The Causality between FII and BSE in India

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ABSTRACT

This paper empirically investigates the causal relationship between FII averages and BSE flows in Indian economy. The authors also investigate different unit root tests *i.e.* DF, ADF and PP and their p. In the level, FII and BSE are not stationary. At first difference, the FII and BSE are stationary at one per cent level of significances. So it was found that the FII and BSE are stationary at their first difference. The trace test indicates the existence of two co-integrating equations at five per cent level of significance. And, the maximum eigenvalue test makes the confirmation of this result. The significance of ECT implies the presence of causal relations from independent variables to dependent variable, used for the bivariate causal relationship between FII and BSE. The granger test shows bidirectional causality between BSE and FIIs. In other words, any change in market movements (BSE) affects the decision of Foreign Institutional Investment and *vice-versa*.

Key Words : Foreign institutional investment, Bombay stock exchange, Foreign portfolio investment, Dicky Fuller, Phillips Perron

INTRODUCTION

Foreign capital has significant role for every national economy, regardless of its level of development. For the developed countries it is necessary to support sustainable development. For the developing countries, it is used to increase capital accumulation to create conditions for more intensive economic growth. For the transition countries [A transition country or transitional economy is an economy, which is changing from a centrally planned economy to a free market economy. Transition economies undergo economic liberalization (letting market forces set prices and lowering trade barriers), macroeconomic stabilization where immediate high inflation is brought under control, and restructuring and privatization in order to create a financial sector and move from public to private ownership of resources, it is useful to carry out the reforms , to cross the past long term problems and to create conditions for stable and continuous growth of GDP, as well as integration in world economy. But, to realize

the potential exist in the developing countries, foreign capital plays a very crucial role. Capital inflows [Capital inflows include Foreign Direct Investment (FDI), Foreign Portfolio Investment (FPI), External Commercial Borrowing (ECBs), NRI Deposits and Social Deposits Schemes dominated that capital account] can help developing countries with economic development by furnishing them with necessary capital and technology. Capital flows contribute in filling the resource gap in countries where domestic savings are inadequate to finance investment. Capital inflows allow the recipient country to invest and consume more than it produces when the marginal productivity of capital within its borders is higher than in the capital-rich regions of the world. Capital inflows facilitate the attainment of the Millennium Development Goals (MDGs) and the objective of National Economic, Empowerment and Development Strategy (NEEDs). As the economy becomes more open and integrated with the rest of the world, capital flows will contribute significantly to the transformation of the

developing economy (Levin, 2001). Added to this, capital inflows are necessary for macroeconomic stability, as capital inflows affect a wide range of macroeconomic variables such as exchange rates, interest rates, foreign exchange reserves, and domestic monetary conditions as well as saving and investments.

The term Foreign Institutional Invest is defined by SEBI as under; "means an institutional established or incorporated outside India which proposes to make investment in India in securities. Provided that a domestic asset management company or domestic portfolio manager who manages funds raised or collected or brought from outside India for investment in India on behalf of a sub-account, shall be deemed to be a Foreign Institutional Investor."

Foreign Investment refers to investments made by residents of a country in financial assets and production process of another country. The less well known Foreign Institutional Invest (FIIs) has been a key part of India's growth story this decade. The term FIIs is most commonly used to refer the companies that are established or incorporated outside India and are investing in the financial markets of India by registering themselves with the Securities and Exchange Board of India (SEBI). FIIs include overseas pension funds, mutual funds, investment trusts, asset management companies, nominee companies, banks, institutional portfolio managers, university funds, endowments, foundations, charitable trusts, charitable societies, a trustee or power of attorney holder incorporated or established outside India proposing to make proprietary investments on behalf of a broad-based fund (*i.e.*, fund having more than 20 investors with no single investor holding more than 10 per cent of the share or units of the fund). Foreign Institutional Investment is basically short-term in nature and mostly made in the financial markets.

Review of literature:

Parthapratimpal (1998) points out that, during the late 1980s, foreign portfolio investment to developing countries was perceived as a symbiosis that benefited everyone. Less developed countries were eager to welcome any kind of foreign capital inflow because after the debt crisis of early 1980s, they were facing a shortage of both foreign capital and invisible resources. The low correlation between movements in developed and developing country's' stock markets, the deceleration in industrial countries' markets and the high growth

prospects of the less developed markets made them an attractive option for portfolio diversification. The most important benefit from foreign portfolio investment is that it gives an upward thrust to the domestic stock market prices. Foreign Institutional Investors (FIIs) are the primary source of portfolio investment in India. FIIs can invest in all the listed and unlisted securities traded on the primary and secondary markets, including the equity and other securities instruments of companies. These would include shares, debentures, warrants and schemes floated by domestic mutual funds.

Hansda and Ray (2002) are of the opinion that, among the significant measures of integration, portfolio investment by Foreign Institutional Investors (FIIs) allowed since September 1992, has undoubtedly been the turning point for the Indian stock market. Now FIIs are allowed to invest in all categories of securities traded in the primary and secondary segments including unlisted ones. FIIs are also allowed from June 1998 to trade in exchange-traded derivatives and take forward exchange cover for equity investment. While there is no restriction on the volume of FIIs or any lock-in-period, preferential allotment to FIIs is restricted to a maximum of 15 per cent equity of a company.

Patnaik (2005) examines the institutionalization of savings by institutional investors in majority of developed countries acted as source for the short-term portfolio flows coupled with this, the low rates of returns also resulted in the export of financial savings from these developed nations. As the assets of institutional investors expanded, their diversification strategies increasingly resulted in an expansion of cross-border investments, especially to emerging markets, which had high rates of return and was mainly in the form of equity finance. These portfolio investments have always been subject to controversies in terms of their motives, desirability, their impact on the domestic economy and stock market and their influence on domestic policy making. Today, India is a major recipients' of the world portfolio flows.

Roy (2007) argues that it is essential to understand the basic motives underlying the financial flows before liberalizing them. In this case, an empirical analysis to identify whether the foreign portfolio flows to India are driven either by the capital gains motive or the income gains motive is attempted. The variables identified for the regression analysis are net foreign portfolio flows as dependent variable and the stock price change, exchange rate change of rupee in terms of US dollar and real

interest rate differential as independent variables. It has been found out that the foreign portfolio flows to India are driven primarily due to the capital gains motive and in the Indian case it is the change in stock prices. Before the analysis the econometric methodology has confirmed the long lasting relationship between the variables. Moreover, the causality checks also reveal that stock prices are causing the Net foreign portfolio flows and not vice versa.

Prasanna (2008) examines the contribution of foreign institutional investment particularly among companies included in sensitivity index (SENSEX) Bombay Stock exchange. He also examined the relationship between foreign institutional investment and firm specific characteristics in terms of ownership structure, financial performance and stock performance; it is observed that foreign investors invested more in companies with a higher volume of shares owned by the general public. The promoters' and the foreign investors choose the companies where family shareholding of promoters is not substantial. Among the financial performance variables the share returns and earnings per share are significant factors influencing their investment decision.

Bansal and Pasricha (2009) studied the impact of market opening to 36 FIIs, on Indian stock market behavior. India announced its policy regarding the opening of stock market to FIIs for investment in equity and related instruments on 14th September 1992. Using stock market data related to Bombay Stock Exchange, for both before and after the FIIs policy announcement day. An empirical examination has been conducted to assess the impact of the market opening on the returns and volatility of stock return. They found that while there is no significant changes in the Indian stock market average returns, volatility is significantly reduced after India unlocked its stock market to foreign investors.

Khan and Rohit (2009) investigates the causal relationship between Nifty and FIIs' net investment for the period January, 1999 to February, 2009 using daily data. This period has been divided into four phases on the basis of major global events. Nifty and FII are not normally distributed in all four phases. Nifty was found to be non-stationary at level and stationary at first level while FII came out to be stationary at level itself. Correlation between FII and Nifty was the maximum in the bear phase as compared to all other phases. Further they found the causality between Nifty returns and FIIs net investment. Granger Causality highlighted unidirectional relationship of Nifty over FIIs during each phase in the long run. Variance decomposition and impulse response functions determined the short term causal relationship which reveals that there was only positive unidirectional causality from Nifty to FIIs. No reverse causality was observed in any phase.

METHODOLOGY

The objective of this paper is to investigate the causal relationship between Foreign Institutional Investment (FII) and turnover in Bombay Stock Exchange (BSE) in India using the annual data from 1991 to 2018. The estimation methodology employed in this study is the co-integration and error correction modeling technique. The entire estimation procedure consists of three steps: first, unit root test; second, co-integration test; third, the error correction model estimation.

RESULTS AND DISCUSSION

Unit root test:

The Table 1 shows the result of different unit root tests *i.e.* DF, ADF and PP and their p. In the level, FII and BSE are not stationary. At first difference, the FII and BSE are stationary at one per cent level of significances. So it was found that the FII and BSE are stationary at their first difference.

Co-integration tests:

In the next step, the co-integration between the stationary variables has been tested by the Johansen's Trace and Maximum Eigenvalue tests. The results of these tests are presented in Table 2.

The trace test indicates the existence of two co-integrating equations at five per cent level of significance. And, the maximum eigenvalue test makes the confirmation of this result. Thus, the two variables of the study have long-run equilibrium relationship between them. But in the short-run there may be derivations from this equilibrium and it is required to verify whether such disequilibrium converges on the long-run equilibrium or not.

Vector error correction model:

Table 3 presents the results of Vector Error Correction Model (VECM). The Vector Error Correction Term (ECT) (e_{t-1}) conveys the long-run causal effects, while the lagged explanatory variables give an indication

Table 1 : Unit root test in first differences

Test	FII		BSE	
	t – statistics	p - value	t - statistics	p - value
Constant				
DF	-5.499	0.0000	-6.085	0.0000
ADF	-5.564	0.0003	-5.955	0.0001
PP	-11.463	0.0000	-6.050	0.0001
Constant and linear trend				
DF	-6.299	0.0000	-6.455	0.0000
ADF	-6.049	0.0007	-6.090	0.0005
PP	16.571	0.0001	-12.208	0.0000

Source: Author's own calculation.
Using critical values by Mackinnon, 1996
Maximum lag length chosen using Schwarz Information Criterion (SIC)
Selection of Bandwidth in case of Phillips-Perron unit root test according to Newey-West, 1994.

Table 2 : Results Of Johansen's Co-Integration Test

Hypothesized No. of CE(S)	Eigen Value	Trace Statistics	0.05	Prob. **	Maximum Eigen Statistics	0.05	Prob. **
None *	0.724	24.010	15.494	0.002	23.218	14.264	0.001
At Most 1	0.043	0.791	3.841	0.373	0.791	3.841	0.373

Source: Author's own calculation.

Table 3 : Estimates for VECM Regression

Independent Variable	FII_t	BSE_t
C	35830.89	1573.19
	[4.188]	[2.226]
	(8554.94)	(706.67)
EC_{t-1}	$EC^1_{t-1}= -1.054$	$EC^2_{t-1}= -0.032$
	[-4.145]	[-1.530]
	(0.254)	(0.021)
FII_{t-1}	-0.447	-0.037
	[-1.375]	[-1.394]
	(0.324)	(0.026)
FII_{t-2}	0.727	0.037
	[2.134]	[1.335]
	(0.340)	(0.028)
BSE_{t-1}	-6.511	0.241
	[-1.092]	[0.490]
	(5.963)	(0.492)
BSE_{t-2}	-29.069	-1.269
	[-3.808]	[-2.013]
	(7.633)	(0.630)
R- Squared	0.811	0.414
F- Statistic	10.365	1.698
Log Likelihood	-207.679	-162.792
Akaike AIC	23.742	18.754
Schwarz SC	24.038	19.051

Source: Author's own calculation.

of the short-run adjustments. The coefficient of ECT contains information about whether the past values of variable affect the current values of the variable under study. A significant coefficient implies that the past equilibrium errors play a role in determining the current outcomes. The significance of ECT implies the presence of causal relations from independent variables to dependent variable, used for the bivariate causal relationship between FII and BSE.

Granger causality tests:

The results of F-tests are presented in Table 4.

Since the F-statistics of granger causality test is significant at 10 per cent level, FII granger causes BSE. In other words, any change in FII affects the market movements in Indian economy. Similarly, to find out the direction of causality between BSE and FII, the Granger Causality test has been applied. Then, the F-statistic of granger causality test is significant at one per cent level

Table 4 : Results of Granger Causality Test

Null Hypothesis	F – Statistic	Probability
FII does not Granger Cause of BSE	3.186	0.076
BSE does not Granger Cause of FII	9.348	0.004

Source: Author's own calculation.

of Significance, BSE granger causes FIIs. In other words, any change in BSE affects the FIIs in Indian economy. It is also concluded from the Table 4 that there exists bidirectional causality between BSE and FIIs. In other words, any change in market movements (BSE) affects the decision of Foreign Institutional Investment and *vice-versa*.

Conclusion:

This paper empirically investigates the causal relationship between FII averages and BSE flows in Indian economy. The researcher also investigates different unit root tests *i.e.* DF, ADF and PP and their p. In the level, FII and BSE are not stationary. At first difference, the FII and BSE are stationary at one per cent level of significances. So it was found that the FII and BSE are stationary at their first difference. The trace test indicates the existence of two co-integrating equations at five per cent level of significance. And, the maximum eigenvalue test makes the confirmation of this result. The significance of ECT implies the presence of causal relations from independent variables to dependent variable, used for the bivariate causal relationship between FII and BSE. The granger test shows bidirectional causality between BSE and FIIs. In other words, any change in market movements (BSE) affects the decision of Foreign Institutional Investment and *vice-versa*.

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