Foreign Direct Investment in India and its Growth Performance:

A Time Series Analysis

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Abstract

Foreign direct investment has played an important role in the process of economic growth and development of many developing countries in the world, but the relationship between FDI and economic growth is still controversial on the ground of theoretical literature and empirical studies.

The present study is an attempt to examine the impact of foreign direct investment (FDI) on economic growth in India in the post reform period (1991). This study also analyses the time profile of FDI and sectoral distribution of FDI in India. FDI registered an average annual growth rate (AAGR) of 51.7 per cent and compound annual growth rate (CAGR) of 41 per cent during the period from 1990-91 to 1999-2000 and 35.6 and 19.5 per cent respectively during 2000-01 to 2010-11. The overall an average annual growth rate in FDI recorded a 42.8 per cent and compound annual growth rate of 33.3 per cent during the analysis period, i.e., from 1990-91 to 2010-11. Sectoral distribution shows that services, telecommunication and construction sector are among the top sectors attracting highest FDI inflows. The regional distribution of FDI inflows reveals an uneven distribution in India.

The empirical study is based on pair wise co- integration test and pair wise Granger causality test for FDI and IIP (as a proxy of economic growth). The long run and short run linkages between FDI and economic growth using vector error correction model (VECM) has been examined. The results of the pair wise Granger causality test reveal that economic growth Granger causes FDI and FDI also granger causes economic growth. It means that there is bi-directional causal relationship between economic growth and FDI in India. It implies that the past information on economic growth improves the predictability of FDI. It explains that the sound economic growth of the country attracts additional FDI.

Keywords: Foreign Direct Investment, Economic Growth, Index of Industrial Production, Co- integration, Granger causality, Vector Error Correction.

Introduction:

Foreign direct investment has played an important role in the process of economic growth and development of many developing countries in the world, but the relationship between FDI and economic growth is still controversial on the ground of theoretical literature and empirical studies. The debate on the issue dated back when many capitals scarce countries resorted to foreign capital as the primary means to achieve rapid economic growth. Unfortunately, the growth experience of most of these countries has not been very satisfactory. As a result, it is imperative for us to re- examine the relationship between FDI and economic growth after the economic reforms of 1991.

Ever since the introduction of economic reforms after balance of payment crisis, India has become 2nd chosen destination after China (FDI Confidence Index, 2012) in FDI inflows. Good growth prospects supported by on-going economic liberalisation and stable financial system, strong external liquidity position, high savings- investment ratios and favourable tax regime attracted foreign investors in our country.

FDI is seen as a means to supplement domestic investment for achieving a higher level of economic growth and development. FDI offer benefits to domestic industry as well as to the consumer by providing opportunities for technological upgradation, access to global managerial skills and practices, optimal utilization of human and natural resources, making industry internationally competitive, opening up exports market, providing backward and forward linkages and access to international quality goods and services.

Economic growth is a function of capital formation. In the developing countries, the per capita income and savings rate being very low, domestic capital formation is inadequate to give a big push to the economy to take it to the take off stage. Hence the domestic resources may be supplemented with foreign capital to achieve the critical minimum investment to break the vicious circle of low income → low saving low investment→ low income.

Foreign investment gives the facility of imports of capital goods, raw materials and technical knowledge for the growth of an economy. If investment is made in export-oriented industries, it promotes exports of host countries and facilitates imports to a large extent. If it is in cost reducing industries, customers get cheaper products which results in general increase in the real incomes of the people. The investment, if used, for structural development leads to the development and growth of all other kinds of industries. Besides giving a general boost up to

the industrial development increased FDI leaves favourable impact on the balance of payment position of a country.

Foreign direct investment (FDI) plays a multi- dimensional role in the overall development of the host economies. It may generate benefits through bringing in non-debt creating foreign capital resources, technological upgrading, and skill enhancement, new employment, spill-over and allocative efficiency effects. While FDI is expected to create positive outcomes, it may also generate negative effects on the host economy. The costs to the host economy can arise from the market power of large firms and their associated ability to generate high profits. Much of the existing empirical evidence suggests that the positive effects offset negatives, thus providing net economic benefits for the host economies.

Theories of FDI state that the basis for investment lies in the transaction cost of transferring technical and other knowledge, and market imperfections and explain why MNCs indulge in FDI; why they choose a specific country in preference to another to locate their foreign business activity; and why they choose a particular entry mode. These theories have also tried to explain why some countries are more successful than others in obtaining FDI.

UNCTAD's classification of FDI determinants:

i. *Policy variables:* Tax policy, trade policy, privatization policy, macroeconomic policy;

ii. *Business variables:* Investment incentives;

iii. *Market-related economic determinants:* Market size, market growth, market structure;

iv. *Resource-related economic determinants:* Raw materials, labour costs, labour productivity; and

v. *Efficiency-related economic determinants:* Transport and communication costs, etc.

On the basis of the above, we can easily say that followings are the key determinants or factors that influencing the size and direction of FDI flows:-Market size, economic stability and growth prospects, trade openness, infrastructure facilities, labour cost and gross capital formation, level of skilled labour, political and economic stability, extent of urbanization, return and costs, government policies, natural resources, interest rate differential, inflation, exchange rate, financial market.

The study broadly analyses the trends, magnitude and composition (time profile) of FDI inflows and examines the causal relationship between FDI inflows and economic growth in India after the initiation of economic reforms in India since 1991.

Research Methodology and Sources of the Data for the Study:

This study makes use of variety of econometric models (time series econometric models) to carry out the empirical analysis. To examine the relationship between FDI inflows and economic growth, the pair-wise co-integration and Pair-wise Granger Causality test have been employed. Vector Error Correction model (VECM) has been used to see the long run and short run linkages between FDI and economic growth.

The quarterly data for the period 1990- 2011 on FDI and Index of Industrial Production (IIP- as a proxy for economic growth) have been collected from the secondary sources such as Handbook of Statistics on the Indian Economy, various issues of monthly RBI's Bulletin, published by RBI. Quarterly data for IIP growth rate is taken as average of three months after changing its base rate on 2004-05.

 Our model has two variables such as FDI and IIP for quarterly time series data from 1990 to 2011. Our objective is to examine whether there exists causality between FDI and IIP. Here we can convert these two variables into natural log to avoid heteroscedasticity. If the variables are in log form, it will estimate elasticity.

Unit Root Test: To determine the order of cointegration, we have performed DF, ADF and PP tests. The typical equations for these tests are as follow:

$\Delta Y_t = \gamma Y_{t-1} + \varepsilon_t$ ....(DF test with no intercept and no trend)

$\Delta Y_t = \alpha_0 + \gamma Y_{t-1} + \varepsilon_t$ ....(DF test with intercept only)

$\Delta Y_t = \alpha_0 + \gamma Y_{t-1} + \alpha_2 t + \varepsilon_t$ ....(DF test with intercept and trend)

$\Delta Y_t = \alpha_0 + \alpha_1 t + \gamma Y_{t-1} + \sum_{i=0}^{k} \beta t\, Y_{t-1} + \varepsilon_t$ ....(ADF test)

$\Delta Y_{t-1} = \alpha_0 + \gamma Y_{t-1} + \varepsilon_t$ ....(PP test)

The parameter of interest in all the regression equation is γ, if $\gamma = 0$, the {Yt} sequence contains a unit root. The test involves estimating one or more of the equations above using OLS in order to obtain the estimated value of γ and associated standard error. Comparing the resulting t-statistic with the appropriate value reported in the Dickey Fuller tables allows us to determine whether to accept or reject the null hypothesis, $\gamma = 0$.

Test of Cointegration: if the variables are integrated of the same order, we can apply the Johnsen- juselius maximum likelihood method of cointegration to obtain the number of cointegrating vector. The typical equation may be the following form:

$$\Delta X_t = \sum \Gamma_i \Delta X_{t-i} + \Pi X_{t-i} + \varepsilon_t, \quad ....(1)$$

Where X_t = 2x1 vector (fdi and iip) respectively,

Δ = difference operator,

ε_t = 2x1 vector residuals.

VECM model has information about the short- and long –run adjustment to changes in X_t via the estimated parameters Γ_i and Π, respectively. ΠX_{t-i} is the error correction term. Π can be factored into separate matrices α and β, such as $\Pi = \alpha\beta'$ where β' denotes the vector cointegration parameters while α is the vector of error correction coefficients measuring the speed of convergence to the long- run steady state.

Our variables FDI and IIP are found to be cointegrated after running Johansen- Juselius meaning that they share a common stochastic trend and will grow proportionally. In other words, they move together in the long run or they have long- run relationship.

Cointegration indicates that causality exists between the two series but it fails to shows us the direction of the causal relationship. Engel and Granger suggest that if cointegration exists between two variables in the long- run, then there must be unidirectional or bi- directional Granger causality between these variables.

Engel and Granger suggest that the cointegrating variables can be represented by an error correction model representation. In other words, according to Granger, if there is evidence of cointegration between two or more variables, then a valid error correction model should also exist between the two variables.

As FDI and IIP are cointegrated, a Vector Error Correction Model (VECM) representation could have the following form:

$$\Delta FDI_t = \sum \beta_i \Delta FDI_{t-i} + \sum \alpha_i \Delta IIP_{t-i} + Z_1 * EC_{1t-1} + \varepsilon_{1t}, \quad .... (2)$$

$$\Delta IIP_t = \sum M_i \Delta FDI_{t-i} + \sum N_i \Delta IIP_{t-i} + Z_2 * EC_{2t-1} + \varepsilon_{2t}, \quad ....(3)$$

Where $\beta_i, \alpha_i, M_i,$ and N_i are the short- run coefficients, EC_1 and EC_2 are error correction terms and ε_{1t} and ε_{2t} are residuals in the above equations. The EC_{1t-1} is the lagged value of the

residuals derived from the cointegrating regression of FDI on IIP (eq. 2) while EC_{2t-1} is the lagged value of the residuals derived from the cointegrating regression of IIP on FDI (eq. 3).

Unidirectional causality from IIP to FDI (IIP Granger causes FDI) will occur in eq.- 2 if the set of estimated coefficients on the lagged IIP (α_i) coefficients are non- zero (short-run causality) and the error correction coefficient (Z_1^*) of EC_{1t-1} is significant (long- run causality).

Similarly, unidirectional causality from FDI to IIP (FDI Granger causes IIP) will occur in eq.- 3 if- the set of estimated coefficients on the lagged FDI (M_i) coefficients are non- zero (short-run causality) and the error correction coefficient (Z_2^*) of EC_{2t-1} is significant (long- run causality).

If both variables Granger causes each other, then it is said that there is a two- way feedback relationship or bi- directional relationship between FDI and IIP.

Before considering magnitudes and trends of foreign capital inflows in India since 1991, it is necessary to point out that the data since 2000-01 are not comparable to the data prior to this year. This is on account of the change in the definition of foreign investment in an attempt to bring it in line with international standards. FDI inflow was recorded under five heads: (i) Reserve Bank of India's automatic approval route for equity holding up to 51 per cent; (ii) Foreign Investment Promotion Board's or Secretariat of Industrial Approval's discretionary approval route for large projects with equity holding greater than 51 per cent; (iii) acquisition of shares route since 1996 (relating to acquisition of shares of Indian companies by non-residents under Section 29 of FERA); (iv) RBI's non-resident Indian (NRI) schemes; and (v) external commercial borrowings (American Depository Receipts/Global Depository Receipts and euro equities). This definition differed from that of the IMF which includes external commercial borrowings, reinvested earnings and subordinated debt. In an effort to bring the Indian definition in line with IMF 's definition, the coverage of FDI since 2000-01 includes, besides equity capital, reinvested earnings and other direct capital.

The study has been divided into three sections. In **Section-I**, we have reviewed some literatures on this issue. Trends and time profiles of FDI in India since 1991 have been analysed in **Section- II** and the empirical study has been examined in **Section- III**.

Section- I: Review of Literature

Bhattacharyya Jita, Bhattacharyya Mousumi, (2012), examined that there was a long-term relationship between FDI, merchandise, service trade and economic growth of India. Bi-directional causality is observed between merchandise trade and economic growth, services trade and economic growth. Unidirectional causality is observed from FDI to economic growth and FDI to merchandise trade. A unidirectional causality is also observed from merchandise trade to services trade.

Agarwal G., Khan M. A. (2011), the study found that 1% increase in FDI would result in 0.07% increase in GDP of China and 0.02% increase in GDP of India. We also found that China's growth is more affected by FDI, than India's growth.

Chee Y. L., Nair M. (2010), in their empirical analysis they showed that financial sector development enhances the contribution of FDI on economic growth in the region. It also showed that the complementary role of FDI and financial sector development on economic growth is most important for least developed economies in the region.

Acharyya J. (2009), showed that long run positive, but marginal, impact of FDI inflow on GDP growth in India during 1980-2003. On the other hand, the long run growth impact of FDI inflow on CO_2 emissions is quite large. The actual impact on the environment, however, may be larger because CO_2 emission is one of the many pollutants generated by economic activities.

Syed Zia A. R., (2009), using panel data analysis, he found that there is a long-term relationship between FDI and employment opportunities.

Pradhan, Prakash J., Abraham, Vinoj and Sahoo, Kumar M. (2004), in their study they made an attempt to evaluate the employment and wage effects of FDI in Indian manufacturing. Their findings suggest that foreign firms do not have any adverse effects on the manufacturing employment in India as compared to their domestic counterparts while they significantly pay relatively higher to their workers. Therefore, this study tends to imply that labour in fact had benefited from foreign investment in India.

Chakraborty C. (2002), using VECM model he revealed three important features: (a) GDP in India is not Granger caused by FDI; the causality runs more from GDP to FDI; (b) trade liberalization policy of the Indian government had some positive short run impact on the FDI flow; and (c) FDI tends to lower the unit labour cost suggesting that FDI in India is labour displacing.

Section- II: Time Profile of FDI in India

There has been a significant increase in the magnitude of FDI flows to India since the early 1990s, reflecting the liberal policy regime and growing investor's confidence.

Magnitude and Trends of FDI

The magnitude and trends of FDI may be depicted through following Table-1 in which components of FDI has also been shown as the definition of FDI has been changed in 1999-2000 in line with international standards so the data since 2000- 01 are not comparable to the data prior to this.

Table- 1 reveals that the flow of net FDI into India increases over the year in absolute sense except in year 1998-99 when net FDI inflows into India declined from US$ 3557 million in 1997-98 to US$ 2462 million in 1998-99 due to the impact of the East Asian crisis of 1997. The cumulative FDI inflows into India were US$ 15.6 billion during 1990-91 to 1999-2000. Year on year growth rate of net FDI during the period from 1990-91 to 1999-2000 shows fluctuating trends over the years. During these periods, growth rates are positive with fluctuating in nature except in 1998-99 when net FDI inflows into India decline from US$ 3557 million to US$ 2462 million. During these periods growth rate in net FDI inflows was highest at 144.2 per cent in 1992-93 over the previous year. The definition of foreign investment has been changed from 2000-01 in line with international standards which include equity, reinvested earnings and other capital so the data since 2000-01 are not comparable to the data prior to this. Equity is the main source of FDI inflow as it is clear from this Table (4.1) and Figure 4.1 (a) and Figure 4.1 (b). During the periods from 2000-01 to 2005-06, net FDI inflow increases slowly except two years, i.e., 2002-03 and 2003-04 when net FDI flow has declined. During these periods net flows into India were, on an average US$ 5.7 billion per year. Net FDI flow increases sharply from the year 2005-06 to 2008-09. During these periods net FDI flows into India were on an average US$ 31.8 billion per annum. Growth rates during these periods are highest at 154.7 per cent in 2006-07 over the previous year. Net FDI inflow starts declining after 2008-09. During the period from 2009-10 and 2010- 11(P), net FDI flows into India on an average US$ 34 billion per annum. The cumulative FDI flows into India were US$ 538.7 billion during the period from 2000- 01 to 2010-11(P).

Table- 1: Magnitude and Trends of FDI

Net FDI Inflows				US$ Mn	In %
Year	Equity (1)	Reinvested earnings* (2)	Other capital** (3)	FDI (1+2+3)	Growth Rate
1990-91	NA	NA	NA	97	
1991-92	NA	NA	NA	129	33.0
1992-93	NA	NA	NA	315	144.2
1993-94	NA	NA	NA	586	86.0
1994-95	NA	NA	NA	1314	124.2
1995-96	NA	NA	NA	2144	63.2
1996-97	NA	NA	NA	2821	31.6
1997-98	NA	NA	NA	3557	26.1
1998-99	NA	NA	NA	2462	-30.8
1999-00	NA	NA	NA	2155	-12.5
2000-01	2,400	1,350	279	4029	87.0
2001-02	4,095	1,645	390	6130	52.1
2002-03	2,764	1,833	438	5035	-17.9
2003-04	2,229	1,460	633	4322	-14.2
2004-05	3,778	1,904	369	6051	40.0
2005-06	5,975	2,760	226	8961	48.1
2006-07	16,481	5,828	517	22826	154.7
2007-08	26,864	7,679	292	34835	52.6
2008-09	28,031	9,030	777	37838	8.6
2009-10 (P)	27,149	8,669	1,945	37763	-0.2
2010-11 (P)	23,443	6,703	234	30380	-19.6

(*Source: Handbook of Statistics on Indian Economy, 2010-11, RBI*)

* *Shows the unavailability of data as the definition of FDI has been changed from 2000- 01 in line of international standard in which equity, re invested earnings and other capital have been included in the definition of FDI.*

When we analyze the growth pattern of FDI, we found that it shows fluctuating trends over the years. FDI registered an average annual growth rate (AAGR) of 51.7 per cent and compound annual growth rate (CAGR) of 41 per cent during the period from 1990-91 to 1999-2000 and 35.6 and 19.5 per cent respectively during 2000-01 to 2010-11. The overall an average annual growth rate in FDI recorded a 42.8 per cent and compound annual growth rate of 33.3 per cent during the analysis period, i.e., from 1990-91 to 2010-11.

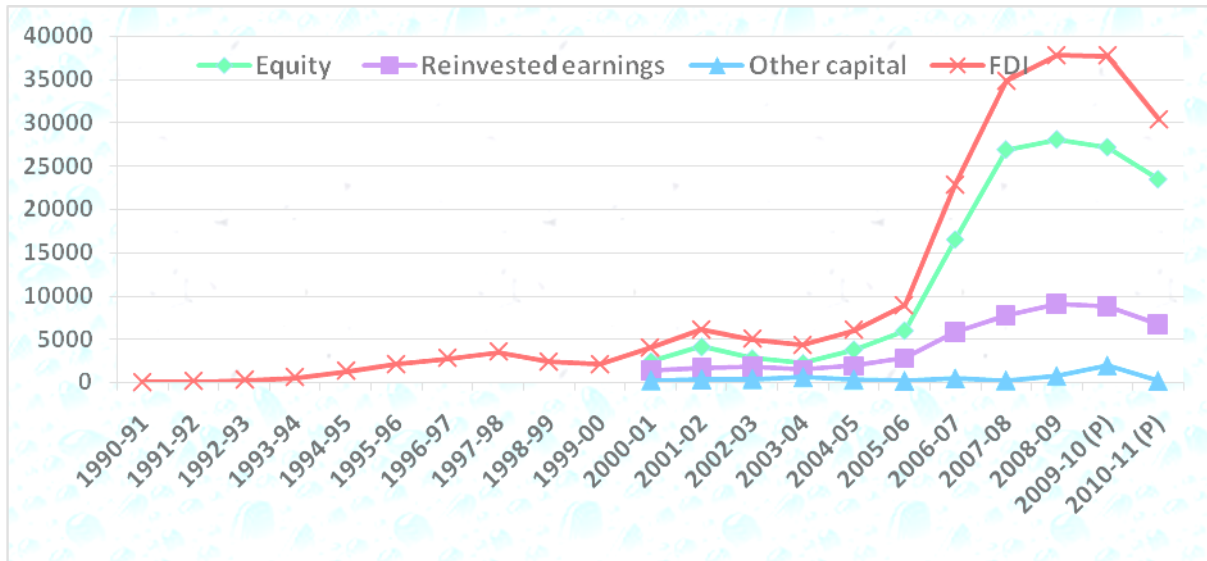**Figure- 1: Trends of Components of FDI in India:**

Figure- 1 shows the trends of components of net FDI inflows into India from 1990-91 to 2010-11(P). The trend of net FDI flow was increasing at a very slow rate up to 1997-98 and then starts declining up to 1999-2000. The definition of foreign investment has been changed from 2000-01 in line with international standards which include equity, reinvested earnings and other capital therefore the data since 2000-01 are not comparable to the data prior to this. Equity is the main source of FDI inflow as it is clear from these figures 4.1 (a) and figure 4.1 (b). The periods from 2000-01 to 2010-11(P), for the sake of our convenience, have been categorized into three phases: Phase- I start from 2000-01 to 2005-06 when net FDI rises at a very slow rate, averaging US$ 5.75 billion per annum. Phase- II starts from 2006-07 to 2008-09. In these periods, net FDI flow rises sharply at an annual average of US$ 31.8 billion per annum. The third phase starts from 2009-10 to 2010-11(P) when net FDI flow starts declining.

India's FDI inflows as World percentage have increased from 0.11 per cent in 1990 to 3.0 per cent in 2009 and 1.98 per cent in 2010. Inflows under FDI were particularly high during the last two years, though a large part of it was offset by significant outflows (India 's FDI outflow as percentage of World 's FDI outflows increased from 0.04 per cent in 2000 to 1.36 per cent in 2009 and 1.11 per cent in2010) on account of overseas investment by Indian corporate (for India 's comparison with other Asian economies, please see *Annexure- 4A.2,* *Source*: *UNCTADStat*). India has improved its rank from 3rd in 2010 to 2nd in 2012 in FDI Confidence Index, 2012 and become the second most FDI attractive destination in the World after China (**Sources:** *ATKearney FDI Confidence Index, 2012*).

In a major break from the past, the spurt in FDI flows to India in the recent period has been accompanied by a jump in outward equity investment as Indian firms establish production, marketing and distribution networks overseas to achieve global scale along with access to new technology and natural resources. Investment in joint ventures and wholly owned subsidiaries abroad has emerged as an important vehicle for facilitating global expansion by Indian companies. Overseas direct equity investment initially started with the acquisition of foreign companies in the IT and related services sector, has now spread to other areas such as non-financial services. FDI outflows from India jumped from US $ 6 million in 1990 to US $ 19.3 billion in 2008 and in 2010 it come down to US $ 14.6 billion.

Sector-wise Distribution of FDI in India

A significant feature of FDI flows to India is that it concentrates in the services sector while in other East Asian Economies FDI flows dominate in manufacturing sector. This shows the service led growth of the economy and comparative advantage in international trade in services. It may be noted that information technology has enabled greater tradability of a number of business and professional services, with greater potential for growth in such services; FDI has also emerged as a vehicle to delivery of services to the international markets. Moreover, within services sector, financing, insurance, real estate and business services have revealed a large increase in their share in FDI flows to India during recent period. Computer services also remain a key sector for FDI as the mode of captive BPO/subsidiaries have been principal instruments for facilitating offshore delivery of computer services and IT enabled services. Followings are the top 10 sectors in India in which FDI Inflows are the highest:

Table- 2: Sector-Wise FDI Inflows: From April 2000 to May, 2012.

| S. No.	Sectors	FDI Inflows in US$ billion	% of total FDI Inflows
1	Services Sector	33.10	19.08
2	Telecommunications	12.55	7.24
3	Construction Activities	11.61	6.69
4	Computer Software & Hardware	11.26	6.49
5	Housing & Real Estate	11.24	6.48
6	Drugs &Pharmaceuticals	9.59	5.53
7	Chemicals (other than Fertilizers)	8.09	4.66

8	Power	7.39	4.27
9	Automobile Industry	6.85	3.95
10	Metallurgical Industries	6.35	3.66

(*Source:* *Department of Industrial Policy and Promotion, Ministry of Commerce & Industry, Govt. of India).*

Table- 2 shows the sector wise FDI inflows into India. The top 10 sectors that attract US$ 118.03 billion which is 68.05 per cent of total FDI inflows into India since April 2000 to May, 2012.The cumulative FDI inflows in services sector are US$ 33.1 billion which is 19 per cent of total FDI inflows into India since April 2000 to May, 2012. Telecommunication sector is the second highest sector that attracts US$ 12.5 billion which is 7.2 per cent of total FDI inflows into India during the same periods. Construction activities, computer software & hardware and housing & real estate attract more than US$ 11 billion each. Table-2 has been depicted in Figure-2 through pie chart for more clarity.

Figure- 2: Sector-Wise FDI Inflows into India as Percentage of total FDI Inflows:
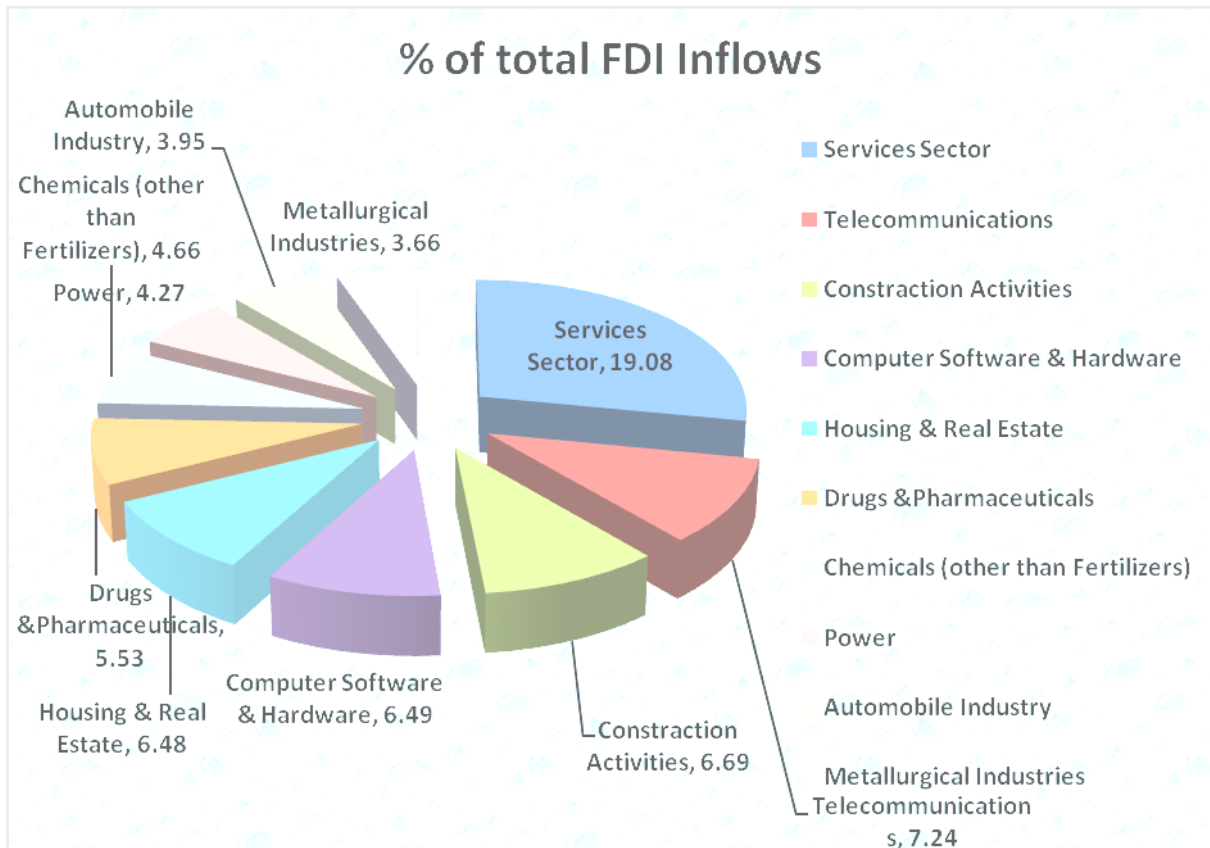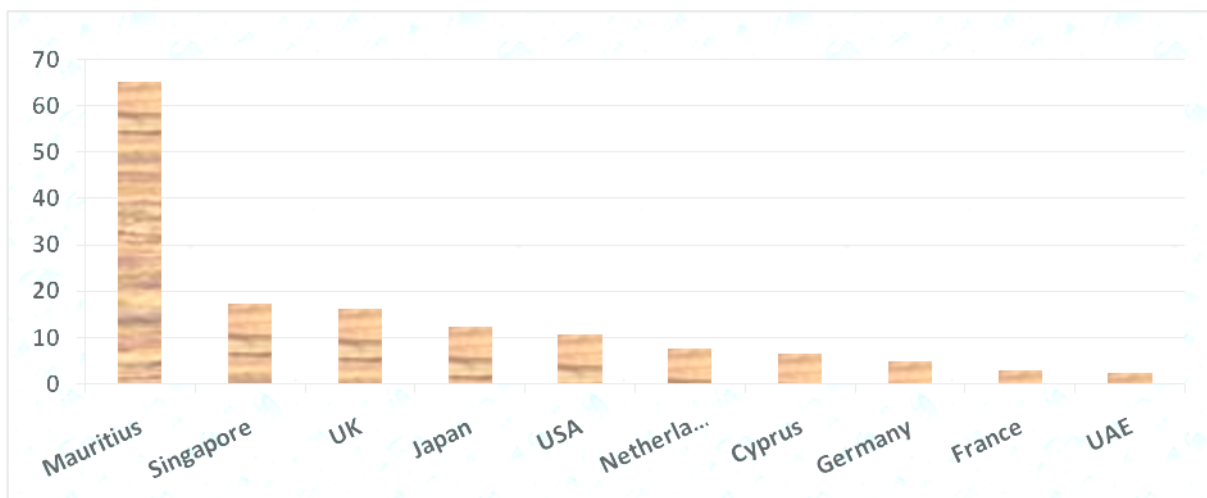
Country-wise Distribution of FDI Inflows in India:

The highest FDI inflows into India come from Mauritius, Singapore, United Kingdom, Japan, the United States, the Netherlands, Cyprus Germany, France and United Arab of Emirates. India receives US$ 146.2 billion which is 84.3 per cent of total FDI inflows since April 2000 to May, 2012.

Figure- 3: Country-Wise FDI Inflows (In US$ billion): From April 2000 to May, 2012:

Regional Distribution of FDI Inflows in India:

The regional distribution of FDI Inflows reveals an uneven distribution in India. Maharashtra, Delhi, Karnataka, Tamil Nadu and Gujarat are the highest recipient of FDI Inflows while Bihar, Jharkhand, North East States, Orissa, UP, Uttarakhand, Rajasthan, Goa are the least recipient of FDI in India. The distribution of FDI Inflows in different States in India has been shown in Table- 4.

Table- 4: RBI's Regional Offices (with State covered) Received FDI Inflows: From April 2000 to May, 2012:

S. No.	RBI's Regional Office	State covered	Cumulative Inflows in US$ billion	% to total Inflows
1	Mumbai	Maharashtra, Dadar& Nagar Haweli, Daman & Diu	55.74	32
2	New Delhi	Delhi, Part of UP and Haryana	33.75	19
3	Banglore	Karnataka	9.97	6
4	Chennai	Tamil Nadu, Pondicherry	8.57	5

5	Ahmadabad	Gujarat	8.25	5
6	Hyderabad	Andhra Pradesh	6.94	4
7	Kolkata	W. Bengal, Sikkim, Andmam& Nicobar Islands	1.88	1
8	Chandigarh	Chandigarh, Punjab, Haryana, Himachal Pradesh	1.15	1
9	Kochi	Kerala, Lakshadweep	0.86	1
10	Bhopal	MP, Chhattisgarh	0.78	1
11	Panaji	Goa	0.76	0.4
12	Jaipur	Rajasthan	0.60	0.4
13	Kanpur	UP, Uttakhand	0.32	0.2
14	Bhubaneshwar	Orissa	0.29	0.2
15	Guwahati	NE States, except Sikkim	0.07	0.1
16	Patna	Bihar, Jharkhand	0.03	0
17	Region not indicated		43.45	25
	Total		**173.46**	**100**

(***Source:*** *Department of Industrial Policy and Promotion, Ministry of Commerce & Industry, Govt. of India)*

Table-4 shows the regional distribution of FDI inflows into India on the basis of RBI's regional offices. Maharashtra, Delhi, Karnataka, Tamil Nadu, Gujarat, Andhra Pradesh and West Bengal receive US$ 125 billion which is 72 per cent of total FDI inflows in India since April, 2000 to May, 2012. The regional distribution of FDI inflows into India suggests that FDI goes to those regions where there are favourable conditions such as government policies regarding promotion of FDI inflows, regional market size, availability of infrastructure facilities, extent of urbanisation, availability of skilled men power, etc. The Table- 4.4 also suggests that BIMARU States are lagging behind and these regions/states could not avail the positive impact of FDI inflows.

Section- III: FDI and Economic Growth: An Empirical Analysis

This section examines the relationship between FDI inflows and economic growth in India as a result of economic reforms started in 1991. This analysis has been done by using a pairwise co-integration test and a pairwise Granger Causality test. The unit root test is given in Table-5which shows that none of the variables are stationary at level, but they are becoming stationary after first differencing.

Table- 5: Unit Root Tests Results for FDI and IIP

	Levels					
Variables	**Without Trend**			**With Trend**		
	DF	**ADF**	**PP**	**DF**	**ADF**	**PP**
FDI	-3.082	-3.08 (0.033)	-1.86 (0.346)	-3.799	-4.215 (0.007)	-3.186 (0.095)
IIP	2.009	2.585 (1.000)	7.426 (1.000)	-1.268	4.379 (1.000)	2.304 (1.000)
	First Difference					
Variables	**Without Trend**			**With Trend**		
	DF	**ADF**	**PP**	**DF**	**ADF**	**PP**
RFDI	-2.701	-2.935 (0.047)	-16.968 (0.0001)	-2.655	-2.992 (0.142)	-16.590 (0.0001)
RIIP	-1.806	-1.947 (0.3090)	-9.010 (0.0000)	-2.146	-3.271 (0.0806)	-9.353 (0.0000)

NOTES: *(i) The critical values for unit root tests are -3.47, -2.88 and -2.57 without trend and -4.02, -3.44 and -3.13 with trend. (ii) Figures in brackets are the p-value. (iii) Lags are selected automatically using AIC. *, ** and *** imply significant at 1%, 5% and 10% level respectively.*

We have carried out co-integration test for FDI and IIP having I (1) series by making use of the methodology suggested by Engel and Granger (1987). The results are reported in Table-6. We found, using Dicky- Fuller test to the residuals of co integrating equations that all I (1) variables individually have a co-integrating relationship with the Index of Industrial Production (IIP). In addition, co-integration is observed between FDI on IIP. The results of co-integration test in the sequence of relations suggest that the long-run equilibrium relationship is restored between economic growth and FDI during the period 1993:Q1-2011:Q4.These long-run relationships, based on the observed data, reflect that the covariate fluctuations for the variables in each pair are correlated over time. These findings are indicative of the fact that the increased FDI inflows in India since 1993 may have a positive impact on economic growth.

Table- 6: Test for Pair-wise co-integration for FDI and IIP

Equation: X_t on Y_t	μ	γ	Without Trend (DF Test)	With Trend (DF Test)
IIP on FDI	87.81975	0.05889	-4.689*	-9.980*
FDI on IIP	-889.1526	11.15892	-10.062*	-10.389*

Note: *(i) Cointegration regression for two variables X_t and Y_t is given by $X_t = μ + γY_t + Z_t$ Where, μ and γ are constant and co integrating parameters, respectively. (ii) DF Tests are carried out using regressions, and (iii) *, **, and *** indicate significant at 1%, 5% and 10% level respectively.*

The test of co-integration ignores the effect of the past values of one variable on the current value of the other variables. So, finally, we tried the Granger Causality test to examine such possibilities. Since the reliability of the results of the Granger Causality test depends on whether the variables are stationary or not, we first tested unit root of the variance using DF, ADF and Phillips- Perron (PP) tests. The results of the unit root test are reported in Table- 5. It shows that all the variables are stationary at first difference. It is well- known that Granger Causality test is sensitive to the choice of the lag length. To avoid this problem, as noted in Enders (1995), we have applied Akaike Information Criterion (AIC) to choose the optimum lag length.

Table- 7: Pair wise Granger Causality Test for FDI and IIP

Dependent Variable	Explanatory Variables	m	F-Statistics	P- Value	Remarks
RIIP	RIIP, RFDI	3	7.412	0.0445	Causality from RIIP →RFDI
RFDI	RFDI, RIIP	3	8.859	0.0071	Causality from RFDI →RIIP

Note: *(i) Optimum lag lengths (m) are determined by minimizing the AIC by E-views package, and (ii) R defines the percentage change of the variables.*

The results of the pair- wise Granger Causality tests are summarized in Table- 7. Major observations are discussed here. The most important observation is that economic growth (IIP) Granger causes FDI. This has relevance for the economic policy after liberalization in India. It implies that the past information on economic growth improves the predictability of FDI. We further observe that there is a bi-directional causal relationship between IIP and GDP. It explains that the sound economic growth of the country attracts additional FDI

inflows. It means that the high inflows of FDI have positive impact on economic growth. This result suggests that, in the post reform period, instability in the trend behaviour of IIP can be explained partly by the instability in the trend behaviour of the inflows of FDI inflows with some lagged effect.

Long Run and Short Run Linkages between FDI and Economic Growth in India:

The coefficients of Error Correction Term contain information about whether the past values affect the current values of the variable under study. A significant coefficient implies that past equilibrium errors play a role in determining the current outcomes. The information obtained from the ECM is related to the speed of adjustment of the system towards long-run equilibrium. The short-run dynamics are captured through the individual coefficients of the difference terms. The adjustment coefficient on ECT in equation (2) is negative and statistically significant at 1% level of significance indicating that, when deviating from the long-term equilibrium, error correction term has an opposite adjustment effect and the deviation degree is reduced. The significant error term also supports the existence of long-term relationship between FDI flow and economic growth. The Error-Correction Term is statistically significant and has a negative sign, which confirms that there isn't any problem in the long-run equilibrium relation between the independent and dependent variables. Their relative price 0.0689 (-0.8793) denotes a convergence rate to equilibrium point per period.

Table- 8: Short term causality test for time series data (VECM)

Error Correction:	D(FDI)	D(IIP)
CointEq1	**-0.068907***	**-0.000274**
	(0.07836)	**(4.6E-05)**
	[-0.87936]	**[-5.90253]**
D(FDI(-1))	-0.238752	0.000205
	(0.12540)	(7.4E-05)
	[-1.90398]	[2.76519]
D(FDI(-2))	-0.167178	0.000283
	(0.12472)	(7.4E-05)
	[-1.34039]	[3.83299]
D(FDI(-3))	-0.362674	0.000178

	(0.11951)	(7.1E-05)
	[-3.03468]	[2.51253]
D(IIP(-1))	70.15669	-0.668228
	(180.928)	(0.10701)
	[0.38776]	[-6.24481]
D(IIP(-2))	-80.73576	-0.694555
	(167.969)	(0.09934)
	[-0.48066]	[-6.99162]
D(IIP(-3))	57.42718	-0.628084
	(172.538)	(0.10204)
	[0.33284]	[-6.15509]
C	491.2554	4.574590
	(909.825)	(0.53809)
	[0.53994]	[8.50150]
R-squared	**0.748211**	**0.526536**
F-statistic	**7.554501**	**10.80318**

Summary, Conclusion and Some Suggestions:

The unit root properties of the data were examined using the Dickey Fuller (DF), Augmented Dickey Fuller test (ADF) and Phillips-Perron (PP) test after that the co-integration and causality tests were conducted. The error correction models were also estimated in order to examine the short-run dynamics. The major findings include the following:

The unit root test clarified that both economic growth and foreign direct investment are non-stationary at both level and the first differences in case of Dickey Fuller (DF), Augmented Dickey Fuller (ADF) test, and Phillips-Perron (PP) Test. But, the series of both variables-FDI and IIP were found to be integrated of order one using these tests for unit root.

The co-integration test confirmed that economic growth and foreign direct investment are co-integrated, indicating an existence of long run equilibrium relationship between the two.

The Granger causality test finally confirmed the presence of feedback or bi-directional causality between these two variables.

The error correction estimates gave evidence that the Error-Correction Term is statistically significant and has a negative sign, which confirms that there isn't any problem in the long-

run equilibrium relation between the independent and dependent variables. The result shows that FDI has not contributed much to the economic growth in India after the post reforms period. Therefore, it is imperative for the government of India to make a policy for attracting FDI in such a way that it should be more growth enhancing.

Foreign Direct Investment (FDI) as a strategic component of investment is needed for its sustained economic growth and development through creation of jobs, expansion of existing manufacturing industries, short- and long-term project in the field of healthcare, education, research and development (R & D) etc.

FDI plays an important role in the long-term development of a country not only as a source of capital but also for enhancing competitiveness of the domestic economy through transfer of technology, strengthening infrastructure, raising productivity and generating new employment opportunities. The huge market size, availability of highly skilled human resources, sound economic policy, abundant and diversified natural resources all these factors enable India to attract FDI. Further, it was found that even though there has been increased flow of FDI into the country during the post liberalization period, the global share of FDI in India is very less when it is compared to other developing countries. Lack of proper infrastructure, instable government and political environment, high corporate tax rates and limited export processing zones are considered to be the major problems for low FDI into the country. Therefore, there is an urgent need to adopt innovative policies and good corporate governance practices on par with international standards, by the Government of India, to attract more and more foreign capital in various sectors of the economy to make India a developed economy.

Government should design the FDI policy such a way where FDI inflow can be utilized as means of enhancing domestic production, savings and exports through the equitable distribution among states by providing much freedom to states, so that they can attract FDI inflows at their own level. FDI can help to raise the output, productivity and export at the sectoral level of the Indian economy.

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