



An Empirical Analysis of the Impact of Foreign Direct Investment on Economic Activity of India

R. Jayaraj¹ and Sumeet Gupta²

Introduction

Foreign Direct Investment occurs when a firm invests directly in facilities to produce and market a product in a foreign country. Once a firm undertakes FDI, it becomes a Multinational enterprise. FDI takes on two main forms. The first is a Greenfield investment. This involves the establishment of a new operation in a foreign country. The second involves acquiring or merging with an existing firm in the existing country. This project aims to identify the economic rationale that underlies foreign direct investment. Outflows of FDI, means flow of FDI out of country and inflows of FDI means the flow of FDI into a country. FDI also facilitates international trade and transfer of knowledge, skills and technology. Most developing countries consider FDI as an important channel for accessing resources for economic development. UNCTAD's world investment report defines foreign direct investment (FDI) as an investment involving a long-term relationship and reflecting a lasting interest and control by a resident entity in one

¹ Dr. R. Jayaraj, Assistant Professor (SG), College of Management, & Economics Studies, University of Petroleum and Energy Studies, Dehradun Jayaraj.rajaiah@gmail.com

² Dr. Sumeet Gupta, Assistant Professor (SG), College of Management, & Economics Studies, University of Petroleum and Energy Studies, Dehradun, sumeetbgh2007@gmail.com

economy (foreign direct investor or parent enterprise) in an enterprise resident in an economy other than that of the foreign direct investor.

Foreign direct investment is a component of a country's national financial accounts. Foreign direct investment is investment of foreign assets into domestic structures, equipment, and organizations. It does not include foreign investment into the stock markets. Foreign direct investment is thought to be more useful to a country than investments in the equity of its companies because equity investments are potentially "hot money" which can leave at the first sign of trouble, whereas FDI is durable and generally useful whether things go well or badly. Foreign direct investment is that investment, which is made to serve the business interests of the investor in a company, which is in a different nation distinct from the investor's country of origin.

Foreign direct investment (FDI) is a measure of foreign ownership of productive assets, such as factories, mines and land. Increasing foreign investment can be used as one measure of growing economic globalization. The largest flows of foreign investment occur between the industrialized countries (North America, Western Europe and Japan). But flows to non-industrialized countries are increasing sharply. In the years after the Second World War global FDI was dominated by the United States, as much of the world recovered from the destruction wrought by the conflict. FDI has grown in importance in the global economy with FDI stocks now constituting over 20% of global GDP. In the last few years, the emerging market countries such as China and India have become the most favored destinations for FDI and investor confidence in these countries has soared. A foreign direct investor may be classified in any sector of the economy and could be any one of an individual, a group of related individuals, an incorporated or unincorporated entity, a public company or private company, a group of related enterprises, a government body, an estate (law), trust or other societal organization, or any combination of the above.

The foreign direct investor may acquire 10% or more of the voting power of an enterprise in an economy through incorporating a wholly owned subsidiary or company, by acquiring shares in an associated enterpriser, through a merger or an acquisition of an unrelated enterprise and participating in an equity joint venture with another investor or enterprise. Foreign direct investment may be initiated by low corporate tax and income tax rates, tax holidays, other types of tax concessions, preferential tariffs, special economic zones, investment financial subsidies, soft

loan or loan guarantees , free land or land subsidies, relocation and expatriation subsidies, job training and employment subsidies, infrastructure subsidies, R&D support and derogation from regulations (Sridhar V. and Vijay Prasad, 2007).

India has recently emerged as a very competitive player and FDI into various sectors have taken off. Given India's large domestic market opportunities, FDI in several sectors is bound to take off in the coming years. The important point is that policies and investment facilitation are (Wei (2005), part of larger set of factors that influence FDI, they cannot substitute hard economic considerations. A good example that supports this argument of FDI dynamics influenced by global market opportunities coupled with diasporic expertise and networks is the IT and ITES sector in India. Therefore, in this study an attempt is made to see the impact of FDI growth on real economic activity. Based on the results from this study, government can take initiative measures in infrastructure, various sectors such as agriculture, industrial and service sectors to increase the FDI. Further this study attempts to see the impact of liberalization policy on real economic activity.

FDI is most important factor to increase a country's output. FDI after liberalization is increased considerably. Many developed countries have invested in India. Through this study, FDI in world countries can be observed. So this study reveals India's FDI position and helps to understand it's share on total economic activity of India. Through this study, it can be observed that FDI's contribution to the growth of India.

The major objectives of the paper are: (a) to analyze the growth of foreign direct investment inflow and real economic activity (GDP at constant price).to study the impact of Liberalization policy (1991 New economic policy) on real economic activity. (c) to study the impact of FDI on real economic activity of India; and (d) to suggest the suitable policy suggestions to the policy maker. Short term analysis was not made by using monthly or quarterly data due to the unavailability of frequent data. Therefore, the author used only annual analysis to see the long term impact. As the study is based entirely on secondary data, it is best with certain limitations which are bound to arise while dealing exclusively with secondary data. The paper is based on assumption of *ceteris paribus*, i.e. all other factors that are having impact on Indian economy are considered to be constant.

Literature Review

Kogut and Singh (1988) suggested that cultural distance can play a important role in determining the nature of foreign investment and Tahir and Larimo (2004) studied that overseas investors are more likely to invest in areas with a low cultural distance from their home country. As India is a large and diverse country but with a degree of political and economic cohesion, the paper examined whether cultural factors play a role in determining the locations that attract FDI. Due to different cultural and religious groups within the culture, may have greater or lesser cultural distances from different countries in the outside world.

Wang and Blomstrom (1992) constructed a model of strategic interaction Between FDI-firms and the domestic enterprises which not only uses Findlay's Assumption of a positive relationship between the technology gap and spillovers, but also stresses the importance of competition. If the FDI-enterprises face strong Competition from domestic firms, they have to bring in more advanced technology from the parent country in order to remain their market shares. The conclusion is that the tougher the competition is, the larger the potential spillovers will be.

Balasubramanyam et.al (1996) had tested the hypothesis, that export promoting (EP) FDI in countries like India confer greater benefit than FDI in other sectors. They have used production function approach in which FDI is treated as an independent factor input in addition to domestic capital and labor. As FDI is a source of human capital accumulation and development of new technology for developing countries, FDI captures such externalities as learning by watching or doing various spillover effects. Exports are also used as an additional factor input in this production function. Once FDI enters a country some of the era while imports become domestic products. Hence, their output becomes a part of GDP which needs consideration as a part of output or growth effect of FDI. Krugman (1998) studied the benefits associated with foreign acquisition of domestic firms, arguing that in financial crises foreigners can take advantage of liquidity constrained domestic investors' fire sales of assets. In this context, foreigners are less efficient than domestic investors, since foreigners acquire local firms because of their superior cash position as opposed to a special know-how or technology advantage. Razin Sadka and Yuen (2000) studied that foreign investors' asymmetric information might lead them to over-invest. Borensztin et al. (1998) studied the absorptive capacity of recipient country, which is measured by stock of human capital required for technological progress; it takes place through 'capital is deepening' associated with new capital goods brought into an economy by FDI. The fructification of

growth effect of FDI requires adequate infrastructure as a pre-requisite. For example, if there are frequent power cuts, it will reduce growth effect.

De Mello (1999) have studied on the FDI-led growth hypothesis, when time series analysis and panel data estimation for a sample of 32. OECD and non-OECD countries covering the period 1970-1990 were made. He estimated the impact of FDI on capital accumulation and output growth in the recipient economy. Two notable developments have taken place in India's export front since 1970s. First, as stated earlier its exports have grown much faster than GDP. Second, there has been a substantial change in India's export mix. Four major items (namely gems and jeweler, readymade garments, engineering goods, and chemicals and allied products) dominate its manufactured exports. The role of FDI in export promotion in developing countries is ambiguous and crucially depends on the motive behind such investment. If the motive behind such investment is to bypass trade barriers in the host country, then it is highly unlikely that such investment would result in better export performance. Over the past few decades India's exports have grown much faster than GDP. Several factors appear to have contributed to this phenomenon including FDI. However, as yet there has not been any attempt to investigate the role of FDI in India's export performance (Kishor Sharma, 2000). Girma and Wakelin (2001) explain the positive spillovers from FDI in the UK¹². The relatively skill-intensive domestic establishes the most positive spillovers. The results from this study confirm that spillovers from FDI are lower in the less developed regions. Regarding the causal relationship between FDI and economic growth, strong evidence of considerable heterogeneity across countries has also been found in the data. Nair-Reichert and Weinhold (2001) studied the Granger causality between FDI and growth to overcome the endogeneity problem. The variable openness for trade is proxies by the ratio of exports to GDP. The reason for proxy openness to trade by the ratio of exports to GDP is not clear. The more conventional measure used was to (which among others, Alfaro et al 2004 have used) proxy the variable by the ratio of the sum of exports plus imports to total GDP.

Ram and Zhang (2002) studied the complementarity of FDI and human capital (measured as mean years of education for the population aged 15 years and older) but find no evidence of such a relation. The FDI parameter is positive and statistically significant at the 5 % level in four of the six variants of the equation

without the interaction term between FDI and human capital. As in the analysis by Alfaro et al (2004) the interaction term most often appears with the negative sign and there is no case where the interaction term has a positive and significant coefficient value. Their analysis does include different decades (than the two decades observed by Borensztein, 1998) but a complementarity between FDI and human capital should not disappear from one decade to another, if it did exist one from the beginning. Their analysis thus indicates that there is no complementarity for the 1990s, although they conclude that this aspect may need further study. They also choose to exclude several variables that a number of other scholars have included in growth regressions. They motivate this with that the FDI terms they use capture most other variables that may reflect “openness” or other “policy distortions”. Yu Ching Wong and Charles Adams (2002), “A study on Trends in Global and Regional Foreign Direct Investment Flows” This paper has reviewed global and regional trends in FDI with particular emphasis on developments in Asia. The review has been conducted against the background of recent increased focus on FDI as a stable source of financial capital and a means by which countries can upgrade their technology, skills and management knowhow. Rather than seek to summarize the main trends identified in the paper, we conclude with three observations (technology, skills and management) that may be of relevance to countries as they consider their policies towards FDI. Sahoo and Mathiyazhagan (2002) concluded that FDI does not matter in the growth of the economy. It implies that India's progress towards 'market oriented economy' through policy reforms in 1991 has not worked properly. Khanna (2002) examines the macro economic impact on Indian capital market as well as the corporate sector and what are the macro economic effects on inflows of capital to Indian and micro economic effects on the capital market during 1989 to 2002. He took the macro variable as FDI, FPI, NRI deposits, external assistance and GDP/GDS/GNP. He tells that entry of international capital flows helps to provide greater depth to the domestic capital market and reduce the systematic risk of the economy. He argues that advanced for liberalizing capital market for liberalizing capital market and opening them to foreign investor are to increase the availability of capital with domestic industries and commercial firms. Liu. And Wang (2002) examines the kinds of FDI inflows contributing significantly to economic growth. Using the data from 12 Asian economies over the period of 1987-1997, she found that only FDI in the manufacturing sector has a significant and positive impact on economic growth and attributes this positive contribution to FDI's spillover effects. Hsiao, F. S. T. &

Hsiao, M. C. (2006) find a feedback association between FDI and GDP in their time series analysis of the data from China. Using data on 80 countries for the period 1971–95, Choe (2003) detects two-way causation between FDI and growth, but the effects are more apparent from growth to FDI.

Frimpong and Oteng-Abayie (2006) also use Toda-Yamamoto no- causality methodology. In the case of Ghana a causality relationship from FDI to GDP growth only during the post-structural adjustment program period. Grog and Greenaway (2004) says that focus on vertical FDI spillover effects three find positive backward FDI spillovers; one finds positive forward FDI spillovers. In addition Javorcik et al (2004) and Blalock and Gertler (2008) found positive vertical FDI spillovers in Latvia and Indonesia. Among the 24 studies using firm level panel data, which Grog and Greenaway (2004) argue to be using the most appropriate estimating framework, only 5 studies obtain positive and significant FDI spillover effects, with 4 from developed countries. For transition economies, only one out of the 8 studied results appear more conclusive for vertical spillovers. Among the five studies discussed in Grog and Greenaway (2004) that focus on vertical FDI spillover effects three had positive backward FDI spillovers, one have positive forward FDI spillovers.

The policy of the Government of India is to se to maximize the developmental impact and spin-offs of FDI. Foreign investments in equity capital of an Indian company under the Portfolio Investment Scheme are not within the ambit of FDI policy and are governed by separate regulations of RBI /Securities & Exchange Board of India (SEBI). This report also shows Country-wise FDI Inflows from August 1991 to December 2005 (Department of Industrial Policy & Promotion ministry of Commerce and Industry, Government of India, 2006).

Singh, Lakhwinder (2007) Department of Economics, Punjabi University, and Patiala did a study on “India’s Economic Growth and the Role of Foreign Direct Investment”. Foreign direct investment policy of the government of India has been gradually liberalized. As early as in the year 1948 and 1956 (two industrial policy resolutions) government policy clearly reflected the need to supplement foreign capital and technology for rapid economic growth. The FDI policy of 1991 proposed to achieve objective of efficient and competitive world class Indian industry. He also mentioned Top 10 Investor Countries in India, 1991-2004. The most significant result of the study is that high technological capability firm’s

benefited from the presence of MNEs and domestic firms with large gap of technological capabilities became victims.

Jayanta Roy and Pritam Banerjee (2007), Principal Adviser, Trade and Globalization Research Confederation of Indian Industry (CII) investigated some of the major themes as to why diasporic FDI has been so modest and provides some important policy recommendations that will allow for greater FDI from the Indian Diaspora. FDI into India has mostly not been of the export oriented variety that leverages India's labor cost arbitrage as far as the manufacturing sector is concerned. The most visible impact of FDI in the manufacturing sector has been in expanding the range of products available to Indian domestic consumers. Ilhan ozturk (2007), Foreign Direct Investment Growth Nexus: The literature dealing with the effects of FDI on Growth. Numerous empirical studies have been conducted to investigate whether growth is influenced by FDI. The overall evidence is best characterized as mixed as the results are regarding to the importance of labour costs, openness, investment climate, countries considered (developed vs. developing) and fiscal incentives. However, free trade zones, trade regime, the human capital base in the host country, financial market regulations, banking system, infrastructure quality, tax incentives, market size, regional integration arrangements and economic/political stability are very important determinant for FDI that creates a positive impact on overall economic growth. In summary, consensus has been reached among academia and practitioners that FDI tends to have significant effect on economic growth through multiple channels such as capital formation, technology transfer and spill over, human capital (knowledge and skill) enhancement, and so on.

Srinivas Subbarao (2008) examined the FDI and Human Capital Development Indian institute of management ahmedabad-380 015 India. Foreign Direct Investment (FDI) has much sought after by countries all over the world-developed and developing alike. Some view it as an engine of economic growth and development while others look it as a panacea for all ills. This paper explains importance of human capital skilling, the relation between the FDI and Human Capital development besides the experiences of these two in different regions of the world i.e., Asian and Latin American experiences. Prity Sharma (2009) studied based on the premises that how global economic slowdown has taken its toll on the foreign investment flows in the country as FDI has declined by a whopping 27.85%

during the month of November 2008 this year over the same month a year ago. FDI has been increasing over the past few years in the country.

The Model

The objectives of the study have necessitated the collection of published secondary data - both annual - pertaining to the India's FDI inflow from countries. This has been taken for the analyses due to their dominant shares in India's GDP. This empirical study has applied on an econometric model to examine the effect of FDI inflow on India's real economic activity (GDP at constant prices) using annual data for 27 observations from 1978 to 2008. This study explores the FDI consequences and India's GDP growth over the years. Further it attempts to examine the impact of Liberalization policy (i.e. New Economic policy, 1991) on Indian economic activity after 1991.

The study includes the following tools, namely,

- *Correlation analysis*
- *Regression models*
- *Augmented Dickey-fuller Test.*
- *Granger Causality Test.*
- *Impulse response of VAR mode*

In this analysis, the influence of FDI on the real economic activity can be examined by running a linear regression by taking the GDP as the dependent variable. Another linear regression is conducted with FDI and Dummy variables as the independent variables and the hypothesis are set as follows:

H1: FDI inflow has an influence on the real economic activity (GDP)

Ordinary Least Square (OLS) Model

$$\ln GDP_t = \beta_0 + \beta_1 \ln FDI_t + \beta_2 \ln D_{91} + E_t$$

(1)

t	Denotes time
GDP	Gross Domestic Product
FDI	Foreign Direct Investment
D ₉₁	Dummy variable for measuring Equation Liberalization Policy in 1991
E	Error Terms

The results of this regression would indicate that growth of FDI are positively related GDP when lagged for one-day period. As a result, it is concluded that there is a relationship between past values of FDI and the real economic activity. Thus, the results from this regression would suggest that past values of FDI do lead growth of Indian economy.

Vector Auto regression model (VAR)

The dynamic relationship between the two variables can be established through Vector auto regression model (VAR). The VAR estimation procedure requires selection of variables to be included in the model. The variables should be selected according to the relevant economic model and should fairly account for and explain the link between real and financial sides of the economy. The important steps in VAR estimation are as follows,

- Checking the stationary of the variables
- Selection of appropriate lag length
- Ordering of variables.
- Impulse response of the VAR system.

For any time series analysis, all the data series must be stationary. Stationary condition has been tested using *Augmented Dickey Fuller (ADF)*. It is a test for a unit root in a time series sample. The ADF, used in the test is a negative number. The more negative it is, the stronger the rejection of null hypothesis that there is a unit roots at some level of confidence. Consider a simple model, as follows,

$$Y_t = \alpha_1 Y_{t-1} + U_t \quad (2)$$

Where,

α_1 = is a parameter (estimated value)

Y_t is said to be stationary series if α_1 lies between -1 to 1 . If Y_t is a non-stationary series, then the variance of Y_t increases steadily with time and goes to infinity. If the absolute value $\alpha_1 > 1$, then the series is explosive. Therefore, the hypothesis of a stationary series can be evaluated by testing whether the α_1 value is strictly less than one.

$$H2: \alpha l < 1$$

In time series literature, unit root tests like ADF tests are used to check whether a variable or series included in the model is stationary or not. For the VAR estimation all the variables included in the model should be stationary.

Selection of appropriate lag length

The last but not the least step of VAR estimation is the selection of appropriate lag length of each variable in the system. The selection of lag length is the biggest challenge in VAR modeling. Various lag selection criteria are used to select the optimum lag length of variables in the system. These are noted as Likelihood ratio (LR), Final prediction error (FPE), Akaike information criteria (AIC), Schwarz information criteria (SIC) and Hannan - Quinn information criteria.

The procedure for testing statistical causality between net FII investment and movement of sensex is the direct "Granger-causality" test proposed by C. J. Granger in 1969. Granger causality may have more to do with precedence, or prediction, than with causation in the usual sense. It suggests that while the past can cause/predict the future, the future cannot cause/predict the past.

Granger Causality

According to Granger, X causes Y if the past values of X can be used to predict Y more accurately than simply using the past values of Y. In other words, if past values of X statistically improve the prediction of Y, then we can conclude that X "Granger-causes" Y.

To determine whether a relationship exists between FDI and GDP, the regression model is used:

Formal tests of causality should be conducted as follows,

To test causality between and its direction the following equation is specified:

$$(\text{GDP})_t = \alpha$$

(3)

$$(\text{FDI})_t = \alpha$$

(4)

For this above-mentioned equation, two types of hypothesis are framed as follows,

H3: $b_i > 0$ for all values of FDI does not "Granger cause" the economic activity.

H4: $b_i > 0$ for all values of GDP (economic activity) "Granger cause" the FDI.

Impulse Response

The most important thing is that the individual coefficients in the estimated VAR models are often difficult to interpret directly. To overcome this problem, Innovation Accounting Technique is used which includes impulse response function. The impulse response function (IRF) shows the dynamic response of the dependent variable to a one period standard deviation shock to the innovation of the system. A shock to the i-th variable not only directly affects the i-th variable, but is also transmitted to all other endogenous variables through the dynamic (lag) structure of the VAR. it may be noted that the responses can change dramatically if the ordering of the variables are changed. So, proper care should be taken while ordering the variables, which are included in a model.

Results and Analysis

The annual GDP for the past 30 years are correlated with the FDI and Liberalization over the years from 1978 to 2008.

Correlation Results

Table 1. Correlation Results

Correlations

		GDP	FDI	DUM
GDP	Pearson Correlation	1	.941**	.831**
	Sig. (2-tailed)	.	.000	.000
	N	31	30	31
FDI	Pearson Correlation	.941**	1	.818**
	Sig. (2-tailed)	.000	.	.000
	N	30	30	30
DUM	Pearson Correlation	.831**	.818**	1
	Sig. (2-tailed)	.000	.000	.
	N	31	30	31

**. Correlation is significant at the 0.01 level (2-tailed).

From the above table it is inferred that there is a very high correlation between FDI yearly net inflows and GDP growth rate. The calculated r value (.941) shows that FDI inflow very highly positively correlated with GDP growth rate. So we accept the alternative hypothesis that there is a positive relationship between FDI net inflow and GDP growth rate. Further, liberalization policy (DUM) is positively significant at any 1% level. It shows that DUM is correlated with GDP and FDI growth.

Ordinary Least square Results

Table 2. Ordinary Least square Results

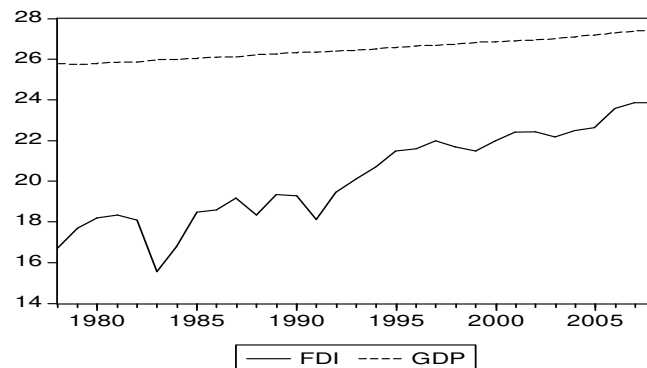
Dependent Variable: GDP, *Significance at 5%; ** Significance at 1%				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	22.76764	0.414143	54.97527	0.0000**
FDI	0.178949	0.022815	7.843547	0.0000**
D91	0.178402	0.104359	1.709499	0.0984
R-squared	0.903315	Mean dependent var		26.48871
Adjusted R-squared	0.896409	S.D. dependent var		0.511929

S.E. of regression	0.164768	Akaike info criterion	-0.676797
Sum squared resid	0.760153	Schwarz criterion	-0.538024
Log likelihood	13.49035	F-statistic	130.7998
Durbin-Watson stat	0.833228	Prob(F-statistic)	0.000000

The adjusted R^2 of 0.896409 implies that regression is highly fit. The results table reveals that the F-Statistics (130.7998) is very large and the corresponding p-value is highly significant (0.000) or lowers than the significance value of 0.05. This indicates that the slope of the estimated linear regression model line is not equal to zero confirming that there is linear relationship between FDI inflow, GDP and Liberalization policy.

As depicted in the above table, the coefficient of 0.178949 indicates that the FDI makes the satisfactory level of contribution in explaining the dependent variable i.e. Real economic activity. Therefore the null hypothesis (H_0) is rejected and it is found that GDP is highly influenced by FDI. The coefficient of 0.178402 indicates that the Liberalization policy makes the satisfactory level of contribution in explaining the real economic activity. Therefore the null hypothesis (H_0) is rejected and it is found that GDP is highly influenced by Liberalization policy.

Figure 1. Co-movement between the FDI inflows and real economic activity



From the Figure 1, it is observed that the association between the FDI inflows and the economic activity (GDP) is significant and positive indicated by the correlation coefficient at 1% level of significance. The above graph indicates the co-movement and converging behavior between the two variables. The movement of FDI is not closely following the GDP in the initial period but after the year of 1992 it closely converges with movement in the FDI. The FDI inflows attained its peak in the mid of 2007 and the GDP also responded quickly to it and attained its all time hike.

Therefore it is clear that the investment activity and new economic policy measures have an influence on the country's economic activity and growth.

Impulse response of VAR model

To examine the dynamic relationship between FDI activity and the growth of economy VAR model is used. The dynamic relationship between the two variables can be established through Vector Auto-Regression model (VAR) using the data from the year 1978 - 2008.

The Stationary condition has been tested using Augmented Dickey Fuller (ADF). The unit root test results on the individual data series is shown as below:

From the tables below, the tall the three variables considered are stationary. The estimated values of GDP, FDI and Liberalization, reported by the ADF test statistic at the first difference are -7.449352, -5.088300 and -5.307943 respectively. The critical values at 1%, 5% and 10% significance level are also given and the test statistic exceeds the critical value and hence the null hypothesis is rejected. Therefore all the variables, GDP, FDI inflow and Liberalization are said to be stationary and ready for testing the Granger Causality test. In Granger Causality test, Liberalization policy variable is excluded because, it can not be influenced by GDP and FDI.

Table 3. Unit root test results for GDP at first difference

Null Hypothesis: D(GDP) has a unit root
Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic based on SIC, MAXLAG=8)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-7.449352	0.0000
Test critical values:	1% level		-4.309824	
	5% level		-3.574244	
	10% level		-3.221728	
*MacKinnon (1996) one-sided p-values.				

Table 4. Unit root test results for FDI at first difference

Null Hypothesis: D(FDI) has a unit root				
Exogenous: Constant, Linear Trend				
Lag Length: 5 (Automatic based on SIC, MAXLAG=8)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-5.088300	0.0022
Test critical values:	1% level		-4.394309	
	5% level		-3.612199	

	10% level		-3.243079	
*MacKinnon (1996) one-sided p-values.				

Table 5. Unit root test results for Liberalization policy at first difference

Null Hypothesis: D(LIB) has a unit root				
Exogenous: Constant, Linear Trend				
Lag Length: 0 (Automatic based on SIC, MAXLAG=8)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-5.307943	0.0009
Test critical values:	1% level		-4.309824	
	5% level		-3.574244	
	10% level		-3.221728	
*MacKinnon (1996) one-sided p-values.				

Selection of Lag length

The selection of lag length is the biggest challenge in VAR modeling. Various lag selection criteria are used to select the optimum lag length of variables in the system. These are noted as Likelihood ratio (LR), Final prediction error (FPR), Akaike information criteria (AIC), Schwarz information criteria (SIC) and Hannan - Quinn information criteria.

Table 6. The results for VAR lag order selection

VAR Lag Order Selection Criteria						
Endogenous variables: GDP FDI						
Exogenous variables: C						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	- 52.46455	NA	0.146677	3.756176	3.850472	3.785708
1	44.79291	174.3927 *	0.000236 *	- 2.675373 *	- 2.392484 *	- 2.586776 *
2	46.31216	2.514620	0.000282	- 2.504287	- 2.032806	- 2.356625
* indicates lag order selected by the criterion						
LR: sequential modified LR test statistic (each test at 5% level)						
FPE: Final prediction error						
AIC: Akaike information criterion						
SC: Schwarz information criterion						
HQ: Hannan-Quinn information criterion						

From the table, it is inferred that the lag length 1 is found to be significant under likelihood ratio, Final prediction error, Akaike information criterion, Schwarz information criterion and Hannan-Quinn information criteria. Therefore, lag length of 1 is chosen for testing the pairwise causality in terms of all the tests for the full sample period.

Granger Causality Results

Table 7. Granger Causality Test Results

VAR Pairwise Granger Causality/Block Exogeneity Wald Tests			
Dependent variable: GDP			
Exclude	Chi-sq	df	Prob.
FDI	0.691123	2	0.7078
All	0.691123	2	0.7078

Dependent variable: FDI			
Exclude	Chi-sq	df	Prob.
GDP	12.21849	2	0.0022
All	12.21849	2	0.0022

P-value (0.0022) suggest that there is a bidirectional causality using 1 period lag between the GDP and the FDI inflow and this would imply that FDI “Granger cause” GDP and vice versa. The results shows that FDI did not Granger cause GDP but interestingly GDP has Granger cause on FDI. This result shows the inter-relationship between these two variables. An increased domestic economic activity will attract foreign investors to invest in India. Because of the huge population, increased domestic production in various industries, infrastructural facilities, large domestic market would attract foreign investors.

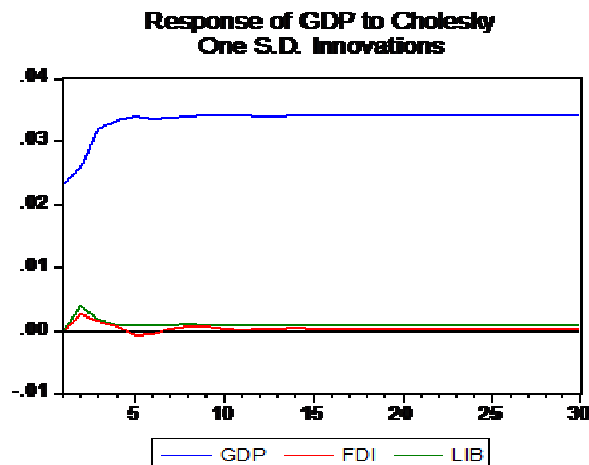
Impulse response of VAR system

To further investigate the dynamic responses among the variables, the impulse response of the VAR has been calculated. The impulse response shows that the effects of an individual variable shock to build up over time both through the lagged value of the dependent variable in the equation and through current and

lagged effects from the impact of the shock and the changes in the dependent and independent variables on the dependent variable. The impulse responses mirror the coefficients of the moving average representation of the VEC model and track the effects of one time shock to one of the innovations on the current and future endogenous variables.

From the below Figure 2, it is clearly understood that the GDP positively influenced by its own activity, FDI and Liberalization. Both FDI and Liberalization moves in the same direction. Due to protection policy, FDI and GDP are low in 1970's and in the beginning of 1980's. Then it is acting towards same direction up to the end of the study period. As the FDI investment began to rise in the positive direction the market also is influenced by the positive feedback from the FIIs net investment and continues to coincide with the reaction of economic activity. After the liberalization, the shock innovation in economic activity and GDP provides an impulse response in the positive direction.

Figure 2. Impulse Response Analyses



Findings and Conclusions

Foreign direct investment (FDI) in India has played an important role in the development of the Indian economy. FDI in India has - in a lot of ways - enabled

India to achieve a certain degree of financial stability, growth and development. This money has allowed India to focus on the areas that may have needed economic attention, and address the various problems that continue to challenge the country. India launched a series of progressive economic liberalization policies to overcome the structural defects that has caused the economic crisis in 1991. With these policy changes, foreign direct investment (FDI) into India has increased rapidly since 1992. Foreign direct investment to India increased from a mere \$97 million in 1990-91 to \$5,526 million in 2004-05 because of institutional restructuring (see Appendixes).

This investment led to a change in technological, economic and social conditions in India. From the above study shows us there is a very high correlation between FDI yearly net inflows and GDP growth rate. The calculated r value (.941) shows that FDI inflow very highly positively correlated with GDP growth rate. So we accept the alternative hypothesis that there is a positive relationship between FDI net inflow and GDP growth rate. It is found that GDP is highly influenced by FDI. The coefficient of 0.178402 indicates that the Liberalization policy makes the satisfactory level of contribution in explaining the real economic activity and it is found that GDP is highly influenced by Liberalization policy.

The study indicates the co-movement and converging behaviour between the two the movement of FDI and GDP. FDI is not closely following the GDP in the initial period but after the year of 1992 it closely converges with movement in the FDI. The FDI inflows attained its peak in the mid of 2007 and the GDP also responded quickly to it and attained its all time hike. The results shows that FDI did not Granger cause GDP but interestingly GDP has Granger cause on FDI. This result shows the inter-relationship between these two variables. An increased domestic economic activity will attract foreign investors to invest in India. Because of the huge population, increased domestic production in various industries, infrastructural facilities, large domestic market would attract foreign investors. It is clearly understood from this study that the GDP positively influenced by its own activity, FDI and Liberalization. Both FDI and Liberalization moves in the same direction. Due to protection policy, FDI and GDP are low in 1970's and in the beginning of 1980's. Then it is acting towards same direction up to the end of the study period. As the FDI investment began to rise in the positive direction the market also is influenced by the positive feedback from the FIIs net investment and continues to coincide with the reaction of economic activity. After the

liberalization, the shock innovation in economic activity and GDP provides an impulse response in the positive direction.

Based on the study the following suggestions can be taken by the policy makers.

- Government can have stable and sensible economic policies.
- There is a need for a well-educated labour force and availability of necessary inputs to an operation, including access to technology. Labour Reform measures are to be taken.
- Improving the infrastructure in India will have a positive impact on FDI such as airports, ports, rail and road travel.
- A stable exchange rate, especially protection from currency depreciation is needed. India can have a stable and well-functioning market system, which can help the economy to grow.
- There is a need for a reform measures in ongoing program of regulatory bodies of the government.
- India can be an active member in WTO and utilize market access and non-discrimination policies.
- India has raised few times the issue on intellectual property rights and the protection against the unfair seizure of or nationalization of assets through WTO.
- Indian can claim a transparent and open legal and regulatory regime and good regulatory supervision in WTO.
- Fiscal policy measures will help the country to have a favourable FDI inflow. Through favourable taxation and tax incentives, government can promote FDI.

Over the past few decades India's exports have grown much faster than GDP. Several factors appear to have contributed to this phenomenon including FDI. However, as yet there has not been any attempt to investigate the role of FDI in India's economic performance. Using annual Data for 1970-2008 we investigate this issue in a simultaneous equation framework. Results suggest that there is a relation between FDI and GDP growth in India. Also it reveals us FDI showing impact on the GDP growth in India. Moreover, the calibration section highlights the importance of local conditions (absorptive capacities) for the effects of FDI on economic growth. We find larger growth effects when goods produced by domestic firms and MNEs are substitutes rather than complements. Policymakers should be

cautious when implementing policies aimed at attracting FDI that is complementary to local production. We have focused in this study the impact FDI on GDP growth in India .From the results FDI impacting on the GDP growth rate .So the country economy also develop. Further, it has also been observed that FDI is the only capital inflow that has been strongly associated with higher GDP growth since 1970. FDI helps fill the savings, technological, managerial and foreign exchange gaps.

BIBLIOGRAPHY

- Sridhar, V., and Vijay Prashad. 2007, “*Wal-Mart with Indian Characteristics*”, Connecticut Law Review, 39 (4):1785-1803.
- Xiao, Wei, 2008, “*Increasing Returns And The Design Of Interest Rate Rules*,” Macroeconomic Dynamics, Cambridge University Press, vol. 12(01), 22-49.
- Larimo J. & Tahir R., 2004, “*Understanding of the location strategies of the European firms in Asian countries*”, Journal of American Academy of Business, Cambridge 5:1-2, 102-109.
- Blomström, M., and A. Kokko (1998), “*Multinational Corporations and Spillovers*”, Journal of Economic Surveys, 12: 247-277.
- Balasubramanyam, V.N., M. Salisu, and D. Sapsford. (1996), “*FDI and Growth in EP and IS countries*,” The Economic Journal 106, 92-105.
- Krugman, P. 2000, “*Fire-Sale FDI: In Capital Flows and the Emerging Economies*”, edited by Sebastian Edwards. Chicago: The University of Chicago Press.
- Borenstein, Eduardo, Jose De Gregorio, and Jong-Wha Lee, 1998, “*How does Foreign Direct Investment Affect Economic growth?*”, Journal of International Economics, 45, 115-135.
- De Mello, “*Foreign Direct Investment-Led Growth: Evidence from Time Series and Panel Data*”, Oxford Economic Papers, 51(1999), pp. 133-51.
- Kishore Sharma, “*Liberalisation and Productivity Growth*” in S. B. Dahyia (ed.), The Current State of Business Discipline, Vol. 2, pp. 817-832. Spellbound Publishers, 2000.
- Girma & Wakelin (2001), “*Regional Underdevelopment: Is FDI the Solution? A Semi-parametric analysis*” University of Nottingham Research Paper Series 2001/11.
- Weinhold, Diana and Eustaquio J. Reis, “*Model evaluation and causality testing in short panels: The case of infrastructure provision and population growth in the Brazilian Amazon*”, Journal of Regional Science, November 2001, vol. 41, no. 4, pp. 639-657(19).
- Ram, R., and K. H. Zhang, 2002, “*Foreign Direct Investment and Economic Growth: Evidence from Cross-Country Data for the 1990*”, Economic Development and Cultural Change 51(1):205-15.

- Charles Adams and Yu Ching Wong, 2002, “*Trends in Global and Regional FDI Flows*”, (Manuscript, International Monetary Fund) and IMF Website (www.imf.org).
- Khanna, Tarun 2002, “*Local institutions and global strategy*”, Harvard Business School.
- Liu, X. and C. Wang 2002, “*Does foreign direct investment facilitate technological progress? Evidence from Chinese industries*”, *Research Policy*, 32, 945-953
- Hsiao, F. S. T. & Hsiao, M. C. W. 2006, “*FDI, export and GDP in East and Southeast Asia: Panel data versus time-series causality analysis*”, *Journal of Asian Economies*, 17, 1082 – 1106.
- Choe, J. I. 2003, “*Do Foreign Direct Investment and Gross Domestic Investment Promote Economic Growth?*”, *Review of Development Economics*. Vol. 7(1). pp: 44 – 57.
- Frimpong, J. M., Oteng-Abayie, E. F., 2006, “*Bivariate Causality Analysis between FDI Inflows and Economic Growth in Ghana*”. *Proceedings*, 3rd African Finance Journal Conference, “Research in Development Finance for Africa”, 12th – 13th July, 2006, Ghana.
- Görg, Holger & Greenaway, David, 2003, “*Much Ado About Nothing? Do Domestic Firms Really Benefit from Foreign Direct Investment?*”, IZA Discussion Papers 944, Institute for the Study of Labor (IZA).
- Javorcik, Beata S. & Saggi, Kamal & Spatareanu, Mariana, 2004, “*Does it matter where you come from? vertical spillovers from foreign direct investment and the nationality of investors*,” Policy Research Working Paper Series 3449, The World Bank.
- Blalock, Garrick, and Paul J. Gertler, 2008, “*Welfare Gains from Foreign Direct Investment through Technology Transfer to Local Supplier*”, *Journal of International Economics*, 74(2), 402–421.
- Department of Industrial Policy & Promotion ministry of Commerce and Industry, Government of India, 2006
- Singh, Lakhwinder, 2007, “*India’s Economic Growth and the Role of Foreign Direct Investment*,” MPRA Paper 6427, University Library of Munich, Germany.
- Jayanta Roy and Pritam Banerjee 2007, “*Attracting Investments from the Indian Diaspora: The Way Forward*,” CII Publication.
- Ozturk, I., 2007. “*Foreign Direct Investment – Growth Nexus: A Review of The Recent Literature*,” *International Journal of Applied Econometrics and Quantitative Studies*, Euro-American Association of Economic Development, vol. 4(2), pages 79-98
- Srinivas Subbarao, 2008, “*International Technology Transfer to India an Impedimenta & Impetuous*”, W.P. No. 2008-01-07(www.iimahd.ernet.in).