International Journal of Applied Research 2016; 2(7): 623-628

ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor: 5.2
IJAR 2016; 2(7): 623-628
www.allresearchjournal.com
Received: 19-05-2016
Accepted: 20-06-2016

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Investigating relational patterns between foreign institutional investment and India stock market

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Abstract
In the early 1990s India faced a balance of payments crisis. This crisis was followed by an IMF structural adjustment program, economic reforms and liberalization of the trade and capital accounts. Policy makers were, however, very cautious about opening up the economy to debt flows. The experience of the Balance of Payments (BOP) crises as well as the lessons learned from other developing countries suggested that debt flows, especially short term debt flows, could lead to BOP difficulties if the country faced macroeconomic imbalances and had an inflexible exchange rate. The emphasis was, therefore, on foreign investment both foreign direct investment (FDI) and portfolio investment especially foreign institutional investment. FIIs were the first allowed in India in 1992, to invest in the primary and secondary markets. Since the time, the FIIs were allowed to enter in Indian market; India has witnessed billions of dollars as inflow and outflow. The present research work has been undertaken to know the real determinant of Foreign Institutional Investment in India and also to study the behaviour of FIIs in Indian market. There may be several determinants of FIIs flow in India like Movement of Stock exchange, Forex rate, WPI, Gold Prices etc. However the study has analyzed the association between the FIIs and BSE Sensex. The findings of statistical investigation have revealed that there is a high degree of significant positive association between FII and Sensex i.e. both the variables moves in the same directions.

Keywords: Foreign Institutional Investment, BSE Sensex, Gold Prices, Descriptive statistics.

1. Introduction
In his Budget speech for the year 1992-93, the then Finance Minister Dr. Manmohan Singh had announced a proposal to invite FIIs such as Pension Funds, Mutual Funds, Investment Trusts, Asset Management Companies, etc. to the Indian capital market. Foreign institutional investor is an entity established or incorporated outside India, which proposes to make investment in India. Since September 14, 1992, FIIs have been permitted to invest in all the securities traded in the primary and secondary markets, including the equity and other securities/instruments of companies, which are listed/to be listed on the stock exchanges in India including the OTC Exchange of India. These securities would include share, debentures, warrants and the schemes floated by domestic mutual funds, etc.

Since then, FIIs started playing a significant role in the Indian capital market. Notwithstanding its political uncertainty, infrastructure bottlenecks and bureaucratic hassles.

India has emerged as an important destination for global investment. This is reflected in the number of Foreign Institutional Investors (FIIs) registered with Securities and Exchange Board of India (SEBI). FIIs registered with SEBI have increased from 18 up to 31st March, 1993 to 1319 up till 31st March, 2008. As mentioned earlier that Foreign Institutional Investor means an Institution established or incorporated outside India, which proposes to make investment in India securities, it also includes a domestic asset management company or domestic portfolio manager who manages funds raised from outside India for investment in India on behalf of a sub-account. The liberalization process of the Indian economy has been a contributing factor for the increase in the financial flows. Financial flows may not be contributing directly to productive capacity but they facilitate the transfer of funds to enterprises with investment opportunities. India, in the last few years, has improved its macroeconomic performance with a shift towards more market discipline and increased capital movements. This has led to a lowering of barriers for foreign investors through the FII regulations in 1995. FIIs are registered with SEBI initially for a period of five years and operate through establishing an office in India or through a sub-account with a local company. Their daily transactions of buy and sell trades are reported to SEBI. All FIIs are required to buy or sell only for delivery. They are not allowed to offset a deal nor are they allowed to sell short (with few exceptions).

Since very beginning, when the FIIs were allowed to invest in India, there is a steady growth in the investment made by the FIIs and the net investment being made by FIIs is growing year by year, in the year 92-93 it stood at 4 US $ million, whereas up to the year 07-08 the figure rose up to 68007 US $ Million (cumulative). On the one hand the flow has always remained positive since very beginning except in the year 98-99, when there was net outflow of FIIs amounting to 386 US $ Million, on the other hand the assets belonging to FIIs/SA under the custody of custodians have increased from Rs. 61753 crores in 2001-2002 to Rs. 736753 crores in 2007-2008 [1]. It is beyond any doubt that today FIIs have become major source of non-debt creating flow of foreign exchange but FIIs are always leveled with several allegations. The prime allegations are entry of corrupt money in Indian stock market, issuance of P-notes, entry of unregulated entities such as hedge fund and above all the herding and positive feedback Behaviour of FII and its subsequent following by domestic investor, makes the market volatile. It is therefore very necessary to know the real determinants of FIIs flow in India so as to predict the movement of these flows. The study has tried to analyze the association between FIIs and one of the biggest probable determinants of these flows in India i.e. Bombay Stock Exchanges' Sensex.

1.1. Literature Review

There have been several attempts to explain FII behaviour in India. All the existing studies have found that equity return has a significant and positive impact on FII (Agarwal 1997; Chakrabarti 2001; Trivedi and Nair 2003). But given the huge volume of investments, foreign investors can play the role of market makers and book their profits, that is, they can buy financial assets when the prices are declining, thereby jacking-up the asset prices, and sell when the asset prices are increasing (Gordon and Gupta 2003). Hence, there is a possibility of a bidirectional relationship between FII and equity returns. The process of liberalization leads to stock price appreciation followed by inflows from foreign investors [Bekaert and Harvey (1998a& b), Henry (1977)]. The stock market starts becoming more receptive to foreign investment as the economy liberalizes. A concern with regard to the entry of FIIs is that they are positive feedback traders – traders who buy when the market increases and sell when the market falls. This is viewed as destabilizing because the sales will lead the stock market to fall further and their purchases increase the stock market [Dornbusch and Park (1995), Rodelet and sachs (1998), Richards (2002)].

Studies on the Indian stock markets have analyzed aggregate investments by FIIs on the returns from the stock indices [Mukherjee *et al.* (2002), Batra (2003)]. Mukharjee *et al*., analyzed the relationship between FIIs inflows and equity returns from 1999 to 2002. They considered variables reflecting daily market return and its volatility in domestic and international equity markets, measures of co-movement of returns in these markets (the relevant betas) as well as macroeconomic, variables likely to affect foreign investor's expectations. The results show that FIIs flows tend to be caused by returns in the stock market and not the other way round. Batra used daily data on FII equity purchases and sales and equity returns between 2000 to 2002 on the BSE Sensex and the monthly data between the periods from 1994 to 2002. The analysis shows evidence of FIIs adopting positive feedback trading at aggregate level on the daily returns with no such evidence on monthly returns. There is unanimity in these studies that FIIs tend to do positive feedback trading. Batra makes the point that while FIIs tend to herd together in the stock market, their trading behaviour doesn't appear to be destabilizing for the Indian equity market. Though there is a plenty of research work already done on various aspects of the stock market but still the results cannot be produced in black and white's, as there are certain limitations in the research work.

1.2. Data and Research Methodology

The present research work is primarily an analytical and critical study of the facts and figures related to FIIs and BSE Sensex. Incidentally, it may be noted that FIIs were allowed to invest in the Indian capital market securities from September 1992. However, investments made by them were in January 1993. The study investigates the empirical relationship between net FII investment, BSE Sensex, and Gold Prices using secondary monthly data from April 2010 to March 2014. For this purpose data is collected from official web sites of Security Exchange Board of India (SEBI) and Bombay Stock Exchange (BSE), and from Reserve Bank of India's Data Bank. Further, various research journals, government reports and web data were also consulted to have more in-depth knowledge about the trend and behavior about the various variables under the study.

1.3 Tools of the analysis:

For the purpose of realizing the objectives of the present research, the study under takes the statistical investigation. In this statistical investigation the statistical software E-Views has been used. Several statistical testing have been used with the aim of arriving to a concrete conclusion. The sequence of these tools is as follows:

- Descriptive Statistics of the variables whole data
- Graphical Presentation whole data
- Correlation analysis of the whole data
- Graphical presentation and correlation analysis of the sub period April 2013 to March 2014

2. Analysis Of Data

The analysis of the data starts from the descriptive study of the variables viz. Net FIIs, BSE Sensex, and Gold Prices from April 2010 to March 2014. Detailed descriptive analysis is given in the table 1 which is followed by the discussion about results.

Table 1: Descriptive Statistics

	FIIS_US_$__MILLION_	BSE_SENSEX	GOLD_PRICES
Mean	1897.271	18658.99	24786.49
Median	1994.000	18691.23	25605.73
Maximum	7164.000	22386.27	30188.34
Minimum	-7536.000	15454.92	16820.42
Std. Dev.	2817.192	1505.649	3963.113
Skewness	-0.602515	0.165378	-0.465239
Kurtosis	4.133700	2.626498	1.925411
Jarque-Bera	5.474746	0.497807	4.041065
Probability	0.064740	0.779655	0.132585
Sum	91069.00	895631.4	1189752.
Sum Sq. Dev.	3.73E+08	1.07E+08	7.38E+08
Observations	48	48	48

Source: Authors Own statistical investigations

The results of descriptive statistics shows the Mean value of Net FIIs at US $ 1897.271 Million (with maximum Net FIIs at US $ 7164 Million and Minimum Net FIIs at US $ -7536 Million- Negative in the Month of August 2013 when the Sensex was also down). The JARQUE-BERA test value stands at 5.474746 with Probability value .064740. As the P value is more than 5% critical value, therefore, the NULL hypothesis that the variable is normally distributed cannot be rejected. Hence, the NULL hypothesis is accepted meaning thereby that the variable of FIIs is normally distributed. As regards to BSE Sensex the mean value is 18658.99 (with Maximum value at 22386.27 and minimum at 15454.92). The JARQUE-BERA (test for knowing the equal distribution of variables) stands at .497807 with P value at .779655. Since the Probability is more than 5% (the critical value) hence, the NULL hypothesis is accepted i.e. the variable of BSE Sensex is normally distributed. Finally in case of Gold prices the mean value is Rupees 24786.49 (with maximum value at 30188 and minimum at 16820.42). The JARQUE-BERA test value is 4.041065 with p value .132585 which is more than the critical value of .05 (5% level of significance). Hence, once again NULL hypothesis is accepted i.e. the Gold prices are normally distributed. In crux it can be said that all the variables are evenly distributed.

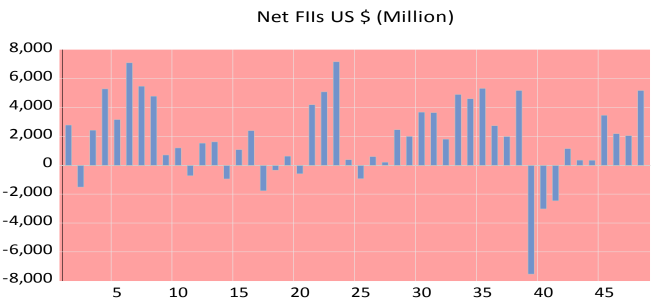

Fig 1: Net FIIs Inflows in India since April 2010 to March 2014 (US $ Millions)

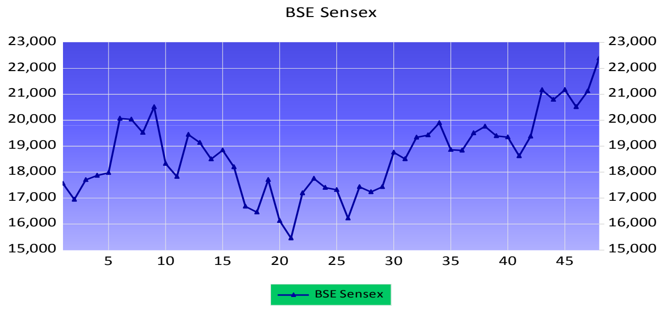

Fig 2: BSE Sensex Movement since April 2010 to March 2014 (US $ Millions)

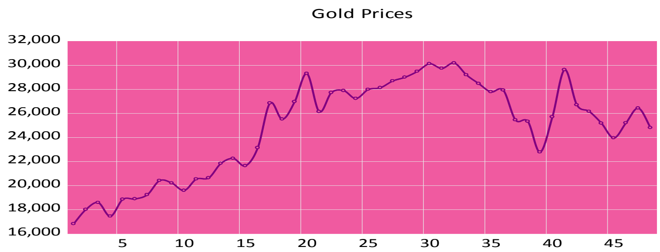

Fig 3: Gold Prices in India

The graphical presentation above shows that except for few months of 2013 the FIIs have remained positive investors in India. Whereas, the BSE Sensex which started from almost 17000 + mark in April 2010 rose to 22000+ mark in March 2014 (a Jump of almost 5000 points in a time span of 4 years). The Gold prices were at Rupees 17000 per 10 grams in April 2010 rose to around 25000 in March 2014 (an increase of Rupees 8000 per 10 grams in 4 years).

The minute observation of these graphs provides a hint of having positive relation between FIIs and Sensex and negative relation between FIIs and Gold prices. However, these are mere observations/guess work and to arrive at concrete conclusion a further statistical analysis is required.

Table 2: Correlation Analysis

Correlation SSCP t-Statistic Probability Observations	BSE_SENSEX	GOLD_PRICES	NET_FIIS_US_$__MILLION_
BSE_SENSEX	1.000000		
	1.07E+08		

	48		
GOLD_PRICES	-0.115607	1.000000	
	-32422177	7.38E+08	
	-0.789377	-----	
	0.4339	-----	
	48	48	
NET_FIIS_US_$__MILLION_	0.188263	-0.042662	1.000000
	37532130	-22386602	3.73E+08
	1.300110	-0.289609	-----
	0.2000	0.7734	-----
	48	48	48

Source: Authors Own statistical investigations

The correlation analysis given above in the table 2 has shown that BSE Sensex and FIIs are having positive but insignificant relation (p value .20) and the relation between FIIs, and Gold prices is negative and this relation is also insignificant (p value is .7734). The results of statistical investigation are not so robust and in-line with general belief especially in case of relation between FIIs and BSE Sensex. The previous experiences and evidences showed that there exists a significant and positive relation between these two variables. The results of this study are contrary to the general belief which may be due to the short length of data, emergence of a new trend, or role of other factors (foreign as well as national) not considered in the present study affecting flow of FIIs in India. Therefore, a comparatively a larger set of data with advanced statistical investigation may provide a reasonable insight into the kind of relation between variables under study and thus re-affirm the general belief about the kind of association or contrary.

Further, the study has developed two sets of data; the first set of data is from April 2010 to March 2014 which is explained in the previous section; the second set of data is from April 2013 to March 2014. In the second sub-period i.e. from April 2013 to March 2014 saw a sharp decline in Stock Market which in turn has shown its impact on Net FIIs and Gold prices. The following section deals with this sub period. The table given below shows that position of BSE Sensex, FIIs, and Gold prices from April 2013 to March 2014.

Table 3: FIIs BSE Sensex and Gold prices April 2013-March 2014

Month	SENSEX Open	SENSEX High	SENSEX Low	SENSEX Close	FIIs US $ Million	Gold prices
13-Apr	18890.81	19622.68	18144.22	19504.18	1,992	25447.71
13-May	19459.33	20443.62	19451.26	19760.3	5,176	25327.43
13-Jun	19859.22	19860.19	18467.16	19395.81	-7,536	22776.39
13-Jul	19352.48	20351.06	19126.82	19345.70	-3,026	25700.37
13-Aug	19443.29	19569.2	17448.71	18619.72	-2,457	29630.59
13-Sep	18691.83	20739.69	18166.17	19379.77	1,151	26702.74
13-Oct	19452.05	21205.44	19264.72	21164.52	357	26162.83
13-Nov	21158.81	21321.53	20137.67	20791.93	343	25176.84
13-Dec	20771.27	21483.74	20568.7	21170.68	3,460	23956.38
14-Jan	21222.19	21409.66	20343.78	20513.85	2,187	25203.02
14-Feb	20479.03	21140.51	19963.12	21120.12	2,054	26436.16
14-Mar	21079.27	22467.21	20920.98	22386.27	5,175	24805.96

Source: BSE, RBI, SEBI Handbook of Statistics 2014.

In the year 2013-14 a heavy decline was seen in the Indian stock market, both S&P BSE Sensex settled at its lowest level in over 11 months at below 18000 mark and CNX NIFTY also settled at over 11 months low. It is a known fact that FIIs are fair weather friends and during the period of low Sensex the FIIs were also came down sharply. In fact in this period a trend of investment was seen in Gold instead of in the stock market. The preference for investing in Gold was considered safe after witnessing the volatility in the share market as the market sentiments were more and more pessimistic at that time. There were number of reasons behind this down fall in the share market indices, firstly during this period rupee bit record low of below 64 against dollar on expectation that US Federal Reserve will soon withdraw monetary stimulus to US economy. The second reason of this down fall was the tension on INDO-PAK border. The result of these happenings was quite visible in trade as well. Many of the pioneers in the industry saw decline in this period. Few in this category were ITC, Index heavy weight reliance industry, PHARMA stock Ranbaxy, etc.

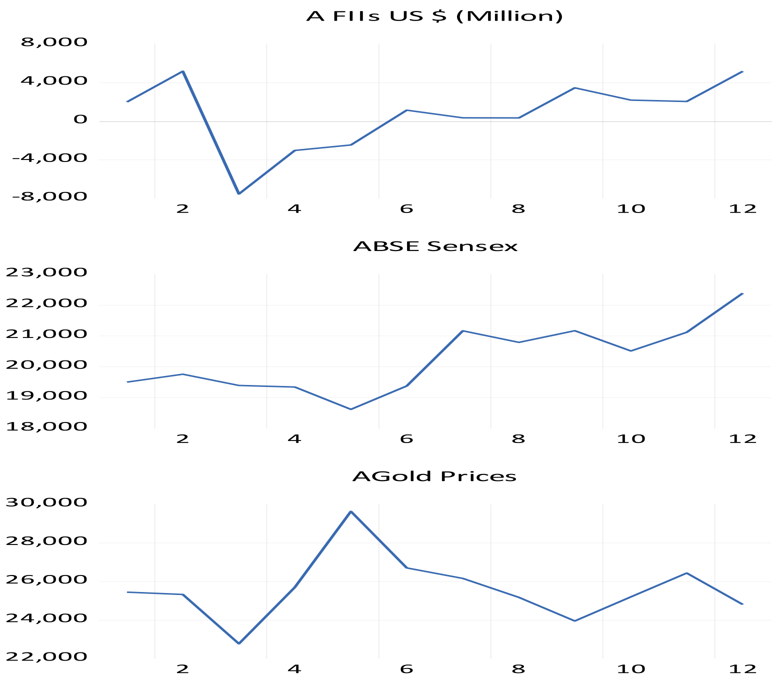

Fig 4: FIIs BSE Sensex Gold Prices from April 2013-March 2014

Table 3: Correlation Analysis April 2013 –March 2014

Correlation			
SSCP			
t-Statistic			
Probability			
Observations	A_FIIS_US_$__MILLION_	ABSE_SENSEX	AGOLD_PRICES
A_FIIS_US_$__MILLION_	1.000000		
	1.46E+08		

	12		
ABSE_SENSEX	0.575781	1.000000	
	25161514	13124681	
	2.226968	-----	
	0.0501	-----	
	12	12	
AGOLD_PRICES	0.024766	-0.364778	1.000000
	1642357.	-7265373.	30225234
	0.078339	-1.238896	-----
	0.9391	0.2437	-----
	12	12	12

During the period of 2013-2014 the absolute values of increase and decrease showed a direct relation between the FIIs and Sensex, and Indirect relation between FIIs and Gold Prices. This can be observed from the correlation analysis (given above in table3) between FIIs and Sensex that these two variables are positively and significantly associated (p value is .0501) i.e. they move in the same direction. However, FIIs and Gold Prices showed a very thin and insignificant relation between these two variables (p value .9391). Hence, the positive relation between FIIs and Gold price is neithr established nor tenable. Therefore, as far as the correlation analysis is concerned it is found that the FIIs and Sensex are having positive and significant relation, whereas, the correlation between Gold price and FIIs is nearly zero. The correlation result between FIIs and Gold prices may be due to short length of data, otherwise the normal perception is that there is significant negative relation between these two variables.

3. Conclusion

The study which analysis the data from April 2010 – March 2014 had taken three variables viz. Net FIIs inflow in to India, BSE Sensex, and the Gold prices in India. The results of the study have been based upon the statistical applications. The study in its statistical investigation (correlation analysis) found that there doesn't exist a relation between the FIIs, BSE Sensex, and Gold prices and if it is there, it is not significant. The results of this study are contrary to the general belief which may be due to the short length of data, emergence of a new trend, or role of other factors (foreign as well as national) not considered in the present study affecting flow of FIIs in India. However, the study was divided in the sub-period from April 2013 to March 2014 during which the BSE Sensex came down heavily and as a result a sharp outflow of FIIs investment was seen, whereas, the Gold prices have gone up during this period. This trend shows that whenever there is a decline in the domestic stock market the FIIs starts withdrawing their money from stock market and divert it towards investment in Gold. However, only a partial of the above trend is evidenced by statistical investigation i.e. in the application of correlation analysis (this analysis from April 2013 to March 2014 showed that there is a positive and significant correlation between FIIs and BSE Sensex. however, the general belief of having negative relation between FIIs and Gold prices is not established in this analysis. As two different time period showed different results, hence comparatively a larger set of data with advanced statistical investigation may provide a reasonable insight into the kind of relation between variables under study and thus re-affirm the general belief about the kind of association or contrary.

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