HOT MONEY OF THE FOREIGN INSTITUTIONAL INVESTORS AND BSE SENSEX: AN EMPIRICAL ANALYSIS OF THE DEGREE OF ASSOCIATION

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ABSTRACT

The Foreign Institutional Investment (FII) have emerged as noteworthy instrument in the Indian stock market since 1992 and its increasing contribution adds as an important feature of the development of stock markets in India. To facilitate foreign capital flows, developing countries (like China, India) have been advised to strengthen their capital market, more specifically stock markets. As a result, the Indian Stock Markets have reached new heights and became more volatile making the researches work in this dimension of establishing the link between FII and Stock Market Indices. Hence, it's an interesting topic to ascertain the association between FIIs and Indian stock Markets Indices. This study is conducted using yearly data on BSE (Bombay Stock Exchange) Sensex and FII flow in India over a period of 17 years spanning from 2000 to 2016. It provides the evidence of significant positive association between FII flow and BSE SENSEX. Italso evidenced a strong positive correlation between FII flow and Gross Domestic Product (GDP) Growth Rate of India. The analysis also finds, through regression analysis, that the movements in the FII in India is fairly explained by the performance of Indian Capital Market.

KEYWORDS: Foreign Institutional Investment (FIIs), Indian Stock Market,

Capital Market, BSE SENSEX, GDP Growth Rate.

I. INTRODUCTION

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

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

With over 20 million shareholders, India has the third largest investor base in the world after the USA and Japan. Over 9,000 companies are listed on the stock exchanges, which are serviced by approximately 7,500 stockbrokers. The Indian capital market is significant in terms of the degree of development, volume of trading and its tremendous growth potential, as stated by **(Mehra Saniya 2007).**[1]

So basically, one can compute the correlation coefficient between the BSE Sensex and FII flows. I found it to be a strong correlation between BSE SENSEX and FII activity in Indian Capital Markets. This strong positive correlation always grabs the headlines. It is because of the volatile nature of investor's sentiments that FIIs are tracked so closely. It would not be prudent to drive away foreign investors from investing in our country. I had mentioned the importance of foreign capital in the context of a developing economy and that is precisely why the government has been so keen on liberalizing the external financial sector since 1991. If one foreign investor has had a good experience investing in our country, it builds up our

reputation in the international community and encourages more foreign investors to invest in our economy. However, a crisis of any kind will create panic among foreign investors as well, and regaining their trust and confidence in our economy will entail another mammoth task!

FOREIGN INSTITUTIONAL INVESTMENT (FII)

When investors who have same interest to invest in foreign company, they create the company and start to invest in foreign companies. In India, SEBI defines all these investors as FIIs. Developing countries like India are generally capital scarce. This is because of low levels of income in comparison to other developed countries, which in turn means savings and investments are also lower. So how do developing nations get out of such a situation? Simple! They borrow money. Countries can thus invest this borrowed money in various social and physical infrastructures, earn a return on them which helps them pay off their debt and simultaneously boost the country to a higher growth trajectory.

However, there is another way in which a country can attract foreign money. This is by way of Foreign Direct Investment (FDI). However there is a slight difference between them. FDI is defined as "long term investment/ acquisition and is associated with investment in capital assets that a parent company makes in a foreign country which eventually leads to creating employment in India. It manifests in various forms i.e. leading to change in management, transfer of technology, increase in production etc. Examples of FDI would include POSCO setting up a steel plant in Orissa (in-bound FDI), Tata buying Arcelor (out-bound FDI) and so on. It is perceived to be beneficial because it increases production, brings in more and better products and services besides increasing the employment opportunities and revenue for the Government by way of taxes. Considering the investment is long term in nature, they cannot be immediately converted into cash and are often only liquidated in a worst-case scenario.

Whereas; FII is a short term investment by foreign institutions, in the financial markets of other countries. These institutions are generally mutual funds, investment companies, pension funds and insurance houses. The SEBI is the nodal agency for dealing with FIIs and they have to obtain initial registration with SEBI. For granting registration to an FII, the SEBI takes into account the track record of the FII, its professional competence, financial soundness, experience and such other criteria as may be considered relevant by SEBI. Besides, FIIs seeking initial registration with SEBI, they will be required to hold a

registration from an appropriate foreign regulatory authority in the country of domicile/ incorporation of the FII. The rules and regulations to enter the Indian market are not much. The fluctuations in the stock market are generally due to the FII investments as the investor can leave the market at any point of time.

Figure(1): Trend in FII flow
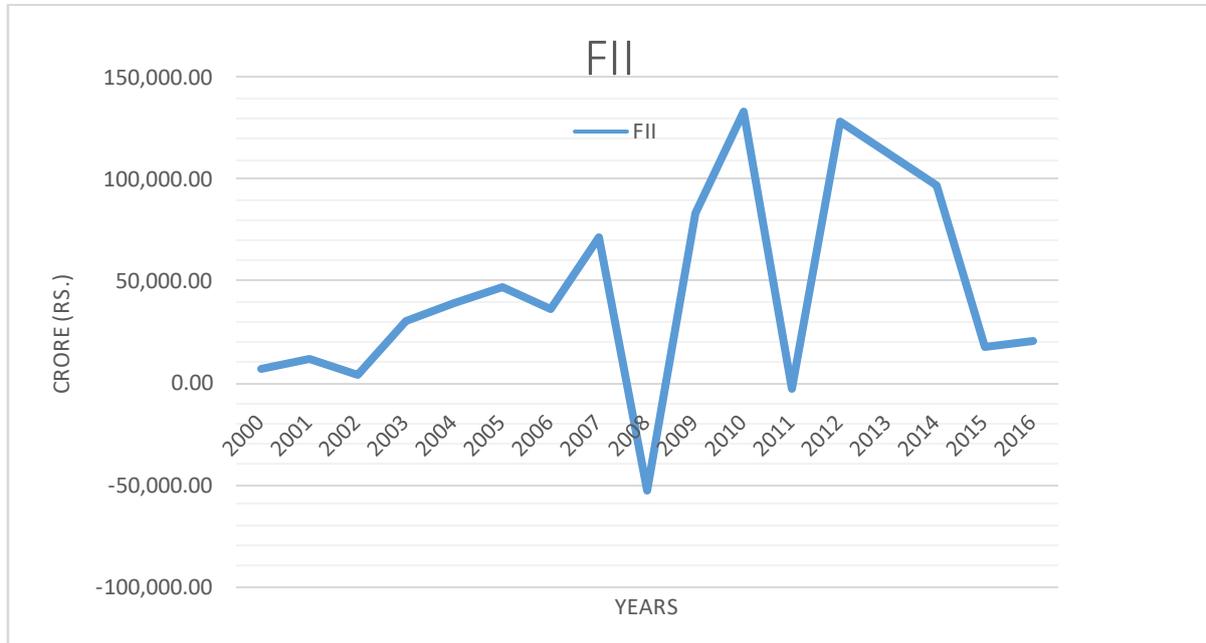
Source: Compiled by Author

The above graph shows the trend in FII flows over the period from 2000 to 2016. It shows till 2007 the FII flow had more or less an increasing trend but in 2008, FII withdrew Rs.52987.40 crore and which may be due to the '2008 Financial Crisis'.

FII widens and deepens the stock exchanges and provides a better price discovery process for the scripts. It is a fair-weather friend and can desert the nation with what is happening in India right now, thereby pulling down not only our share prices but also wreaking havoc with the Indian rupee because when FII sell in a big way and leave India they take back the dollars they had brought in.

BOMBAY STOCK EXCHANGE (BSE)

Bombay Stock Exchange (BSE) which is one of the oldest in the world and accounts for the largest number of listed companies and has also started a screen-based trading system with the introduction of the Bombay On-Line Trading system. There are 23 recognized stock

exchanges in India, including the Over the Counter Exchange of India (OTCEI) for small and new companies and the National Stock Exchange (NSE) which was set up as a model exchange to provide nation-wide services to investors. NSE, which in the recent past has accounted for the largest trading volumes, has a fully automated screen based system that operates in the wholesale debt market segment as well as the capital market segment.

No single class of investors drives the market — asset prices go up, driven by the collective momentum of all investors. Finally, the market enters the state of self-organised critically. This is when any negative information could have non-linear effect on the market. The FIIs play a major role during this phase too. So, why is a rise or decline in the market always attributed to the FII? How relevant are FIIs to derive the market rally? A simple model using FII investments, change in their investments and market returns shows that FIIs do not drive asset returns. The relationship is also not significant if asset returns are used with a time lag. This brings us to the point about the FIIs and the market. The FIIs do matter because their entry starts off a market rally. Further, their exit or rumours of their exit at best temporarily halts the rally. At worst, their exit could halt the rally completely. But the FII factor is not very important when the market functions as a self-organised system. This phase has a longer duration than the entry and exit phase of the rally. That is why statistical models suggest that FII flows do not drive market returns even though they do.

Further, FIIs can repatriate capital gains, dividends, incomes received by way of interest and any compensation received towards sale/renouncement of rights offering of shares subject to payment of withholding tax at source. The net proceeds can be remitted at market rates of exchange. The FIIs are playing an important role in bringing in funds needed by the equity market. Additionally, they are contributing to the foreign exchange inflow as the funds from multilateral finance institutions and FDI are insufficient. However, the fact remains that FII investments are volatile and market driven, but this risk has to be taken if the country has to ensure steady inflow of foreign funds.

Figure(2): Trend in BSE Sensex
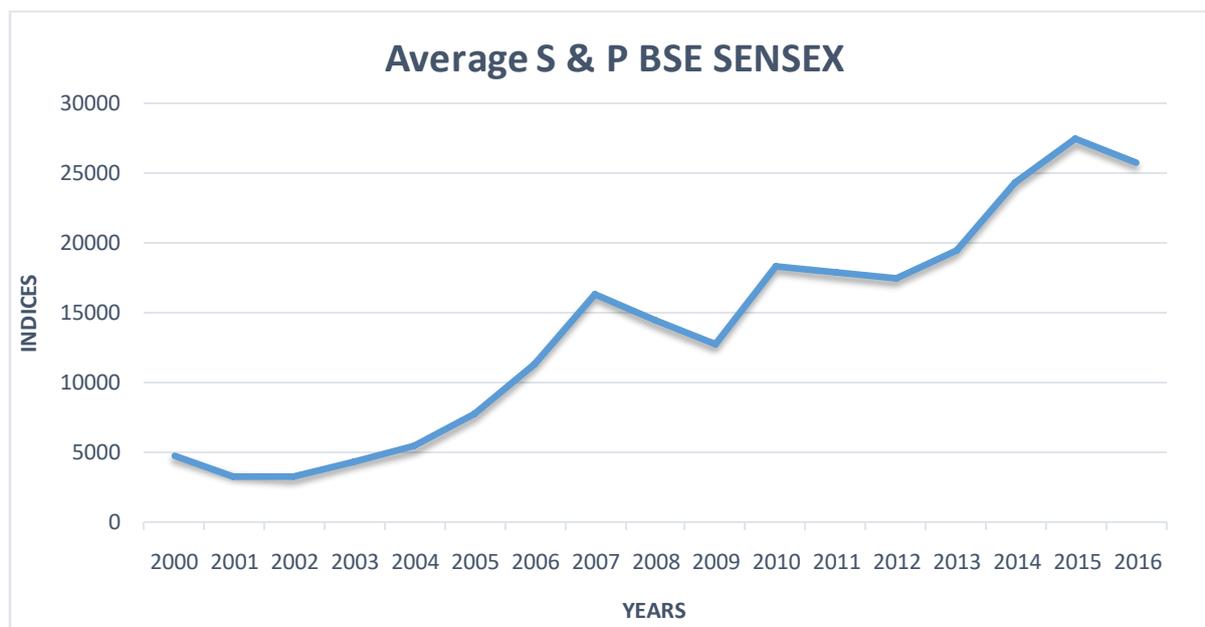
Source: Compiled by Author

The line chart above shows an increasing trend of S & P BSE SENSEX over the period from 2000 to 2016. In 2000 the index value was 4821.12 and in 2016 its 25785.945, that is around 434% increase over the 16 years study period.

GDP GROWTH (ANNUAL %)

Economic growth is the increase in a country's net output i.e. the production of Goods and Services. The monetary value of total goods and services produced within a country's territory in one year is the Gross Domestic Product (GDP) of that country. It is one of the primary indicators used to gauge the wealth of a country's economy.

The rate at which the GDP of a country grows is the GDP Growth Rate (GDPGR) of that country. It is important for the country's policy makers and citizens to keep a close watch on the GDPGR because it determines the rate at which growth takes place in the net output of a country.

In other words, the GDPGR is the percentage increase in the economy's output from quarter to quarter or year to year. It gives an accurate idea of how fast a country's economy is growing or developing. As the economy grows it attracts more FIIs. So possibly there should

be a positive correlation between GPDGR and FII, and GDP growth rate and Stock market indices.

Figure (3): Trend in GDP Growth
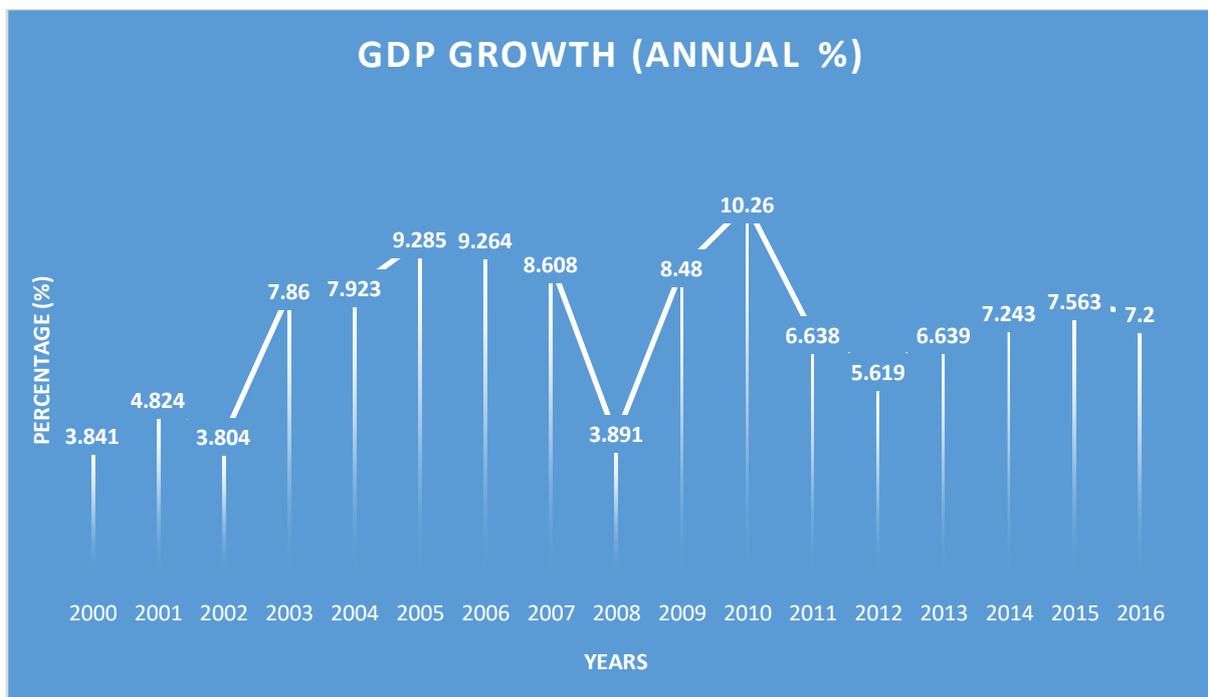
Source: Compiled by Author

The figure above shows a fluctuating GDPGR. The highest growth rate over the study period attained in 2010 which is 10.26% and the lowest growth rate over the same period reached 2002 which is 3.804%. So over the 16 sixteen years the range of GDP growth is 6.456. As the range is quite high, which suggest lack of consistency in growth rate over the period.

II. REVIEW OF LITERATURE

Bekaert and Harvey, (1998)[2]**:**The waves of liberalization results in appreciation of stock price which is followed by inflows from foreign investors as said by Bekaert and Harvey, 1998 and Henry, 1997. As the Indian equity market is growing, the trend and future prospects in foreign institutional investments has become a topic of great concern. A recent research survey by Japan Bank for international operation (JBIC), shows that in the next 3 years, India will be the third most favoured investment destination for Japanese investors. A Smith

Barney (a CITI group Division) study says estimated market value of foreign institutional investment in the top 200 companies in India (including ADRs and GRDs) at current market prices is US$43 billion. This is 18% of the market capitalization of BSE 200. It is established in literature that block shareholders influence the firm performance (**Cho & Padmanabhan, 2001**).[3]

Choe et. al., (1998)[4]**:** He examined the influence of FIIs on equity returns in Korea before and during the 1997 Asian crisis and they found no evidence of stock prices falling because of a withdrawal of foreign equity investment. Also, it is not necessary that inviting FIIs to the stock market would increase its volatility as argued by (**Rene and Stultz, 1997**).[5]

Douma, Kabir and Rejie (2006)[6]**:**They investigated the impact of foreign institutional investment on the performance of emerging market firms and found that there is positive effect of foreign ownership on firm performance. They also found impact of foreign investment on the business group affiliation of firms. (**Aggarwal, Klapper and Wysocki, 2005**)[7] observed that foreign investors preferred the companies with better corporate governance.

Gordon and Gupta, (2003)[8]**:** They found causation running from FII inflows to return in BSE. They observed that FIIs act as market makers and book profits by investing when prices are low and selling when they are high. Hence, there are contradictory findings by various researchers regarding the causal relationship between FII net inflows and stock market capitalization and returns of BSE/ NSE. Therefore, there is a need to investigate whether FIIs are the cause or effect of stock market fluctuations in India.

Jeong-Bon and Li (2004)[9]**:**They found that foreign investors tend to avoid stocks with high cross corporate holdings. They suggested that FII are likely to be efficient processors of public information and are attracted to Japanese firms with low information asymmetry. (**Morin, 2000**)[10] explored the influence of French model of shareholding and management on FII. They commented that France has undergone rapid change from a financial network economy to a financial market economy. The new pattern has broken the traditional system of cross holding and facilitated the arrival of FII who bring with them new techniques and demands efficient corporate management. There is a growing literature on the determinants of global investment flows and allocations.

Jatinder Loomba (2012)[11]**:**He examined the relationship between FII activity and Indian stock market volatility using daily data on BSE Sensex and FII activity over a period of 10

years spanning from 01st Jan 2001 to 31st Dec 2011. He established significant positive correlation between FII activity and Indian Capital Market volatility. He also found that the movements in the Indian Capital Market are fairly explained by the FII net inflows.

Most of the existing literature on FIIs in India found that the equity return has a significant and positive impact on the FIIs and stock returns are strongly correlated in India (**Agarwal, 1997**[12], **Chakrabarti, 2001**[13] and **Nair and Trivedi, 2003**[14]**).** But, given the huge volume of investments, foreign investors could play a role of market makers and book their profits, i.e. they can buy financial assets when the prices are declining, thereby jacking-up the asset prices and sell when the asset prices are increasing **(Gordon and Gupta, 2003)**[8]**.** The possibility of bi- directional relationship between FII and the equity returns was explored by (**Bhanumurthy and Rai, 2003**[15]). They studied the determinants of foreign institutional investment in India during the period 1994-2002. They found, using monthly data that the equity returns is the main driving force for FII investment and is significant at all levels. They further studied the impact of news on FII flows and found that the FIIs react more (sell heavily) to bad news than to good news.

III. OBJECTIVES OF THE STUDY

1. To give a brief descriptive account of BSE SENSEX, FII and GDP Growth Rate. *(Refer I & V.II)*

2. To find association amongst BSE SENSEX, FII and GDP Growth Rate**. (Refer V.III)**

4. To understand the movement of FIIs in context to BSE SENSEX and GDP Growth Rate through appropriate model.*(Refer V.IV)*

IV. RESEARCH METHODOLOGY

Data and Sample: This research is essentially a quantitative research (Time Series Data) in which published / secondary data is used. The data for the research is collected mainly BSE, Department of Industrial Policy & Promotion (DIPP), National Securities Depository Limited (NSDL) websites and various other reliable sources. S & P BSE Sensex represent Indian Stock Market. The study period for the present study have been 17 years, from 2000 to 2016.

Tools Used for Data Analysis: Jarque-Bera test have been used to test the normality of the Data set. Descriptive Statistics, Pearson correlation and Regression Analysis (For Time Series Data) have been used as the data sets were real and it gives an informative and accurate statement of the strength of the linear association between the two variables.

Residuals have been tested for normality using Jarque-Bera statistic, autocorrelation using Breusch-Godfrey serial correlation LM test, and Heteroskedasticity using Breusch-Pagan Godfrey test with EViews. Here, dependent variable is FII and independent variables are taken as SENSEX and GDP growth rate.

Research Hypothesis: The following hypotheses are developed to know the relationship between FII and BSE Sensex and GDP growth.

H_0: There is no linear relationship between FII and BSE Sensex & GDP growth rate.

H_1: There is linear relationship between FII and BSE Sensex & GDP growth rate.

Model Specification: The following model is used where FII is dependent variable and BSE Sensex & GDP growth rate are independent variable –

$$FII_t = a + b_1 SENSEX_t + b_2 GDPG_t + e_t$$

Where,

FII_t = Foreign Institutional Investment at Year t

a = Constant term

b_1 = coefficient of Sensex

$SENSEX_t$ = S& P BSE Sensex at Year t

b_2 = coefficient of GDPG

$GDPG_t$ = Gross Domestic Product Growth Rate at Year t

e_t = Error Term

V. RESULT AND ANALYSIS

V.I: Jarque-Bera Test for Normality

The **Jarque–Bera (JB) test** is a goodness-of-fit test of whether sample data have the skewness and kurtosis matching a normal distribution. The test statistic JB is defined as

$$JB = \frac{n-k+1}{6}\left(S^2 + \frac{1}{4}(C-3)^2\right)$$

Where n is the number of observations (or degrees of freedom in general); S is the sample skewness, C is the sample kurtosis, and k is the number of regressors.

The null hypothesis (H_0) for the test is that the data come from a normal distribution (that means the H_0 of the JB test is a joint hypothesis of the skewness being aero and the excess kurtosis being zero); the alternative hypothesis (H_1) is that the data does not come from a normal distribution.

With a **P**-Value > 0.05, one would usually say that the data are consistent with having skewness and excess kurtosis zero. A high P-Value is expected here because we use normally distributed random numbers.

The result of JB test in EViews 9 is presented in Table 1 of Appendices. The result shows for all the three variables namely Sensex, FII, GDPGR, the P-Values are more than 5%, so we accept null hypothesis for all the three variables. That means data of all the three variables comes from a normal distribution.

V.II: Descriptive Statistics

Table 2 in Appendices gives brief description of the variables (BSE Sensex, FII and GDPGR) chosen for analysis. The mean BSE Sense over the study period of 2000 to 2016 that is over 17 years was around 13831, minimum of which was 3293and reached a highest value of27429.

Over the study period of 17 years FII moved between highest value of 133266 Cr. and lowest value of minus 52987 Cr. which implies a withdrawal of FII by foreigners. The average value of FII over the period was 46148 Cr. which is quite satisfactory.

Annual GDPGR throws a good impression of Indian Economy and its Prospect as the highest growth rate is as much as 10.26% with a very low standard deviation of 2. Although the minimum growth rate was 3.8% but its Range was 6.456% that subsides the minimum growth rate, which again indicate a bright prospect for Indian Economy.

V.III: Correlation Analysis

Table 3 in Appendices shows the Correlation Matrix which tells us relationship amongst variables in this Study namely BSE Sensex, FII and GDPGR. Correlation can also be defined as dependence of one variable upon other(s).

FII has a very strong positive association with GDPGR (as much as 0.5173) which indicate they move in the same direction. As FII increases GDPGR also increases. BSE Sensex has a strong positive relationship with FII Flows. That is, if Sensex increases then the FII flows in India. BSE Sensex has a very low positive association with GDPGR (Correlation Coefficient 0.2673), which indicates there may be no autocorrelation problem. Though we will shortly look at the exact autocorrelation test and thereafter comment on the same.

V.IV: Regression Analysis

From the model summary *Table 4* in Appendices, we find R^2 value 0.3029 and adjusted R^2 value 0.2033. Meaning that two variables namely Sensex and GDPGR taken together account for 30.29 % of variance in the FII flows in India.

Now, from the same table it is found **F Stat = 3.942484 (P = 0.049946 < 0.05)** meaning that the multiple regression model significantly contributes the variation in FII inflow in India.

Durbin-Watson Stat (D-W Stat) can vary from 0 to 4. Value close to 2 meaning there is no autocorrelation in the residuals.

D-W stat from the same *Table 4* in Appendices is found close to 2 (D-W Stat = 1.791592). So it can be stated that adjacent residual/ error term (for first order only) are not correlated. So, the assumption of independent errors (no autocorrelation) is met.

Looking at the individual P-Values of coefficients it is observed that both the coefficients are statistically significant. Sensex is statistically significant at less than 5% level but GDPGR is not significant at 5% level but significant at 10%.

Now, looking at the individual coefficients values (b values), we can write the model as follows:-

$$FII_t = -54339.96 + 1.208581*SENSEX_t + 11973.17*GDPDR_t$$

From above, coefficient of SENSEX (b_1) is (+) 1.2085 which indicates that as BSE Sensex increases by 1 index point, FII also increases by 1.208% when the effect of GDPGR is taken constant.

Coefficient of GDPGR is (+) 11973.17 which indicates that as GDPGR increases by 1%, FII also increases 11973.17 times when the effect of Sensex is taken constant.

Test for Multicollinearity is done using Variance Inflation Factor (VIF). In statistics, the VIF quantifies the severity of multicollinearity in an ordinary least squares regression analysis. It provides an index that measures how much the variance (the square of the estimate's standard deviation) of an estimated regression coefficient is increased because of collinearity. VIF indicates whether an independent variable has a strong linear relationship with the other independent variables.

As all VIF are well below 10, even well below 5 (as some say it should be below 5) as found in *Table 5* in Appendices, therefore, it can be concluded that there is no multicollinrearity within the data used for the study. VIF close to 1 confirms no multicollinrearity at all.

Residual Normality Test using Jarque-Bera test is done and the result in *Table (6)* shows the P value for Jarque-Bera stat is 0.6755 which is more than 5%. Therefore accepting the null hypothesis that residuals are normally distributed.

Another main assumption of Classical Linear Regression Model (CLRM) is that the error term is homoscedastic (i.e. same variance). So if there is 'non constant' error term, the problem that arises is termed as Heteroskedasticity. So a test of Heteroskedasticity is done using *Breusch-Pagan Godfrey Test* and the result is given in *Table (7)* in appendices. From the table, the P Value of Observed R-Squared is 0.058 which is more than 5% so the null hypothesis of equal variance is accepted. So it can be concluded that there is no Heteroskedasticity problem in the model.

From the above discussion of the regression model and various tests of assumptions of CLRM it can be conferred that the fitted model to predict FII Flows in India in the contest of Indian stock market and GDPGR is the most appropriate one as its predictability is quite satisfactory (R squared = 0.3029) and almost all the major assumptions of CLRM holds as there is no Multicollinearity problem, on Autocorrelation problem and no Heteroskedasticity problem in the fitted model.

VI. CONCLUSION AND RECOMMENDATIONS

Since the liberalization of Indian economy, Foreign Institutional Investors have emerged as noteworthy players in the development of Indian economy in general and stock market in particular. FII flow is strongly associated with stock market performance. Healthy

performance of stock market attracts more FII in India. Hence proper stock market regulation and control is highly recommended not only from the viewpoint of domestic investors but also from FII point of views.

Through time series analysis, the forecasting model is established and the effectiveness of the model is good enough to explain FII Flows in India with only two predictor variables viz. BSE Sensex and GDPGR. Data used were normally distributed as tested with Jarque-Bera test. Both the coefficients of explanatory variables are statistically significant. From the Variance Inflation Factors (VIF) test, existence of no multicollinrearity was confirmed. Finally residual analysis with various test confirmed that error terms are normally distributed, error terms are not correlated (no autocorrelation problem), and they are homoscedastic (i.e. there is no Heteroskedasticity problem). So based on this analysis, the model is highly appreciable to predict FII flows in the context of BSE Sensex and GDPGR of India.

So the study has high significance so far as policy making is concerned in the Indian context with regards to strengthening Indian stock exchanges. As the study revealed FII flows are fairly explained by stock exchange performance, hence stock exchange strengthening will attract FII and as a consequence Indian economy will further move towards a developed economy.

APPENDICES

Table (1): Jarque-Bera test

JARQUE BERA TEST			
	Sensex	**FII**	**GDPGR**
Jarque-Bera	1.049374	0.419387	0.916187
Probability	0.591741	0.810833	0.632488

Source: Computed by Author with EViews 9.5

Table (2): Descriptive Statistics

DRESCRIPTIVE STATISTICS			
	Average S & P BSE SENSEX	*FII (crore Rs.)*	*GDPGR (Annual %)*
Mean	13831.72118	46148.17059	6.996588235
Median	14452.08	36540.2	7.243

Standard Deviation	8024.78914	51284.13488	2.008124344
Range	24135.765	186253.7	6.456
Minimum	3293.375	-52987.4	3.804
Maximum	27429.14	133266.3	10.26
Count	17	17	17

Source: Computed by Author with EViews 9.5

Table (3): Correlation Matrix

CORRELATION MATRIX			
	Average S & P BSE SENSEX	*FII*	*GDPGR*
Average S & P BSE SENSEX	1	0.314418904	0.267267992
FII	0.314418904	1	0.519376061
GDPGR	0.267267992	0.519376061	1

Source: Computed by Author with EViews 9.5

Table (4): Regression Analysis Result

SUMMARY OUTPUT		
R-Squared	0.302961	
Adjusted R Square	0.203384	
F	3.942484	
P-Value	0.049946**	
Durbin-Watson Stat	1.791592	
	Coefficients	*P-value*
Intercept	-54339.96	0.2212
Sensex	1.208581	0.0278**
GDPGR	11973.17	0.0624*

Source: Computed by Author with EViews 9.5

[* = Significant at 10% level.]

[** = Significant at 5% level.]

Table (5): Variance Inflation Factors: Test for Multicollinearity

Variance Inflation Factors	
Variables	**VIF**
C	NA
SENSEX	1.076927
GDPGR	1.076927

Source: Computed by Author with EViews 9.5

Table (6): Residual Normality Test

Series: Residuals	
Sample 2000 2016	
Observations 17	
Mean	6.85e-12
Median	2931.854
Maximum	94291.03
Minimum	-62701.57
Std. Dev.	42816.53
Skewness	0.497815
Kurtosis	2.659184
Jarque-Bera	0.784433
Probability	0.675558
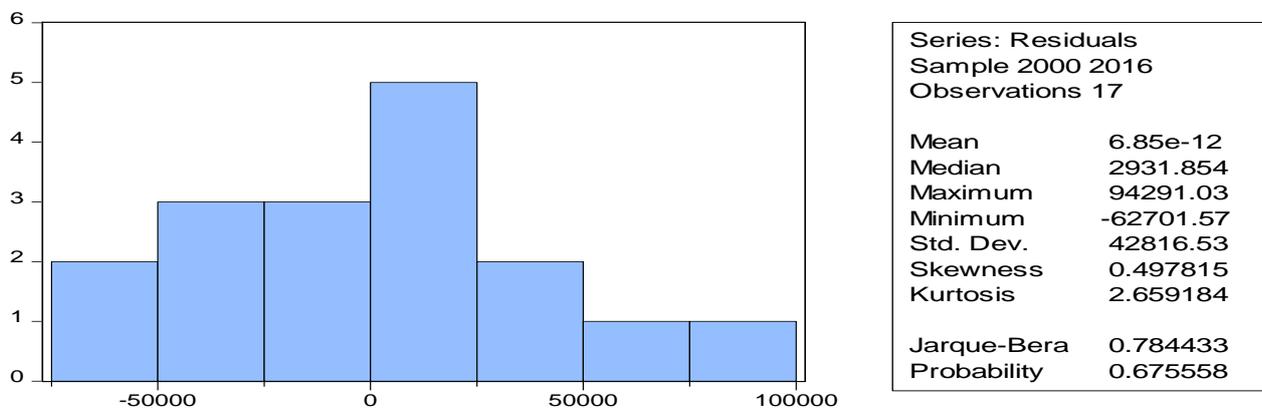
Source: Computed by Author with EViews 9.5

Table (7): Breusch-Pagan Godfrey Test for Heteroskedasticity

Breusch-Pagan Godfrey Test			
F-statistic	3.52514	Prob. F(2,14)	0.0576
Obs*R-Squared	5.69374	Prob. Chi-Square(2)	0.058
Scaled Explained SS	3.20347	Prob. Chi-Square(2)	0.2015

Source: Computed by Author with EViews 9.5

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