Dynamics of Relationship of Institutional Investors' Investments and Sensex: An Empirical Study

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Abstract

India has emerged to be one of the leading destinations for Institutional Investments both domestic as well as foreign. The role and importance of Institutional Investments during last few years has increased manifold due to globalization of the different markets, which also led to development of Indian Stock Market. The objective of the present study is to analyze the dynamism of relationship between Institutional Investors Investments and Indian Stock Market for developing competencies and skills for global competitiveness. To test the objective Foreign Institutional Investors (FIIs) and Domestic Institutional Investors (DIIs) investments in Indian Stock Market have been taken from the year 2006-07 to 2015-16. To represent Indian Stock Market SENSEX of Bombay Stock Exchange was used. Correlation Analysis, Regression Analysis, Johansen Co-integration Test and Granger Causality Test have been applied to analyze the relationship.

Key Words: Institutional Investors Investments; Foreign Institutional Investments; Domestic Institutional Investors; SENSEX; Indian Stock Market.

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INTRODUCTION

India has emerged as one of the leading investment destinations for foreign as well as domestic Institutional Investors' Investments. The Institutional Investors have emerged as noteworthy players in the Indian Stock Market and their growing contribution works as an important feature. The role and importance of Institutional Investments during last few years has increased multiple due to integration of the markets, which has led to development of competencies in Indian Stock Market and skills for global competitiveness. The development of any stock market largely depends on Institutional Investments due to limited role of individual and retail investors' investment capabilities. This role takes on a far greater significance in developing markets like India where a vast majority of investors are not yet comfortable with investing directly in the stock market that too huge amount like Institutional Investors invest into.

Since Indian Stock Market is an attractive investment avenue for Institutional Investors, resulting into steadily growing stock market, it has further allured Foreign Investors group and Domestic Investor's community in the past. The major part of investment in Indian Stock Market is attributed by Institutional Investors among whom Foreign Institutional Investors (FIIs) and Domestic Institutional Investors (DIIs) are of prime importance. One eminent matter of concerned is whether these Institutional Investors regulate the Indian Stock Market and hold any relationship between them. So, it is imperative to judge the dynamism of relationship of Foreign Institutional Investors (FIIs) and Domestic Institutional Investors (DIIs) with Indian Stock Market.

Indian Stock Market

Indian Stock Market is represented by two major stock exchanges i.e. Bombay Stock Exchange (BSE) and National Stock Exchange (NSE), and their representative index are SENSEX and S & P CNX Nifty respectively. One new stock exchange Metropolitan Stock Exchange of India Limited (MSEI) introduced during the year 2015-16. Total market capitalization of BSE, NSE and MSEI was Rs.94,75,328, Rs. 93,10,471 and Rs. 91,82,759 respectively as on 31 March

2016. Total number of listed companies on BSE, NSE and MSEI was 5911, 1808 and 80 respectively (SEBI Annual Report, 2015-16).

Institutional Investors

An Institutional Investor is an investor that is registered in the country in which it is trading. The Foreign Institutional Investors (FIIs) are basically referred to investors who are organized in the form of an institution or entity and indulge in investing funds in the financial market of a foreign country, i.e., different from where the entity was originally registered or incorporated. In India, FIIs can invest their funds in the country only under the norms prescribed by Security and Exchange Board of India. Domestic Institutional Investors (DIIs) refers to the Indian institutional investors who are investing in the financial markets of India especially into Stock Market

RATIONALE

Indian Stock Market is witnessing growing participation of Institutional Investments, both FIIs as well as the DIIs. Foreign Investment provides a channel through which countries gain an access to essential foreign capital. FIIs investments is perceived very important for any emerging economy like India, because FIIs investments may impact on the domestic financial market in short run and a real impact in long run specifically on capital market. DIIs are supporting Indian Stock Market stepping into buying every time, when FIIs are selling badly as there exist no future tomorrow. The existence, interaction and reflection of DIIs are essential to safeguard, promote and mature the stock market while FIIs operate. So, it becomes imperative to examine the dynamism of relationship of Institutional Investors' Investments and Indian Stock Market.

LITERATURE REVIEW

Mukherjee, et al., (2002) in their study analyzed daily flows of FIIs Investments (net investment, purchasing and sales) on Indian Stock Market for the period of 1999-2002. Study used BSE SENSEX for the market return illustration. On applying Granger Causality Test and Multiple Regression Test, it was found that FIIs purchase decision was not caused by Indian Stock Market return significantly. But according to Granger Causality Test it was found that BSE returns was

an important determinant of FIIs Investments. Another research by Chittedi,(2008)analyzed performance of the SENSEX and FIIs in the Indian Stock Market. It revealed that the liquidity as well as the volatility was highly influenced by FIIs inflows in BSE SENSEX, so FIIs was the significant factor for determining the liquidity and volatility in the stock market prices. The study concluded that the FIIs who had been so bullish in India for the last so many years might start looking at other cheaper emerging markets for better returns. So, it is very tough to predict that whether the SENSEX will sustain the momentum in future or not.

Market capitalization and stock market turnover of India have significant positive influence only in short-run but stock market risk had negative influence on FIIs inflows to India. Among macroeconomic determinants, economic growth of India had positive impact on FIIs Investment in both long run and short run, but all other macroeconomic factors have significant influence only in long run like inflation (Kaur and Dhillon, 2010). In a study by Loomba(2012),Pearson Correlation was applied to understand the dynamics of the trading behavior of FIIs and its effect on the Indian Equity Market. The study was based on daily data. BSE SENSEX and FII activity over a period of 10 years spanning from 1st January 2001 to 31st December 2011 was observed. The study found a significant positive correlation between FII activity and its effects on Indian Capital Market and concluded that the movements in the Indian Capital Market were fairly explained by the FII net inflows.

A cause and effect relationship was investigated between FIIs and Indian Capital Market in a study by Shrikanth and Kishore(2012). It was observed that FIIs carried the institutional flavor in terms of market expertise and fund management by way of pooling small savings from retail investors. The main objective of FIIs was maximizing returns and minimizing risk while keeping liquidity of the investments intact. It was concluded that net FIIs inflows had a positive impact on the Indian Stock Market and Foreign Exchange Reserves. A study by Mehta and Sharma (2015) examined daily observation of FIIs and Indian Stock Market to study the association and causation in these two actors. The objective of the study was to identify is some co-integration exists between the global investment and stock market performance or not. The study concluded that applied econometrics tools were convincingly captivating and may have a conspicuous

effect on the strategies of domestic and international investors before investing in Indian Stock Market. Because of more digitized stock market with advance software's for trading of stock market products and entrée of investors across the world stock market may root information spillover from one bourse to another.

OBJECTIVES

- To study the relationship between FIIs Net Investments, DIIS Net Investments and SENSEX.
- To study the impact of FIIs Net Investments and DIIs Net Investments on SENSEX individually.
- To check the Co-integration among the FIIs Net Investments, DIIs Net Investments and SENSEX.
- To study cause and affect relationship among FIIs Net Investments, DIIs Net Investments and SENSEX.
- To explore role of FIIs Net Investments and DIIs Net Investments for developing competencies and skills for global competitiveness in Indian Stock Market.

Hypothesis

To test the above objectives following null hypothesis were framed:

- H_{01}: There exists no significant relationship between DIIs Net Investments and SENSEX.
- H_{02}: There exists no significant relationship between FIIs Net Investments and SENSEX.
- H_{03}: There exists no significant relationship between DIIs Net Investments and FIIs Net Investments.
- H_{04}: DIIs Net Investments have no significant impact on SENSEX.
- H_{05}: FIIs Net Investments have no significant impact on SENSEX.
- H_{06}: There exists no Co-integration among DIIs Net Investments, FIIs Net Investments and SENSEX.
- H_{07}: DIIs Net Investments does not granger cause SENSEX.
- H_{08}: SENSEX does not granger cause DIIs Net Investments.
- H_{09} FIIs Net Investments does not granger cause SENSEX.

- H_{010}: SENSEX does not granger cause FIIs Net Investments.

- H_{011}: DIIs Net Investments does not granger cause FIIs Net Investments.

- H_{012}: FIIs Net Investments does not granger cause DIIs Net Investments.

RESEARCH METHODOLOGY

The Study
The study empirically tested dynamism of relationship between FIIs Net Investments and DIIs Net Investments in equity cash segment and SENSEX.

The Sample
DIIs Net Investments, FIIs Net Investments and SENSEX are the variables used for the study. Monthly net investments of FIIs Investment and DIIs Investment in equity cash segment and monthly closing values of SENSEX index from April 2007 to March 2016 were taken for the study.

The Tool for Data Collection
The present study is based on secondary data. FIIs Net Investments and DIIs Net Investments in equity cash segment and SENSEX Index values have been used. The data were collected from websites http://www.bseindia.com, http://www.nseindia.com, http://www.sebi.com, etc.

The Tool for Data Analysis
Correlation Analysis was carried out to find and study the relationship between FIIs Net Investments, DIIs Net Investments and SENSEX. Regression Analysis was used to study the impact of FIIs Net Investments and DIIs Net Investments on SENSEX individually. Johansen Co-integration Test was carried on to analyze long term relationship between the variables involved and Granger Causality Test was applied to determine the directional relationship between the variables.

ANALYSIS AND INTERPRETATION

Correlation Analysis

Karl Pearson's Coefficient of Correlation was applied to study the relationship between FIIs Net Investments, DIIs Net Investments and SENSEX at 5% level of significance. As per Table 1 given below and on analysis, it was conferred that, DIIs Net Investments had very low degree of negative correlation with SENSEX. Thus, the first null hypothesis H_{01} was accepted, i.e. There exists no significant relationship between DIIs Net Investments and SENSEX.

FIIs Net Investments pointed out the very low degree of positive correlation with SENSEX. Therefore, the null hypothesis H_{02} was also accepted, which states that there exists no significant relationship between FIIs Net Investments and SENSEX

DIIs Net Investment and FIIs Net Investment showed very low negative correlation with each other. Thus, the null hypothesis H_{03} was accepted which says that there exists no significant relationship between DIIs Net Investments and FIIs Net Investments. It means that there was no significant relationship between DIIs Net Investments and SENSEX.

Regression Analysis

As shown below in Table 2, the Regression Model 1 with SENSEX as dependent variable and DIIs Net Investment as independent variable had yielded 0.044 as an R Square Value, indicating that, 4.4% of the variation in SENSEX was caused by changes in DIIs Net Investments. The corresponding F Statistics (goodness of fit) was 1.27 and the corresponding p-Value was 0.234 (p > 0.05), indicated that, the impact of DIIs Net Investment on SENSEX was not significant at 95% level of significant. The corresponding T Statistic (level of significance) at 95% level of significance was 1.568, conferring that the regression coefficient was not significant. The corresponding p-value was 0.1195 (p > 0.05), pointed out that, there was no significant impact of DIIs Net Investment on SENSEX. Thus, the null hypothesis H_{04} was accepted which means, DIIs Net Investments have no significant impact on SENSEX.

As shown in Table 2, the Regression Model 2 with SENSEX as dependent variable and FIIs Net Investment as independent variable had yielded 0.0067 as an R Square Value, indicating that, 0.67% of the variation in SENSEX was caused due to changes in FIIs Net Investments. The corresponding F statistics (goodness of fit or god fit) was 0.756 and the corresponding p-value

was 0.3862 ($p > 0.05$), pointing out that, the impact of FIIs Net Investment on SENSEX was not significant at 95% level of significant. The corresponding T Statistic (level of significance) at 95% level of significance was 1.17, conferring that the regression coefficient was not significant. The corresponding p-value was 0.2422 ($p > 0.05$), pointing out that, there was no significant impact of DIIs Net Investment on SENSEX. Thus, the null hypothesis H_{05} was accepted, i.e. FIIs Net Investments have no significant impact on SENSEX.

Johansen Co-integration Test

Table 3.a. and 3.b. as shown below present results of Johansen Co-integration Test. Unrestricted Co-integration Rank Test (Trace) stated that, the studied variables had p values < 0.05 in all the three cases of Co-integration equations. Unrestricted Co-integration Rank Test (Maximum Eigen Value) also states that the all studied variables had p values < 0.05 in all the three cases of Co-integration equations. Hence, the null hypothesis H_{06} was accepted, which confirms that there exists no Co-integration among DIIs Net Investments, FIIs Net Investments and SENSEX. It means that the variables were not co-integrated with each other. So, it clarified that DIIs Net Investments, FIIs Net Investments and SENSEX had no long term relationship and equilibrium with each other and they moved independently in long run.

Granger Causality Test

Granger Causality Test as shown in Table 4 below indicated the directional bilateral relationship among the variables studied. The study inferred that the p values > 0.05 in case no. 1, 2, 3 and 5 at lags ranging from 1 to 18. So the null hypothesis $H_{07,}$ $H_{08,}$ $H_{09,}$ H_{11} were accepted individually. This proves that DIIs Net Investments does not granger cause SENSEX, SENSEX does not granger cause DIIs Net Investments, FIIs Net Investments does not granger cause SENSEX and; DIIs Net Investments does not granger cause FIIs Net Investments. Further the study inferred that the p values < 0.05 in case no. 4 and 6 at lags was ranging from 1 to 18. Therefore the null hypothesis H_{10} and H_{12} was rejected individually. This shows that SENSEX does not granger cause FIIs Net Investments and FIIs Net Investments does not granger cause DIIs Net Investments;. It means that DIIs Net Investments does not granger cause SENSEX bi-

directionally; FIIs Net Investments does not granger cause SENSEX uni-directionally; DIIs Net Investments does not granger cause FIIs Net Investments uni-directionally.

RESULTS AND DISCUSSION

Correlation Analysis depicted no significant correlation; Regression Analysis stated no significant impact of independent variables on dependent variables; Johansen Co-integration Test conferred no long term relationship; and Granger Causality Test revealed that majority of the directional relationships between variables showed their independency. It can be concluded that SENSEX affected FIIs Net Investments and FIIs Net Investments affected DIIs Net Investments. The study stated that there existed no significant relationship between DIIs Net Investments and SENSEX. It was also found that there existed no significant relationship between FIIs Net Investments and SENSEX. On the other hand DIIs Net Investment and FIIs Net Investment had showed very low negative correlation with each other. It showed the independency of the variables. There was no significant impact of DIIs Net Investments and FIIs Net Investments on SENSEX individually. Non existence of significant impact further described the independency of variables. The three variables DIIs Net Investment, FIIs Net Investment and SENSEX were not found to be Co-integrated. The existence of non co-integration indicated that the variables had no long term relationship with each other and will move independently in long run.

DIIs Net Investment does not Granger Cause SENSEX bi-directionally. It showed that DIIs Net Investment and SENSEX were independent and SENSEX and DIIs Net Investment were also independent. FIIs Net Investments does not Granger Cause SENSEX. It means FIIs Net Investment and SENSEX were independent. DIIs Net Investments does not Granger Cause FIIs Net Investments unidirectional. It means that DIIs Net Investments and FIIs Net Investments were independent. SENSEX Granger Cause FIIs Net Investments, it means SENSEX and FIIs Net Investment were not independent. FIIs Net Investments Granger Cause DIIs Net Investment, it means FIIs Net Investments and DIIs Net Investment were not independent. Out of the six directional causal relationships, four directional causal relationships were found independent, but

two directional causal relationships were not independent. So, it can be said that on the basis of causal relationship majority of the variables were independent.

Though, majority of the tests showed the independency of the variables but, Granger Causation stated that SENSX affected FIIs Net Investments uni-directionally. FIIs Net Investment affected DIIs Net investments uni-directionally. So, it probably showed a chain based reaction with some lags that SENSEX affects FIIs Net Investments but FIIs Net Investments also affects DIIs Net investments. Change in SENSEX brings change in FIIs Net Investments and change in FIIs Net Investments brings change in DIIs Net Investments, but the nature of change has not been predicted leaving scope for further study.

Further the result of Co-integration showed that there is no long term relationship between FIIs Net Investments, DIIs Net Investments and SENSEX. It showed that FIIs Net Investments affect Indian Stock Market for short tern only. For long term one can not rely on FIIs Net Investments. In this situation DIIs Net Investments plays a supportive role.

When ever SENSEX is higher and achieves a new level, FIIs are selling as there exist no tomorrow; DIIs are working as supporting forces in the Indian Capital Market stepping into buying. Understanding the FIIs Net Investments is very important for any emerging economy as FIIs Net Investments exerts a larger impact on the domestic financial market in the short run. A drastic fall even can break the confidence of FIIs and can also create high redemption pressure on domestic mutual funds. Thus, it is not beneficial for DIIs to let price rise too fast or fall too much. So DIIs existence, interaction and reflection are essential to safeguard, promote and mature the stock market when FIIs are allowed in to operate (Market Star Team, 2010).

CONCLUSION

It is concluded that there was no correlation between DIIs Net Investments, FIIs Net Investments and SENSEX. There was no impact of Institutional Invertors' Investments on SENSEX. Also there was no long term relationship between the DIIs Net Investments, FIIs Net Investments and

SENSEX. SENSEX affects FIIs Net Investments uni-directional. FIIs Net Investments affects DIIs Net Investments uni-directional.

SUGGESTIONS AND RECOMMENDATIONS

The Government of India is trying its best to attract the FIIs to invest in the Indian Stock Market but on the other hand one should be careful of the future risk of the foreign capital outflows. So, it may be suggested to the investors, both existing and potential, and policy makers regarding Foreign Institutional Investors' behaviour that long term developmental policies for economy should not be based upon inflow of FIIs. To support Indian Stock Market especially when FIIs are going out, mutual funds should invest more in equity in the stock market. Moreover, the Government and policy makers should focus on strengthening the banking system for long term results rather than promoting FIIs because FIIs are fair weather friends. Banks can provide the surest vehicle for promoting long-term growth and industrialization in the economy. Government should set a minimum limit as well as maximum limit for FIIs Net Investments in India, in order to avoid volatility in Indian Stock Market. Further, it should be cautioned that too much foreign portfolio investment damages the power of the domestic companies, especially when foreign investor begins to hold large stakes as non-promoting shareholders. In this regard, the market regulator has an important role in integrating financial markets.

It is recommended that individual investors' interests should also be safeguarded and promoted, as normally they are not switching from investments as FIIs do. Similarly the laws should be such that it protects domestic investors. Derivative instruments which facilitate long term foreign investment with specified lock in periods be introduced.

IMPLICATIONS

It is implied that DIIs Net Investments, FIIs Net Investments and SENSEX are working independently in the market without holding any predictive correlation which indicates market efficiency status. The Regression Models needed further to be improved by including other

variables to express the relationship more accurately. Leaving further scope for finding other variables required in regression equation. Non existence of co-integrations among the variables also explains the independency of the operating variables which shows maturity of the market. Unidirectional impacting of SENSEX to FIIs Net Investments and in turn FIIs Net Investment impacting to DIIs Net Investments seems to be natural logical sequencing behavior of the studies variables. Thus, the objective to analyze the dynamism of relationship between Institutional Investors Investments and Indian Stock Market is clear in terms of correlation, regression, co-integration and granger causality which will help in developing competencies and skills for global competitiveness of Indian Stock Market.

REFERENCES

Chittedi, Krishna Reddy (2008). Volatility of Indian Stock Market and FIIs. *The Indian Economy Review*, 5(31).

Kaur, Manjinder and Dhillon, S. Sharanjit (2010). Determinants of Foreign Institutional Investor's Investment in India. *Eurasian Journal of Business and Economics*, 3(6), 57-70.

Loomba, J. (2012). Do FIIs Impact Volatility of Indian Stock Market? *IRJC International Journal of Marketing, Financial Services & Management Research*, 1(7), 80-93. Cited in: www.indianresearchjournals.com.

Market Star Team (2010). FIIs and DIIs Trading Trends in Indian Stock Market. Cited in: http://marketstarcapital.com/fii-dii-trading-trends-in-indian-stock-market. Visited on: August 16, 2015.

Mehta, Kiran and Sharma, Renuka (2015). A Study of Linkage between Indian Stock Market and Macroeconomic Indicators. *Journal of Banking, Information Technology and Management,* 12(1), 21-29.

Mukherjee, P., Bose, S., and Coondoo, D. (2002). Foreign Institutional Investment in Indian Equity Market: An Analysis of Daily Flows During January 1999 – May 2002. *ICRA Bulletin Money & Finance,* 2(9-10), 21-51.

Shrikanth, Maram and Kishore, Braj (2012). Net FIIs Flows into India: A Cause and Effect Study. *ASCI Journal of management*, 41(2), 107-12.

ANNEXURES

Table 1: Correlation Analysis

Variables	SENSEX	DIIS_NI	FIIS_NI
SENSEX	1	-0.211227408	0.081551722
DIIS_NI	-0.211227408	1	-0.129956089
FIIS_NI	0.081551722	-0.129956089	1

Table 2: Regression Analysis

Regression Model	Dependent Variable	R Square	F	P	T	P	Beta
1	SENSEX	0.044617	1.277175	0.23448	1.568884	0.1195	0.987193
2	SENSEX	0.006651	0.756559	0.386251	1.175756	0.2422	0.750876

Table 3: Johansen Co-integration Test

Table 3.a.: Unrestricted Co-integration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigen Value	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.20557	61.69083	29.79707	0
At most 1 *	0.177956	36.37645	15.49471	0
At most 2 *	0.126051	14.82066	3.841466	0.0001

Trace test indicates 3 Co-integrating equation(s) at the 0.05 level

* denotes acceptance of the null hypothesis at the 0.05 level.

**MacKinnon-Haug-Michelis (1999) p-values.

Table 3.b.: Unrestricted Co-integration Rank Test (Maximum Eigen Value)

Hypothesized No. of CE(s)	Eigen Value	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.20557	25.31438	21.13162	0.0121
At most 1 *	0.177956	21.55579	14.2646	0.003
At most 2 *	0.126051	14.82066	3.841466	0.0001

Max-Eigen Value test indicates 3 co-integrating equations at the 0.05 level

* denotes acceptance of the null hypothesis at the 0.05 level.

**MacKinnon-Haug-Michelis (1999) p-values.

Table 4: Granger Causality Test

Case No.	Null Hypothesis	Obs.	F Statistic	Prob.	Lag	Accepted/ Rejected
1	DIIS_NI does not Granger Cause SENSEX	103	0.61107	0.8267	12	Accepted
2	SENSEX does not Granger Cause DIIS_NI		0.77246	0.6765	12	Accepted
3	FIIS_NI does not Granger Cause SENSEX	109	0.30555	0.9327	6	Accepted
4	SENSEX does not Granger Cause FIIS_NI		4.12644	0.001	6	Rejected
5	DIIS_NI does not Granger Cause FIIS_NI	106	0.12967	0.9988	9	Accepted
6	FIIS_NI does not Granger Cause DIIS_NI		4.35494	0.0001	9	Rejected

(http://www.quantshare.com).