

# Role of Sectorwise FDI Inflow on Growth of India- An Empirical Analysis

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**Abstract**— With the major economies of the world embracing globalization, Foreign Direct Investment has attained the status of an eminent and indispensable tool. India opened up its economy to globalization during the 1990s and experienced a multitude of changes with the beginning of an era of economic reforms. With the establishment of an open trade policy, India has become increasingly competitive in attaining foreign funds. But the debate around the effects of FDI still has a wide range of conclusions. From a negative relation with the growth of the host economy to a positive robust relation, all sorts of conclusions have been drawn. This paper attempts to empirically investigate the role of FDI in the growth of Indian economy by studying the effect of FDI inflows in major sectors.

**Index Terms**— India, sector wise FDI, GDP, Regression.

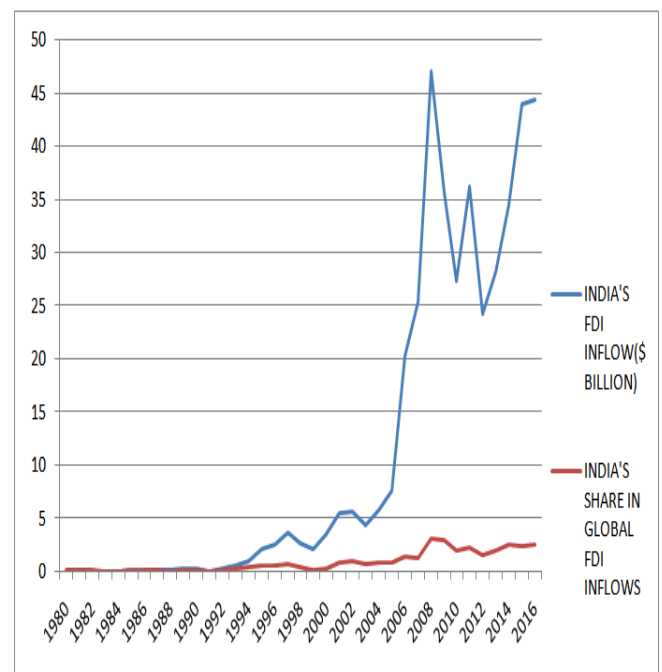
## I. INTRODUCTION

According to the World Bank, FDI is today globally recognized as the leading vector in integrating the economies worldwide since consumers today receive more goods through foreign affiliates than by trade alone. Foreign investment has advantages for developing nations like India. It helps set the ground for progressive economic policies. FDI viewed from a narrow perspective improves avenues for job opportunities once it enters the host nation via greenfield investment channel, in its wake improving the work environment. The creation of linkages, whether trade or knowledge has improved the chances of Indian affiliated firms to expand their business to other firms beyond the investing enterprises. From a broader perspective, the technological spillovers generated by presence of MNEs has provided a great thrust to other Indian firms to improve their work environment, imbibe better management practices and improve overall efficiency, increasing its chances of survival in rising competitive times. In times of slump in domestic savings and consequently investment in India, FDI has come to rescue, by bridging the gap between intended savings and investment. It ensures smooth progress of economic activities even when the economy might not be in a position to sustain itself on its own.

The 1970s and earlier part of 1980s was marked by very low levels of FDI inflow in India. Owing to the restrictive entry policy for MNEs and a harsh exit policy under the Foreign Exchange Regulation Act (FERA) 1973, barely any

foreign firm looked upon India as a favourable investment destination. During the 1970s FDI amounted to a meagre 1.2% of gross investments made in India. The later part of 1980s saw a marginal ease in FDI entry policy. This was followed by a more liberal approach adopted by the policy makers during the nineties. Under the ambit of New Economic Policy of India announced in June 1991, India sought to ease itself from the investment deficit it had been dealing with for a long time. With this watershed, India ushered into a new phase of development. With foreign money flowing in India in an unprecedented manner, the economy embarked on the path of continual progress. As the investors started realising the potential benefits India held, FDI started to flow in from various parts of the world.

## INDIA'S FDI INFLOWS AND SHARE IN GLOBAL FLOWS (1980-2016)



**Source:** Compiled from UNCTAD Statistics (available at <http://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx>)

But, for the past century or so, assessment of the effect of foreign investment on host nations has attained diverse results. UNCTAD (1964) viewed FDI as a source of economic growth for the host nation. This perception in a span of a few years underwent change when the investing

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firms started being viewed as a threat to the authority of the recipient nation (Vernon, 1971). This shift in view every now and then gives rise to concern over the LONG TERM role played by FDI in influencing growth of the host nation. The range of conclusions drawn span in all directions. While some studies profess a positive robust relation between FDI and the economic growth of the host economy, a healthy number of studies have found no relation between the two. On the other end of the continuum are the studies where FDI has worked to the disadvantage of the host economy by bearing an inverse relation with the growth.

### II. REVIEW OF LITERATURE

A myriad of studies especially during the past few decades have been conducted to investigate the role of foreign investment and precisely the role of FDI on the host economy. Pioneering work in revealing the effect of FDI can be attributed to the work of Borensztein-et-al. According to Borensztein et al (1998), technological progress takes place through a process of 'capital deepening' as new varieties of capital goods are introduced at a cost lower than what exists in the host country. Under such circumstances FDI contributes to growth more than domestic investment. According to Seetanah and Khadaroo (2007), FDI stands out as an eminent element in explaining economic performance, though to a lesser degree than other types of capital. Their study is based on examination of industrial data for a panel of 39 Sub-Saharan African countries for the period 1980-2000. FDI also works to the advantage of crowding-in domestic investment (Borensztein-et-al, 1998). A study of Chinese economy revealed that FDI instead of crowding-out domestic investment, as opposed to common belief, complements it, therefore stimulating economic growth (Tang et-al, 2008). Noorzoy (1979) concluded that domestic investment may fall short in certain sectors of the host economy such as high risk sectors or newly developed ones. In such cases, FDI could come to the rescue of the host nations. His study also suggested that related industries observe a rise in investment when FDI inflow takes place in a certain industry or sector. This happens because FDI tends to raise the positive sentiment of the investor associated with that industry.

The effect that FDI has on the host economy to a great extent depends on the sector observing the influx. These sectors may require a dissimilar set of setting to display positive results (Aykut and Sayek, 2007). Primary, secondary and tertiary sectors have exhibited different results for FDI inflow. Since the potential of linkage to various pockets of the economy differs for each sector, it exhibits a different level of impact on the host economy according to World Investment Report by UNCTAD (2001). Alfaro's work is considered first of its kind where the effect of FDI was studied separately for major sectors of the host economy. According to Alfaro (2003), benefits of FDI on economic growth show varied results for different sectors, namely primary, manufacturing and service. Alfaro conducted a sectoral panel OLS analysis on data from 1981 to 1999. His investigation revealed that whereas FDI has a positive effect on the manufacturing sector of the host nation, he effect is reverse in the primary sector. In the primary sector FDI

negatively affects FDI. The results for the services sector are on the other extreme end. Here no effect has been observed at all. The presence or absence of FDI in the service sector has no effect on host nation's economic growth. While a great number of researchers have talked about the positives associated with FDI, there are studies where the effect of FDI has been found to work to host country's disadvantage (Sahoo and Mathiyazhagan, 2002). The findings of the research work conducted by Falki (2009) for Pakistan as a host nation illustrate a negative and statistically insignificant relation between the GDP and FDI Inflows in Pakistan. Khaliq and Noy (2007) concluded the same in their study for FDI inflows to Indonesia over the period 1997-2000. This thought was earlier put forth by Hirschman (1958) too that all the sectors do not have equal capacity to absorb technology. Girma (2002) found substantial heterogeneity in the way FDI-induced externalities are distributed across domestic firms in U.K. UNCTAD (1999) recognized that FDI has an extractive nature. In many nations it has been witnessed to bring detrimental changes. It leads to exploitation of the host nation's resources. Also, indigeneous firms, because of either being in their nascent stage lack the capability to cope with the presence of foreign firms. Or the foreign firms being strong enterprises leave very little room for domestic enterprises to compete with the. It in many cases has lead to the closure of domestic firms and their market share too is attained by the foreign firm (Ram and Zhang, 2002). Singer (1950) professed that MNFs transfer almost all benefits to their home country, leaving little or no room for improvement of the host economy. Infact, due to price distortion, monopolisation and resource depletion instead of FDI improving the host country's condition, harms it in ways more than one (Bos-et-al, 1974).

Reducing the effect down to India, the scenario doesn't change much. The difference in deduction drawn is somewhat the same for India as for any other country. Although a generally observed trend is that maximum FDI is drawn in by developed nations rather than developing ones ( Duce, 2003 ; Singh-et-al, 2012), its role in fostering growth can still be contended. Dash and Parida (2012) through their analysis of manufacturing and services sector concluded that bi-directional causality exists between FDI and growth in India. Foreign direct investment is an essential element for long term sustainable economic growth in developing countries like India. since the most basic ingredient of economic development is the fast and able transfer of technology and best practices whether managerial or technical (Borensztein et al.1998), betterment of standard of living and chances of economic growth. Peng Hu (2006) specifically applied this thought to India, proposing that economic growth, domestic demand, currency stability, government policy and labour force availability are the precondition for encouraging FDI to India. Zheng (2013) detected that the pattern of FDI inflow varies with economic and structural changes. Morris (2004) claimed FDI inflow in India is mainly accumulated in the metropolitan regions, thus reinforcing the above stated study. Devajit (2012) stated the suggestion of passing on enough freedom to states to form policies for drawing in FDI to them in particular, since his

study spread over a decade found that the states which provide better infrastructure facilities and congenial atmosphere attained higher percentage of the foreign funds compared to the states which lacked such facilities.

### III. NEED FOR STUDY

The work pertaining to the effects of FDI has yielded mixed results in different countries and in different sectors of these countries too. While the economists have a clashing opinion on the role of foreign investments in the host economy, nonetheless past few years have witnessed ease in the regulations and policies governing FDI, which hasn't come about without caution and criticism. Also, the research on the analysis of the relation between the two has not been conclusive, providing a wide range of outcomes. Mixed views ranging from a deterrent role to studies suggesting a positive, robust relation between GDP and FDI, to no role at all have been found. The amplitude of diverse results makes it pertinent to analyse the role of FDI on growth of India. Against this backdrop, this paper intends to analyse the effect of FDI inflow in major sectors on the growth of India.

### IV. OBJECTIVES OF THE STUDY

This paper intends to achieve the following objectives:

- To analyse how much the presence of FDI, if any, contributes to growth of India.
- To study if the sector specific FDI inflow affects growth differently
- To study the effect of each sector on growth and the extent to which each sector affects growth

### V. METHODOLOGY

Regression Analysis of secondary data collected in the light of proposed objectives intends to be conducted. The empirical investigation based on macroeconomic variables has one dependant and nine independent time series from financial year 2000-01 to 2016-17. Growth, the dependent variable has been proxied by GDP and FDI inflows, the predictor variable pertaining to major sectors have been taken as the independent variables. GDP used for the purpose of analysis is GDP at factor cost as is the practice followed by academicians across the board. Necessary data has been collected from various sources, i.e. Reserve Bank of India, publications from the Ministry of Commerce, Govt. of India, Economic and social survey, IMF, CII, Telecom Regulatory Authority of India (TRAI), Department of Telecommunication (DoT) and the reports from Government

**Table 2. PARAMETER ESTIMATES TABLE WITH STANDARDIZED REGRESSION COEFFICIENT (BETA VALUES)**

	Coef.	Std. Err	t	P> t	Beta
Service	287.963	45.03986	6.39	0.000	.9690784
Comphws	-324.8575	49.78504	-6.53	0.000	-1.341263

of India and various websites, etc. Time series data and relevant data shall be collected for the period from 2000-01 to 2016-17. For the purpose of analysis, major sectors were identified on the basis of FDI data provided by Department of Industrial Policy and Promotion(www.dipp.nic.in). Nine major FDI attracting sectors are enumerated yearly. Based on the data from dipp website, nine sectors for which data was found for the stretch from 2000-01 to 2016-17 have been analysed. Since the sectors which figure in the top ten FDI attracting sectors keep changing year on year basis, a total of 9 sectors could be taken up for the purpose of analysis which figure in all the financial years from 2000-01 to 2016-17. The Statistical package, Stata is used for the purpose of conducting regression analysis.

### VI. DATA ANALYSIS AND INTERPRETATION

In the following section empirical analysis of data has been conducted to achieve the objectives undertaken in this study.

**Table 1. ANOVA STATISTICS & OVERALL MODEL FIT**

Number of obs	17
F(9, 7)	10.41
Prob>F	0.0027
R-squared	0.9305
Adj R-squared	0.8411
Root MSE	1.4e+06

In order to establish whether the model is robust, the overall model fit has been analysed by conducting F test. P value of 0.0027 obtained for the F test being less than the critical value of 0.05 indicates that the null hypothesis ( $H_0: \beta_1 = \beta_2 = \dots = \beta_{10} = 0$ ) can be rejected. It can be said with 95% confidence that the regression coefficient is significant and the value obtained for  $R^2$  is not a random occurrence. Also, it can be inferred that the model with independent variables is a better fit than a model with no independent variables, i.e. intercept alone.

Regression coefficient, represented by  $R^2$  gives us the proportion by which change in the dependant variable, GDP can be explained by the predictors, i.e FDI inflows. The  $R^2$  value of 0.9305 indicates that 93% of the change in Y i.e GDP is explained by FDI. The value for Adjusted  $R^2$  of 0.8411 again signifies that there exists a strong relation between GDP and FDI. Considering the sample size, it can be inferred from adjusted r squared value that 84% of the variation in the value of GDP is because of the FDI, indicating that the model is robust. Adjusted  $R^2$  value of 0.8411, being quite close to 1, indicates that the regression coefficient obtained for the sample is equally significant.

<b>Telecommun-s</b>	18.96413	31.97445	0.59	0.572	.0795711
<b>Power</b>	-638.131	190.8367	-3.34	0.012	-.5341353
<b>Automobile-y</b>	446.0859	111.8869	3.99	0.005	.6455908
<b>Metallurgi-y</b>	-293.2376	131.0107	-2.24	0.060	-.289463
<b>Petroleumn-s</b>	461.816	189.5644	2.44	0.045	.4690826
<b>Chemicals</b>	97.84556	68.03367	1.44	0.194	.1890137
<b>Drugsandph-l</b>	-38.58274	9.681681	-3.99	0.005	-.5029459
<b>_cons</b>	3772370	1254771	3.01	0.020	-

From the table above the prediction equation that can be formed is as follows:

$$\text{GDP} = 3772370 + 287.963(\text{service}) - 324.8575(\text{comphsws}) + 18.96413(\text{telecommun}) - 638.131(\text{power}) + 446.0859(\text{automobile}) - 293.2376(\text{metallurgy}) + 461.816(\text{petroleumnatgas}) + 97.84556(\text{chemicals}) - 38.58274(\text{drugsandpharmaceutical})$$

GDP varies inversely with four of the nine sectors, namely computer hardware and software, power, metallurgy, drugs and pharmaceuticals. With the rest of the six sectors linear positive relation exists between GDP and FDI, indicating that with a unit increase in any one sector GDP increases at varying levels.

The p values at 95% confidence level indicate that the beta coefficients for telecommunication sector (p value of 0.572), metallurgy (p = 0.60) and chemicals (p = 0.194) are

statistically insignificant. P value for Regression coefficient of the rest of the seven parameters indicates that they are statistically significant.

Beta values from the above given table indicate that on a comparative scale, services has the highest influence on GDP compared to the rest of the sectors. Standardized regression coefficient's value of + 0.969 indicates that the parameter for this independent variable exerts the largest amount of influence compared to other sectors. The standard deviation for Computer hardware and software, power, metallurgy and drugs and pharmaceuticals varies inversely with that of GDP. Telecommunications sector has the least effect on GDP compared to the rest of the nine sectors. With one standard deviation increase in increase in telecommunications, GDP increases by 0.08 standard deviations.

**Table 3. VIF TEST CHECK FOR MULTICOLLINAEITY**

	<b>VIF</b>	<b>I/VIF</b>
<b>1. Computer Hardware &amp; Software</b>	2.81	0.355360
<b>2. Automobile Industry</b>	2.48	0.404031
<b>3. Services</b>	1.85	0.540800
<b>4. Chemicals</b>	1.68	0.595051
<b>5. Metallurgy</b>	1.68	0.596115
<b>6. Telecommunications</b>	1.57	0.638881
<b>7. Drugs and Pharmaceuticals</b>	1.45	0.691219
<b>8. Power</b>	1.24	0.437444
<b>9. Petroleum and natural gas</b>	1.79	0.357612
<b>MEAN VIF</b>	<b>1.93</b>	

Multicollinearity has been tested is through the VIF test also. VIF measures the level of inflation of variance of the estimated regression when the independent variables are correlated as compared to when they are not correlated. VIF value of 1 indicates no multicollinearity. Values of VIF greater than 10 indicate presence of multicollinearity. Higher the value of VIF, greater the level of correlation. The table above depicts mean VIF value of 1.93 which is well within the range. Individual values for each predictor are also less than 10. Thi s indicates that the sample has no problem of multicollinearity.

**VII. FINDINGS AND SUGGESTIONS**

This paper undertook the task of empirically examining the relation between GDP and FDI inflows. The analysis reveals that while some of the sectors aid growth of GDP, certain sectors vary inversely with the GDP. FDI plays a role in affecting growth in India in the long run.

Three sectors bear a negative effect on growth of India, viz Computer hardware and software; Power; and Drugs & Pharmaceuticals. FDI in the power sector plays a detrimental role for growth in India. It has a negative effect on the GDP. The computer hardware and software sector too has a negative effect on GDP. Increase in FDI leads to a decrease in



growth figures. Metallurgy sector along with the Drugs and Pharmaceuticals sector also inversely affect GDP. Of these four sectors, computer hardware and software sector has the highest inverse impact on growth figures.

Three of the nine sectors analysed do not affect growth in India, viz Telecommunications, Metallurgy and Chemicals sector. Metallurgy although varies inversely with GDP, it bears little or almost no effect on growth. Telecommunications varies positively with GDP, but its effect too does not count. Chemicals sector too bears no effect on GDP. India need to adopt innovative policies to attain FDI and direct it in the right sectors.

Three of the nine sectors analysed have a strong, positive impact on growth. Of these three sectors, services sector exerts the highest positive impact on GDP. Automobile industry bears the second highest amount of impact on the growth figures. Influx of FDI in this sector leads to economic growth in the Indian economy. Petroleum and natural gas sector has a positive impact on GDP.

India needs to revamp its FDI policy. While the entry route has been eased in most of the sectors, India needs to look at its exit policy. Hostile regulations for leaving the host nation pose as a deterrent to investment in the host country. India needs to look into the factors which turn FDI inflow in certain sector hostile towards growth.

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