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## FOREIGN DIRECT INVESTMENT FLOWS INTO INDIA AND THEIR CAUSAL RELATIONSHIP WITH ECONOMIC GROWTH SINCE LIBERALISATION

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### ABSTRACT

*Though foreign direct investments (FDIs) in India were significant in the 1950s and 1960s, FDI inflows were meager in the 1970s and 1980s. By the mid-1980s, the stagnation and technological obsolescence in Indian industry led to a push for economic reform and deregulation of exchange controls. As a result of the reforms agreed with the IMF, FDI boomed in post reform India and FDIs in India are considered to be a major stimulus in our economic growth as it has the ability to curtail the shortage of financial resources and the shortage of technology and skill consequently. But the researchers are also of the opinion that FDI may exert a negative impact on economic growth of the recipient countries by extracting their labour and other resources. Hence this study is an attempt to overcome this ambiguous and mixed opinion by assessing the causal relationship between FDI Flows and Indian Economic Growth using the quarterly figures for investment flows and General Index of Industrial Production (IIP) for the period starting from Quarter 1 of 1994-95 to Quarter 4 of 2010-11. The results provide the evidence of unidirectional causality running from FDI Net Flows to IIP and explain the existence of both long-run and short-run relationship between FDIs and IIP. Thus the findings of the study unambiguously suggest that FDIs have not been established as a major dominant factor for the economic growth of India and the Indian policy makers should offer the foreign investors with the real prospects to invest in Indian markets by offering them the most constructive economic conditions as these things positively influence foreign investments in India.*

### KEYWORDS

Causal Relationship, Economic Growth, Foreign Direct Investments, Liberalisation.

### FDI – AN OVERVIEW

Domestic firms that are contemplating to enter the international market require information and knowledge that may be costly to obtain. Foreign firms are an obvious source of such information to enable the host country's access to the world market. Moreover, Foreign Direct Investment implies an element of risk sharing between the capital owners and the capital importing countries that make this type of capital flow more desirable than loans. Unlike borrowings from foreign sources which involve contractual obligations from day one, direct foreign investment does not involve any fixed charges. Moreover, dividends would have to be paid only when the firms earn profit. FDI can also stimulate employment generation in the host country because everything else being equal, the establishment of foreign firms increases the demand for labour and the demand for intermediate goods and services from local suppliers.

FDI flows are usually preferred over other forms of capital flows because they are non-debt creating and non-volatile. In a world of increased competition and rapid technological changes, their complimentary and catalytic role can be very valuable. FDI can contribute directly and indirectly to building national capabilities. FDI as an important means to reorganize the production facilities globally, it is regarded as an important vehicle for economic development particularly for developing economies. Thus foreign direct investment is considered a desirable route amongst various forms of capital inflows for bridging this gap, as it is not prone to quick reversal unlike portfolio investment. The importance of FDI also lies in the fact that assistance from multilateral and bilateral sources is either stagnant or declining in comparison with FDI inflows. Further, apart from the long-term additional capital that it brings in, FDI also facilitates technology upgradation and introduction of modern production and management practices.

### DETERMINANTS OF FDI INFLOWS

The volume and the quality of FDI in a country depend on the following factors:

- a. Natural Resources:** Availability of natural resources in the host country is a major determinant of FDI. Most foreign investors seek an adequate, reliable and economical source of minerals and other materials. FDI tends to flow in countries which are rich in resources but lack capital, technical skills and infrastructure required for the exploitation of natural resources.
- b. National Markets:** The market size of a host country in absolute terms as well as in relation to the size and income of its population and market growth is another major determinant. Large markets can accommodate more firms and can help firms to achieve economies of large scale operations.
- c. Availability of Cheap Labour:** The availability of low cost and skilled labour has been a major cause of FDI in countries like China and India. Low cost labour together with availability of cheap raw materials enables foreign investors to minimize costs of production and thereby increase profits.
- d. Socio-Economic Conditions:** The size of the population of the host country, its infrastructural facilities and income level of the country also influence direct foreign investment.
- e. Political Situation:** Political stability, legal framework, judicial system, relations with other countries and other political factors prevailing in the country also influence movements of FDI from one country to another.
- f. Rate of interest:** Differences in the rate of interest prevailing in different countries stimulate foreign investment. Capital tends to move from a country with a low rate of interest to a country where it is higher. FDI is also inspired by foreign exchange rates. Foreign capital is attracted to countries where the return on investment is higher.
- g. Government Policies:** Policy towards foreign investment, foreign collaborations, foreign exchange control, remittances, and incentives – both monetary and fiscal offered to foreign investors exercise a significant influence on FDI in a country. For example, Export Processing Zones (EPZs) have been developed in India to attract more FDI inflows and to boost exports.

### ADVANTAGES OF FDI

FDI plays an extraordinary and growing role in global business. It can provide a firm in the home country with new markets and marketing channels, cheaper production facilities, access to new technology, products, skills and financing. For a host country FDI is said to be an important factor for spurring the development of a nation in the following ways.

- a. Economic development:** Foreign Direct Investment helps in the economic development of the particular country where the investment is being made. It has also been observed that FDIs helped several countries when they have faced economic hardships.
- b. Transfer of technologies:** FDI also permits the transfer of technologies. This is done basically in the way of provision of capital inputs. It also assists in the promotion of the competition within the local input market of a country.
- c. Human capital resources:** The countries that get FDIs from another country can also develop the human capital resources by getting their employees to receive training on the operations of a particular business. The profits that are generated by the FDIs that are made in that country can be used for the purpose of making contributions to the revenues of corporate taxes of the recipient country.
- d. Job opportunity:** Foreign direct investment helps in the creation of new jobs in a particular country. It also helps in increasing the salaries of the workers. This enables them to get access to a better lifestyle and more facilities in life. It has normally been observed that foreign direct investment allows for the development of the manufacturing sector of the recipient country.
- e. Income generation:** FDI assists in increasing the income that is generated through revenues realized through taxation. It also plays a crucial role in the context of rise in the productivity of the host countries. In case of these countries, their companies get an opportunity to explore newer markets and thereby generate more income and profits.
- f. Export:** It also opens up the export window that allows these countries the opportunity to cash in on their superior technological resources. It has also been observed that as a result of receiving FDIs from other countries, the recipient countries can keep their rates of interest at a lower level. It becomes easier for the business entities to borrow finance at lesser rates of interest.
- g. Linkages and spillover to domestic firms:** Various foreign firms are now occupying a position in the Indian market through Joint Ventures and collaboration concerns. The maximum amount of the profits gained by the foreign firms through these joint ventures is spent on the Indian market, which in turn benefits the domestic firms.

## STATEMENT OF THE PROBLEM

During the early 1990s an imminent foreign exchange crisis loomed large before the Indian economy, with an unsustainable external debt burden. Rangarajan Committee Report on Balance of Payments during 1991 recommended a compositional shift away from debt to non-debt-creating flows by removing the restrictions on the share of foreign enterprises for most sectors and by progressively raising the upper bounds for automatic approval of direct investment. Foreign investment income has become fully convertible to foreign currency for repatriation. Foreign Direct Investments are considered to be a major stimulus in our economic growth as it has the ability to curtail the shortage of financial resources and the shortage of technology and skill consequently. Thus this work is an attempt to study the impact of liberalisation on these FDIs for the period 1990-91 to 2010-11 and the importance of these capital flows in the growth Indian Economy.

## OBJECTIVES OF THE STUDY

The main objectives of this study are

1. To assess the determinants and benefits of foreign direct investments.
2. To analyse the growth and direction of Foreign Direct Investments in India.
3. To assess the causal relationship between FDIs in India and Indian Economic Growth.
4. To advance concrete suggestions from the study to transform India as a favourite destination for the foreign investors.

## METHODOLOGY OF THE STUDY

This study is entirely based on secondary data. The required data have been collected from the secondary sources namely – RBI Bulletin, World Investment Reports, Releases of Ministry of Statistics and Programme Implementation and other related websites

### TREND ANALYSIS

Trend Analysis was used to assess the trend and pattern of inflows in the form of FDIs from 1991-92 to 2010-11. Since the inflows in the form of Foreign Direct Investments vary radically over the years, it was considered better to use nonlinear trend than linear trend. Amongst the non-linear models namely Exponential Model, Quadratic Model and Cubic Model, Cubic Non-Linear Model being the model with the smallest standard error value and the biggest R-square value was found suitable for FDI inflows.

$$T_t = a + bY_t + cY_t^2 + dY_t^3$$

### JOHANSEN AND JUSELIUS CO-INTEGRATION AND VECTOR ERROR CORRECTION MODEL

The causal relationship between Foreign Direct Investments and India's economic growth can be clearly understood by analyzing the quarterly figures for investment flows and General Index of Industrial Production (IIP). IIP index has been taken as a proxy variable for Gross Domestic Product since the quarterly figures of GDP are not available. The IIP Index includes all the three sectors namely industry, agriculture and service sector. And hence, the Index of Industrial Production (Base 1993-1994) is considered as a proxy variable for GDP. Considering this base year and the year in which FDIs and FPIs actually gained its momentum, Johansen and Juselius Co-integration and Vector Error Correction Model was applied for Capital inflows and IIP index for the period starting from 1994-95 to 2010-11.

The long-term and short-term relationship and the causal nexus between foreign direct investments in India and the Economic Growth of the country was found out using Johansen and Juselius Cointegration and Vector Error Correction Model in the following order.

- a. The necessary lag length of the data series was selected using Schwarz Information Criterion, Akaike information criterion and Hannan-Quinn information criterion.

- b. Stationarity is defined as a quality of a process in which the statistical parameters, both mean and standard deviation, of the process do not change with time. Augmented Dicky-Fuller and Phillips-Perron tests were employed to determine whether the data have unit roots indicating the data is non-stationary.

Augmented Dicky-Fuller Model:

$$y_t = \rho y_{t-1} + u_t$$

where,  $y_t$  = variable of interest,  $t$  = time index,  $\rho$  = coefficient, and  $u_t$  is the error term.

Phillips-Perron Model:

$$\Delta y_t = \rho y_{t-1} + u_t$$

where  $\Delta$ , is the first difference operator.

- c. Further Johansen and Juselius Cointegration test was employed between the two variables foreign direct investments and economic growth to identify whether the variables included in the system are co-integrated and thus tied in the long-run relationship. There are two likelihood ratio tests that are to be employed to identify the co-integration between the two series.

$$\lambda_{\text{trace}}(r) = -T \sum_{i=r+1}^n \ln(1 - \hat{\lambda}_i)$$

$$\lambda_{\text{max}}(r, r+1) = -T \ln(1 - \hat{\lambda}_{r+1})$$

where,  $\hat{\lambda}_i$  are the eigen values obtained.

d. And then Vector Error Correction Model was employed to verify the direction of long-run and short-run relationship between the two variables using the following two models.

$$\Delta \ln FC_t = c_1 + \sum_{k=1}^n \alpha_{1k} \Delta \ln FC_{t-k} + \sum_{k=1}^n \beta_{2k} \Delta \ln IIP_{t-k} + ECT_{t-k} + u_{1t}$$

$$\Delta \ln FC_t = c_1 + \sum_{k=1}^n \alpha_{1k} \Delta \ln FC_{t-k} + \sum_{k=1}^n \beta_{2k} \Delta \ln IIP_{t-k} + ECT_{t-k} + u_{1t}$$

where,  $\Delta$  = first difference operator and  $u_{1t}$  and  $u_{2t}$  are white noise disturbance terms.  $FC_t$  and  $IIP_t$  are Foreign Private Capital Flows and Index of Industrial Production respectively at the time  $t$  and  $ECT_{t-k}$  is the lagged error correction term.

### INDIA - 'THE HOT SPOT FOR FDI'

During the early nineties, Indian economy faced severe Balance of payment crisis. Exports began to experience serious difficulties. The crippling external debts were debilitating the economy. Inflation touched its highest level of 13%. In this critical face of Indian economy, the then finance Minister of India Dr. Manmohan Singh with the help of World Bank and International Monetary Fund introduced the macro – economic stabilization and structural adjustment programme. As a result of these reforms India open its door to Foreign Direct Investment inflows and adopted a more liberal foreign policy in order to restore the confidence of foreign investors.

In the present context, India has a number of advantages to offer to potential foreign investors, namely, suitable congenial business climate, political stability, steady economic growth, a vast domestic market, a large pool of trained manpower, an efficient legal and judicial system, social and psychical infrastructure, exchange rate and price stability, availability of raw materials and other inputs, availability of domestic and export market for the final output and rapidly expanding capital market. As a result the country has emerged as the latest and the most sought-after destination for FDI. India has a large reservoir of skilled labour available at competitive prices, large entrepreneurial base and diversified manufacturing structure that make it easy to find partners for collaborations. All these have opened up innumerable options for the foreign investors to expand their businesses at a global level.

Besides, India has a vast domestic market of 300 million strong middle-class population power and another 700 million people whose purchasing power is gradually improving. The country also has a huge network of technical and management institutions of international standard for development of excellent human resources. The country has a strong English language base for business correspondence. Ongoing initiatives, such as further simplification of rules and regulations and improvements in infrastructure are expected to provide the necessary impetus to increase Foreign Direct Investment inflows in future. The inflows of FDI depend on domestic economic conditions, world economic trends, and strategies of global investors.

### TOTAL FDI FLOWS INO INDIA

Though foreign direct investment flows were significant in the 1950s and 1960s, FDI inflows were meagre in the 1970s and 1980s. By the mid-1980s, growing concern about stagnation and technological obsolescence in Indian industry led to a push for economic reform and deregulation. As a result of the reforms agreed with the IMF, FDI boomed in post reform India. The growth and direction of FDIs in the post liberalization era can be clearly understood from Table 1 given below, showing Five Year Average, 10 Year average and Overall Average analysis. In this analysis the term total FDI inflows represents the equity flows till 1999-00 and the sum of equity flow, re-invested earnings and other capital since 2000-01. The component-wise FDI inflows, outflows and net flows since 1990-91 is given in Annexure I.

TABLE 1: INDIA'S TOTAL FOREIGN DIRECT INVESTMENTS GROWTH TREND (1991– 92 TO 2010-11)

Years	Total FDI Inflows (US \$ Millions)	Growth Rate (%)	Five year average (%)	Ten year average (%)	Overall average (%)
1991-92	147	0.00	78.35	49.43	40.33
1992-93	345	134.69			
1993-94	651	88.70			
1994-95	1351	107.53			
1995-96	2173	60.84			
1996-97	2864	31.80	20.51		
1997-98	3596	25.56			
1998-99	2518	-29.98			
1999-00	2170	-13.82			
2000-01	4101	88.99			
2001-02	6229	51.89	21.67	31.24	
2002-03	5168	-17.03			
2003-04	4464	-13.62			
2004-05	6087	36.36			
2005-06	9178	50.78			
2006-07	23590	157.03	40.80		
2007-08	37322	58.21			
2008-09	38941	4.34			
2009-10	38500	-1.13			
2010-11	32944	-14.43			

Source: Compiled and computed from [www.rbi.org.in](http://www.rbi.org.in)

While analyzing the saga of FDI Flows into India as per Table 1, over the last twenty years, it shows a rising trend, with 40.33 per cent growth rate on an average, with volatile oscillations. It clearly indicates the confidence the global investors have on India. The liberalization measures that were undertaken during 1990s provide India with all-season investment enabling climate. Splitting the twenty year span into two decades, the FDI growth rate shows an almost consistent level to the overall percent, being 49.43 per cent during the first decade and 31.24 per cent during the second decade. Over the years, three financial years (1992-93, 1994-95 and 2006-07) were remarkable with FDI growth rates crossing 100 percent over the immediate preceding years. It can be inferred from the above data that foreign investors were waiting at the door steps of India, as they rushed in when the economy started opening up.

Foreign investments in the country have seen a growing trend during the period 2007-08 and 2008-09, in spite of the Global Financial Crisis. But India witnessed a sharp fall in the inflows after 2008-09. This decline was influenced by weak inflows into services like computer software, hardware, financial services, banking, and construction sector. The decline in inflow during 2010-11 had become a cause for concern, as most of the emerging nations had been able to attract huge amounts of FDI inflows. Economists believed Foreign Direct Investments, which are stickier than volatile portfolio flows, would be supported by several large proposals in the oil & gas, metal and telecom sectors and also the gradual opening up of the retail sector would also lead to increased inflows over 2011-12 and 2012-13. But the FDI Inflows, being hit by global imbalances, witnessed sharp fall during Q3 of the financial year 2011-12. The trend and pattern of FDI inflows since liberalisation can be understood from the non-linear model presented below. Table 2 gives Total FDI inflows and their trend values as per Cubic Non-Linear Model.

**TABLE 2: FDI INFLOWS TO INDIA AND THEIR TREND VALUES: 1990-91 TO 2010-11 (US\$ Millions)**

S.N.	Year	FDI Inflows (Y)	T <sub>i</sub> [Trend Values]
1	1991-92	147	1121.83
2	1992-93	345	2801.89
3	1993-94	651	3991.47
4	1994-95	1351	4788.75
5	1995-96	2173	5291.89
6	1996-97	2864	5599.03
7	1997-98	3596	5808.36
8	1998-99	2518	6018.02
9	1999-00	2170	6326.18
10	2000-01	4101	6831.00
11	2001-02	6229	7630.64
12	2002-03	5168	8823.26
13	2003-04	4464	10507.03
14	2004-05	6087	12780.10
15	2005-06	9178	15740.64
16	2006-07	23590	19486.81
17	2007-08	37322	24116.76
18	2008-09	38941	29728.67
19	2009-10	38500	36420.68
20	2010-11	32944	44290.97

Figure 1 gives the comparative picture of lines fitting the Total FDI inflows in India and the trend values as per Table 2.

**FIGURE 1**

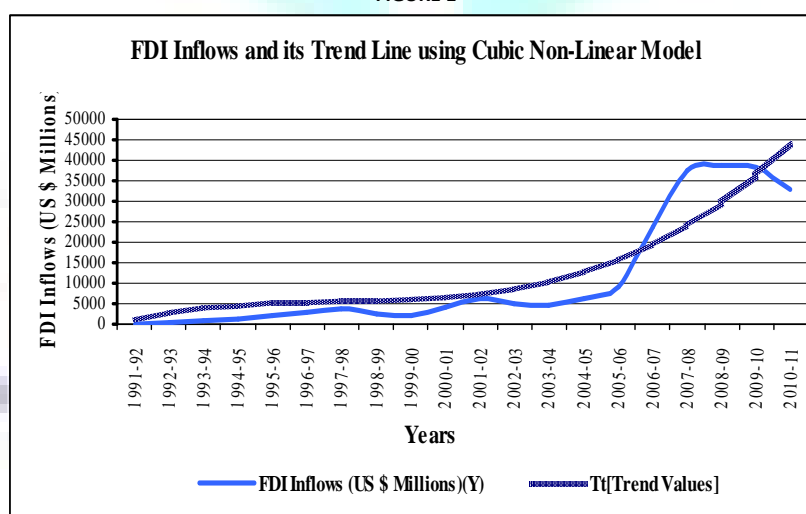


Figure 1 clearly indicates an upward trend of Total FDI inflows. The lines depicting actual inflows and the trends values rarely coincide, indicating that there are radical differences in the inflows over this period. The tiny peaks and troughs in the line showing actual FDI inflows when compared to trend line are caused by the sharp fall in the inflows during 1998-99 and 1999-00 due to lower FDI approvals and higher risk perception of emerging economies; thereafter the slow pace of growth till 2005-06 and the heavy surge in the flows during 2008-09 following the consistent attempts by the policy makers to provide better infrastructure and a more vibrant financial sector. These hasty changes make these curves not to settle on each other.

**FDI AND ECONOMIC GROWTH**

Nations' progress and prosperity is reflected by the pace of its sustained economic growth and development. Investment provides the base and pre-requisite for economic growth and development. Developed economies consider FDI as an engine of market access while less developed and developing countries, like India, view FDI as a mean for their own technological progress and in maintaining their own economic growth and development.

**FOREIGN DIRECT INVESTMENT AND GDP**

Foreign Direct Investments in terms of, India's foremost significant economic growth indicator, Gross Domestic Product will provide an indication of the role of FDIs in the country's development. Percent of FDI inflows to India on India's GDP shows the level and the degree of FDIs on India's Gross Domestic Product. The higher the percent the more will be the role of FDI in Indian economy. Table3 gives the FDI inflows as a percent on India's GDP.

**TABLE 3: FDI INFLOWS TO INDIA AS A PERCENT OF INDIA'S GDP: 1990 TO 2010**

Year	FDI as Percent of GDP
1990	0.07
1991	0.03
1992	0.11
1993	0.20
1994	0.30
1995	0.60
1996	0.63
1997	0.87
1998	0.64
1999	0.48
2000	0.78
2001	1.14
2002	1.11
2003	0.76
2004	0.79
2005	0.82
2006	1.90
2007	1.70
2008	3.57
2009	2.58
2010	1.40

Source: [www.nationmaster.com](http://www.nationmaster.com) and World Investment Reports

Table 3 reveals that Foreign Direct Investment was only 0.03 percent in 1991 and went up to 0.87 in the year 1997. But during 1999 and 2000 it declined to 0.64 percent and .48 percent respectively due to heavy fall in the FDI approvals; slowly the percent progressed over the years to reach 3.57 percent during 2008, the period during which the Global Financial Crisis was at the peak. While the concrete recovery is still due in FDI inflows, the percent of FDI on GDP also have not shown any positive sign of improvement.

However, the percent of FDI to GDP are extremely smaller, that is the FDI inflows are very meager when compared to the GDP. Thus it is not possible to conclude that as the per cent of FDI on GDP raises FDI inflows determine the economic growth of India.

**CAUSALITY RELATIONSHIP BETWEEN FDI AND ECONOMIC GROWTH**

For years, many researchers and economists are analysing the impact of foreign direct investment inflows into developing countries. The results they find are based two theories namely, Economic Theory and Dependency School Theory.

According to economic theory, the three principal contributions of FDI to a host country are: (1) the financial capital invested by foreign firms; (2) the export market access provided by them; and (3) the faster technology development that is expected to occur through technology transfer as part of the FDI package. Each of these is believed to help the host country to achieve faster industrial catching-up than it is feasible otherwise, and thus, contribute to the host country's economic growth and development. As per the economic theory, Alfaro et al. (2004), Sissoko (2006), Jackson and Markowski (1995), Mahmoud Al-Iriani et al. (2007), Kasibhatla and Sawhney (1996), Rodrik (1999) and Bengoa et al. (2003) proved that FDI plays an important role in contributing to economic growth, and those countries with well-developed financial markets gained significantly from FDI, suggesting that countries with better financial systems can exploit FDI more efficiently.

To the contrary of Economic School Theory, the dependency school theory argues that foreign investment from developed countries is harmful to the long-term economic growth of developing nations. It asserts that First World nations became wealthy by inadequately compensating the Third World nations for their natural resources and thereby sentenced to conditions of continuing poverty. This kind of capitalism based on the global division of labour causes distortion, hinders growth, and increases income inequality in developing countries as per the studies by Stoneman (1975), Bornchier (1980) and O'hearn (1990). Studies by Singer (1950), Prebisch (1968), Griffin (1970) and Weissikof (1972) supported the traditional view that target countries of FDI receive very few benefits because most benefits are transferred to the multinational company's country

In the Indian context, still there is a raging debate whether FDI in India drives growth or stunts it. FDI has been a booming factor that has bolstered the economic life of India, but on the other hand it is also being blamed for ousting domestic inflows. Studies at the national level by Chakraborty and Basu (2002) found that the causality runs more from real GDP to FDI flows into India. On the other hand, Alam (2000) stressed that the impact of FDI on Indian Economic growth is not satisfactory. The study of Bhat et al. (2004) provides no evidence of causality in either direction.

Since the above literatures present an ambiguous and mixed opinion, it is worthwhile to identify the causal nexus between foreign direct investments and economic growth in India. The Johansen and Juselius Co-integration test and the Vector Error Correction Model were applied in order to detect the causality between these two variables using the quarterly data set of FDI Net Flows and Index of Industrial Production for the period Q1 of 1994-95 to Q4 of 2010-11, as given in Annexure II. In this process, the optimal lag length essential for the unit root tests is determined by using three criterions namely Schwarz Information Criterion (SIC), Akaike information criterion (AIC) and Hannan-Quinn information Criterion (HIC), as given in Table 4.

TABLE 4: LAG ORDER SELECTION CRITERIA FOR FDI NET FLOWS AND IIP

Lag	Log L	LR	FPE	AIC	SIC	HQ
0	42.40693	-	0.000871	-1.37	-1.30	-1.34
1	52.09921	18.40	0.000719	-1.56	-1.35	-1.48
2	61.64530	17.47	0.000596	-1.75	-1.40	-1.61
3	82.09684	36.05*	0.000342*	-2.31	-1.81*	-2.12*
4	104.7365	38.37	0.000182	-2.94	-2.31	-2.69
5	117.9814	21.55	0.000134	-3.25	-2.48	-2.95
6	121.2467	5.09	0.000138	-3.23	-2.31	-2.87
7	123.9724	4.07	0.000145	-3.19	-2.13	-2.77
8	130.5347	9.34	0.000134	-3.27*	-2.08	-2.81
* indicates lag order selected by the criterion						
LR – Likelihood Ratio: sequential modified LR test statistic (each test at 5% level)						

Most of the criteria in the Table 4 suggest that the significant lag length is Three for FDI Net Flows and Index of Industrial Production series.

If the variables in the regression model are stationary, then it can be proved that the standard assumptions for asymptotic analysis are valid and thus we can validly undertake hypothesis tests about the regression parameters. To test the stationarity, the null hypothesis of 'FDI Flows and IIP has a unit root and the series are non-stationary' is tested by applying Augmented Dickey-Fuller test and the Phillips-Perron unit root test with intercept, with intercept and trend, and without intercept and trend; Table 4 reports the results of stationary tests as levels and first differences.

TABLE 5: UNIT ROOT TEST RESULTS FOR FDI NET FLOWS AND IIP

Augmented Dickey-Fuller Test				
SN	Variables	Intercept	With Intercept & trend	Without Intercept & trend
I. Levels				
1.	FDI	-1.75	-1.92	0.15
2.	IIP	0.51	-1.39	1.27
II. First Difference				
1.	FDI	-3.47**	-3.51**	-3.53*
2.	IIP	-4.35*	-4.47*	-2.06**
Phillips-Perron Test				
I. Levels				
1.	FDI	-0.05	-2.67	1.50
2.	IIP	-0.11	-2.75	1.39
II. First Difference				
1.	FDI	-12.14*	-12.15*	-12.11*
2.	IIP	-14.79*	-14.80*	-14.76*
Notes: * (**) – indicates significance at one and five per cent level, respectively.				

Table 5 indicates that the null hypothesis of a unit root in FDI flows and IIP cannot be rejected in level while the hypothesis of a unit root in these variables is rejected as a first difference at the 5 percent level of significance, indicating that both the data set are non stationary in levels and stationary at the first difference level, and hence they are integrated in the order of I (1).

Under Johansen and Juselius Co-integration test, two likelihood ratio tests namely  $\lambda_{\max}$  test and  $\lambda_{\text{trace}}$  were employed to capture the co-integration between the two series. The variables are co-integrated if and only if a single co-integrating equation exists. To prove the integration between these variables, the Null Hypotheses of ' $r=0$ ', where  $r$  is the number of co-integrating vector present under  $\lambda_{\text{trace}}$  test and 'Single co-integrating vector is not sufficient' under  $\lambda_{\max}$  test were framed in this co-integration test and the results are reported in Table 6.

TABLE 6: CO-INTEGRATION TEST RESULTS BASED ON JOHANSEN AND JUSELIUS APPROACH

Null Hypothesis ( $H_0$ )	Alternative Hypothesis ( $H_1$ )	Eigen Value	Likelihood Ratio Tests	95 % Critical Value
			$\lambda_{\text{trace}}$	
$r = 0$	$r \geq 1$	0.3069	31.458**	20.26
$r \leq 1$	$r \geq 2$	0.1160	8.0206	9.164
			$\lambda_{\max}$	
$r = 0$	$r = 1$	0.3069	23.834**	15.89
$r = 1$	$r = 2$	0.1106	7.6237	9.164
Notes: $r$ is the number of co-integrating vectors.				
Critical values are noted from Johansen and Juselius (1990), and				
** - denote the significance at five per cent level.				

Since the Johansen's trace ( $\lambda_{trace}$ ) and maximum eigen statistics ( $\lambda_{max}$ ) are greater than the upper bound with 31.46 and 23.83 respectively, under Alternate Hypothesis, it indicates that the null hypothesis of non co-integration that is  $r = 0$  is rejected and also the null hypothesis of one co-integrating vector is not sufficient is also ruled out, implying the existence of a single co-integrating vector in the model between the two series at 5% level and ultimately there is a stable long-run linear equilibrium linkage among the variables under study.

Since Index of Industrial Production and FDI flows are co-integrated causality must exist in at least one direction. Vector Error Correction Model can explore the short-run relationship between the data series and identify whether the two variables move one after the other or contemporaneously in the long-run and in the short-run. When they move contemporaneously, one provides no information for characterising the other. Table 7 given below narrates the results of Vector Error Correction Mode.

TABLE 7: RESULTS OF VECTOR ERROR CORRECTION MODEL

Dependent Variable: $\Delta IIP$			Dependent Variable: $\Delta FDI$			Inference
Variables	Estimate	t-value	Variables	Estimate	t-value	IIP $\rightarrow$ FPI in the Short-run and Long-run
$\Delta FPI_{t-1}$	-0.0179	-1.234	$\Delta FDI_{t-1}$	0.5346	1.520	
$\Delta FPI_{t-2}$	-0.0034	-0.328	$\Delta FDI_{t-2}$	0.2657	1.048	
$\Delta FPI_{t-3}$	-0.0019	-0.322	$\Delta FDI_{t-3}$	0.0374	0.260	
$\Delta IIP_{t-1}$	-0.9070	-18.28*	$\Delta IIP_{t-1}$	-0.9670	-0.807**	
$\Delta IIP_{t-2}$	-0.8945	-16.76*	$\Delta IIP_{t-2}$	2.4682	2.140**	
$\Delta IIP_{t-3}$	-0.9457	-19.60*	$\Delta IIP_{t-3}$	-0.8668	-1.989**	
$EC_{t-1}$	0.0253	1.426	$EC_{t-1}$	-1.9447	-4.538*	
c	-0.0015	-0.5406	c	0.0196	0.285	
Adj. $R^2$	0.91	-	Adj. $R^2$	0.68	-	
Notes: Optimal lag length is determined by the Schwarz Information Criterion (SIC), *, ** and *** denote the significance at the one, five and ten per cent level, respectively.						

It can be observed from the results of Table 6 that the unidirectional relationship subsists between the foreign direct investments and economic growth in India. The FDI flows are found to be determined by the economic growth and not vice versa. The negative and significant error correction coefficient  $EC_{t-1}$  at -4.54, when FDI flows are dependent variable, is statistically significant at one per cent level which confirms the direction of causality runs from growth to FDI flows in the long-run. And the lagged coefficients the lagged coefficients,  $\Delta IIP_{t-1}$ ,  $\Delta IIP_{t-2}$ , and  $\Delta IIP_{t-3}$ , of index of industrial production in FDI equation with -0.807, 2.140 and -1.989 are found to be statistically significant at five per cent levels indicating that IIP leads to FDI in the short-run.

## FINDINGS

The results of Johansen and Juselius Co-integration test and the Vector Error Correction Model provide the evidence of unidirectional causality running from FDI Net Flows to IIP for the period 1994-95 Q1 to 2010-11 Q4 and explain the existence of both long-run and short-run relationship between FDIs and IIP at a lag length of 3. This shows that the real economic growth of India determines the volume of foreign direct investment flows into India. Thus, Reserve Bank of India must ensure that the economy remains on a healthy and sustainable growth path so as to maintain investor confidence in the economy.

## SUGGESTIONS

1. Thus the finding of the study unambiguously suggest that Foreign Direct Investments has not been established as a major dominant factor for the economic growth of India. The Indian policy makers should offer the foreign investors with the real prospects to invest in Indian markets by offering them the most constructive economic conditions as these things positively influence foreign investments in India.
2. In order to attain favourable sustained economic conditions the government should improve the investment environment with the ensured political and economic stability in the country. Policy makers need to ensure transparency and consistency in policy making along with comprehensive long term development strategy. India needs to build on its current savings and investment levels so as to assure Indian Economic Growth.

## CONCLUSION

FDI inflows dominate the capital flows in terms of the benefits derived from these flows by the country. India has certainly reaped all the benefits as now the country is recognized as an emerging economy. Foreign Direct Investments really boosts our industrial and social growth and also provided the savings to undertake essential infrastructure development works. The country is coming out of the 'Less Developed Country' tag. Hence FDI is beneficial to India's growth and India's growth is beneficial for FDI. FDI, if monitored and nurtured duly, will bring more skills and resources to India. Giving importance to the dependence of Indian Economy on the FDI flows, the study analysed the causal nexus between FDI and Economic growth and found that the economic growth determines the quantum of FDI flows and not vice versa.

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## ANNEXURE

ANNEXURE I: COMPONENT-WISE FDI FLOWS IN INDIA: 2000-01 TO 2010-11 (US\$ Millions)

Year	Inflows				Outflows				Net Flows			
	E. C.	R.E.	O. C.	Total	E. C.	R.E.	O. C.	Total	E. C.	R.E.	O. C.	Total
2000-01	2469	1352	280	4101	414	340	75	829	2055	1012	205	3272
2001-02	4195	1644	390	6229	674	700	121	1495	3521	944	269	4734
2002-03	2898	1832	438	5168	743	1104	104	1951	2155	728	334	3217
2003-04	2371	1460	633	4464	1264	552	260	2076	1107	908	373	2388
2004-05	3814	1904	369	6087	1737	248	389	2374	2077	1656	-20	3713
2005-06	6192	2760	226	9178	4043	1092	1009	6144	2149	1668	-783	3034
2006-07	17245	5828	517	23590	13455	1076	1366	15897	3790	4752	-849	7693
2007-08	29342	7680	300	37322	17007	1084	3338	21429	12335	6596	-3038	15893
2008-09	29132	9032	776	38940	14957	1084	3083	19124	14175	7948	-2307	19816
2009-10	27887	8668	1945	38500	14294	1084	4351	19729	13593	7584	-2406	18771
2010-11	22868	9424	652	32944	16750	1084	7968	25802	6118	8340	-7316	7142

Source: Compiled and computed from www.rbi.org.in

E. C. – Equity Capital

R. E. – Re-invested Earnings

O. C. – Other Capital

ANNEXURE II: FDI NET FLOWS AND IIP GENERAL INDEX: 1994-95 Q1 TO 2010-11 Q4

Period		IIP General Index [Base year 1993-94]	FDI Net Flows (US\$ millions)
1994-95	Q1	100.97	170
	Q2	103.60	303
	Q3	110.90	309
	Q4	120.93	561
1995-96	Q1	114.40	471
	Q2	117.77	449
	Q3	124.17	664
	Q4	137.03	559
1996-97	Q1	127.50	595
	Q2	125.53	538
	Q3	130.17	831
	Q4	140.13	878
1997-98	Q1	133.67	1164
	Q2	134.77	795
	Q3	140.83	782
	Q4	148.83	821
1998-99	Q1	140.20	904
	Q2	140.00	543
	Q3	145.37	365
	Q4	155.40	668
1999-00	Q1	148.10	452
	Q2	149.70	648
	Q3	155.17	400
	Q4	166.43	667
2000-01	Q1	157.13	924
	Q2	157.50	804
	Q3	164.07	704
	Q4	171.10	840
2001-02	Q1	160.63	808
	Q2	161.43	1293
	Q3	168.77	1133
	Q4	177.13	1500
2002-03	Q1	167.47	1240
	Q2	171.93	532
	Q3	178.50	676
	Q4	188.67	769

FDI Netflows and IIP General Index: 1994-95 Q1 to 2010-11 Q4 [Continues]

Period		IIP General Index [Base year 1993-94]	FDI Net Flows (US\$ millions)
2003-04	Q1	177.10	386
	Q2	183.30	702
	Q3	191.53	587
	Q4	203.97	713
2004-05	Q1	195.93	963
	Q2	205.73	1334
	Q3	215.23	582
	Q4	227.60	834
2005-06	Q1	210.50	1350
	Q2	212.80	1076
	Q3	223.73	1368
	Q4	239.03	-760
2006-07	Q1	232.50	1738
	Q2	237.93	2116
	Q3	248.83	2898
	Q4	268.93	941
2007-08	Q1	256.37	2874
	Q2	258.60	2266
	Q3	269.43	2120
	Q4	287.67	8633
2008-09	Q1	270.03	9196
	Q2	270.73	5610
	Q3	271.50	710
	Q4	289.17	4300
2009-10	Q1	280.40	4827
	Q2	295.20	7503
	Q3	307.93	3039
	Q4	350.70	3402
2010-11	Q1	324.57	2933
	Q2	332.63	3003
	Q3	337.77	629
	Q4	369.10	577

Source: Compiled and computed from www.rbi.org.in

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