226
February 1998	88	203
March 1998	231	257

Source: Handbook of Statistics on the Indian Economy, 2010-11.

6.4.2.2 The Pokhran Nuclear Explosion of 1998 and Foreign Investment in India

The aftermath developments of the Pokhran Nuclear Explosion of May 1998[248] witnessed high volatility in the Indian capital market. Immediately after the explosion, USA declared sanctions against India. Other countries like Japan followed the suit. The result was a confidence crisis and the foreign investment reacted. The impact was severe, which is demonstrated in Table 6.17 and Figure 6.9. Immediately after the explosion USA started sanction against India and consequently FPI flows became negative during several months succeeding the explosion.

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[248]Pokhran-II was the series of five nuclear bomb test explosions conducted by India at the Indian Army's Pokhran Test Range in May 1998. It was the second Indian nuclear test; the first test, code-named Smiling Buddha, was conducted in May 1974. Pokhran-II consisted of five detonations, of which the first was a fusion bomb and the remaining four were fission bombs. These nuclear tests resulted in a variety of sanctions against India by a number of major countries, including Japan and the United States.

Table 6.17: Pokhran Nuclear Explosion and Capital Erosion from the Indian Economy

Month	FPI (US $ Million)	FDI (US $ Million)
February 1998	-88	203
March 1998	231	257
April 1998	-31	275
May 1998	-115	210
June 1998	-269	377
July 1998	-26	117
August 1998	-48	130
September 1998	-43	141
October 1998	-140	66

Source: Handbook of Statistics on the Indian Economy, 2010-11.
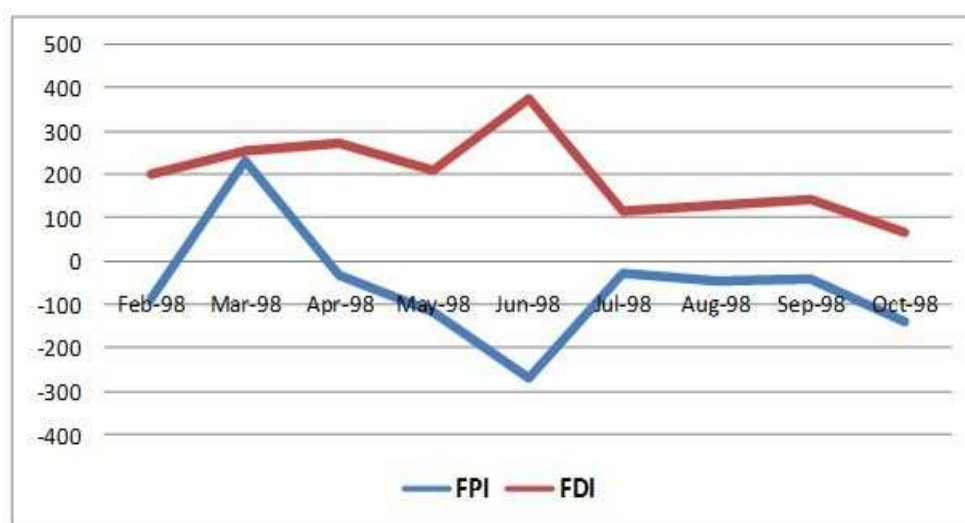
Figure 6.9: Pokhran Nuclear Explosion and Capital Erosion from the Indian Economy

6.4.2.3 Foreign Investment in India during the Stock Market Scam of 2001

The Stock Market Scam of 2001[249] was a major shock which Indian capital market felt. During this scam foreign investors too behaved in an abnormal

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[249]The Stock Market Scam of 2001 is attributed to the market manipulation by Ketan Parekh. Parekh siphoned off money from banks like Global Trust Bank and accumulated stocks of nearly 10 companies (which came to be called the KP 10 stocks) whose prices skyrocketed. This was the time during which even the

manner as illustrated in Table 6.18 and Figure 6.10. During this scam volatility occurred not in the form of FPI outflows but in the form of FPI inflows carried over by the manipulations of Kethen Parake.

Table 6.18: Foreign Investment Flows during the Stock Market Scam of 2001

Month	FPI (US $ Million)	FDI (US $ Million)
September 2000	246	91
October 2000	-231	176
November 2000	78	113
December 2000	116	181
January 2001	451	335
February 2001	670	193
March 2001	486	162

Source: Handbook of Statistics on the Indian Economy, 2010-11.

Figure 6.10: Foreign Investment Flows during the Stock Market Scam of 2001

foreign investors were waiting for the news of what Ketan Parekh was buying into. The leveraging process became unsustainable, the carried forward positions became unmanageable and finally the market crashed.

6.4.2.4 Foreign Investment in India around the Black Monday of May 17, 2004

In May 2004, the Indian market experienced extreme volatility and on May 17 2004[250], the Sensex index of the Indian capital market crashed by nearly 840 points in intra-day trade and there were market halts for the first time after the introduction of circuit breaker rules. Table 6.19 and Figure 6.11 shows foreign investment behavior around the Black Monday of 2004.

Table 6.19: Foreign Investment Flows around Black Monday of May 17, 2004

Month	FPI (US $ Million)	FDI (US $ Million)
February 2004	738	382
March 2004	1834	168
April 2004	938	217
May 2004	-314	217
June 2004	-467	380
July 2004	-410	173

Source: Handbook of Statistics on the Indian Economy, 2010-11.
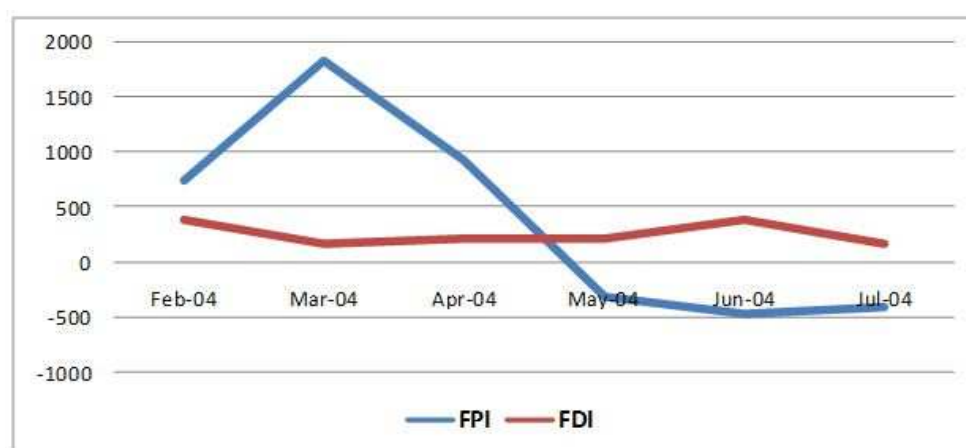
Figure 6.11: Foreign Investment Flows around Black Monday of May 17, 2004

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[250]Totally unexpected political development was the main factor for such a collapse. The UPA government which came to power was supported by the left parties and the leaders of the left made comments regarding the rollback of reforms. The result was utter panic in the market and afraid of political instability and set back in reforms. The market stabilized when Mr. P. Chidambaram assumed charge as the Finance Minister, who was well known for his pro-reform attitude and Dr. Manmohan Singh became the Prime Minister. The market cooled off soon.

6.4.2.5 Foreign Investment in India during Global Market Meltdown of 2006

Another episode of a serious Indian capital market crash occurred in June 2006[251]. It was part of the global market meltdown. The Table 6.20 and Figure 6.12 present the behavior of foreign investors during this crisis.

Table 6.20: Foreign Investment Flows during the Global Market Meltdown of 2006

Month	FPI (US $ Million)	FDI (US $ Million)
January 2006	1545	482
February 2006	1821	127
March 2006	966	1240
April 2006	3711	661
May 2006	-3334	538
June 2006	-903	523
July 2006	-309	1127

Source: Handbook of Statistics on the Indian Economy, 2010-11.

Figure 6.12: Foreign Investment Flows during the Global Market Meltdown of 2006

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[251]Global Market Meltdown 2006 was triggered by the crash in the metal prices on the London Metal Exchange which eventually became a global market meltdown.

6.4.2.6 Foreign Investment in India during the Global Financial Crisis of 2008-09

During the Global Financial Crisis of 2008-09[252] also there was extreme outflow of foreign investment as can be seen in Table 6.21 and Figure 6.13.

Table 6.21: Foreign Investment Flows during the Global Financial Crisis of 2008-2009

| Month	FPI (US $ Million)	FDI (US $ Million)
April 2008	-880	3749
May 2008	-288	3932
June 2008	-3010	2392
July 2008	-492	2247
August 2008	593	2328
September 2008	-1403	2562
October 2008	-5243	1497
November 2008	-574	1083
December 2008	30	1362
January 2009	-614	2733
February 2009	-1085	1488
March 2009	-889	1956

Source: Handbook of Statistics on the Indian Economy, 2008-09

6.4.2.7 Foreign Investment in India during the Brexit

As in the case of economies all over the world the Brexit 2016, the decision of Britain to exit from the European Union, posed serious challenges to the Indian economy also. The behavior of foreign investors during those bad days

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[252]The global financial crisis began in July 2007 when a loss of confidence by investors in the value of securitized mortgages in the United States resulted in a liquidity crisis. In September 2008 the crisis deepened, as stock markets worldwide crashed and entered a period of high volatility and a considerable number of banks, mortgage lenders and insurance companies failed in the following weeks. The immediate cause of the crisis was the bursting of the housing bubble in the United States which peaked in 2005-06. High default rates on 'sub-prime' lending mortgages led to the burst of the housing bubble. Every single developing region was affected by the global financial crisis and some countries have experienced even worse economic impacts than the United States in which the crisis started.
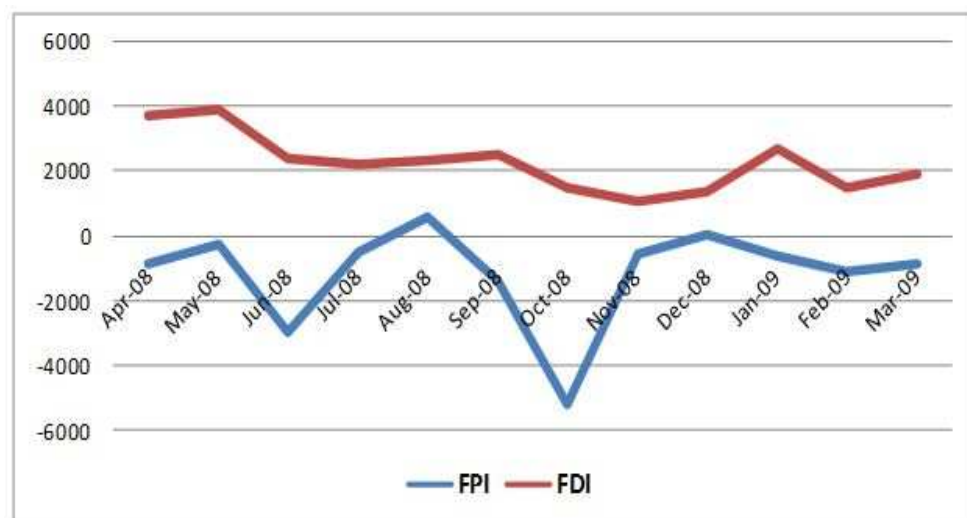
Figure 6.13: Foreign Investment Flows during Global Financial Crisis of 2008-2009

of Indian economy added more troubles and panic to the economy especially in her capital market. As can be seen from Table 6.22 and Figure 6.14, the foreign portfolio investment began to start its outflows on the eve of the actual Brexit itself i.e., in May 2016, much in anticipation of the Brexit and foreign portfolio investment became negative during two months.

Table 6.22: Foreign Investment during the Brexit 2016

Month	FPI (US $ Million)	FDI (US $ Million)
May 2016	-1621.85	1415.72
June 2016	-279.1	1677.72
July 2016	2266.55	4062.3
August 2016	1558.01	4783.78
September 2016	2884.01	5130.35

Source: Handbook of Statistics on the Indian Economy, 2017-18

Thus the above analysis shows that during the major economic crises the foreign investors withdrew their investments from India in an unprecedented manner. Their acts intensified the gravity of these crises in India. Thus in the Indian context also foreign investors proved themselves that they are only fair weather friends and foreign portfolio investment is hot money.
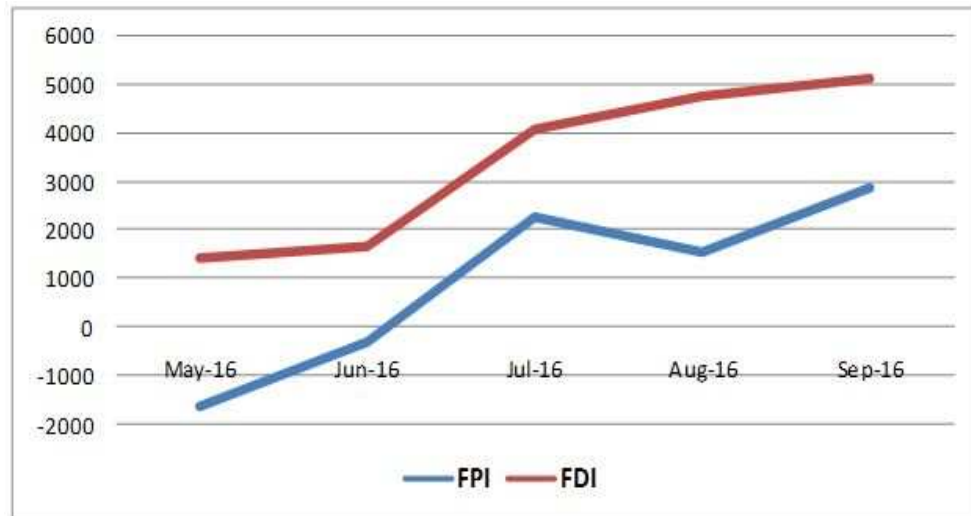
Figure 6.14: Foreign Investment Flows during the Brexit

6.5 Statistical Test of the Volatility of the Foreign Investment in the Indian Economy

In order to get a clear picture of the volatility of foreign investment in India especially of FPI, an empirical analysis is made in the background of FDI, which is generally known as a non-volatile capital.

6.5.1 Volatility of Foreign Investment in India - GARCH Test

The volatility pattern of FDI and FPI in India is studied separately by using the Generalized Auto Regressive Conditional Heteroscedasticity (GARCH) Model based on time series data which consists of monthly average flows of foreign investment from 1995 to 2018 and their results are given in Table 6.23 and 6.24 respectively. This model is found valid as the value of ARCH and GARCH are highly significant and the sum of the both is less than 1.

ARCH value shows that current news has a positive impact on the volatility. Historical volatility impact is represented by GARCH which is also positive and equal to recent news impact. It is also found from the analysis that the sum of ARCH and GARCH coefficients $(\alpha + \beta)$ is very close to one, indicating

Table 6.23: Volatility of FDI in India

Dependent Variable: FDI				
Method: ML ARCH - Normal distribution (BFGS / Marquardt steps)				
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*GARCH(-1)				
Variable	**Coefficient**	**Std. Error**	**z-Statistic**	**Prob.**
C	247.6934	12.43068	19.92597	0.001
Variance Equation				
C	77197.91	6797.824	11.35627	0.001
RESID(-1)^2	1.268252	0.245799	5.159719	0.001***
GARCH(-1)	0.17869	0.080064	2.231838	0.0256**
R-squared	-0.602503	**Mean dependent var**		1370.297
Adjusted R-squared	-0.602503	**S.D. dependent var**		1449.018
S.E. of regression	1834.312	**Akaike info criterion**		16.54797
Sum squared resid	8.82E+008	**Schwarz criterion**		16.6023
Log likelihood	-2172.058	**Hannan-Quinn criter.**		16.5698
Durbin-Watson stat	0.310849			

** Significant at 5%   ***Significant at 1%

Table 6.24: Volatility of FPI in India

Dependent Variable: FPI				
Method: ML ARCH - Normal distribution (BFGS / Marquardt steps)				
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*GARCH(-1)				
Variable	**Coefficient**	**Std. Error**	**z-Statistic**	**Prob.**
C	232.329	8.528461	27.24161	0.001
Variance Equation				
C	42.22532	45.40141	0.930044	0.3523
RESID(-1)^2	0.409718	0.065847	6.222281	0.001***
GARCH(-1)	0.739511	0.032292	22.90073	0.001***
R-squared	-0.036018	**Mean dependent var**		846.5393
Adjusted R-squared	-0.036018	**S.D. dependent var**		3242.518
S.E. of regression	3300.397	**Akaike info criterion**		16.6606
Sum squared resid	2.85E+009	**Schwarz criterion**		16.71493
Log likelihood	-2186.869	**Hannan-Quinn criter.**		16.68244
Durbin-Watson stat	1.875543			

*** Significant at 1%

that volatility shocks are quite persistent. In the case of FDI the coefficient of GARCH term is found smaller than ARCH term, which indicates that effect of recent news volatility is higher than past or historical volatility. In the case of FPI the coefficient of the GARCH term is found larger than ARCH

term, which indicates that effect of past volatility is higher than the recent information. Since the total of ARCH and GARCH term is less than one, it shows that model is perfectly structured. In short, as per these tests both FDI and FPI in India are found volatile.

6.5.2 Volatility of Foreign Investment - Statistical Analysis

The above referred volatility of foreign investment is further analyzed with the help of descriptive statistics like mean, standard deviation, coefficient of variation and skewness.

Table 6.25: Descriptive Statistic of Volatility of Foreign Investment in India

Foreign Investment	Mean Statistic	Minimum Statistic	Maximum Statistic	Skewness Statistic	Standard Deviation	Coefficient Of Variation
FDI	1370	58	6177	1.22	1449	105
FPI	846	-19811	28704	1.67	3242	383

Source: Compiled by the Researcher

Though both form of foreign investment i.e., FDI and FPI are volatile as seen in Table 6.25, it is found that FPI is more volatile than to FDI. As all the three statistic give consistent result i.e., standard deviation of FPI value is 3242 whereas it is only 1449 in the case of FDI, the skewness of FPI is higher than the FDI i.e., 1.67 and 1.22 respectively and the coefficient of variation of FPI is also higher than FDI i.e., 383 and 105 respectively, FPI is seen more volatile than FDI.

This chapter began with a justification for the special treatment of the impact of the foreign investment on the capital market i.e., significance of the capital market in the Indian economy, capital market is the major domain and vibrant part of foreign investment in India and of the most prominent risk of foreign investment - volatility - is in the realm of the capital market.

The impact of foreign investment in the capital market is studied under four heads - impact of the foreign investment on the stock return, impact of foreign investment on sectoral indices, impact of foreign investment on the development of the capital market and impact of foreign investment on volatility of the

capital market. The impact of foreign investment on stock return is studied in relation to other factors which influence the stock return viz interest rate, exchange rate, index of industrial production, inflation, gold price and it is found that along with these factors foreign investment (FII) also impacts stock return positively. With the help of Regression Analysis it is also found that FIIs are more focused on the banking sector and least concentrated on information technology sector. And the finding that the highest return is from the banking sector reinforces the impact of foreign investment on stock return.

The impact of foreign investment on the development of the capital market is studied in relation to the generally accepted indicators of the development of capital market like liquidity, market capitalization, reduction of transaction costs, modernization, corporate governance etc. Mainly with the help of Granger Causality Test it is found that with regard to all these indicators foreign investment has played a great role i.e., foreign investment could:-

1. produce an upward movement in the liquidity of the Indian capital market as is indicated by the increase of market turnover since the advent of foreign investment

2. increase market capitalization (size of the capital market) especially the market capitalization of large cap companies

3. increase P.E. Ratio

4. reduce transaction costs and

5. bring about other developments like increase in the number of listed companies, improvement in the corporate governance, introduction of online trading etc.

Finally the volatility of foreign investment in India especially the impact of foreign investment on the volatility of the Indian capital market is studied by analyzing the trend of foreign investment inflows and outflows during the period under study, by analyzing the behavior of foreign investors during seven episodes of Indian economy's stress and strain and by conducting a volatility test.

Even without the volatility test it is found that foreign investment in India as a whole is volatile but FPI is found more volatile than FDI; foreign portfolio investment in the capital market inflows have always been accompanied by almost a similar quantity of outflows; and during the days of Indian economy's stress and strain foreign investment in India witnessed heavy outflow proving that in the Indian context foreign investors proved themselves that they are only fair weather friends and foreign portfolio investment is hot money.

The volatility test conducted by taking the net capital flows during the period under study also confirmed that foreign investment in India in general and FPI in particular is volatile proving that in the Indian context also FPI proved to be more volatile than FDI. However high volatility is not seen especially during normal times. When this comparatively high volatility of FPI and comparatively low volatility of FDI are taken together foreign investment in India as a whole does not appear to be dangerously volatile.

The credit of the positive impact of the foreign investment on the macroeconomic variables seen in the previous chapter deserved to be attributed to the positive impact of foreign investment in the capital market also. In other words it is when the deep impact of foreign investment on the capital market joined hands with the impact of foreign direct investment that foreign investment produced positive impact in the Indian economy.

The explorations made so far in the previous chapters took this study to take the following generalization. The impact of foreign investment on the Indian economy is not only significant but positive too. The analyses made to reach this conclusion and the findings came across during this process is summarized in the coming chapter, the concluding chapter.