

Impacts of FIIs' Investment volatilities on Indian Equity Market's Bench Mark Index-BSE SENSEX before and after the Implementation of Goods and Service Tax in India

Dr. R. Amuthan

MBA, M.Com, M.Phil, CMA(inter), Ph.D, MISTE
amuthan@karunya.edu

Associate Professor in Finance Area,
Department of Management Studies,
Karunya Institute of Technology and Sciences (Deemed to be University),
Coimbatore.

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Abstract:

FIIs have been very much positive on Indian markets since the beginning of 2019 and are expected to be net positive, as despite the slowdown, Indian the economy is expected to be one of the fastest growing economies in the world. In the past five years, FIIs had withdrawn funds only in 2018 from the Indian market due to the falling apart of Auto, IT and other durable product segments due to the impact of GST. The focus of this study is that “whether FPI or FII Investments creates impact or not on over all Indian Stock Market growth”. In order to prove this statement, FII Investments monthly data before and after the implementation of Goods and Service Tax and BSE SENSEX index points monthly data base before and after the implementation of GST are taken in to account. Those data will be analysed by means of using analytics algorithms namely Simple linear regression, bivariate correlation and paired sample T-Test.

Keywords: GST, FII, SENSEX, Analytics Algorithms

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I. INTRODUCTION

There was the felt need from both central and state Government side to introduce a single taxation system to eliminate this roadblock. In order to serve the needs of people, Goods and Service Tax was introduced on July 1st 2017. Ever since the introduction of GST in India, FIIs have invested Rs.31778 Crore in equities while withdrawing Rs.4723 crore from the debt market. It led us to get the net inflow of Rs.27055 crore. FIIs have been very happy with Indian shares to the tune of \$627 Million so far in November 2019 and they used to be the buyers in all seasons particularly in November 2019. Foreign Portfolio/Institutional Investors (FPI/FII) have been one of the biggest drivers of

India's financial markets and have invested around Rs 13.39 trillion (US\$ 191.60 billion) in India between FY02-20 (till December 4, 2019). Investments by FIIs/FPIs in India are regulated by the Securities and Exchange Board of India (SEBI) while the ceilings on such investments are maintained by the Reserve Bank of India (RBI). In 2018-19, India ranked seventh with a market cap of US\$ 2.1 trillion. From February to June 2019, FIIs invested a net of US\$ 11.4 billion in Indian equities. The Bench mark Index-SENSEX scaled a new high of 40749 points in November 2019. This month alone Sensex increased by 0.53% and in overall 2019, FIIs had gained 11.86% through BSE Sensex listed stocks. Undoubtedly it is said that adding icing on the cake, the passage of Goods and Service Tax

Bill (GST) has turned India in to 21st Century economy. Until now, as many as 269 Institutional investors fondly called as foreign portfolio Investors (FPIs) registered with Capital Market Regulator-Securities Exchange Board of India (SEBI) in April, indicating their willingness to be part of India's growth story. Adding 2016-17 databases, the total numbers of such investors are increased to 4580 as the records of Securities Exchange Board of India.

II. Objectives of the Study:

- ❖ To find out the trend of FII investments in India.
- ❖ To find out Whether FII investments created positive or negative impacts on Indian Stock Market.

III. Scope and Methodology

This study is limited to the scope of analysis only FII investments and its impact on stock market. In fact so many other domestic variables are also influencing stock market in various degrees. However, FII impacts are said to be the predominant one in stock market, because 70% of investments particularly in Derivatives and high frequency trading are the result of this investment only. With reference to the study methodology, Analytical research design is used to portray the amount of influence of FII investments on Equity market. This study is primarily a Bivariate Analysis where in two variables namely FII investment which is said to be an independent variable and BSE-SENSEX which is said to be a dependent variable, the conclusion of the study will be drawn out of using Correlation, Simple Linear Regression and Paired Sample-T-Test. There are five SENSEX Indices are available at Bombay Stock Exchange. Each Index has the list of Blue Chip Companies which means firms having sound financial fundamental. They are namely 1. S&P BSE SENSEX, 2. S&P BSE SENSEX 50, 3.S&P BSE SENSEX 50 TMC, S&P BSE SENSEX NEXT 50 and S&P BSE SENSEX Next 50 TMC. Out of 5

indices, only S&P BSE SENSEX is selected on simple random sampling basis.

IV. Hypothesis

Ho: No Significant influence between FII Investments growth and BSE SENSEX returns growth before GST Implementation;

Ho: No Significant influence of FII investment on Indian Equity Market/BSE SENSEX Returns growth post GST Implementation;

V. Analysis and Interpretation:

Here in this study, FII investments in Equity Market is said to be the dependent variable and BSE-Sensex is said to be the dependent variable which means When there is any purchase done by FIIs will cause positive refection and their sale will cause negative reflection in the overall growth of SENSEX points. Any purchase by FII is marked as "1" and any sale of FII is marked as "0". This 1 and 0 are used as Data Coding for using analytical algorithms. This has centred the Implementation of GST on JULY 1st 2017. The stock trading activity before this date and after this date is considered for the analysis. As far as the case of after GST implementation the data coding is done till Jan.2020. Because the stock market started getting volatilities afterwards due to worldwide COVID-19 Pandemic as it was declared by World Health Organization in Jan.30th 2020.

In the following tables, Net Purchase is the positive sign in Stock Market but Net Sales is the Negative sign in the Stock market. That is why is marked as "0". 30 Months before and after GST implementation data were taken in to account for the analysis. Before GST Implementation, data during Jan-2015 to June 2017 and after GST implementation, data during Aug.2017 to Jan.2020 were taken in to account.

Table-1 showing FII Net Purchase/ Net Sales before GST implementation in India

S.No.	Months	Net Purchase		Net Sales	
		Amount(Rs.in Crore)	Coding	Amount(Rs.in Crore)	Coding
1	January-2015	17689	1	-	-
2	February -2015	8892	1	-	-
3	March-2015	8717.04	1	-	-
4	April-2015	8702.56	1	-	-
5	May-2015	-	-	1895.03	0
6	June-2015	-	-	6580.24	0
7	July-2015	2502	1		
8	Aug.-2015			17248.65	0
9	Sep.-2015			5695.70	0
10	Oct.-2015	4204.26	1		
11	Nov.-2015			7628.81	0
12	Dec.-2015	205.49	1		
13	January-2016	-	-	10968.89	0
14	February -2016	-	-	7987.49	0
15	March-2016	23620.63	1	-	-
16	April-2016	3654.50	1	-	-
17	May-2016	2578.64	1	-	-
18	June-2016	5174.80	1	-	-
19	July-2016	11130.19	1	-	-
20	Aug.-2016	9785.56	1	-	-
21	Sep.-2016	9336.40	1		
22	Oct.-2016	-	-	4990.12	0
23	Nov.-2016	-	-	17736.95	0
24	Dec.-2016	-	-	8494.77	0
25	January-2017	-	-	1009.30	0
26	February -2017	10485.18	1	-	-
27	March-2017	33781.93	1	-	-
28	April-2017	-	-	2208.61	0
29	May-2017	9956.78	1	-	-
30	June-2017	4028.23	1	-	-

Interpretation: From the before GST table, it is well understood that purchase spree was more than sell spree between Jan.15 to June17. Purchase signs were 18 times but selling signs were 12 times. Between Jan-2015 to April 2015 and March 2016 to Sep.2016, there are continuous purchase signs. It makes sense that FII investment was ahead of withdrawals during Jan.2015 to June 2017.

Table-2 showing FII Net Purchase/ Net Sales after GST implementation in India

S.No.	Months	Net Purchase		Net Sales	
		Amount(Rs.in Crore)	Coding	Amount(Rs.in Crore)	Coding
1	Aug.17	15006.22	1	-	-
2	Sep.17	992.17	1	-	-
3	Oct.17	17960.72	1	-	-
4	Nov.17	-	-	1426.40	0
5	Dec.17	2463.28	1		

6	January-18	8931.55	1		
7	February -18	-	-	2771.36	0
8	March-18	-	-	7297.82	0
9	April-18	-	-	11868.30	0
10	May-18	-	-	17534.09	0
11	June-18	150.06	1	-	-
12	July-18	-	-	178.22	0
13	Aug.-18	2366.77	1	-	-
14	Sep.-18	-	-	10527.04	0
15	Oct.-18	-	-	10019.22	0
16	Nov.-18	2262.77	1	-	-
17	Dec.-18	5804.98	1	-	-
18	January-19	2601.07	1	-	-
19	February -19	9290.38	1	-	
20	March-19	15351.47	1		
21	April-19			4570.32	0
22	May-19	3788.99	1	-	-
23	June-19	7687.18	1	-	-
24	July-19	8417.77	1	-	-
25	Aug.-19	11414.83	1	-	-
26	Sep.-19			454.45	0
27	Oct.-19	5055.55	1	-	-
28	Nov.-19	3223.80	1		-
29	Dec.-19	6015.14	1	-	-
30	Jan-20			5359.51	0

Interpretation: It is quite evident that FII investment which means the amount of inflow was continuously on positive trajectory. investments were increased by 19 times whereas withdrawals were taken place only 11 times. Hence, the fact is that FII had not expressed their resentment even after the implementation of GST in India. More particularly from Nov.18 to Dec.19, the size of

Table-3 Showing BSE Sensex positive or Negative Growth before GST Implementation in India

S.No.	Months	Net Increase		Net Decrease	
		Amount(Rs.in Crore)	Coding	Amount(Rs.in Crore)	Coding
1	Jan-15	1683.53	1	-	-
2	Feb-15	178.55	1	-	-
3	Mar-15	-	-	-1404.01	0
4	Apr-15	-	-	-946.18	0
5	May-15	817.13	1	-	-
6	Jun-15	-	-	-47.61	0
7	Jul-15	333.73	1	-	-
8	Aug-15	-	-	-1831.47	0
9	Sep-15	-	-	-128.26	0
10	Oct-15	502	1		
11	Nov-15	-	-	511.16	0
12	Dec-15	-	-	-28.13	0

13	Jan-16	-	-	-1246.85	0
14	Feb-16	-	-	-1868.69	0
15	Mar-16	2339.86	1	-	-
16	Apr-16	264.76	1	-	-
17	May-16	1061.34	1	-	-
18	Jun-16	331.76	1	-	-
19	Jul-16	1052.14	1	-	-
20	Aug-16	400.31	1	-	-
21	Sep-16			-586.21	0
22	Oct-16	64.25	1	-	-
23	Nov-16			-1277.4	0
24	Dec-16			-26.35	0
25	Jan-17	1029.5	1	-	-
26	Feb-17	1087.36	1	-	-
27	Mar-17	877.18	1	-	-
28	Apr-17	297.9	1	-	-
29	May-17	1227.4	1	-	-
30	Jun-17			-224.19	0

Interpretation; When it comes to BSE Sensex performance, all 30 stock put together was witnessed an increase by 17times and 13 times, it happened to show its negative growth between Jan.15 to Jun-17.

Table-4 Showing BSE Sensex positive or Negative Growth after GST Implementation in India

S.No.	Months	Net Increase		Net Decrease	
		Amount(Rs.in Crore)	Coding	Amount(Rs.in Crore)	Coding
1	Aug-17	-	-	-784.45	0
2	Sep-17	-	-	-446.77	0
3	Oct-17	1929.41	1		
4	Nov-17			-63.78	0
5	Dec-17	907.48	1		
6	Jan-18	1908.19	1		
7	Feb-18			-1780.98	0
8	Mar-18			-1215.36	0
9	Apr-18	2191.68	1	-	-
10	May-18	162.02	1	-	-
11	Jun-18	101.1	1	-	-
12	Jul-18	2183.1	1	-	-
13	Aug-18	1038.49	1	-	-
14	Sep-18	-2417.93	1	-	-
15	Oct-18			-1785.09	0
16	Nov-18	1752.25	1		
17	Dec-18			-125.97	0
18	Jan-19	188.36	1		
19	Feb-19			-389.25	0
20	Mar-19	2805.47	1	-	-
21	Apr-19	358.64	1	-	-

22	May-19	682.65	1	-	-
23	Jun-19	-319.56	1	-	-
24	Jul-19			-1913.52	0
25	Aug-19			-148.33	0
26	Sep-19	1334.54	1	-	-
27	Oct-19	1461.72	1	-	-
28	Nov-19	664.76	1	-	
29	Dec-19	459.93	1	-	-
30	Jan-20	-	-	-530.25	0

Interpretation: It is quite comprehensible that Sensex was continuously pouring in positive signs by 19 times during Aug.17 to Jan.20. Stock Market growth was continuously found to be an uptick only after the implementation of GST. Between Apr-18 to Sep.18, Mar-19 to Jun-19 and Sep.19 to Dec.19, Indian Bench Mark Index Sensex had witnessed only purchasing trend amid GST implementation in India.

are tested with the help of Bivariate Correlation, Linear regression and Paired sample T-Test. The degree of relationship between FII and SENSEX will be found with the correlation, the amount of influence of FII on SENSEX as independent variable is analysed with the help of linear regression and the mean difference between FII and SENSEX before GST and after GST implementation is analysed through Paired Sample T-Test.

Association between FII investments in Equity and over all Sensex Performance

Three facts between FII investments in Equity and BSE SENSEX are analysed and there by hypothesis

VI. T-Test

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
FII before GST	30	.57	.504	.092
FII after GST	30	.63	.490	.089

One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
FII before GST	6.158	29	.000	.567	.38	.75
FII after GST	7.077	29	.000	.633	.45	.82

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
BSE SENSEX Before GST	30	.57	.504	.092
BSE SENSEX After GST	30	.63	.490	.089

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BSE SENSEX Before GST	6.158	29	.000	.567	.38	.75
BSE SENSEX After GST	7.077	29	.000	.633	.45	.82

Interpretation

When it is reference to T-Test, 30 Months before GST and 30 Months after GST implementation were taken in to account. The result is significant 0.000 which is less than the acceptable level of 0.05. FII investments were found to be positively increased by 0.096(0.633-0.567). Though it was an increase, it was only a minuscule in number. The same trend was reflected in the case of BSE SENSEX before and after the implementation of GST. Before GST,

the mean difference was 0.567 but after GST, the mean difference was 0.633. The net increase in the difference is 0.066. It was also a minuscule in number. From the reading of this trend, it was quite evident that there is the miniscule increase in FII investments and BSE SENSEX increase both in the case of before and after the implementation of GST but not of any significant increase took place.

ANOVA

BSE SENSEX Before GST

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.539	1	1.539	7.392	.011
Within Groups	5.828	28	.208		
Total	7.367	29			

Correlations

		FII Investment Before GST	BSE SENSEX Before GST
FII Investment Before GST	Pearson Correlation	1	.457**
	Sig. (1-tailed)		.006
	N	30	30
BSE SENSEX Before GST	Pearson Correlation	.457**	1
	Sig. (1-tailed)	.006	
	N	30	30

**. Correlation is significant at the 0.01 level (1-tailed).

ANOVA

BSE SENSEX After GST

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.134	1	.134	.550	.465
Within Groups	6.833	28	.244		
Total	6.967	29			

Correlations

		FII Investment after GST	BSE SENSEX after GST
FII Investment after GST	Pearson Correlation	1	.139
	Sig. (1-tailed)		.232
	N	30	30
BSE SENSEX after GST	Pearson Correlation	.139	1
	Sig. (1-tailed)	.232	
	N	30	30

Interpretation:

The application of One Way Anova indicates the mean performance of FII investments and the mean performance of BSE SENSEX returns Growth in between before and after GST Implementation. When it comes to before GST between groups namely FII Investments and BSE SENSEX, F value is 7.392. It is quite large in size which says that the mean performance of FII Investments and mean performance of BSE SENSEX are not similar. The significant value is 0.011 which is lower than the critical value 0.05 at 95% confidence level. This result is quite supported by Correlation Analytics.

It shows that if FII Investments are increased by 1 time, BSE SENSEX Points were increased by 1.45times. From these statistical values, it is quite obvious that there was the significant difference between BSE SENSEX Points and FII Investments

before the implementation of GST and thereby it has to be accepted that Null Hypothesis should be rejected before the implementation of GST. When the results of ANOVA after the implementation of GST, the F-Value is only 0.550 which is minuscule.

Moreover the result of Anova is above the acceptance level of 0.05 which is lower than 0.465. This value indicates that there is no difference in the mean performance between FII investments (Group-1) and BSE SENSEX (Group-2). This value is well supported by Correlation values also. As per the after GST correlation statistics, the association was only 0.139 and significant value is 0.232 which is greater than 0.05. Hence in Post GST implementation, the increase or decrease of FII investments did not create significant impacts on BSE SENSEX. It is decided that Null hypothesis should be accepted.

VII. Regression Results before GST Implementation

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	FII before GST ^b	.	Enter

a. Dependent Variable: BSE SENSEX before GST,

b. All requested variables entered

Co-efficient

		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.308	.127		2.432	.022	.048	.567
	FII before GST	.457	.168	.457	2.719	.011	.113	.801

a. Dependent Variable: BSE SENSEX before GST

Model Summary

Model	R	R-Square	Std Error in Estimates	R-Square Change	Df1	Df2	Sig.	Durbin Watson
1	0.457	0.209	0.456	0.209	1	28	0.011	2.118

Regression Results after GST Implementation

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	Df1	Df2	Sig.
1	.139 ^a	.019	-.016	.494	.019	.550	1	28	.465

Co-efficient

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.545	.149		3.662	.001	.240	.851
	FII Investment After GST	.139	.187	.139	.741	.465	-.245	.522

a. Dependent Variable: BSE SENSEX After GST

Interpretation: This Regression test is an accurate one because R-square value (0.457) is less than Durbin Watson (2.118). The regression equation before GST Implementation is $BSE\ SENSEX(Y) = 0.308(a) + 0.457(FII\ Before\ GST)$. It shows that when there is the increase of FII investments by 1 time, BSE SENSEX Points were significantly increased by 1.45 times at 0.011 Significant level and thereby Null Hypothesis should be rejected. There is the significant difference Between the two variables. But in the case of equation after GST Implementation is $BSE\ SENSEX(Y) = 0.545(a) + 0.139(FII\ Investment\ After\ GST)$ at 0.465 significant level which means that there is least influence of FII investments on BSE SENSEX during **post GST implementation period and there by Null hypothesis should be accepted.**

FII Investments and BSE SENSEX Points growth is lower.

❖ **ANOVA** result before GST implementation is 7.392 but after GST implementation is only 0.550. This is clearly proving that there was the significant impact took place between FII investments and BSE SENSEX before GST Implementation but after GST in force; there was no significant impact between FII Investments and BSE SENSEX Points.

❖ As per **Regression** result, the amount of impact of FII Investments on SENSEX points growth was 0.457 at 0.011 significant values but after GST in force, the same FII Investments impacts on SENSEX Points growth became only 0.139 at 0.465 significant value. This is yet another proof that Null hypothesis should be rejected before GST implementation and the same one should be accepted post GST period as it was proved with analytical algorithms.

VIII. Findings Of the Study:

❖ When it is reference to **T-Test**, 30 Months before GST and 30 Months after GST implementation were taken in to account. The result is significant 0.000 which is less than the acceptable level of 0.05. FII investments were found to be positively increased by **0.096**(0.633-0.567). But after GST, the mean difference was **0.633**. Positive increase before GST Implementation is comparatively higher than post GST periods. It is found that Null hypothesis should be rejected during before GST implantation periods as it is higher impacts Of FII Investments on stock market performance. But after GST implantation, Null Hypothesis should be accepted as mean difference between

IX. Conclusion:

This study has centred on FIIs activity and their benefits to Indian Capital Market. Their Purchase has been regarded as Positive sign and their sale has been regarded as negative sign with regard to BSE SENSEX Points, increase is the positive growth and its decrease is the negative growth. Whole gamut of study is testing that whether the FII investments created positive or negative impacts on the movements of SENSEX Points. It was observed

through the use Analytical algorithms (Statistical Techniques) with 60 months data put together before implementing GST and after implementing GST in India, there was the impact of FII presence in positive form on Benchmark SENSEX Index particularly before GST implementation but it had very less effect on the movement of SENSEX Points after GST came in to force in India.

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Author’s Profile



Dr.R.Amuthan, MBA, M.Com, M.Phil, CMA(inter), Ph.D, MISTE
Associate Professor in Finance Area,
Department of Management Studies,
Karunya Institute of Technology and Sciences
(Deemed to be University),
Coimbatore.