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Investigation of Foreign Institutional Investors (FIIs) in India

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Abstract

The role of foreign investment in promoting economic growth has received considerable attention in India since 1990s. An important feature of the development of Indian stock market in the last twenty years has been the growing participants of foreign investors. Though numerous research studies have been conducted in respect of Foreign

Institutional Investors (FIIs) into India, most of them have restricted their assessment to the impact of stock markets on FIIs investment flow in India. Very few studies have focused on the aggregate impact of macro-economic variables such as inflation, money supply, Index of Industrial Production (IIP), gold, crude oil, etc on FII flows in India. Given this background this study assesses the determinants (using various macroeconomic factors) of FIIs flows in India. We used regression analysis to determine that during the period 2011-2020, Sensex, risk in Indian securities market, dollar-INR exchange rate, gold rate, crude oil rate, interest rates in USA and India were the statistically significant determinants of FIIs in India. This study will enable policy makers, regulators and investors to understand FII flows, to develop better policies and take informed decisions related to FIIs and the factors that impact their flow. This will in-turn lead to better development of the Indian economy.

Keywords: Foreign Institutional Investment, FII, Determinants, Indian economy.

Introduction

Enterprise Significant amounts of capital money are flowing from developed world to emerging economies in various forms of instruments. India is a developing economy with a growing market. It is an attractive destination for Foreign Institutional Investors (FIIs). Foreign Institutional Investments (FII) is investors or investment funds which are from a country outside of the one in which they are currently investing (or registered in an outside country). Examples of Institutional investors are insurance companies, hedge funds, pension funds, and mutual funds. FIIs in India are the external companies investing in the financial markets of India. Foreign investments play an important role in the long-term economic development of emerging economies such as India by augmenting availability of capital in the domestic market, bridging the gap between savings and investment, raising productivity and providing foreign exchange. The increase in foreign investments brings liquidity into the capital market and raises the price earnings ratios, thereby reducing the cost of capital. In addition, they bring improvements in the stock market such as expansion of securities business, increased depth and breadth of the market and efficient stock pricing. These investments come with many side benefits, such as, transfer of expertise, technology and other institutional benefits. On the flip side, they pose several threats to the domestic economic and financial system of the recipient economy such as inflation, appreciation in exchange rate, overheating of the economy and possibility of sudden withdrawal. So it is important for emerging economies to construct suitable policies to manage the flow of FIIs.

Since the 1990s, one of the best sources of capital investments in India has been brought by the FIIs. FIIs have become important players in the Indian financial markets. The cumulative FII investment since 1992-2022 in India was INR 13,91,518.82 crore [1]. Foreign investors invested over Rs.1.4 trillion (USD 19 billion) in the Indian stock market in 2020 [2]. In order to encourage and manage this flow of resources by investors, it is important to identify the key triggers for such inflows into the economy so that effort can be applied in the right direction to define and refine policies related to FII inflow the

economy. FII flows are directly influenced by various macro variables such as stock prices, volatility in the stock market, inflation, industrial production, oil prices, foreign exchange, money supply, government policies & Political environment.

This paper attempts to identify a comprehensive set of factors that could affect the flow of FIIs in India from the literature. Identification of the factors affecting FII creates further interest in the degree of dependence of FII on these factors. Next, we use statistical regression test to see the degree of effect of these factors on the investment of FIIs in India from 2011-2020 and also understand the statistical significance of the key factors. The main determinants of FII in India found in our study are Sensex, risk in Indian securities market, Dollar-INR exchange rate, gold rate, crude oil rate, interest rates in India. The results of our study have important implications for both the major players government and investors.

Literature Review

The investments made by FIIs into the Indian capital markets has grabbed the attention of researchers' worldwide to identify the relationship between the net inflow of FIIs and the factors that determine them. This relation has been studied over different phases of world's financial and economic development for various countries.

In the Indian context, some of the early studies have examined the relationship between the net flows of foreign institutional investment over a period of time and the Indian stock market. For instance, found in their research that the equity return has a significant and positive impact on the FII investments in India [3]. Gordon and Gupta, documented that lagged domestic stock market returns are an important determinant of FII flows [4]. Rai and Bhanumurthy found a positive association of FII with return on the Bombay Stock Exchange (BSE) [5]. Singh analyzed the determinants of FII flows and examined the policy towards foreign institutional investment. The study concluded that FII flows were positively related with BSE (SENSEX) [6]. Mukherjee et al., have explained that the exchange rate, liberalization policies of Indian economy the Indian economy stock market returns, etc [7]. Influenced FIIs investment decision. On the contrary, inferred that FII investments are more driven by fundamentals and they do not respond to short-term changes or technical position of the market [8]. Garg and Bodla, showed that the rate of FII flows into the country is dependent on the performance of the domestic stock market and the foreign investors' expectations about this performance [9]. Reddy and Kumar studied also studied the behaviour between FIIs and stock market [10].

Due to the changing landscape of Indian economy, the financial crisis in 2008, academics have recognized the importance of understanding the relationship of FIIs with other economic factors. Bhasin and Khandelwal showed that the important determinants of FIIs as returns on MSCI Emerging Market Index, past values of FII inflows and Index of Industrial Production (IIP) [11]. Kaur and Dhillon showed the returns from Indian stock market, market capitalization, liberalization policies of India have a positive influence on FII investment in India [12]. On the other hand, stock market risk in India, inflation in

India, and the US interest rate has a negative influence on FII investment. Gupta R and Gupta H showed that foreign investors are investing in the Indian market for their own interest and the return at the Indian stock market and the risk at the international market have emerged as major drivers of FII inflows to India [13]. Vohra showed that BSE Sensex is a positive determinant of FIIs inflow in India, whereas, the gold prices are negative determinants [14]. Srinivasan and Kalaivani, showed that FII inflows to India are essentially determined by exchange rate, domestic inflation, domestic equity market returns, returns and risk associated with US equity market [15]. Vimaladevi make an attempt to understand the relationship between FII and Indian stock market using correlation analysis and time series analysis to show a strong link between FII flows and the movement of the stock prices [16]. On the other hand, Gupta et al., examined the determinants of FIIs in India from 2000 to 2017 [17]. The study revealed that FIIs behaviour has not been affected by the financial market development return on investment and political risks faced by the country as FIIs are more focused towards reaping the fruits of long-term development of Indian economy. Also, Mehta and Jain study the determinants of FIIs such as money supply, inflation [18]. Foreign exchange reserve and BSE Sensex, etc. from 2008-2014.

There is also a line of research that studies bi-directional relationship between FII and the above factors. These works study the causes and effects of FIIs net flows on all segments of the Indian economy [19-22].

All the above research shows that authors have varying views about the relationship between FIIs and factors affecting their investment in India. In addition, very few studies have focused on the aggregate impact of FIIs inflow over various areas of financial market. Through our literature review, we identify all the important variables and then study their effect on FIIs in India. This paper is structured as follows: A comprehensive set of factors that could affect the flow of FIIs in India are first identified. Next, statistical regression test are performed to see the degree of effect of these factors on the investment of FIIs in India from 2011-2020. Finally, we discuss the statistical significance of the key factors.

Methodology

An extensive literature analysis was performed to identify the variables that could impact the investments of FIIs in India. In order to examine the impact of the Indian stock market and various other macroeconomic variables on FII, linear regression analysis has been done. A classical linear regression analysis will help to identify the degree of dependence of the FII on Indian capital market performance and macroeconomic factors.

The various variables and their sources which could be possibly related to the study are shown in Table 1 below

Table 1: Data Series and Source.

S.No.	Data Series	Source
1	Foreign Institutional Investment	RBI Bulletins
2	BSE sensitivity Index	www.investing.com
3	S&P 500 Index	Yahoo Finance
4	Standard Deviation (For BSE sensitivity Index)	Calculated from monthly data
5	Gold Rate	www.investing.com
6	Crude Oil (petroleum) Dubai Fateh Rate	www.investing.com
7	Nominal Exchange Rate	www.investing.com
8	Whole Sale Price Index	RBI Handbooks of Statistics
9	Market yield on U.S. Treasury securities at 3 Month	Federal reserve website
10	Mifor rate	National Stock Exchange Website
11	Index of Industrial Production	RBI Handbooks

In this section each of the variables will be discussed in detail. Since, it is not possible to do an analysis of all important foreign economies vs the Indian economy, we have used the US economy as a proxy while comparing indicators such as return on equities, risk, exchange rate, etc. For FII, we collected the monthly time series data for FII inflows into India from the RBI's Database on Indian Economy. It is measured in INR crore. BSE Sensitive Index (Sensex) is a basket of 30 constituent stocks representing a sample of large, most actively traded stocks, from various industrial sectors of the Indian economy and representative companies in India. We collected the monthly time series data for Sensex and used it as an index to measure returns from investing in Indian equities. Standard and Poor's 500 Stock Index (S&P 500) is an index containing the stocks of 500 Large-Cap corporations, most of which are in US. The S&P 500 is one of the most widely used indexes of large-cap stocks in US. We used the monthly time series data for S&P 500 as an indicator to gauge the returns one can expect by investing in equities in the U.S. economy. We are considering the US economy as over 40 per cent of FII inflows into India come from the US. The Standard Deviation (SD) for Sensex was calculated to measure the volatility (used as an indicator for risk associated with investing in Indian equities or volatility in Indian stock market) of the index. The SD was calculated by taking the data on monthly returns for each month and calculating the SD for the individual months. The gold price is an indicator of the health of an economy, so we have included Gold's Monthly Price in Indian Rupee per Troy ounce to study its relationship with FII. The crude oil is the economic engine of growth of any country. Though this is expected to have no direct relation with FII. But, indirectly, by increase in crude oil price, inflation increases, government will have to spend too much on subsidies, exports will become weaker and investment decrease. Thus, it is important to study its relationship with FII. The exchange rate is defined in the model as the number of Indian Rupee that can be exchanged for one US Dollar. A depreciation of the INR currency results in losses for a foreign investor when an FII investment is converted back into the foreign currency,

whereas an appreciation of the INR currency would result in higher returns for the foreign investments. Wholesale Price Index (WPI) has been used as an indicator of inflation in the Indian economy. We expect a negative correlation of FII with WPI. The market yield on Treasury securities at 3-month (91 day T-Bill) represents the interest rate US investors would get in their home country and hence plays an important role in their investment decision. A United States Treasury Bill is a government debt financing instruments of the United States federal government. MIFOR is a benchmark rate used by commercial banks for some financial contracts in India. In India, the Treasury Bills market was not so mature in early 2010s, so we use Mumbai Interbank Forward Offer Rate (MIFOR) as a representation of the Interest Rate for India. If the interest rate of a country is high of course FII will want to invest in that country to make good capital gain. Index of Industrial Production (IIP) was used as a representative of the sectors like manufacturing, mining, electricity, and so on. It shows the overall changes in the industrial production of the country. It is an indicator of growth rate of Indian economy. The variable used in the study was the monthly value of IIP. The lag variable that has been introduced in the model, $FII(t-1)$. This has been done to capture the lagged effect of FII investments in India as it is expected that FII investment in time period t is also a function of past FII investments. The political factor is a dummy variable and it refers to the political environment in India. Congress government has always shown policies supporting foreign investment in India compared to any other ruling party [23]. For the time period that the Congress party was the ruling part the value of dummy variable is 1 and for the time period, Congress was not the ruling party the value of dummy variable is 0. We collected monthly data for the variables mentioned below in the Table 2 from year 2011- 2020.

Table 2: Data Description

Type	Variable	Unit	Label	Observations
Dependent	FII_t	INR Crores	Foreign Institution Investment	120
Independent	$Sensex_t$	Points	BSE sensitivity Index	120
Independent	$S\&P\ 500_t$	Points	S&P 500 Index	120
Independent	$StdDev_Sensex_t$		Standard Deviation (For BSE sensitivity Index)	120
Independent	$Gold_t$	Indian Rupee per Troy ounce	Gold Rate	120
Independent	$Crudeoil_t$	Indian Rupee per Barrel	Crude Oil (petroleum) Dubai Fatch Rate	120
Independent	$Exchange_Rate_t$	Rs. Per USD	Nominal Exchange Rate	120
Independent	WPI_t	Points	Wholesale Price Index	120

Independent	US_TBILL_Rate	Percent Per Year	Market yield on U.S. Treasury securities at 3-month	120
Independent	Mifor_Rate_t	Percent	Mumbai Interbank Forward rate	120
Independent	IIP_t	Points	Index of Industrial Production	120
Independent	FII_t-1	INR Crores	Lag Variable=1	120
Independent	DI		Political Factor	120

Regression Model

We have assumed a linear model between the dependent variable FII and the independent explanatory variables. Regression will help us describe the magnitude and structure of the relationship between FII and the various probable determinant variables. Further, we can also estimate the value of FII based on the set of determinant variables.

$$FII_t = \beta_1 + \beta_2(Sensex_t) + \beta_3(S\&P500_t) + \beta_4(StdDev_Sensex_t) + \beta_5(Gold_t) + \beta_6(Crudeoil_t) + \beta_7(Exchange_Rate_t) + \beta_8(WPI_t) + \beta_9(US_TBILL_Rate_t) + \beta_{10}(Mifor_Rate_t) + \beta_{11}(IIP_t) + \beta_{12}(FII_{t-1}) + D1$$

β_1 =the intercept term β_2 to β_{12} =the partial regression slope coefficients $D1$ =Dummy Variable $D1=1$, when ruling party is Congress; $D1=0$, when ruling party is Non-Congress

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The above model indicates that FIIs in India is a linear function of the BSE Sensex, the S&P 500 stock index in the US, the riskiness of investing in Indian equities (as given by the standard deviation of the movements in Sensex), gold rate, crude oil rate, the inflation rate in India, the nominal exchange rate, Rate of Interest in US and India represented by 91 day-TBill in US and MIFOR Rate in India, FII inflows in the corresponding previous one time periods and the dummy variable .

Data Analysis

Results of regression analysis [Table 3]

Table 3: Regression Model summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.736 ^a	0.541	0.489	16109.26295
Note: a. Predictors: (Constant), Dummy_Variable, StdDev_S&P, FII_t-1, US_TBILL_Rate, StdDev_Sensex, Exchange_Rate, Mibor_Rate, CrudeOil, IIP, S&P, Sensex, Gold, WPI				

R Square (R²): This is an indication of explanatory power of the regression model. The Model summary gives us an adjusted R square of 54.1%. It can be interpreted that 54.1 percent of the variation in the dependent variable FII can be explained by variation(s) in the causing factors. Adjusted R-square: Measures the proportion of the variance in the dependent variable (FII) that was explained by variations in the independent variables. The “Adjusted R-Square” shows that 48.9% of the variance was explained by macro-economic factors. Standard Error of Estimate: Std. error of the estimate measures the dispersion of the dependent variables estimate around its mean. Std. Error of the Estimate of FII is 16109.26295 [Table 4].

Table 4: Regression ANOVA Table.

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	3.24E+10	12	2498598795	9.55	<0.001b
Residual	2.74E+10	106	261722877.7		
Total	5.99E+10	118			
Note: a. Predictors: (Constant), Dummy_Variable, StdDev_S&P, FII_t1, US_TBILL_Rate, StdDev_Sensex, Exchange_Rate, Mibor_Rate, CrudeOil, IIP, S&P, Sensex, Gold, WPI; b. Dependent Variable: FII					

H₀: Null Hypothesis: None of the macroeconomic factors are significant predictors of FII
H₁: Alternate Hypothesis: Atleast one macroeconomic factor is a significant predictor of FII
Since p-value <0.05, Null Hypothesis Rejected

Regression Coefficients:

FII_t = -138007 + 5.66(Sensex_t) + 21.89(S&P500_t) - 30.03(StdDev_Sensex_t) + 1.33(Gold_t) + 12.61(Crudeoil_t) - 1626.65(Exchange_Rate_t) + 273.79(WPI_t) + 10152.98(US_TBILL_Rate_t) + 7067.97(Mifor_Rate_t) + 55.73(IIP_t) - 0.05(FIIt-1) + Ut

We collected monthly data for the variables mentioned below in the Table 5

Table 5: Regression Coefficients Table.

Coefficients					
Model	Unstandardized	Coefficients	Standardized	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-138007	39293.79		-3.51	<.001
FII_t1	0.05	0.08	0.04	0.51	0.61
S&P	21.89	19.1	0.61	1.14	0.254
Sensex	5.66	1.49	1.97	3.79	<.001
StdDev_Sensex	-30.03	5.64	-3.09	-5.32	<.001
Gold	1.33	0.25	1	5.3	<.001
CrudeOil	-12.61	2.98	-0.73	-4.23	<.001
Exchange_Rate	-1626.65	721.49	-0.58	-2.25	0.026
WPI	273.79	140.26	0.33	1.95	0.054
US_TBILL_Rate	10152.98	5835.96	0.36	1.74	0.085
IIP	55.73	218.23	0.03	0.26	0.799
Political Factor	-14221.02	10916.74	-0.29	-1.3	0.196
MIFOR	7067.97	1959.53	0.44	3.6	<.001
Note: a. Dependent Variable: FII					

Results and Discussion

As seen in the section above, a regression equation was formulated to understand the relationship between the FII's and the economic factors. In this section, the results of the equation will be discussed. We observe that Sensex, risk in Indian securities market, Dollar INR exchange rate, gold rate, crude oil rate, MIFOR are statistically significant predictors of FII. Sensex, gold rate, MIFOR have a positive impact on FII as expected; while, risk in Indian securities market, crude oil rate, dollar-INR exchange rate have a negative impact on FIIs as expected.

As per results of the regression analysis, when the average monthly value of Sensex increases by one unit, the monthly FII investments into India increase by INR 5.66 crore. As the market volatility increases or the risk of investing in Indian equities (as measured by the monthly standard deviation of Sensex returns) increases by one unit in a month, monthly FII investments into India falls by INR 30.03 crore. In addition, when the average monthly gold price and MIFOR interest rate increases by one unit in a month, monthly FII investments in India increase by INR 1.33 crore and INR 7067 crore respectively. These results are quite intuitive because gold prices are indicator of health of an economy and if the interest rate of a country is high, FII will want to invest in that country to make good capital gain. When the crude oil price increases by one unit in a month and INR-USD

conversion depreciates by one unit, the monthly FII investments decrease by INR 12.61 crore and INR 1626 crore respectively. These results are as expected because by increase in crude oil price, inflation increases, government will have to spend too much on subsidies, exports will become weaker, and investment should decrease. Also, a depreciation of the INR currency results in losses when an FII investment is converted back into the foreign currency, leading to lower returns for foreign investments.

The above results have important implications for all the participants in the economy, the Indian government, policy makers, investors. They should work together to fully reap the benefits arising out of increasing foreign investment and manage the determining factors. Indian economy is very promising as an investment destination of the FIIs. But the foreign investors are quite sensitive towards policies and events which occur domestically and internationally and can change their behaviour depending on situations. This could mean they infuse or withdraw billions depending on events. Hence, it is quite necessary to manage these factors affecting FIIs behaviour and take appropriate actions.

The Indian government could work on stabilizing the stock market to attract more FIIs in the market. The policymakers in India could try to develop in-built cushions to protect the economy from the ill effects resulting from volatility of the stock market. For gold rate, as much as possible, the policy makers can try to work together and manage the factors that affect their prices such as, gold reserves of the government, jewellery market, etc. Currently, India imports 80 percent of its crude oil needs, so a rise in crude oil prices, will not be beneficial for the economy. So, the government could strategize to create their reserves by diversifying its sources of crude oil, which could help to cushion the impact. The central banks manage the interest rates. Higher interest rates offer the lenders a higher return compared to other countries. Therefore, higher interest rates attract foreign investment; however, it can also cause the exchange rate to rise. A depreciating currency is also not favourable for FIIs. So, the policy makers, government and banks need to work together and manage a balance in these factors. There will always be factors that cannot be controlled such as global trends, US inflation, US interest rates, etc., but Indian government could focus on the controllable factors and try to best manage the foreign investment.

Overall, foreign investors prefer investing in stable countries with strong economic performance and political landscape to invest their money. And a country with positive economic attributes will attract more foreign investment compared to a country with instability in the economy and political landscape.

Conclusion and Recommendations

Thus, our results suggest that the FII inflows to India are in response to a combination of multiple factors. The main determinants of FII in India found in our study during 2011-2020 are Sensex, risk in Indian securities market, Dollar-INR exchange rate, gold rate, crude oil rate, interest rates in India. In future, we plan to study the causal (cause and

effect) relationship of FII with the various factors that we determined in this study. We also plan to use predictive modeling techniques to predict activity, behavior, and trends of the FII investments in future in India.

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