

**Study of relationship between FII, Indian Stock Market and Indian Economy**

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**Abstract:**

Over the last 10-15 years, Indian stock markets have seen concerning 3-4 crashes with an equal range of booms. If one were to research the boom and bust cycles of the securities market, it might seem that the economy extremely didn't suffer as badly because the stocks, nor did it vanquish the markets. What then is that the relation between the index costs and also the real economy? This paper tries to check what's the connection between cracking index and economic indicators like value, FII and Exchange Rates. The data of year 2016-17 has been taken to check the connectedness between Index costs and economic indicators. when varied tests it's finished that cracking index costs don't seem to be powerfully laid low with value, FII and rate (between Indian rupees and US dollars). However, it's found that index is closely obtaining laid low with its own previous knowledge.

**Keywords: FII, GDP, Nifty Index, Exchange Rate and FDI**

**Introduction:** Globalizations have witnessed whole number economic process leading to fierce competition and accelerated pace of innovation. As a result flow of Foreign Institutional capitalist has become a putting live of economic development in each developed and developing countries. FDI and FII therefore became instruments of international economic integration and stimulation. Quick growing economies like Singapore, China, etc have registered unimaginable growth at onset of FDI. tho' U.S.A. captures most of the FDI inflows, developing countries still account for vital growth of FDI and rise in FII. FII not solely offers access to foreign capital however additionally provides domestic counties with innovative technology, desired talent sets, tools of innovation and alternative complementary skills. Excluding serving to in making further economic activity and generating employment, foreign investment additionally facilitates flow of subtle technology into the country and helps the trade to march into advanced technology.

A favorable business setting fostered Indian economy once 1991, once the govt. of India opened the door for foreign capital within the manner of direct investment and thru foreign institutional investors. The policies written to stimulate the flow of foreign capital in to India provided a lot of required impetus for India to emerge as a horny destination for foreign investors. Consequently, the international capital inflows are hyperbolic hugely throughout last twenty years.

Any investment that flows from one country into another is thought as foreign investment. Flow

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of investment from alternative countries is inspired since it enhances and stimulates domestic investments in capital-scarce economies of developing countries. Since 1991 foreign investments within the country area unit allowed to require the shape of investments (thru stock market) in listed corporations referred as FII investments and investments in listed/unlisted corporations apart from through stock exchanges area unit referred as Foreign Direct Investment. In alternative words FDI refers to AN investment created by an organization primarily based in one country, into an organization primarily based in another country, corporations creating such direct investments have a big degree of influence and management over the corporate into that the investment is formed.

Foreign investment is additionally seen as an rising live of growing economic process. Investment has invariably been a problem for the developing economies like India so those countries have written measures to liberalize their policies for hospitable investment from countries that area unit plethoric in capital resources. The countries that area unit developed area unit that specialize in new markets wherever there's handiness of plethoric labors, scope for merchandise, and high profits area unit achieved to meet their growth ambitions.

**Literature Review:** During 1990, Political uncertainty and guarded economy has precipitated the Balance of Payment crises. The disabling economy and yoke external debts in conjunction with exports added to the woes of the Indian economy. Because the country is fatally poised to fail its external payments, leading to mortgage of its gold reserves, Indian economists opted for a lot of liberal and international approach to the age previous economic policy by gap its door to FDI inflows. Relaxation and globalization initiatives and polices have additionally instilled the arrogance of foreign investors.

The extant of literature on impact of FII is presented below.

Nitin Kansal examined the "Impact of FDI & FII on India". The objective of his research is to find the trends & patterns in the FDI from different countries flown into India during 1991-2007 period means i.e during post liberalization period & Influence of FII on movement of Indian stock exchange during the post liberalization period that is 1991to 2007. The key findings of this research are that Net FDI in India during 2005-2006 was valued at \$4.7 billion. During 2006-2007, it got tripled, to \$15.7 billion. Almost one-half of all FDI is invested in the Mumbai & New Delhi regions. Researcher concludes that the process of economic reforms initiated from July 1991 have opened up many sectors to the financial institutors. It concludes that FII did have high significant impact on the Indian capital market. A study conducted by the World Bank in 1997 reports that stock market liquidity improved in those emerging economies that received higher foreign investments.

Another researcher investigated the results of FII inflows on the Indian stock exchange drawn by the Sensex victimization monthly information from Jan 1993 to December 1997 and inferred that FII investments square measure a lot of driven by Fundamentals and don't reply to short-run changes or technical position of the market. In testing whether or not web FII Investment (NFI) has any impact on Sensex, a regression of NFI was calculable on lagged values of the primary distinction of NFI, initial distinction of Sensex and one lagged price of the error correction term

(the residual obtained by estimating the regression between NFI and Sensex). Similarly, regression with Sensex as variable quantity showed that one month lag of NFI is critical, that means that there's relation from FII to Sensex. This finding is in contradiction with the findings of Rai and Bhanumurthy, United Nations agency failed to notice any exploit from FII to come back in BSE victimization similar information between 1994 and 2002. However, Rai and Bhanumurthy have additionally found vital impact of come back in BSE on NFI.

**Objective of the Study:** The objective of this research is to study the relationship between FII, Indian Stock Market and Indian Economy.

**Research Problem:** This study is done to measure the significant impact of FII, Indian stock market on Indian Economy. This study is done to measure the relationship between FII, the stock index of Indian market and Indian Economy.

**Hypothesis:**

H01: Stock Market return in India is determined by flow of FII in India.

H02: Stock Market return in India is determined by the GDP of India.

H03: Stock Market return in India is determined by the exchange rate prevailing in the market.

**Research Methodology:**

Descriptive research has been used in this study and the data has been collected from NSE website, RBI website, money control website and Government gazette. The present study takes 1 year data into consideration. To study the impact of FII on Indian stock market, Nifty was a natural choice to be considered in the study, as it is the most popular stock market indices and widely used by market participants for benchmarking. GDP data is taken on quarterly basis and exchange rates daily data of 1 year are taken into consideration. GDP and Exchange Rate are taken as a measure of Indian Economy. National Stock Exchange's NIFTY Index is considered for measuring Indian Stock Market. Gross Domestic Product (GDP) is the broadest quantitative measure of a nation's total economic activity. More specifically, GDP represents the monetary value of all goods and services produced within a nation's geographic borders over a specified period of time. The exchange rate is a central price in economics. The exchange rate of the Indian rupee is dependent upon the market conditions. Though, in order to sustain effective exchange rates, the Reserve Bank of India (RBI) actively trades in the US\$/INR currency market. The RBI also intervenes in the currency markets to maintain low volatility in exchange rates and remove excess liquidity from the economy.

**Data Collection:** This study is based on secondary data. The required data related to FII and Exchange Rates have been collected from various sources i.e. Bulletins of Reserve Bank of India, publications from Ministry of Commerce, Govt. of India. The CNX Nifty data is down loaded from the websites of nseindia respectively. Daily closing index value are taken and averaged to get the index value for each year, which is considered as more representative figure of index for the entire year rather any one day's/month's closing figure of the index. The GDP data is taken from RBI Website. The present study considers 1 year's data starting from 1 Jan, 2015 to 31 Jan, 2015.

**Analytical Tools & Technique:** In order to analyze the collected data the statistical tools such as Linear Regression and VAR is used. The vector auto regression (VAR) is an econometric model used to capture the linear interdependencies among multiple time series. The vector auto regression (VAR) is commonly used for forecasting systems of interrelated time series and for analyzing the dynamic impact of random disturbances on the system of variables. The VAR approach sidesteps the need for structural modeling by treating every endogenous variable in the system as a function of the lagged values of all of the endogenous variables in the system.

**Model Building:** Further, to study the impact of Foreign Institutional Investors on Indian stock market, following models were framed and fitted.

Model depicts NIFTY as dependent variable; where as independent variables are FII, GDP and Ex-Rate.

$$\text{Nifty} = a + b_1 \text{Nifty} (-1) + b_2 \text{Nifty} (-2) + \text{FII} + \text{GDP} + \text{Ex-Rate}$$

**Data Analysis:** The data of FII, Nifty, GDP and Exchange Rate are taken in percentage. The data was checked for multi-co linearity and trend component on data was removed. Multi-co-linearity is not found in the data and trend component was found in Nifty and FII was removed by doing residual analysis and saving residuals in SPSS.

**Testing for Co linearity in the data:** The coefficients and Co linearity statistics when multi regression is applied are shown below. The two Co linearity statistics are tolerance and VIF. A value of VIF higher than 10, and tolerance less than 0.1 indicates a potential problem. For our current model the VIF values are all well below ten and the tolerance statistic is as well above 0.2 for all the independent variables. Hence there is no problem of Co linearity among the variables used in the model and multi regression is appropriate.

**Limitation of the study:** As the time available is limited and the subject is very vast the study is mainly focused on identifying whether there does exist a relationship between FIIs and Indian Equity Stock Market. It is mainly based on the data available in various websites. The inferences made are purely from the past year's performance.

**Findings of the Study:** After applying Anova test we find that the nifty index closing value is not affected by FII, GDP and rupee to dollar exchange rate. As, the Anova test result shows the significance value of 0.00, which is less than 0.05. So, the null hypothesis gets rejected. Hence, we can say that Nifty index is independent variable, fluctuations in nifty is independent of GDP and Exchange rate. However, when we regressed nifty with its own lagged values, we find that nifty is significantly affected by its past value. The linear regression of nifty with its two lagged values is showing significance value more than 0.05. Hence, nifty index is more dependent on its previous day closing amount, it can be said that movement of market will considerably be affected by its own past values. To verify our results, we applied Vector Auto Regression test and deduced the model confirming the conclusion. Nifty closing price is affected by its past or lagged values. Nifty closing price is affected by the flow of FII. Nifty closing price is least affected by GDP and Exchange Rates. From the current study it is evident that there is a strong correlation between Nifty & FII, and Nifty and its lagged values. There is low correlation between Nifty Prices & GDP. Also, low correlation between Nifty and Exchange rate.

**Model Equation:** The final model equation based on VAR results can be formulated as -

$$\text{Nifty} = 1.339032 - 0.642842 \text{ Nifty } (-1) - 0.338973 \text{ Nifty } (-2) + 0.359134 \text{ FII}$$

Hence it can be concluded that the impact of value of Nifty Index on FII flow in India is significant.

**Conclusion:**

It is found that after government's strong move of demonetization the GDP of India has however decreased with higher rate but stock market seems unaffected by this move. The investment share of Foreign Institutional Investors in Indian stock market also couldn't shake the growth of Indian stock market, and so is the exchange rate fluctuation between rupees and US dollars. However, the nifty index is strongly getting affected by its own previous day's values. Hence, it can be concluded that lagged values of nifty have strong impact on the movement of the stock market index.

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**Appendix**

**Collinearity Diagnostics<sup>a</sup>**

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	GDP	NSE closing
1	1	2.998	1.000	.00	.00	.00
	2	.002	36.815	.00	.10	.24
	3	.000	152.152	1.00	.90	.76

a. Dependent Variable: FII

**Collinearity Diagnostics<sup>a</sup>**

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	GDP	NSE closing
1	1	2.998	1.000	.00	.00	.00
	2	.002	36.815	.00	.10	.24
	3	.000	152.152	1.00	.90	.76

a. Dependent Variable: FII

**Residuals Statistics<sup>a</sup>**

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	60.9903	66.7745	64.1436	1.51686	240
Residual	-1.34731	1.41590	.00000	.55066	240
Std. Predicted Value	-2.079	1.734	.000	1.000	240
Std. Residual	-2.436	2.560	.000	.996	240

a. Dependent Variable: FII

**Collinearity Diagnostics<sup>a</sup>**

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	CP
1	1	2.000	1.000	.00	.00
	2	2.172E-7	3034.745	1.00	1.00

a. Dependent Variable: FII

**Residuals Statistics<sup>a</sup>**

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	61.5664	66.7200	64.1436	1.48186	240
Residual	-.95018	1.79792	.00000	.63889	240
Std. Predicted Value	-1.739	1.739	.000	1.000	240
Std. Residual	-1.484	2.808	.000	.998	240

a. Dependent Variable: FII

### Residual Closing Price

**Variables Entered/Removed<sup>b</sup>**

Mode	Variables Entered	Variables Removed	Method
1	CP <sup>a</sup>	.	Enter

a. All requested variables entered.

b. Dependent Variable: NSE closing

**Model Summary<sup>b</sup>**

Mode	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.765 <sup>a</sup>	.586	.584	223.37807

a. Predictors: (Constant), CP

b. Dependent Variable: NSE closing

**ANOVA<sup>b</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.679E7	1	1.679E7	336.580	.000 <sup>a</sup>
	Residual	1.188E7	238	49897.763		
	Total	2.867E7	239			

a. Predictors: (Constant), CP

b. Dependent Variable: NSE closing

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	409676.831	21878.983		18.725	.000	1.000	1.000
	CP	-2.939E-5	.000	-.765	-18.346	.000		

a. Dependent Variable: NSE closing

### Stationary and Unit Root Test:

Augmented Dickey-Fuller test (ADF) is a test for a unit root in a time series sample. It is an augmented version of the Dickey-Fuller test for a larger and more complicated set of time series models. The augmented Dickey-Fuller (ADF) statistic, used in the test, is a negative number. The more negative it is, the stronger the rejection of the hypothesis that there is a unit roots at some level of confidence.

The ADF tests are performed in E-views and results are as under.

**Nifty closing prices**

**Null Hypothesis:** D(CLOSE) has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic based on SIC, MAXLAG=14)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-14.77695	0.0000
Test critical values:		
1% level	-3.996918	
5% level	-3.428739	
10% level	-3.137804	

\*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(CLOSE,2)

Method: Least Squares

Date: 03/11/16 Time: 14:54

Sample (adjusted): 1/05/2015 12/31/2015

Included observations: 239 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(CLOSE(-1))	-0.958646	0.064874	-14.77695	0.0000
C	0.827671	11.23496	0.073669	0.9413
@TREND(1/01/2015)	-0.021815	0.080689	-0.270364	0.7871
R-squared	0.480639	Mean dependent var		-0.256695
Adjusted R-squared	0.476237	S.D. dependent var		118.8543
S.E. of regression	86.01660	Akaike info criterion		11.75943
Sum squared resid	1746130.	Schwarz criterion		11.80307
Log likelihood	-1402.252	Hannan-Quinn criter.		11.77702
F-statistic	109.2022	Durbin-Watson stat		1.993165
Prob(F-statistic)	0.000000			

Null Hypothesis: D(PCLOSING) has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 5 (Automatic based on SIC, MAXLAG=14)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-11.22870	0.0000
Test critical values:		
1% level	-3.997930	
5% level	-3.429229	
10% level	-3.138092	

\*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(PCLOSING,2)

Method: Least Squares

Date: 03/11/16 Time: 14:56

Sample (adjusted): 1/13/2015 12/31/2015

Included observations: 233 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(PCLOSING(-1))	-3.911584	0.348356	-11.22870	0.0000
D(PCLOSING(-1),2)	2.093975	0.313065	6.688636	0.0000
D(PCLOSING(-2),2)	1.435428	0.261957	5.479636	0.0000
D(PCLOSING(-3),2)	0.914093	0.197292	4.633195	0.0000
D(PCLOSING(-4),2)	0.572754	0.128209	4.467355	0.0000
D(PCLOSING(-5),2)	0.199791	0.063755	3.133743	0.0020
C	-0.029968	0.150060	-0.199708	0.8419
@TREND(1/01/2015)	0.000241	0.001064	0.226637	0.8209
R-squared	0.809604	Mean dependent var		0.005099
Adjusted R-squared	0.803680	S.D. dependent var		2.464198
S.E. of regression	1.091837	Akaike info criterion		3.047331
Sum squared resid	268.2242	Schwarz criterion		3.165822

Log likelihood	-347.0141	Hannan-Quinn criter.	3.095112
F-statistic	136.6779	Durbin-Watson stat	2.003736
Prob(F-statistic)	0.000000		

**FII**

Null Hypothesis: D(DFII,2) has a unit root

Exogenous: Constant

Lag Length: 5 (Automatic based on SIC, MAXLAG=14)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-11.43947	0.0000
Test critical values:	1% level	-3.458470	
	5% level	-2.873809	
	10% level	-2.573384	

\*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(DFII,3)

Method: Least Squares

Date: 03/11/16 Time: 15:17

Sample (adjusted): 1/14/2015 12/31/2015

Included observations: 232 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(DFII(-1),2)	-4.195938	0.366795	-11.43947	0.0000
D(DFII(-1),3)	2.365933	0.328322	7.206140	0.0000
D(DFII(-2),3)	1.658578	0.268787	6.170616	0.0000
D(DFII(-3),3)	0.987790	0.200603	4.924113	0.0000
D(DFII(-4),3)	0.489790	0.131624	3.721133	0.0003
D(DFII(-5),3)	0.167036	0.064752	2.579630	0.0105
C	0.004406	0.013818	0.318833	0.7501
R-squared	0.804147	Mean dependent var		-0.002340
Adjusted R-squared	0.798924	S.D. dependent var		0.469268
S.E. of regression	0.210427	Akaike info criterion		-0.249651
Sum squared resid	9.962861	Schwarz criterion		-0.145655
Log likelihood	35.95954	Hannan-Quinn criter.		-0.207710
F-statistic	153.9702	Durbin-Watson stat		2.045234
Prob(F-statistic)	0.000000			

**GDP**

Null Hypothesis: D(GDP,2) has a unit root

Exogenous: Constant

Lag Length: 4 (Automatic based on SIC, MAXLAG=14)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-11.69615	0.0000
Test critical values:		
1% level	-3.458225	
5% level	-2.873701	
10% level	-2.573327	

\*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(GDP,3)

Method: Least Squares

Date: 03/11/16 Time: 15:20

Sample (adjusted): 1/12/2015 12/31/2015

Included observations: 234 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDP(-1),2)	-3.500000	0.299244	-11.69615	0.0000
D(GDP(-1),3)	1.666667	0.261201	6.380775	0.0000
D(GDP(-2),3)	1.000000	0.202326	4.942527	0.0000
D(GDP(-3),3)	0.500000	0.133826	3.736199	0.0002
D(GDP(-4),3)	0.166667	0.065300	2.552310	0.0114
C	-5.31E-16	0.001984	-2.68E-13	1.0000
R-squared	0.805556	Mean dependent var		2.09E-16
Adjusted R-squared	0.801291	S.D. dependent var		0.068082
S.E. of regression	0.030349	Akaike info criterion		-4.126810
Sum squared resid	0.210000	Schwarz criterion		-4.038212
Log likelihood	488.8367	Hannan-Quinn criter.		-4.091087
F-statistic	188.9143	Durbin-Watson stat		2.047619
Prob(F-statistic)	0.000000			

**Exchange Rate**

Null Hypothesis: EXCHANGER has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic based on SIC, MAXLAG=14)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.472836	0.0447
Test critical values:		
1% level	-3.996754	
5% level	-3.428660	
10% level	-3.137757	

\*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(EXCHANGER)

Method: Least Squares

Date: 03/11/16 Time: 15:26

Sample (adjusted): 1/02/2015 12/31/2015

Included observations: 240 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EXCHANGER(-1)	-0.077826	0.022410	-3.472836	0.0006
C	4.773557	1.378995	3.461621	0.0006
@TREND(1/01/2015)	0.001789	0.000494	3.619518	0.0004
R-squared	0.053227	Mean dependent var		0.014313
Adjusted R-squared	0.045238	S.D. dependent var		0.232639
S.E. of regression	0.227316	Akaike info criterion		-0.112530
Sum squared resid	12.24640	Schwarz criterion		-0.069022
Log likelihood	16.50357	Hannan-Quinn criter.		-0.094999
F-statistic	6.662053	Durbin-Watson stat		1.936625
Prob(F-statistic)	0.001531			

**Vector Auto Regression**

The vector auto regression (VAR) is commonly used for forecasting systems of interrelated time series and for analyzing the dynamic impact of random disturbances on the system of variables. The VAR approach sidesteps the need for structural modeling by treating every endogenous variable in the system as a function of the lagged values of all of the endogenous variables in the system.

Vector Auto regression Estimates

Date: 03/11/16 Time: 15:39

Sample (adjusted): 1/07/2015 12/31  
/2015

Included observations: 237 after  
adjustments

Standard errors in ( ) & t-statistics in [ ]

	D(PCLOSING)
D(PCLOSING(-1))	-0.642842 (0.05980) [-10.7501]
D(PCLOSING(-2))	-0.338973 (0.05963) [-5.68498]
C	1.339032 (3.29047) [ 0.40694]
DFII	0.359134 (0.14058) [ 2.55460]
GDP	-0.032283 (0.60825) [-0.05308]
EXCHANGER	-0.016839 (0.09151) [-0.18401]
R-squared	0.345836
Adj. R-squared	0.331677
Sum sq. resids	317.8401
S.E. equation	1.173001

F-statistic	24.42451
Log likelihood	-371.0668
Akaike AIC	3.181998
Schwarz SC	3.269797
Mean dependent	0.015320
S.D. dependent	1.434845

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