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RELATIONSHIP BETWEEN FDI AND FII/FPI: A CASE STUDY OF INDIA

Mohammad Iftekhar Khan, Maulana Azad National Institute of Technology
Amit Banerji, Maulana Azad National Institute of Technology

ABSTRACT

FDI and FPI/FII are two major forms of foreign investments in the global financial system. Extensive studies have been done and their impact on almost all aspects of the host and the home country's economy and society. It is a paradox that though essentially they have the same motive, but they are always looking diametrically opposite in term of consequence. Both forms have grown because of, globalization. In some studies, a particular business factor was studied taking into account the two forms, which gave results unique to each form. In this study, an attempt has been made to find links between the two forms.

INTRODUCTION

The literature is replete with two major forms of foreign investment, their impact, drivers and their pros and cons. A lot of studies regarding FDI and FPI/FII have been done with reference to India, China and other emerging markets. The two forms have two things in common: **Origin – Foreign** and **Activity – Investment**. However, there has hardly been any report regarding the interrelationship between these two forms.

METHODOLOGY AND OBJECTIVES

Every investor looks for maximization of returns, irrespective of category – shareholder (FPI) or Owner (FDI). Which leads to the questions – Is there any connection between them, any causal relationship, and any time gap before the causal effect sets in, any long run association etc. This paper makes an attempt to connect the dots. Literature for this paper was obtained from freely available reports of ministries of the Government of India, OECD, UNCTAD, World Bank, IMF and Indian Capital Market Regulator (SEBI) publications. Limited access to Springer Link, Taylor & Francis, Elsevier (Business Management & Accounting) and JSTOR, available in the institute were used for literature review. Econometric analysis was as per Gujarati & Sangeetha (2010) and Brooks (2008) using Eviews 7.

The paper is structured as follows : -

1. Discussion on FDI in India
2. Discussion on FPI/FII in India {technically FPI encompasses FII, however, in literature and in many Indian government reports, they are used interchangeably}
3. Analysis
4. Conclusion

REVIEW OF FDI AND ITS IMPACT ON INDIA

Any investment that flows from one country into another is known as foreign investment. The inflow of investment from other countries complements and leads to domestic investments in capital-scarce economies. In India, Foreign investments are allowed to take the form of investments (through capital market) in listed companies referred as FII investments and investments in listed/unlisted companies other than through Exchanges, are referred as Foreign Direct Investment. In other words FDI means an investment made by a company based in one country, into a company based in another country, companies making such direct investments has a significant degree of influence and control over the company into which the investment is made (Sultana & Pardhasaradhi, 2012).

FDI refers to an investment made to acquire lasting interest in enterprises operating outside the economy of investor. In cases of FDI, the investor´s purpose is to gain an effective voice in the management of enterprise. The foreign entity or group of associated entities that make an investment is termed as "direct investor". The unincorporated or incorporated enterprise-a branch or subsidiary, respectively, in which direct investment is made-is referred to as a "direct investment enterprise". Some degree of equity ownership is almost always considered to be associated with an effective voice in the management of an enterprise. A threshold of 10 per cent of equity ownership is required to qualify an investor as a foreign direct investor (IMF BPMFE 1993). FDI serves as an important source to fulfill the gap between income and savings, in technology up gradation and efficient exploitation of natural resources along with the development of basic infrastructure. It improves balance of payment condition and helps the recipient firms to cope competition in better ways. The main determinants of FDI in India are stable policies in favor of foreign investment, favorable economic factors like interest loan subsidies, removal of restrictions, tax exemptions, availability of cheap and skilled labor and in spite of being a developing country reasonably developed infrastructure like roads, information and communication networks. (Daniel et al 2009).

In 1980 looking into the inability of commercial bank to lend, most of the developing countries removed restriction from foreign investment inflow and started offering several tax incentives & subsidies. Due to a policy change in these countries, there was a huge inflow of non commercial bank capital flow and in a short span of time; FDI accounted for 60 percent of capital flows (Atiken and Harrison 1999). Romer (1994) argued that technology and business known how transferred in the form of foreign investment to poorer countries had positive spillovers over the whole economy. This foreign investment not only increases the productivity of firms receiving foreign capital, but economic growth in the economy.

Findings of studies done by Borensztein, De Gregorio and Lee (1998) found that FDI had positive growth effects over countries which had educated workforce. The cross country regression framework was used using data from 69 developing areas of the past two decades. The results of the study showed that FDI is an important medium of transfer of technology, thereby contributing more to growth than to domestic investment. But higher productivity of FDI is possible only when host country has a minimum threshold stock of human capital. i.e sufficient absorptive capacity. Alfaro et al (2000) suggested that FDI promoted economic growth of the country which also had a well developed financial market. This was an unusual finding till then. Now, FDI has become a key feature of national development strategies for all most all the countries over the globe (Sharma and Singh 2013). The study maintained that in the period 1996-2002, growth rate faltered on account of slow reforms and not due to East Asian crisis.

FDI brings better technology and management, marketing networks and offers competition; while FII investment helps Indian companies to improve performance. Steps were taken to allow foreign portfolio investments into the Indian stock market through the mechanism of foreign institutional investors. The objective was to create non debt creating foreign capital inflows and also to develop the Capital market in India, lower the cost of capital for Indian enterprises and indirectly improve corporate governance structures.Therefore a developing country like India, adopts two strategies at same time one to attract FDI which is associated with various benefits of technology, access to export markets, skills, management techniques, etc. and second strategy is to encourage portfolio capital flows which provides the financing means to Indian enterprises (Aggrawal, 2012).

Table 1
SECTORS ATTRACTING HIGHEST FDI EQUITY INFLOWS
(US$ in millions)

Ranks	Sector	2010-11 (April - March)	2011-12 (April - March)	2012-13 (April – March)	Cumulative Inflows (April ‟00 – March ‟13)	% age to total Inflows (In terms of US$)
1.	Services Sector **	3,296	5,216	4,833	37,235	19 %
2.	Construction Development: Townships, Housing, Built-Up Infrastructure	1,663	3,141	1,332	22,080	11 %
3.	Telecommunications (Radio Paging, Cellular Mobile, Basic Telephone Services)	1,665	1,997	304	12,856	7 %
4.	Computer Software & Hardware	780	796	486	11,691	6 %
5.	Drugs & Pharmaceuticals	209	3,232	1,123	10,318	5 %
6.	Chemicals (Other Than Fertilizers)	2,354	4,041	292	8,881	5 %
7.	Automobile Industry	1,299	923	1,537	8,295	4 %
8.	Power	1,272	1,652	536	7,834	4 %
9.	Metallurgical Industries	1,098	1,786	1,466	7,507	4 %
10	Hotel & Tourism	308	993	3,259	6,631	3 %

** Services sector includes Financial, Banking, Insurance, Non-Financial / Business, Outsourcing, R&D, Courier, Tech. Testing and Analysis (Source: "Fact Sheet on FDI from April 2000 to March 2013" Reserve Bank of India)

Study by Kumar and Dhingra (2011) showed a major change in the nature of FDI inflow from the pre liberalization era. Manufacturing sector received nearly 87% of total FDI in 1980 which reduced to 48% in 1997. The reasons for this were liberalized policy of the government in service and infrastructure sector. Along with this, several new sectors were opened for FDI by increasing sectoral limits. Limits of FDI were raised from 49% to 74% in 2005 in most of the sectors. Real estates and housing sector were opened for FDI in 2006. As per table 1, top ten sectors accounted for 70% of total FDI on cumulative basis. During 1981-1990 FDI inflow was very slow due to tough approval policies even though the amount of FDI increased 12 times from

1980 to 1991 but the gap between approved and actual inflow was very high. The Liberalized policy of government in service and infrastructure sector was responsible for high inflows in these two sectors. Increased FDI inflow in the power sector was due to two reasons (1) high ROI (2) huge size of the market (except in atomic energy).

Between 2000 and 2013, approx. 50% of FDI was routed through Mauritius and Singapore as India has double taxation treaty with these countries (Table 2).

TABLE 2
STATEMENT ON COUNTRY-WISE FDI EQUITY INFLOWS FROM APRIL, 2000 TO MARCH, 2013

S. No.	Country	Amount of Foreign Direct Investment Inflows (In US$ million)	%age with total FDI Inflows (+)
1	Mauritius	73,666.11	38.11
2	Singapore	19,460.35	10.07
3	United Kingdom	17,548.55	9.08
4	Japan	14,550.29	7.53
5	U.S.A	11,121.11	5.75
6	Netherlands	8,965.08	4.64
7	Cyprus	6,889.33	3.56
8	Germany	5,480.30	2.84
9	France	3,572.99	1.85
10	UAE	2,422.47	1.25

(Source: "Fact Sheet on FDI from April 2000 to March 2013" Reserve Bank of India)

Sultana and Pardhasaradhi (2012) studied the relationship and impact of FDI and FII on Indian capital market for the period 2001-2011. They found significant positive correlation between FDI and stock indices (BSE & NSE); while in case of FII moderate correlation was observed. Singla (2011) studied determinants of FDI inflow in India (FY 1993 to 2011) with reference to a stock market index, foreign exchange rate, index of industrial production (IIP), net FII, gross domestic product (GDP) and foreign exchange reserves. It was found that the exchange rate and foreign exchange reserve do not have any significant effect on FDI inflow, but inflows depended on the stock market, IIP and GDP.

Chaturvedi (2011) found that the correlation between FDI and economic development was 0.90. Study by Singh and Srinivasan (2002) confirmed the standard theories of direction of foreign investment which stated that regions which have improved infrastructure, availability of skilled labor and higher per capita income attract higher FDI relatively.

Saiyed (2012) examined the effect of FDI stock on economic growth of India between FY 1990-91 and 2011-12 using regression technique. Positive correlation between FDI and G.D.P growth was observed along with unidirectional causality between FDI and output on an annual basis. Research by Das & Das (2012) confirmed significant rise in FDI post reforms (1991). Gharana (2012) examined the cause and effect of FDI to GDP and exports to GDP for the period 1999 to 2008 and observed that in this short period Granger cause was stronger from export led growth (i.e. Export to GDP) than vice versa. Kinda (2012) found that crucial elements in attracting FDI are developed infrastructure and developed HR, strengthened institutional capabilities and low inflation & strong economic growth. Agbloyer et al (2013) findings regarding Africa were:

(1) Existence of bi- Directional Causalities relationship between banking sector development and increased FDI.

(2) Existence of bi-directional causality between improvements in financial sector and FDI.

Jadhav (2012) found that FDI to BRICS primarily was not because of resource seeking motive but to access their markets for the products of investing organization. Vita &Kyaw (2009) studied the impact of FDI & FPI flows on economic growth of low, lower-middle & upper-middle income countries for the period 1985-2002. The Findings were that in the case of upper-middle income countries, a 1% increase in FDI increases per capita real GDP growth by 0.004%, twice the magnitude of the impact on lower-middle income countries in this group and opposite in direction. Anwar & Nguyen (2010) examined determinants regarding FDI in Vietnam. It was observed that absorptive capacity (education, technological status) of a country plays an important role. Work done by Bayrakhtarn (2013), focused on the flow of FDI from developed to developing countries (including India) and found that 'ease of doing business" plays a positive role. The parameters were- Starting an enterprise, construction permits, registration, tax structure & rate, trade across borders, contract enforcement and winding up of the business.

Mathiyazhagan (2005) studied the impact of FDI on India's different socio economic aspects with the aid of the panel cointegration test. According to the study, till 1991 due to the regulatory policy framework, growth of FDI was insignificant in India. But soon after 1991 inflows increased from US$ 143.6 million in 1991 to US$ 3108.9 million in 2003 which contributed to average growth of 6% to GDP. Panel co integration test technique was used to assess impact of FDI at sectoral level in the long run, with gross output, exports and labor productivity in Indian economy from 1990-91 to 2000-2001. The result of the study proved that FDI positively co integrated with gross output, export and labor productivity in transportation and metallurgical sectors but exhibited negative co integration in food processing and industrial machinery sectors. As early as mid 60s, Beckerman (1965) found that exports play a vital role in the economic growth of developing countries. Several studies have suggested that FDI promotes exports of host countries in three ways (1) Providing necessary capital for Exports (2) Technology transfer and development of new products (3) Enables host market to access new large and developed foreign markets and also the development of skills in the host country workforce by training (Caves 1996; UNHDR 2003).

Ayut & Sayek(2006) observed if FDI inflow is towards manufacturing sector, result is positive for growth; on the other hand if inflows are towards service sector or primary sector, it causes adverse effect on economic growth. Since the beginning of reforms, aim of Indian Government was to facilitate FDI in advance technology sectors. This led to skewed growth in export of engineering goods, IT &ITES sectors, which require skilled and highly skilled workers. An indirect result has been the overall decline of manufactured goods exports. An unrelated reason for lower growth in manufacturing sector, including lower FDI in this sector is because of antiquated labor laws, resulting in overall increased capital to labor ratio (Datt & Mahajan2012).

Klein and Palanivel (2000) studied economic reforms and growth prospects in India. The emphasis of the study was on financial sector reforms, economic framework of the country and its growing linkages with the rest of the world. Some of the positive financial reforms were: -

1. Capital market liberalization.
2. Lowering of operating constraints on the banking sector.
3. Disinvestment in government owned Domestic Financial Institutions (DFI) and opening up areas of the financial sector to private areas e.g. Banking and Insurance etc.

Some of the observations in the above study were:

1. In the period 1990-97, both India and China started exhibited greater integration with world economy, measured as ratio of trade (export& import) with GDP. However the rate of integration of India was higher, perhaps on account of lower base effect.
2. First phase of reforms (1991-1996) was on account of exchange rate devaluation, conducive global trade factor and large scale deregulation in domestic business environment. The sluggishness shown in the latter half of decade was on account of limitation of the last two factors and also down turn of the global trade (East Asian trade crisis)
3. Capital market liberalization led to an unusual effect. FPI overtook FDI very soon.
4. Manufacturing exports had reached their peak (contrary to path traversed by East Asian countries); service sector started showing higher growth rate (service sector exports exhibited CAGR of 7.1% between 1990 and 1998).
5. Comparison with East Asian countries up to 1995 revealed that India had the lowest share of technologically advance goods in manufactured exports (science based goods and brand differentiated products) among the newly industrialized countries in East Asia excluding Japan

REVIEW OF FII/FPI AND ITS IMPACT ON INDIA

Institutional investor is any investment entity which is registered in country outside the country in which it is currently investing. It includes hedge funds, insurance companies, pension funds, mutual funds, asset management companies. Foreign portfolio investments (FPI/FII) are more difficult to manage than foreign direct investments (FDI) since they are very volatile and have the capacity to get affected both by domestic and external factors.

The Indian financial market was thrown open in September 1992 to FII. Fund managements have to register with SEBI. SEBI places limits and ceiling limits on investment in sectors as per their evaluation. The Major source of their investment is in the form of participatory notes (P notes) also commonly known as offshore derivatives. Since last decade, they have contributed a lot in changing the face of the Indian markets. The changes include both quantitative as well as qualitative aspects. FPI's have increased the depth and breadth of the capital indicating that FPI investment follows the stock indices (Dhiman, 2012). By the beginning of new century, it was observed that FII had an important role in building of currency reserves of India (Juneja, 2013).

Bohra and Dutt (2011) studied investment by FII in various group of stocks in BSE and FII behavior in equity market in India for the period 2000-2009. BSE index and FII investment had a close relationship during this period. With index moving up FII increased and vice versa. This was confirmed by Dhiman (2012). Capital market provides investors with assets with varying degrees of risk, return and liquidity. The demand of portfolio investment is created by companies and route is decided by the Government. Bombay Stock Exchange (BSE) has classified equity scripts into various categories on the basis of market capitalization, trading volume and numbers, track records, profits, dividend, shareholding patterns and other basic quantitative aspects. As per their findings, shares of some categories attract FII to a large extent while some in moderate amount, and result in very less or almost nil.

Study done by Jain et.al (2012) examined the role of FII on sensitivity index (sensex) of Indian capital market for the period 2001 -2010. Significant coefficient was found between BSE index and FII inflows. FIIs were found to exert a dominant role in short term market movements. Correlation between foreign inflows and market returns are higher in bear market but in case of bull market correlation decreased significantly. This could be due to expectation of lower share appreciations in bullish market.

Bansal and Pasricha (2009) found that entries of FIIs have affected both the volatility and returns of Indian stock market without any significant change in average returns of market. The existence of Granger causality from FII to index was observed. Rai and Bhanumurthy (2004) did not find any causation between FII and returns in BSE between 1994 and 2002 but found close positive relationship between portfolio investments and BSE index movement –index increased with positive portfolio inflows while with negative inflows it decreased.

Poshakwale and Thapa (2007) attempted to explain influence of portfolio investments in short term and long turn relationship of Indian equity market with equity markets of US and UK. The findings of study showed a strong relationship between FPI inflows and movement of Indian capital market index (r =0.90). Average daily returns from Indian markets were found to be higher compared to US and UK markets. The study also supported earlier findings that US and UK markets influence movements in Indian capital market in the short run as well as in long runs and also influence the flow of foreign capital. The study found that Indian capital market returns are independent of the returns in the US and UK, but FPI flows play a very important role to explain co- movements of the Indian equity market with markets of US and UK. This means that FPI movement from USA and UK get affected by the capital market, sentiment of their country.

Hsin (2004) found that US plays dominating role in transmitting shocks to other markets. Dungey et., al (2004) confirmed the applicability of above for the Australian market. Sen et., al (2005) observed certain positive effects of portfolio inflows in India like, improvement in quality of trading and settlement procedure of the stock exchanges of the country and improvement in the information flow of the trading system. Tax concessions of charging capital gains at lower rates compared to domestic investors also helped increase portfolio inflows.

Banaji (2000) was of the view that for FII inflows, an important issue is the level of the free float. Floating stock in the Indian market was less than 25% and about 35% of free float was held by FIIs. Gordan and Gupta (2003) found that even though India received approximately 1% of portfolio investment in emerging markets, portfolio flows were comparatively less volatile. FIIs invest in good quality scrips, high growth and large cap markets. Banaji (2000) found that reforms in capital markets like transparency, automation, dematerialization, increased disclosure were introduced due to FII investment in markets, which also lead to further inflows. *FII flows have been found to be both cause and effects of capital market reforms.*

Sen and Krishnamurti (2005) studied inter relationship between FII inflows and domestic returns. They also tested the existence of base broadening hypothesis followed by price pressure and feedback trading hypothesis. Their study proved high correlation between returns and FPI inflow. Warther (1995) also found results in favor of base broadening hypothesis. In the study done on relation between aggregate mutual fund flows in US and security returns, Sen and Krishnamurti (2005) classified flows into expected and unexpected inflows using time series model. Positive correlation between returns and unexpected inflows was observed. Perhaps expected returns are anticipated by market so they do not influence returns and market reacts only with unexpected flows.

Aggarwal et al (2005) studied investment allocation of US mutual funds, taking sample of 114 US mutual funds investment in 1280 firms in emerging economies. Period of study was late 1990's (post East Asian currency crisis), with the objective to find out how country and firm level policies affect FPI decisions. Main observations were, that countries having better accounting policies, strong legal and shareholder rights, transparent corporate accounting norms, stringent disclosures norms along with fewer restrictions on foreign capital were able to attract American Depository Receipts (ADR) and US mutual funds. High quality disclosures in Annual Statements help foreign investors protect their investments. Study by Laporta et.,al (1997) showed that financial market development of emerging economies depend to the extent the host country stressed on investor protection laws and stringent disclosures norms and enforcement of the same. Studies by Johnson et.,al (2000), Mitton (2002) and Joh (2003) showed a positive linkage between return and performance in the firms which adopted disclosures and governance policies before and after East Asian crisis. They concluded that foreign investors preferred companies with better corporate governance. East Asian Crisis of late 1990's was on account of crony capitalism along with absurd leverage ratios and poor disclosure norms which acted as hindrance for some FIIs (Kapstein 2006). Large share holders affect firm value and also influence benefits (dividends, yield, EPS etc) received from firms (Burkart 1997). This too becomes cause of FPI inflows. From all these studies it seems that FPI inflows are more a function of corporate transparency. There seems to be a tenuous linkage between FPI and index movement - *FPI become the cause and effect in strengthening of capital markets.*

Prasanna (2008) examined contribution of portfolio invested companies included in benchmark index of (Bombay Stock Exchange) BSE and looked into relationship between FPI and firm specific characteristics like ownership structure, financial performance and stock performance; and found that FI is more in companies which have dispersed stock ownership. EPS and PE ratios also influence investment decisions. It was observed that FII's withdraw money when stock market goes down. As per the study, financial market performance and widely distributed ownership can be correlated with higher FPI. Link between FPI and labor productivity was also found to be positive. However this did not form part of main study. Labor productivity in general is known to rise with skill enhancement, automation and process improvements, normally associated with broader rise in FI (Daniels et al2009). Findings of Li & Jeong Bon (2004) suggest that foreign investors usually avoid investment in high cross corporate holdings. It was also found that Japanese firms with *low information asymmetry* were preferred by FIIs. Promoters' holdings and foreign investment are inversely related as FIIs prefer to invest in firms having lower shareholding by promoters.

Saha (2009) studied impact of participation of different investor groups especially FII on performance of Indian stock market. Main factors which helped Indian stock market to gain momentum and to complete internationally were flexible industrial deregulation, currency exchange rates, well developed equity markets and manageable public debt.

According to Brenan and Henery (1997) FII have bi directional causation with returns of other domestic financial markets such as –money market, capital market and foreign exchange markets. FDI has impact on the host country in form of advance technology, marketing skills, and organized management and in expansion of foreign trade. While on the other hand FII increases liquidity of market along with increase in P/E ratio which on other hand reduces cost of capital (World Bank, 1997). Thus the impact of FPI is restricted in comparison to FDI. Pal (1998) found that risk factors play a crucial role in determining both, domestic and foreign investments. It was found that FPI's normally enter into secondary market rather than primary

markets and significant secondary transactions are on account of FPIs. Domestic individual investors were found to move to debt market via bank deposits or debt based mutual fund investments. Role of FPIs led to increased volatility in secondary market.

Another study done by Bandopadhyay (2005) showed that portfolio investment improves balance of payment position along with the liquidity of host market. Agarwal (1997) observed that increase of global capital market capitalization had a positive impact on FPI inflows to India. Rangarajan (2000) found that FPI affect capital markets directly by widening the investor base and compel local authorities to make their trading system more efficient. Khanna (2002) observed that FII has brought all round development of capital markets by expanding securities business along with increasing the depth and breadth of market.

Gordan and Gupta (2003) suggested possibilities of the bidirectional relationship between FII and equity returns. Huge investments make them market makers and also provide high returns. FPIs generally buy financial assets on the decline and sell on increase, contrarian strategy to Domestic Financial Institutions (Bose 2012). In India net investment by FII's and trends of international stock exchanges have played a dominating role in affecting stock prices. The Search for higher returns by FII's has led to record increase liquidity inflows in the emerging markets both in bonds and equity funds (RBI, 2005). India has gained high ranking as good investment destination by S&P's and Moody's, which have naturally initiated confidence on FII's and attracted even Japanese investors towards India. It is evident from increased Japanese inflow in last few years. FIIs are more dominating players in equity markets as compared to debt markets and this is just reverse in the case of mutual funds. A reason for this could be that FPI decisions are influenced by home country corporate headquarters. Table 3 depicts assets under FII assets under management on a cumulative basis

Table 3
ASSETS UNDER FII ASSETS UNDER MANAGEMENT ON CUMULATIVE BASIS (AS ON JAN 14, 2014)
(Monetary figures in US$ million)

Sr. No.	Sectors	Equity	Debt	Total
1	Automobiles & Auto Components	10,249	0	10,249
2	Total Financial Services	49,312	4,404	53,715
2a	Banks	28,085	27	28,112
2b	Other Financial Services	21,227	4,377	25,604
3	Capital Goods	11,393	72	11,465
4	Chemicals & Petrochemicals	1,790	0	1,790
5	Coal	1,424	0	1,424
6	Commercial Services & Supplies	1,166	0	1,166
7	Construction Materials	3,861	0	3,861
8	Consumer Durables	645	0	645
9	Diversified	422	0	422

10	Diversified Consumer Services	29	0	29
11	Food, Beverages & Tobacco	13,471	0	13,471
12	Forest Materials	58	0	58
13	General Industrials	1,059	0	1,059
14	Hardware Technology & Equipment	13	0	13
15	Healthcare Equipment & Supplies	36	0	36
16	Healthcare Services	902	20	922
17	Hotels, Restaurants & Tourism	830	0	830
18	Household & Personal Products	6,780	0	6,780
19	Media	3,067	30	3,098
20	Metals & Mining	6,226	42	6,269
21	Oil & Gas	13,453	388	13,841
22	Pharmaceuticals & Biotechnology	15,049	5	15,054
23	Realty	1,942	40	1,982
24	Retailing	476	0	476
25	Software & Services	37,933	0	37,933
26	Telecom Services	5,216	74	5,290
27	Telecommunications Equipment	15	0	15
28	Textiles, Apparels & Accessories	2,392	0	2,392
29	Transportation	2,232	0	2,232
29 a	Airlines	24	0	24
29 b	Logistics	177	0	177
29 c	Marine Port & Services	1,044	0	1,044
29 d	Roads & Highways	136	0	136
29 e	Shipping	185	0	185
29 f	Surface Transportation	1	0	1
29 g	Transport Related Services	665	0	665
30	Utilities	7,378	78	7,456
31	Sovereign	0	11,890	11,890
32	Others	7,491	5,016	12,506

	Grand Total	**206,310**	**22,061**	**228,370**

(Source: SEBI Fortnightly Release)

FIIs have invested in Service sector, keeping in line with the general direction of growth sectors in India. The unavailability of secondary corporate debt market is reason why debt investment FPIs is so low (RBI 2014).

INTERRELATIONSHIP BETWEEN FDI AND FPI/FII

Kinda (2012) made an attempt to find out any common drivers between FDI and FPI in developing countries, including India. The study could not find any connection between the two forms but among the various variables studied it was, found that inflow of FDI is contingent on development of physical infrastructure and that of FPI on financial development (sound monetary policy and stronger oversight in the financial system).

Pfeffer (2008) studied relationship between the two forms of FIs. The study looked from the point of an investor – whether investing in firms of host country should be through FDI or FPI route. Though the study did not take up the research problem in consideration, but, there was one striking observation – *"that firms adjust to short-term changes via FPI and keep FDI stable. FPI can prop up small and medium sized changes and therefore, the valuation of FDI with combined FPI is higher than of isolated FDI. Hence, a combined FPI and FDI investment strategy increases the firm's flexibility. A combination of both investment instruments increases the valuation of the respective instruments."* This happens to be one of the rarest findings in the vast plethora of FDI and FPI studies, which showed some long run association between the two forms.

Agbloyor et al (2013) in their study of African countries found a three way relationship between banking industry, FDI and development of financial markets. Bi-directional positive causality was observed between FDI and development of banking sector. As per the study this leads to greater openness in banking sector in particular and financial markets through relative opening up of capital account. This can bring in more FPI. However this study was limited to Ghana. Its extension to a matured economy like India may be sub optimal since the levels of developments are different. A perusal of the references in the study failed to connect effectively the dots between FDI and FPI. An interesting finding by Wu et al (2012) was that rule based societies had more of FPI component since investors had faith in legal system; whereas societies, which have promoter driven companies, tend to have more of FDI so as to monitor and control investment to maximize sustainable profits. An important point raised by authors, with special regard to developing countries is that host countries must evolve a governance system, which increases trust among foreign investors to invest in any form. A minor logic that might explain that in case of India FPI is more than FDI could be that rules related to capital markets (enactment of SEBI Act 1992, clause 49 of Listing Agreement etc.) were framed post liberalization and based on UK/USA models. FDI is regulated through various routes & departments, in existence for a long time (e.g., FIPB, DIPB, RBI and sometimes Cabinet Committee), Income Tax Act 1962 and the newly notified Companies Act 2013. However the study did not cover interrelationship between the two forms of FI.

Nair (2012) studied impact of FDI and FPI, along with other macro-economic parameters. From this work it was seen that increase in FDI has an almost similar (in % terms) positive impact on inflation. FPI was found to play a mixed role, in the sense that increase in FPI

leads to excess money supply and on other hand a relaxed capital account faces threat of FPI outflow. Thus the study limited itself to money supply/inflation. Impact of both the forms was considered separately. And no attempt was made to conduct causal relationship between the two forms of FI.

Rodoinova (2013) studied impact of FDI and FPI on 19 countries comprising, Central & Eastern Europe, Balkans, Latin America and former USSR countries. Findings of the study are important because it stated that firstly on account of significant accumulation of FDI stock over time, repatriation (dividends, royalties etc.) may exceed net annual FDI; secondly in case of FPI, repatriation of investment (or their returns) exert downward pressure on country's' finances. As per this study, both forms exert pressure on current account balance in the long run. The results of this study cannot be applicable in case of India, since the economic drivers of these 19 countries and India are different and composition of trade account is different, which as per the study was one of the underlying reason.

FDI AND FPI/FII INTERRELATIONSHIP IN INDIA

As per data available from CMIE Prowess database, quarterly inflow of FDI and FPI/FII between September 1992 till June 2013 are given in table 4

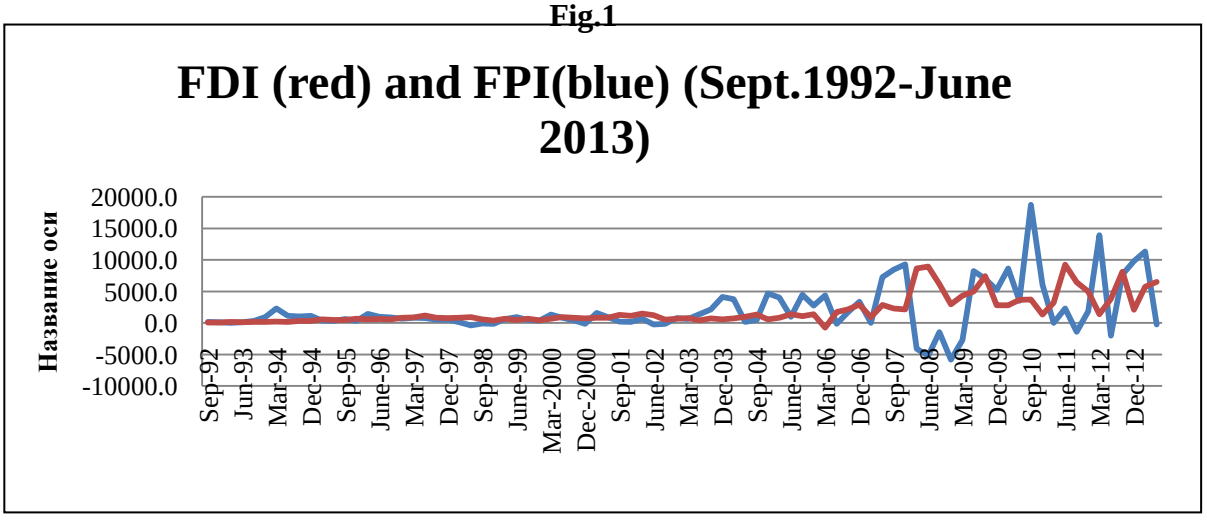
Table 4
QUARTERLY INFLOW OF FOREIGN INVESTMENT (IN US$ MILLION)

Quarter	FPI	FDI
Sep-92	154.0	59.0
Dec-92	84.0	66.0
Mar-93	4.0	137.0
Jun-93	124.0	123.0
Sep-93	307.0	140.0
Dec-93	935.0	131.0
Mar-94	2282.0	192.0
June-94	1120.0	170.0
Sep-94	991.0	303.0
Dec-94	1097.0	309.0
Mar-95	371.0	561.0
June-95	325.0	471.0
Sep-95	595.0	449.0
Dec-95	300.0	664.0
Mar-96	1441.0	549.0
June-96	978.0	595.0
Sep-96	878.0	538.0
Dec-96	662.0	831.0
Mar-97	794.0	878.0
June-97	735.0	1164.0
Sep-97	492.0	795.0

Dec-97	515.0	782.0
Mar-98	86.0	821.0
June-98	-423.0	904.0
Sep-98	-117.0	543.0
Dec-98	-149.0	365.0
Mar-99	621.0	668.0
June-99	899.0	452.0
Sep-99	450.0	648.0
Dec-99	346.0	400.0
Mar-2000	1329.0	667.0
June-2000	789.0	924.0
Sep-2000	396.0	804.0
Dec-2000	-168.0	704.0
Mar-01	1573.0	840.0
June-01	935.0	808.0
Sep-01	216.0	1293.0
Dec-01	129.0	1133.0
Mar-02	672.0	1500.0
June-02	-263.0	1240.0
Sep-02	-131.0	532.0
Dec-02	745.0	676.0
Mar-03	593.0	769.0
June-03	1376.0	386.0
Sep-03	2136.0	702.0
Dec-03	4111.0	587.0
Mar-04	3733.0	713.0
June-04	156.0	963.0
Sep-04	464.0	1334.0
Dec-04	4684.0	582.0
Mar-05	3983.0	834.0
June-05	972.0	1350.0
Sep-05	4441.0	1076.0
Dec-05	2748.0	1368.0
Mar-06	4333.0	-760.0
June-06	-167.0	1738.0
Sep-06	1690.0	2116.0
Dec-06	3362.0	2898.0
Mar-07	-1.0	941.0
June-07	7226.0	2874.0
Sep-07	8422.0	2266.0
Dec-07	9254.0	2121.0

Mar-08	-4115.0	8632.0
June-08	-5207.0	8944.0
Sep-08	-1446.0	6159.0
Dec-08	-5828.0	2941.0
Mar-09	-2713.0	4328.0
June-09	8225.0	4970.0
Sep-09	7014.0	7425.0
Dec-09	5210.0	2791.0
Mar-10	8619.0	2780.0
June-10	3491.0	3644.0
Sep-10	18699.0	3694.0
Dec-10	6066.0	1310.0
Mar-11	-13.0	3186.0
June-11	2263.0	9256.0
Sep-11	-1401.0	6485.0
Dec-11	1814.0	4963.0
Mar-12	13896.0	1356.0
June-12	-2016.0	3821.0
Sep-12	7632.8	8159.2
Dec-12	9773.4	2105.7
Mar-13	11314.0	5733.0
June-13	-245.0	6495.0
Total	**167668.2**	**159864.9**

Fig.1



FPI in India has been more that of FDI in the period selected. Post September 2007, FPI and FDI have tended to move in almost opposite direction. Reasons for gain in FDI have been mentioned earlier. Drastic reductions in FPI between September 2007 and March 2009 can be attributed to global economic crisis. Post March 2009 till June 2013, the fluctuations were on account of release of large sum globally on low interest rates, currency depreciation & high current account deficit of India (Banerji and Khan 2014).

To observe any cause and effect relationship, the following steps are being undertaken.

1. Identification of Heteroskedasticity in FDI and FPI (abbreviated results)

Table 5
HETEROSKEDASTICITY TEST: ARCH (FDI)
Obs R^2 11.29 Prob. Chi^2 0.0008
Heteroskedasticity Test: ARCH(FPI)
Obs R^2 0.77 Prob. Chi^2 0.38

Heteroskedasticity (ARCH effect) is present in FDI but not in FPI.

2. Making the two series stationary.

They are non stationary and become stationary at first difference as per tables 5 and 6.

Table 6

NULL HYPOTHESIS: D(FPI) HAS A UNIT ROOT

Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=11)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-9.558478	0.0000
Test critical values:	1% level	-3.513344	
	5% level	-2.897678	
	10% level	-2.586103	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(FPI,2)
Method: Least Squares
Sample (adjusted): 1993Q2 2013Q2
Included observations: 81 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(FPI(-1))	-1.816942	0.190087	-9.558478	0.0000

D(FPI(-1),2)	0.294626	0.113827	2.588369	0.0115
C	104.3301	451.7822	0.230930	0.8180
R-squared	0.706485	Mean dependent var		-141.7160
Adjusted R-squared	0.698959	S.D. dependent var		7399.794
S.E. of regression	4060.059	Akaike info criterion		19.49212
Sum squared resid	1.29E+09	Schwarz criterion		19.58080
Log likelihood	-786.4307	Hannan-Quinn criter.		19.52770
F-statistic	93.87233	Durbin-Watson stat		1.982094
Prob(F-statistic)	0.000000			

Table 7

Null Hypothesis: D(FDI) has a unit root

Exogenous: Constant

Lag Length: 2 (Automatic - based on SIC, maxlag=11)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-9.259222	0.0000
Test critical values:	1% level	-3.514426	
	5% level	-2.898145	
	10% level	-2.586351	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(FDI,2)

Method: Least Squares

Sample (adjusted): 1993Q3 2013Q2

Included observations: 80 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(FDI(-1))	-2.295741	0.247941	-9.259222	0.0000
D(FDI(-1),2)	0.844424	0.181272	4.658339	0.0000
D(FDI(-2),2)	0.367073	0.118696	3.092548	0.0028
C	160.5573	175.9932	0.912293	0.3645
R-squared	0.707403	Mean dependent var		9.700000
Adjusted R-squared	0.695853	S.D. dependent var		2840.110
S.E. of regression	1566.306	Akaike info criterion		17.59953
Sum squared resid	1.86E+08	Schwarz criterion		17.71864
Log likelihood	-699.9814	Hannan-Quinn criter.		17.64729
F-statistic	61.24768	Durbin-Watson stat		2.104001
Prob(F-statistic)	0.000000			

2. To estimate Granger causality between FDI and FPI.
   Best possible lag selection was 11 i.e., two and three quarter years. However VAR and VECM model cannot be estimated because one of the variables (FDI) exhibits Heteroskedasticity.

Table 8
GRANGER CAUSALITY TEST BETWEEN FDI AND FPI

Pairwise Granger Causality Tests
Sample: 1 85
Lags: 11

Null Hypothesis:	Obs	F-Statistic	Prob.
STATFDI does not Granger Cause STATFPI	72	9.35152	1.E-08
STATFPI does not Granger Cause STATFDI		1.93139	0.0578

Conclusion from table 7 is that FDI has an impact on FPI after a gap of 11 quarters or in general form, within two to three years. FDI to a large extent is dependent, in India, on government policies and reform process. It is reasonable to expect that FPI though perception and capital market based, would follow the trend of FDI.

3. Any further cause & effect relationship requires checking for Heteroskedasticity among residuals of OLS estimations between FPI and FDI.

Table 9
OLS BETWEEN FPI AND FDI

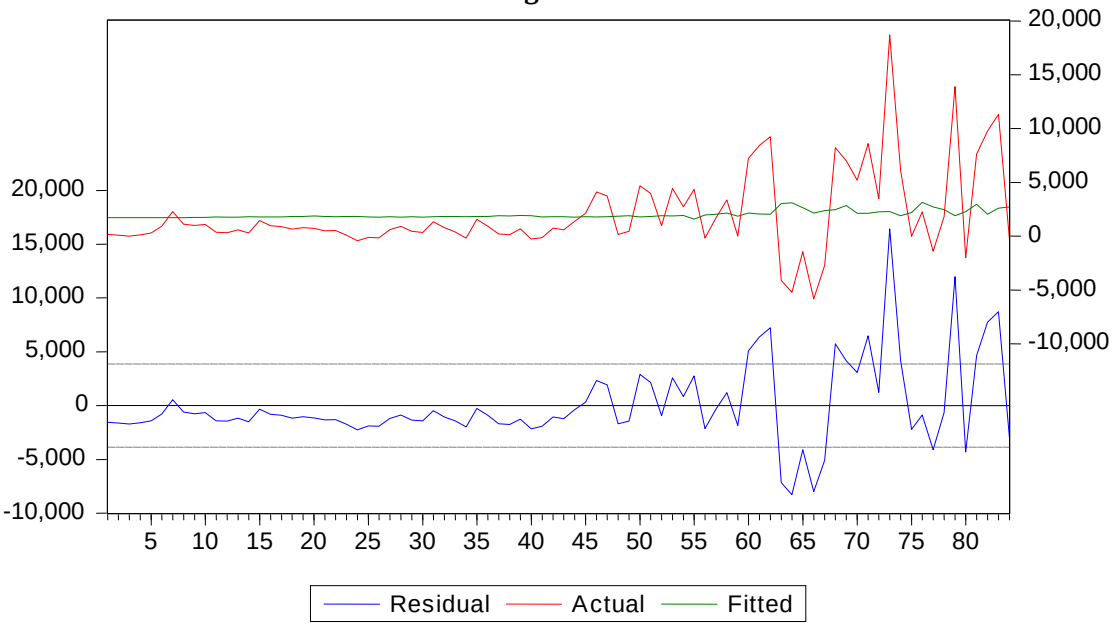
Dependent Variable: FPI
Method: Least Squares
Sample: 1 84
Included observations: 84

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDI	0.155395	0.185653	0.837019	0.4050
C	1700.310	549.4286	3.094687	0.0027

R-squared	0.008472	Mean dependent var	1996.050
Adjusted R-squared	-0.003620	S.D. dependent var	3849.303
S.E. of regression	3856.264	Akaike info criterion	19.37631
Sum squared resid	1.22E+09	Schwarz criterion	19.43418
Log likelihood	-811.8049	Hannan-Quinn criter.	19.39957
F-statistic	0.700601	Durbin-Watson stat	1.377118
Prob(F-statistic)	0.405015		

(a) Plotting of residuals and test of residuals

Figure 2



Residuals – periods of low volatility are followed by periods of low volatility and periods of high volatility are followed by periods of further high volatility, reflecting a ARCH/GARCH (1,1) model. The OLS estimation fails residual tests.

(b) Abbreviated residual test results are. Null hypotheses are:

- Homoskesdasticity Present
- Serial correlation absent
- Residuals distributed normally

Table 10
HETEROSKEDASTICITY TEST: WHITE
Obs R^2 13.50 Prob Chi^2 0.0012
Breusch-Godfrey Serial Correlation LM Test
Obs R^2 8.15 Prob. Chi^2 0.0170
Normality Test
Jarque- Bera: 89.33 Prob.: 0.000

Now to create a model, excluding VAR/VECM framework would involve first dealing with stationary FDI and FPI (statfpi and statfdi).

(a) Testing Heteroskedasticity in statfdi, statfpi and OLS regression estimation of statfpi and statfdi. Null hypothesis – ARCH effect absent

Table 11 **STATFDI SHOWING ARCH EFFECT**
Heteroskedasticity Test: ARCH
Obs R^2 5.083 Prob Chi^2 0.0242

Table 12 **STATFDI SHOWING ARCH EFFECT**
Heteroskedasticity Test: ARCH
Obs R^2 14.20 Prob Chi^2 0.0002

Regression of statfpi (dependent) and statfdi (independent)-OLS
Table 13

Table 13
REGRESSION OF STATFDI (DEPENDENT AND STATFDI (INDEPENDENT)-OLS

Dependent Variable: STATFPI
Method: Least Squares
Sample (adjusted): 2 84
Included observations: 83 after adjustments

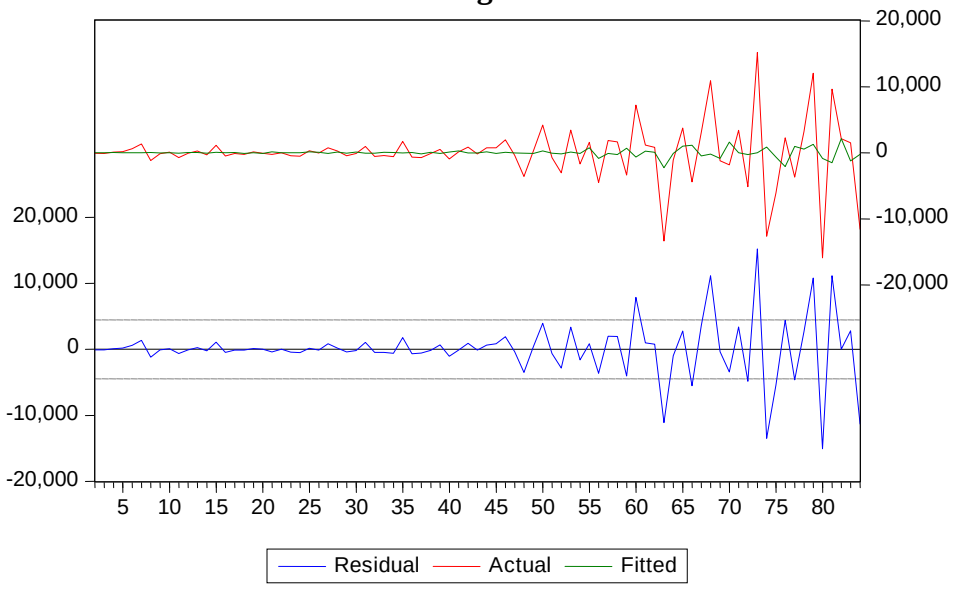
Variable	Coefficient	Std. Error	t-Statistic	Prob.
STATFDI	-0.349286	0.277817	-1.257250	0.2123
C	22.27715	490.3689	0.045429	0.9639

R-squared	0.019141	Mean dependent var	-4.807229
Adjusted R-squared	0.007032	S.D. dependent var	4478.935
S.E. of regression	4463.160	Akaike info criterion	19.66890
Sum squared resid	1.61E+09	Schwarz criterion	19.72719
Log likelihood	-814.2595	Hannan-Quinn criter.	19.69232
F-statistic	1.580677	Durbin-Watson stat	2.760732
Prob(F-statistic)	0.212276		

Note – DW stat reflects inconclusive autocorrelation.

(b) Residual diagnostics in OLS between statfpi and statfdi

Residual, actual and fitted graphs
Fig. 3



TEST FOR RESIDUALS
Null hypotheses are:

(a) Absence of ARCH effect (Heteroskedasticity) from residuals
(b) Residuals are not distributed multivariate normally.
(c) Absence of serial correlation from the residuals

Abbreviated results

Table 14
HETEROSKEDASTICITY: ARCH:
Obs R^2 = 17.45 Prob. Chi square(1) 0.00
Normality: Jarque Bera=58.72 Prob.=0.00
Autocorrelation present up to 36lags: Q stat=91.66 Prob. 0.00

All residual diagnostic tests failed.

ARCH/GARCH Model

(6) The graph of residuals indicates that periods of low volatility are followed by low volatility and periods of high volatility followed by high volatility. This clearly indicates presence of ARCH/GARCH effect. Multivariate ARCH/GARCH models (MGARCH) have been used extensively in modeling financial time series. Since this approach captures the effect on current volatility of both own innovation and lagged volatility shocks emanating from within a given market and cross innovation & volatility spillovers from interconnected markets; it permits a greater understanding of volatility and volatility persistence in these interconnected markets. It is within the context of this limited empirical work that the present study is undertaken.

It has been pointed in many studies existence of bi-directional causality between FII and stock market returns (mentioned in this paper). Studies by Gupta et al (2012) pointed strong causality running from FDI to stock market. The same has been supported by Ghosh (2005), Lin (2006), Adam & Tweneboah (2009) and Sayah et al (2010) in their studies. Hence in the model compounded return of stock market (R) is taken as the exogenous variable, to regress FDI and FPI model from stock returns; giving relationship between these two forms with impact of stock returns acting as the external moderating factor. Lag of stock returns is presumed to be one (Engle 1993). Closing value of quarter endings from September 1992 till June 2013 of Bombay Stock Exchange (BSE) index – BSE Sensex has been taken from website www.moneycontrol.com and used as such.

Table 15
QUARTERLY CLOSING BSE SENSEX

Quarter	Closing BSE
Sep-92	3294.42
Dec-92	2615.37
Mar-93	2280.52
Jun-93	2227.54
Sep-93	2709.64
Dec-93	3346.06
Mar-94	3778.99
June-94	4086.72
Sep-94	4281
Dec-94	3926.9
Mar-95	3260.96
June-95	3247.36
Sep-95	3493.21
Dec-95	3110.49
Mar-96	3366.61
June-96	3812.52
Sep-96	3239.48
Dec-96	3085.2
Mar-97	3360.89
June-97	4256.09
Sep-97	3902.03
Dec-97	3658.98
Mar-98	3892.75
June-98	3250.69
Sep-98	3102.29
Dec-98	3055.41
Mar-99	3739.96

June-99	4140.73
Sep-99	4764.42
Dec-99	5005.82
Mar-2000	5001.28
June-2000	4748.77
Sep-2000	4090.38
Dec-2000	3972.12
Mar-01	3604.38
June-01	3456.78
Sep-01	2811.6
Dec-01	3262.33
Mar-02	3469.35
June-02	3244.7
Sep-02	2991.36
Dec-02	3377.28
Mar-03	3048.72
June-03	3607.13
Sep-03	4453.24
Dec-03	5838.96
Mar-04	5590.6
June-04	4795.46
Sep-04	5583.61
Dec-04	6602.69
Mar-05	6492.82
June-05	7193.85
Sep-05	8634.48
Dec-05	9397.93
Mar-06	11279.96
June-06	10609.25
Sep-06	12454.42
Dec-06	13786.91
Mar-07	13072.1
June-07	14650.51
Sep-07	17291.1
Dec-07	20286.99
Mar-08	15644.44
June-08	13461.6
Sep-08	12860.43
Dec-08	9647.31
Mar-09	9708.5
June-09	14493.84

Sep-09	17126.84
Dec-09	17464.81
Mar-10	17527.77
June-10	17700.9
Sep-10	20069.12
Dec-10	20509.09
Mar-11	19445.22
June-11	18845.87
Sep-11	16453.76
Dec-11	15454.92
Mar-12	17404.2
June-12	17429.98
Sep-12	18762.74
Dec-12	19426.71
Mar-13	18835.77
June-13	19395.81

Normalized compounded stock market returns R is calculated as
$R = lnclosingbse_t - lnclosingbse_{t-1}$

Table 16

Table 16
MULTIVARIATE ARCH/GARCH (1,1) EFFECT BETWEEN STATFPI AND STATFDI WITH R AS VARIANCE REGRESSOI

Dependent Variable: STATFPI
Method: ML - ARCH (Marquardt) - Normal distribution
Sample (adjusted): 2 84
Included observations: 83 after adjustments
Failure to improve Likelihood after 191 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(3) + C(4)*RESID(-1)^2 + C(5)*GARCH(-1) + C(6)*R

Variable	Coefficient	Std. Error	z-Statistic	Prob.
STATFDI	-0.636591	0.184126	-3.457358	0.0005
C	41.03520	93.47781	0.438983	0.6607
Variance Equation				
C	342129.9	342052.7	1.000225	0.3172

RESID(-1)^2	0.004633		0.002556	1.812569	0.0699
GARCH(-1)	1.128779		0.004340	260.1147	0.0000
R	-45489.60		42492.12	-1.070542	0.2844
R-squared	0.006190	Mean dependent var			-4.807229
Adjusted R-squared	-0.006079	S.D. dependent var			4478.935
S.E. of regression	4492.529	Akaike info criterion			17.90617
Sum squared resid	1.63E+09	Schwarz criterion			18.08102
Log likelihood	-737.1060	Hannan-Quinn criter.			17.97642
Durbin-Watson stat	2.832410				

Estimation Command:
==========
ARCH(BACKCAST=0.7,DERIV=AA) STATFPI STATFDI C @ R

Estimation Equation:
==========
STATFPI = C(1)*STATFDI + C(2)

GARCH = C(3) + C(4)*RESID(-1)^2 + C(5)*GARCH(-1) + C(6)*R

Substituted Coefficients:
==========
*STATFPI = -0.636590958955*STATFDI + 41.0351983346* (**Mean Equation)**

*GARCH = 342129.860985 + 0.00463313853943*RESID(-1)^2 + 1.12877858401*GARCH(-1) - 45489.6033359*R* (**Variance Equation)**

Here,

GARCH = variance of the residual (error term) derived from Mean Equation. Here it is current quarter's variance or volatility of STATFPI

GARCH (-1) = previous quarter's volatility or the GARCH term
RESID(-1)^2 = previous quarter's squared residual or ARCH term

TEST FOR RESIDUALS

The three tests have following null hypotheses

(a)Absence of ARCH effect (Heteroskedasticity) from residuals
(b) Residuals are not distributed multivariate normally.
(c) Absence of serial correlation from the residuals

Abbreviated results

Table 17 **HETEROSKEDASTICITY: ARCH:**
Obs R^2 = 0.28 Prob. Chi square(1) 0.60
Normality: Jarque Bera=1.71 Prob.=0.42
Autocorrelation absent up to 33 lags: Q stat=22.81 Prob. 0.908

From the above iterations following inferences can be made

1. GARCH term i.e. previous quarter's volatility is significant in influencing FPI, with positive coefficient; positive swing in FPI leads to higher FPI in next quarter and vice-versa. Even though ARCH is significant at 7%, this shows that preceding quarter's squared residual has impact on FPI. This implies persistence of the cause, for one quarter, which leads to variation of FPI from mean value. Thus it could be understood that (a) as momentum of swing/change in FPI (b) persistence of impact of cause of change in FPI, both influence subsequent quarter's FPI. This argument fits in well with the nature of portfolio investments.
2. FPI and FDI move in opposite direction. An examination of inflows in the study period shows that since December 2008 till June 2013, FPI and FDI have moved in diametrically opposite directions. FPI movements have been in consonance with global trends post 2008, wherein there were large withdrawals from India interspersed with large inflows probably on account of easy monetary policy followed in USA and other countries.
3. Significance of R is low and is perhaps confounding as literature suggests otherwise.

A probable cause could be that FPI shows stronger ARCH/GARCH relation with R as exogenous variable (as variance regressor) as discussed further.

Table 18
ARCH/GARCH (1,1) EFFECT STATFPI
WITH R AS VARIANCE REGRESSOR

Dependent Variable: STATFPI
Method: ML - ARCH (Marquardt) - Normal distribution
Sample (adjusted): 2 82
Included observations: 81 after adjustments
Failure to improve Likelihood after 203 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*GARCH(-1) + C(5)*R

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	11.90864	72.77464	0.163637	0.8700

Variance Equation				
C	-37160.85	6133.805	-6.058369	0.0000
RESID(-1)^2	-0.039414	0.003939	-10.00516	0.0000
GARCH(-1)	1.157309	0.002604	444.4142	0.0000
R	810263.6	262381.2	3.088116	0.0020

R-squared	-0.000613	Mean dependent var	118.7580
Adjusted R-squared	-0.000613	S.D. dependent var	4341.465
S.E. of regression	4342.797	Akaike info criterion	17.67630
Sum squared resid	1.51E+09	Schwarz criterion	17.82411
Log likelihood	-710.8902	Hannan-Quinn criter.	17.73560
Durbin-Watson stat	2.790462		

Estimation Command:
==========
ARCH(BACKCAST=0.7,DERIV=AA) STATFPI C @ R

Estimation Equation:
==========
STATFPI = C(1)

GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*GARCH(-1) + C(5)*R

Substituted Coefficients:
==========
STATFPI = 11.90863524 (**Mean Equation)**

GARCH = -37160.8528443 - 0.0394141953453*RESID(-1)^2 + 1.15730944006*GARCH(-1) + 810263.60162*R (**Variance Equation)**

Here,

GARCH = variance of the residual (error term) derived from Mean Equation. Here it is current quarter's variance or volatility of STATFPI

GARCH (-1) = previous quarter's volatility or the GARCH term
RESID(-1)^2 = previous quarter's squared residual or ARCH term

TEST FOR RESIDUALS

Null hypotheses:

(a) Absence of ARCH effect (Heteroskedasticity) from residuals
(b) Residuals are not distributed multivariate normally.
(c) Absence of serial correlation from the residuals

Abbreviated results

Table 19

HETEROSKEDASTICITY: ARCH:
Obs R^2 = 0.25 Prob. Chi square(1) 0.62
Normality: Jarque Bera=0.18 Prob.=0.91
Autocorrelation absent up to 36 lags: Q stat=23.94 Prob. 0.94

Herein the variance equation, GARCH and ARCH terms are highly significant; also R is highly significant with high coefficient. Association of R with FPI is strong and well documented in literature and referred in this article. Significance of R is restricted to FPI only and was found to be absent in FDI.

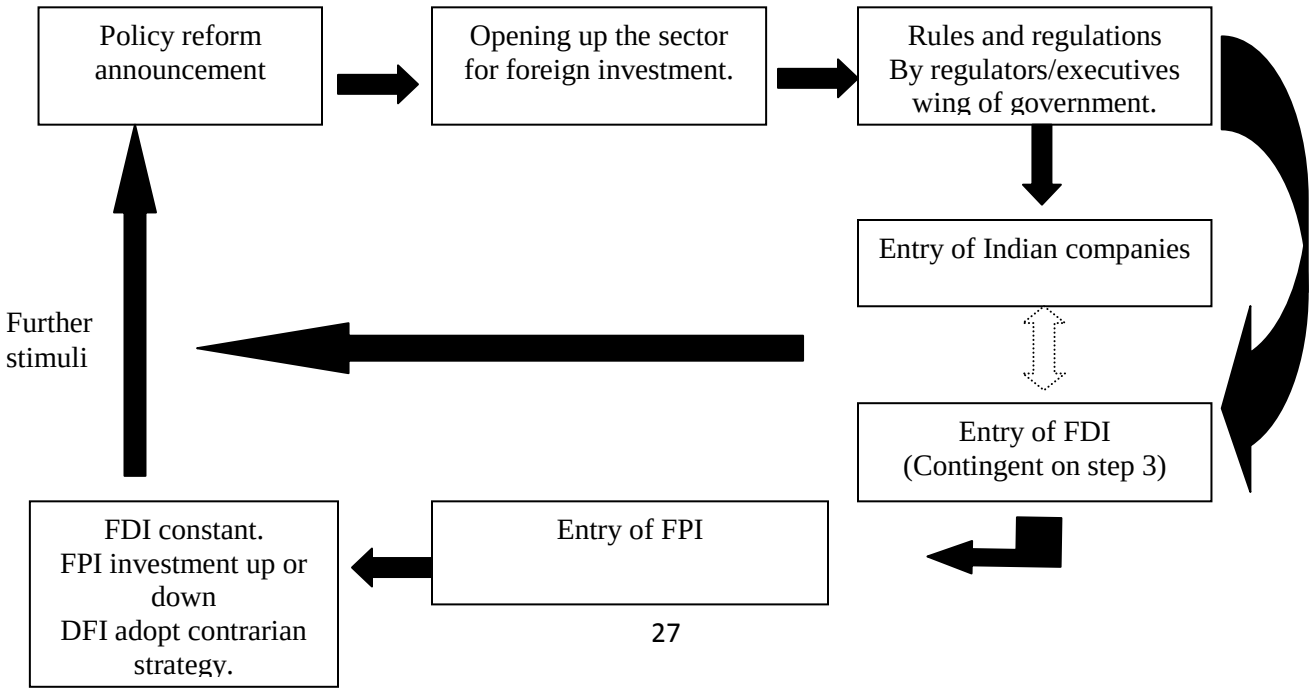
INTERPRETATION

1. *Ceteris Paribus*, FDI and FPI have a long run association with FDI being a probable cause of FPI, with some time lag.
2. In an economy, which has three distinct characteristics – developed capital markets, existence of both promoter and institution led companies and rule based company affairs management, *per se*, it becomes confounding. A more precise model would perhaps exchange rate variations and use of dummy variables for structural breaks to formulate a model.

CONCLUSION AND SUGGESTION

Entire gamut of FDI and FPI are a part of economic reforms initiated in India approximately twenty five years. FDI has become an important source of gross capital formation. In certain sectors MNCs dominate overwhelmingly. E.g., consumer white durables, processed food, passenger cars etc. Figure 4 gives a schematic overview of the linkage between FDI and FPI/FII in India. In the perspective of FDI and FPI; Domestic Financial Institutions (DFI) operating in financial markets have long been using a contrarian strategy visa-vies portfolio investors (Bose 2012).

Figure 4
Scheme of FDI and FPI/FII Linkage



India has had current account deficit (CAD/GDP) in the range of approx. 5% since 2011. This has been balanced mainly by FPI (ESI 2013-14). Overdependence on FPI can be risky as mentioned in studies referred in this study. FDI is stable and in India it has made remarkable impact on the Indian economy. With a market based economy (leaving aside certain sectors), FDI has spurred Indian companies to greater efficiency. Though sectoral limits are there in certain industries, however this has not deterred MNCs to invest and wait for further liberalization. FDI in service sector is highest because this sector grew fastest in last two decades and now accounts for approx. 65% of GDP.

Onset of FPI has led to greater attention by promoters to wealth creation and better treatment of minority shareholders. Post 1990s, Indian business laws are being harmonized with their Anglo-Saxon counterparts. Corporate governance norms have become rigorous and to some extent portfolio investors are indirectly responsible. It may take some time before FPIs are allowed to invest in commodity and foreign exchange markets. Sometimes government actions are more attuned for FPIs rather than FDI because of visibility of capital market indices.

An important lesson for Indian economic planners is that reforms must be pushed vigorously, so that Indian private sector can compete. Success of private Indian companies, sooner or later draws FDI. If integration of FDI in that sector is successful then FPI follows. The period 2009-2014, was characterized by financial scandals, policy paralysis, persistent high inflation, high bank rates, high commodity prices and high current deficit account (ESI 2012-13 and 2013-14). Portfolio investment was extremely volatile and reacted to global trends and profit booking on Indian bourses. Due to policy paralysis in economic matters, many large scale investments especially in infrastructure were held up. Private sector Indian companies in infrastructure either suffered losses or did not invest further. Matters were complicated by judicial and federal auditor's intervention. Confusion regarding tax policies made matters worse (these observations are from general newspaper readings between 2009 and 2014). It is the conclusion of authors that favorable and hassle free economic policy, which benefits domestic investors (and industries), will result in increased FDI, which after a lag of some time, will impact FPI (it is not necessary that in future lag would be 10-12 quarters). India as one of the emerging economies has sufficient depth and available investment opportunities for FDI in various sectors and capital market for FPIs. Portfolio investment will keep on increasing on account of carry over trade (in foreign currencies) followed by investments in countries like India to get higher returns. For quite some time to come, CAD will be balanced by capital/portfolio flows. Needless to mention, howsoever contradictory to the discourse of FDI and FPI, returns from capital markets do matter, in case of both forms of foreign investments. The model and available literature substantiates it.

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