FII Flows and Stock Market Capitalization in India

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Abstract. The portfolio investment by Foreign Institutional Investors (FIIs) has become a remarkable force behind the development of Indian stock market and is majorly perceived as achief cause of stock market volatility. This has attracted numerous of researchers to study the relationship between FIIs Portfolio flows and volatility in stock market of India. In order to ascertain the relation between FIIs portfolio flows and stock market volatility the impact study of market capitalization and FIIs inflows and outflows relationship has been established .The study is conducted using monthly time series of NIFTY, SENSEX and FIIs activity for a period of sixteen years spanning from January, 2001 to December, 2016. To check the non-stationarity of the time series the Augmented Dickey-Fuller (ADF) unit root test is applied. In addition to these tools, granger causality Test is also used to study the impact of FIIs (Buy/Sell/Net) capital flows on stock market capitalization and vice versa. The study reveals that there is significant relationship between FIIs capital flows and stock market capitalization. Moreover, BSE and NSE market capitalization have significant influence on FII flows.

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1 Introduction

The prime objective of the study isto measure the impact of foreign investors' portfolio investments on market capitalization and volatility in stock markets of India.For developing countries and under developed countries foreign institutional investment has different impact and elements as compare to foreign direct investment flows. FII flows are great substitution against domestic savings; it brings new management skills and improves portfolio choice for domestic investors of host country. FII enhance foreign currency reserves and domestic savings but generally not project specific as FDI investment generally are. Developing counties encourage more foreign flows in the form of portfolio investment as these are non-debt creating. It is generally expected by the host country that FPI will lead to improvement in the functioning of the stock markets, which in turn results into healthier growth of stock market .FII flows improves trading volume and market capitalization which increases length and breadth, improves stock worth and change investment avenues as foreign portfolio investments are mainly based on methodical analysis.

In late 1980's Indian economy faced high debt crises in the Balance of payments and the worst condition in 1990-91 lead to shortage of financial resources in the economy.Indian

government initiated financial liberalization program to bring financial reforms and foreign investments from the abroad. Lalitha (1992) states that major reason behind attraction of foreign capital was liberalizing the economy for FIIs. In the recent past, FII have shown a high fascination towards Indian stock market. FIIs net investments was decreased to-960.06 in 2000-01, but after certain time, these got a positive flows and stood 22416.26crores.However, FII net investment in India never gone negative afterwards. Monthly trend are in tandem and shows 36% growth year to year in NSE & BSE.T he market capitalization of the NSE—which at the end of March 2014 amounted to 72,777 billion (US$ 1,214.2 billion)—increased to 99,301 billion (US$ 1,613.1 billion) at the end of March 2015.

2. Review of Literature

Chakrabarti (2001) examined the relationship between FII flows and stock market during the period of 1993 to 1999. His study revealed that there is significant relationship between stock market return and flows by foreign institutional investors' .Fll plays important role in destabilization of Indian stock market.

Tripathi (2007) Study examines the relationship between market capitalization ,stock market and FII flows(net) .The results revealed that the causality run between market capitalization and FII flows .Study applied VAR model and Granger causality and found that there is unidirectional causality run between FII flows (net) and stock market capitalization.

Garg and Bodla (2011) Study examines how Indian stock market has become important destination among Asian markets. The objective of the studies were about analyzing the impact relating to FII flows on stock markets and volatility. The study found that returns of BSE has significantly reduced after the beginning of FII flows. It also provide sufficient evidences that impact of return of previous day are related in current return .FII flows improved liquidity of stock market and decrease volatility.

Bhatia and Kishor (2013) examines the relationship between FII flows (Net), stock price fluctuations and exchange reserves with the help of granger causality test. Study observed the time period of 20 years on monthly basis. Study reveals that there is bi-directional relationship between FII flows and stock market.

3. Data Sources and Methodology

This study covers a time period of 16 years from January, 2001 to December, 2016 to ascertain the implicit of trading volume and market capitalization of BSE & NSE stock market. Monthly base data of the Trading Volume and market capitalization have been taken from the website of the Reserve Bank of India (RBI) to achieve the objective of the research. We have taken the monthly data of the purchases, sales and net flows of funds by FIIs for the analysis. Moreover, the econometric technique namely Granger causality test has been applied to check the existence of causal relationship between FIIs investment and indicators of stock market development such as trading volume and market capitalization.

As the trading volume, market capitalization, FII flow (buy, sell, net) are in the form of time series. So firstly, there was a need test the stationarity is run to check the stationarity of data series. Further, used the Augmented Dickey Fuller (ADF) test to test the stationarity on all the series, by using the following regression equations:

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \sum_{i=1}^{m} \alpha_i \Delta Y_{t-i} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(i)}$$

The dynamic linkage was examined by using the concept of Granger Causality Test. The test involves the following regressions (Granger, 1969):

$$Y_t = \sum_{i=1}^{n} \alpha_i X_{t-i} + \sum_{j=1}^{n} \beta_j Y_{t-j} + \varepsilon_{1t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(ii)}$$

$$Y_t = \sum_{i=1}^{m} \lambda_i X_{t-i} + \sum_{j=1}^{m} \delta_j Y_{t-j} + \varepsilon_{2t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(iii)}$$

In the above equations Y_t, X_t are the variables to be tested and $\boldsymbol{\alpha}_i$, $\boldsymbol{\beta}_i$, $\boldsymbol{\lambda}_j$, $\boldsymbol{\delta}_j$ are coefficients explaining the relation of dependent variable with the lag terms of independent variable and lag terms of dependent variable in itself. ε_{1t} *and* ε_{2t} are mutually uncorrelated white noise errors. *t* is the time period and *i* is the number of lags.

4. Data Analysis

The objective of this study was to determine causal relationship between FIIs investments (Buy, Sell, Net) and market capitalization. As stated previously, Granger causality analysis is used for the purpose, after testing for unit root test on each series. The Augmented Dickey Fuller (ADF) Unit root test was applied to check whether the time series of variables like; market

capitalization and FIIs investments are stationary or not. The results of Test of stationarity (ADF) are given in Table 1.

Table1: Test of stationarity (ADF) of Data series (2001-16)

Variables	Levels		First Difference	
	ADF(Constant)			
	CV	TS	CV	TS
BSE (MC)	-3.472813	-2.859185	-3.473096	-13.67426
NSE(MC)	-3.472813	-2.323730	-3.473096	-13.44414
FII (P)	-3.473382	-1.530279	-3.473382	-13.02717
FII(S)	-3.473672	-1.879047	-3.473382	-12.72078
FII (NET)	-3.472813	-8.387375	-3.473382	-12.77400

Table 2: Test of stationary (ADF) of Data series (2001-16)

Variables	Levels		First Difference	
	ADF(Constant with trend)			
	CV	TS	CV	TS
BSE (MC)	-4.018349	-3.065307	-4.018748	-13.63021
NSE(MC)	-4.018349	-3.584458	-4.018748	-13.39986
FII (P)	-4.018748	-4.024876	-4.019151	-12.98782
FII(S)	-4.019561	-3.401892	-4.019151	-12.69058
FII (NET)	-4.018349	-8.861154	-4.019151	-12.73070

The properties of time series data such as stationary or non-stationary were examined. The Augmented Dickey Fuller Unit Root test was applied to ascertain whether the time series of variables such as BSE & NSE market capitalization and FII's investments are stationary or non-stationary. The results are given in above Table 1.

It is evident from the table 1 that times series of each variable except the FIIs net investments are not stationary at level. FIIs net investments are stationary at level. In order to make the data appropriate for the analysis, first we made all the series stationary at level by using the differencing technique. The results of table 2 shows that all the data series are stationery and further the pairwise Granger Causality Test can be applied.

Table 3: Pairwise Granger Causality Tests (2001-2016)

Null Hypothesis:	F-statistic	Probability	Remarks
D(FIIP) does not Granger Cause D(FIIN)	4.58956	0.0116	Significant at 5% level
D(FIIN) does not Granger Cause D(FIIP)	2.84048	0.0616	Insignificant
D(FIIS) does not Granger Cause D(FIIN)	4.58956	0.0116	Significant at 5% level
D(FIIN) does not Granger Cause D(FIIS)	6.85838	0.0014	Significant at 1% level
D(BSE_MC) does not Granger Cause D(FIIN)	1.56169	0.2132	Insignificant
D(FIIN) does not Granger Cause D(BSE_MC)	4.63082	0.0112	Significant at 5% level
D(NSE_MC) does not Granger Cause D(FIIN)	1.74571	0.1781	Insignificant
D(FIIN) does not Granger Cause D(NSE_MC)	4.25810	0.0159	Significant at 5% level
D(FIIS) does not Granger Cause D(FIIP)	2.84048	0.0616	Insignificant
D(FIIP) does not Granger Cause D(FIIS)	6.85838	0.0014	Significant at 1% level
D(BSE_MC) does not Granger Cause D(FIIP)	2.04617	0.1329	Insignificant
D(FIIP) does not Granger Cause D(BSE_MC)	3.52679	0.0319	Significant at 5% level
D(NSE_MC) does not Granger Cause D(FIIP)	1.39977	0.2499	Insignificant
D(FIIP) does not Granger Cause D(NSE_MC)	1.97598	0.1423	Insignificant
D(BSE_MC) does not Granger Cause D(FIIS)	7.38076	0.0009	Significant at 1% level
D(FIIS) does not Granger Cause D(BSE_MC)	10.6497	0.0000	Significant at 1% level
D(NSE_MC) does not Granger Cause D(FIIS)	6.72322	0.0016	Significant at 1% level
D(FIIS) does not Granger Cause D(NSE_MC)	7.25926	0.0010	Significant at 1% level
D(NSE_MC) does not Granger Cause (BSE_MC)	0.36238	0.6966	Insignificant
D(BSE_MC) does not Granger Cause D(NSE_MC)	0.62849	0.5348	Insignificant

Table 3 above presents the outcome of pair wise Granger causality test. The null hypothesis that, Purchases of FII's does not granger causes BSE Capitalization is not accepted at 5 percent level of significance. It implies that the investments by foreign institutional investors influence Market capitalization in BSE. But on the other hand, in NSE the results are showing opposite relationship .That is, the FIIs net investments do not exert significant effect on market capitalization of NSE. The findings are parallel to Tripathi (2007), thus hypothesis "FIIP does not cause BSE market capitalization, is not accepted and hence the BSE market capitalization is dependent on foreign investor's investments, significantly. Surprisingly, on the other side NSE market capitalization is found not valid. So, FIIN is not affected by market capitalization the next hypothesis, an important revelation of the Table 3 is that neither BSE nor NSE market capitalization affected by FIIN and FIIP. However, sell by FIIs leads to NSE and BSE market capitalization and both have turned as significant determinants of each other. Nature and direction of causality is tested using pairwise Granger causality test between Net FII flows and

trading volume and market capitalization in BSE and NSE with lag length of 8. Net FII flows were found Granger Causes trading volume and market capitalization in NSE and BSE. Sales by FII & Purchases by FII and market capitalization in BSE were found to Granger cause each other.

The results indicate that advent of FIIs in Indian stock market has helped the market to expand and improve liquidity. From the above, it can be concluded that Indian stock market has grown phenomenally with the presence of FIIs The study has shown that the net investment made by the foreign institutional investors (FIIN) in Indian stock market proved as a casual force of Market Capitalization. It refers that arrival of the foreign institutional investors increase market capitalization. But in case of casual relationship between FIIs investment and trading volume, FIIs investment turned as a result of trading volume which implies that as domestic investors start investment in the national market it boost the confidence of foreign investors also which pulls them to invest in the host country market. Trading volume is found possessing a positive association with the purchases done by the foreign institutional investors which implies that the trading volume of the host country market attracts foreign investors and resultantly their purchase increases. The purchases have shown bi-directional causality with market capitalization, which implies that rise in the market attract purchases of FIIs which in turn increases market capitalization. Study also reveals that sales done by foreign institutional investors in Indian stock market also have a bi-directional causality with the market capitalization. Similar findings were also found by Bodla, Ashish (2011) while measuring stock market development.

5. References

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