



DETERMINANTS OF FDI INFLOW AND IMPACT OF FDI ON INDIAN ECONOMY

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ABSTRACT

In this paper effect of economic determinants on total Foreign Direct Investment inflows and FDI inflows in top five sectors in India is studied individually and collectively. There exists a very high degree of correlation between India FDI inflow and GDP. FDI inflows as percentage of GDP in India showed an increasing trend from 2000-01 to 2008-09 and from 2012-13 to 2015-16.

The correlation coefficient relationship strength between total FDI inflow and FDI inflows in services, housing, computer, telecom and automobile sectors are found to be Very High, High Moderate, low, moderate, high moderate and very high respectively. The determinants of FDI inflows in India are GDP, Foreign Exchange, Total Trade, Balance of Payment, Exchange Rate and Inflation rate. The high value of multiple correlation coefficients shows that there exists strong positive relationship between the determinants and FDI inflows.

Keywords: Determinants, foreign direct investment, Gross Domestic Products, Multiple linear regressions



Introduction

Economic developments of a number of present day industrialized economies are assisted by foreign capital and it played an important role in the early stages of industrialization of most of the advanced countries today. It plays an important role in the developing economy also. After liberalization of Trade policies in India, there has been a positive GDP growth rate in Indian economy. Foreign direct investments helped in development of economy by generating employment, generating revenues in the form of tax and incomes, development of infrastructure, financial stability to the government, backward and forward linkages to domestic firms for the requirements of tools, raw materials, business infrastructure, and acts as support for the financial system. FDI brings better technology and management, brings marketing networks and offers competition which helped Indian companies to improve. The country adopted a two-pronged strategy: first to attract FDI which is associated with multiple attendant benefits of technology, access to the export markets, management techniques, and skills etc. and second, to encourage portfolio capital flows which eased the financing constraints of Indian enterprises.

There has been constant growth in Indian economy since 1991 followed by increased life expectancy, literacy rates and food security. GDP growth rate is used to represent economic activities influence in any economy and it helps in providing dependable information about economic performance trends for a period under consideration. Higher growth rate leads to other favorable macro-economic indicators like higher level of employment, consumption, saving and investment. This in turn helps in enhanced business confidence which leads to domestic and foreign net investment. FDI inflow into India has increased in the post reform period. India's FDI inflow when compared with other developing economies is not remarkable. India stands as a competitor in FDI inflow market with the other developing countries.

Literature review

Azam and Ling (2010) estimated economic determinants effects on FDI inflows to Pakistan, India and Indonesia for the period 1970 to 2005 using Log linear regression model and method of least square. The market size, external debt, domestic investment, trade openness, and physical infrastructure were observed to be the important economic determinants of FDI. Krishnankutty (2010) used Stepwise regression to find determinants for FDI inflow and outflow from India for the period 1980-2009. The factors which determine FDI inflow in



India are Trade openness, Gross Capital Formation, economic stability and FDI outflow while labor cost, market size, economic stability, Gross capital formation and FDI inflow are associated with FDI outflow. Agarwal and Khan (2011) studied Foreign Direct Investment effect on China and India economic growth for period of 1993-2009. Ordinary Least Square method was used with GDP as the dependent variable while Human Capital, Labor Force, FDI and Gross Capital Formation as the independent variables. The author concluded that 1% FDI increase leads to 0.07% increase in China GDP and 0.02% increase in India GDP. Mukherjee (2011) in his paper analyzed the regional distribution of FDI flow in India to find the main determinants associated with it. The study revealed that market size, agglomeration effects and manufacturing and services base size in a state have positive impact on FDI flows while taxation and labour cost have negative impact. Sahni (2012) used Ordinary Least Square method to study trends in time series data of FDI inflow in India from 1992-93 to 2008-09. The GDP, inflation and trade openness were observed to be the important determinants for FDI inflows in India whereas Foreign Exchange Reserves was not found to be not as important. Goel et al. (2013) observed through foreign direct investment and economic growth models that Trade GDP, Reserves GDP exhibit a positive relationship with FDI while R&D,GDP and Exchange rate variables exhibit a negative relationship with FDI inflows in India for the period of 1991-2010. The study also reveals that FDI is a significant factor influencing the level of economic growth in India. Kumar (2013) analyzed the FDI flow in India and their impact on economy. New job opportunities, large capital, new technology and skills, better work culture is being provided by host country by FDI. FDI helped in increased capital which led to the growth in various sectors and country's GDP. Sharmiladevi and Ali (2013) examined potential determinants of FDI inflows in India for the period of 2000-01 to 2011-12 using ordinary Least Square method. It was observed inflation rate, index of industrial production and exports have direct influence on attracting FDI flow in India. Sisili and Elango (2013) observed that market size, market growth and the exchange rate of the country are three key variables which influence the FDI inflows in SAARC nations. It was observed that India's market size has expanded due to FDI inflows and the growth is significant. Kirthika and Nirmala (2014) studied the effect of India's FDI inflows on the economic development of the country and developed a relationship between the India's FDI inflows and its economic growth. Shafi (2014) illustrated the positive effect of FDI for the economic growth due to foreign technology, technological spillovers, human capital enhancement brought by FDI. Negative effects of FDI have been



showed upon by the decrease in balance of payments and overcrowding in the host economy. Githaiga (2015) explored FDI effect on human capital and financial sector development, health care and trade openness using data from 30 countries for the time period of 1980-2012. The study revealed that FDI has a positive influence on measures of financial sector development and trade openness and negative effect on human capital development. Parashar (2015) determined the factors affecting FDI inflows in both China and India from 1980 to 2013 using ordinary least squares and partial least squares analysis. Market size, infrastructure, trade openness, growth rate, policy changes and opportunity cost for investors and inflation were taken as Macroeconomic indicators for the study. The market size was observed to be an important factor.

Research methodology

The study is based on secondary time series data. It has been collected from Department of Industrial Policy and Promotion fact sheets, Ministry of Commerce and Industry for the period 2000-01 to 2015-16. The study is an endeavor to discuss impact of FDI on Indian economy. In this paper effect of GDP, exchange rate, interest rate, inflation rate, total trade, and balance of payment on FDI inflow in India individually and collectively is studied. The relationship between FDI inflows and determinants are examined using regression analysis.

The study is taken up with the following research hypotheses:

1. H_0 : There is no significant relationship between FDI inflow and GDP.
 H_1 : There is significant relationship between FDI inflow and GDP.
2. H_0 : There are no significant factors which influence FDI flow into the country.
 H_1 : There are significant factors which influence FDI flow into the country.

Results and discussion

After the detailed study of various explanatory variables with the help of literature review the macroeconomic indicators incorporated in the study are: economic growth (GDP at Factor cost), inflation rate (Consumer Price Index), exchange rate (Rupees to US dollars), total trade, balance of payment, foreign exchange reserve and foreign direct investment (FDI). Foreign Direct Investment is dependent variable and the foreign exchange reserves, GDP, exchange rate, inflation rate, total trade, and balance of payment are the independent variables.



FDI and its determinants

Market size and FDI inflows shows a direct relationship. GDP or per capita GDP as a substitute to market size is a strong determinant. Higher FDI inflows are attracted with increased market size of economy and vice versa. i.e.; higher GDP helps in attracting more FDI inflows. Market size has emerged as one of the important Pull factor for the horizontal FDI inflows, but not for vertical FDI.

Another important determinant of international finance comes out to be an exchange rate due to the globalization of the world economies. An increased exchange rate is not considered a good indicator. More FDI is indirectly attracted by a lower exchange rate.

Foreign exchange reserve stock is considered as a good indicator of country's claim against foreign economies. Enhancement of foreign exchange reserve stock leads to bargaining capacity of a country, healthy economic relationships reinforcement and international trade promotion. The foreign exchange reserves increases the confidence of outside investors.

One of the main aspects of country's good economic fundamentals is considered as Inflation rate. Mild inflation is considered as important to business and economy according to economic literature. The relationship between rate of inflation rate and FDI inflow is not always uniform. Various studies related to coincidences of high inflation and low FDI versus low inflation and high FDI inflows have been documented (Shamsuddin, 1994; Vijayakumar, *et al.*, 2010). Increased inflation rate is generally related with decreased FDI inflows.

The superiority of goods and services is marked by the constant rise in exports in value terms as compared to imports. A decisive role in FDI inflow is played by the imports volume. Growing import is a favorable indicator for FDI inflow which takes the advantage of increased purchasing power along with competitive advantage of MNEs. However in the long run it is not considered as a desirable indicator.

FDI impact on the balance of payments is dependent on two opposite factors. There is an increase in the import of host country by the FDI inflow due the fact that capital and intermediate goods and services that are not readily available in the host country are imported by FDI companies. An increased GDP which is due to FDI inflow leads to increased imports. All these factors have a negative impact on BOP. Economic growth in the short term is boosted by the balance of payments surplus.

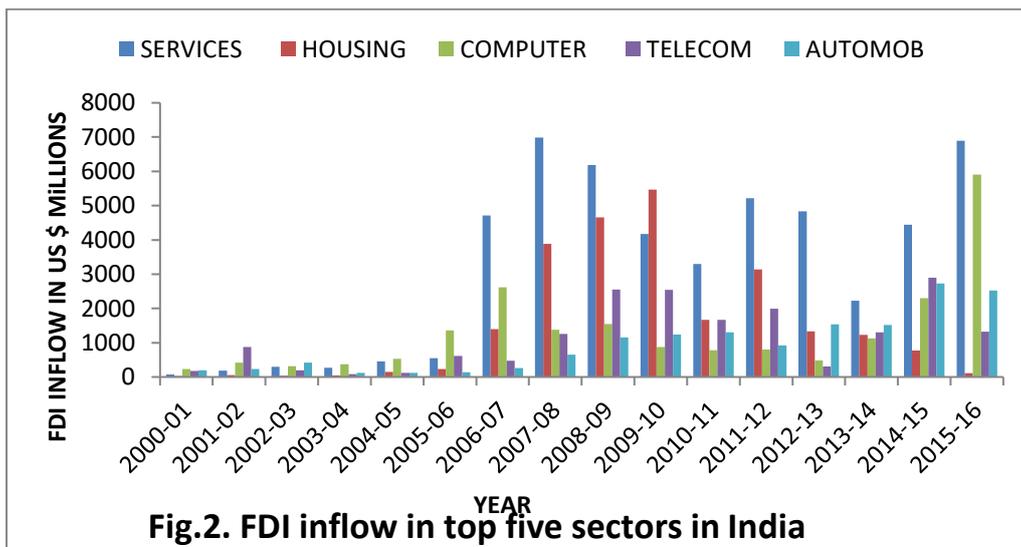
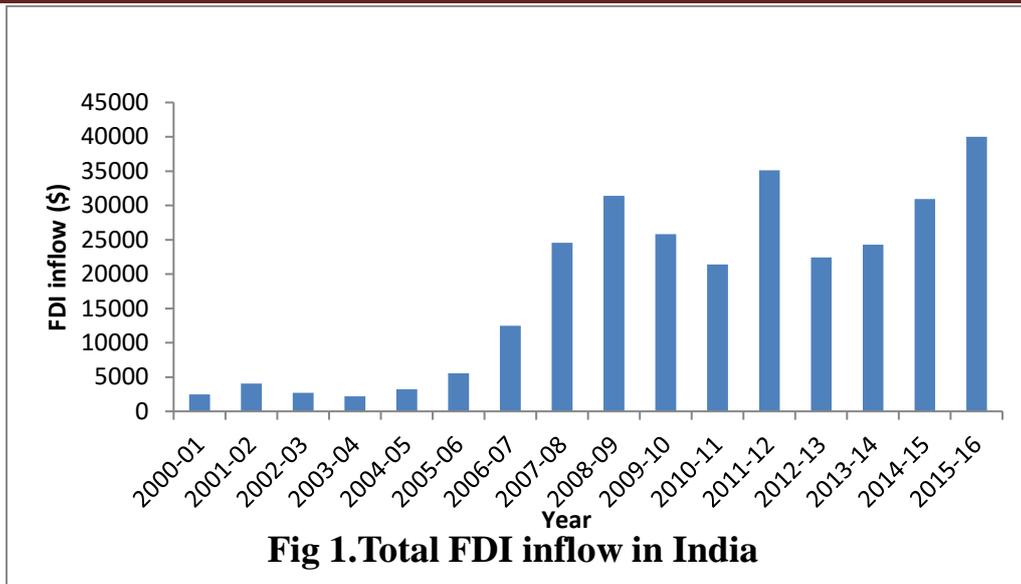
The statistics of Total FDI Inflow in India and determinants (foreign exchange reserves, GDP, exchange rate, interest rate, inflation rate, total trade, and balance of payment) are given in Table 1. The average FDI inflows in India during the study period is 18039.67 million US \$. From the table it is clear that FDI inflows in India has increased 18.31 times from the minimum value. It is seen from the Table that skewness and kurtosis values are within -3 to +3 except balance of payment. Most of the values are skewed to right except foreign exchange and total trade. Coefficient of variation for balance of payment is highest (3.01) which shows that it is more volatile and is inconsistent in comparison to other variables.

Table 1 FDI and its determinants statistics

	Max	Min	Mean	SD	CV	Skewness	Kurtosis
Total FDI	40000.98	2187.85	18039.67	13223.05	0.73	0.06	-1.51
GDP	2274230	478965.5	1331707	614976.5	0.46	0.01	-1.52
Foreign Exchange	360176	42281	219739.1	107875.6	0.49	-0.46	-1.35
Total Trade	-5899.2	-199412	-85928.47	63370.5	-0.74	-0.20	-1.05
BOP	993984	-21170	81352.64	244853.9	3.01	3.92	15.53
Exchange Rate	65.42	40.12	49.37	7.10	0.14	1.26	0.62
Inflation	12.11	3.77	6.85	2.83	0.41	0.58	-1.03

FDI impact on economy

The financial year wise total FDI inflows in India as per Department of Industrial Policy and Promotion for the study period (April 2000 –March 2016) are shown in Figure 1. The total FDI inflows in India in 2000-01 was 2462.68 in million US \$ which reached to 288634.8 million US \$ in 2015-16. The top five sectors attracting higher FDI inflows in India i.e.; services, housing, computer, telecommunication and automobile sector wise FDI inflow are shown in Figure 2. The combined share of these five sectors is 44.85% during the study period.



The economic growth of India measured in terms of GDP through FDI is shown in Figure 3. The Figure shows that FDI inflows as percentage of GDP in India was 0.51 in 2000-01, rose to 0.8 in 2001-02, came down to 0.31 in 2003-04, rose to 2.37 in 2008-09, came down to 1.17 in 2010-11, rose to 1.92 in 2011-12, came down to 1.19 in 2013-14 and rose to 1.76 in 2015-16. The Figure shows an increasing trend in FDI as percentage of GDP from 2000-01 to 2008-09 and again from 2012-13 to 2015-16. The decreasing trend in FDI as percentage of GDP in 2009-10 and 2010-11 was due to global meltdown resulting from recession in USA and European crises.

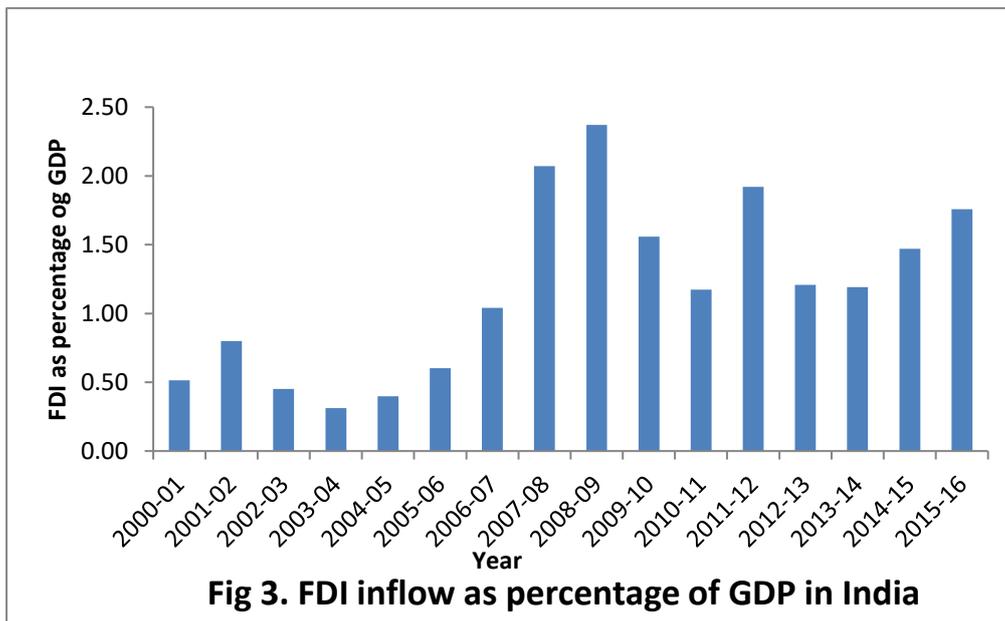


Fig 3. FDI inflow as percentage of GDP in India

To observe relation between GDP and total FDI inflow in India and also FDI inflows in services, housing, computer, and telecom and automobile sectors simple regression analysis were applied. Table 2 illustrates the regression model along with p value and correlation coefficient for all sectors. It is showed in Table 2 that regression model results in all sectors are significant at 1 % level of significance except housing and computer. It is at 5% level of significance for computer sector. Null hypothesis1 is rejected which stated that there exists no significant relationship between total FDI inflow and GDP and FDI inflow in services, telecom and automobile sectors. The correlation coefficient value between total FDI inflow and FDI inflows in services, housing, computer, telecom and automobile sectors are 0.89, 0.708, 0.322, 0.543, 0.633 and 0.888 respectively. According to Krithika and Nirmala (2014) correlation coefficient relationship strength between total FDI inflow and GDP in India and also FDI inflows in services, housing, computer, telecom and automobile sectors and GDP are found to be Very High, High Moderate, low, moderate, high moderate and very high respectively. There exists a very high degree of correlation (0.89 as correlation coefficient) between India FDI inflow and GDP. Thus, there exists a positive impact of foreign direct investment on the economic growth of the country. FDI inflows trend shows similarity with the Indian economy trend. FDI came out to be a significant factor which influences economic growth in India.



Table 2 Regression model of FDI and GDP in different sector

Sl. No.	Equation	Correlation coefficient	p- value
1.	$FDI(\text{Total}) = -7457.20 + 0.0191 * GDP$	0.890	3.79E-06
2.	$FDI(\text{Services}) = 780.69 + 0.0030 * GDP$	0.708	0.002135
3.	$FDI(\text{Housing}) = 257.59 + 0.0009 * GDP$	0.322	0.224523
4.	$FDI(\text{Computer}) = 342.74 + 0.0012 * GDP$	0.543	0.029669
5.	$FDI(\text{Telecom}) = 154.08 + 0.00098 * GDP$	0.633	0.008539
6.	$FDI(\text{Automobile}) = 668.30 + 0.0012 * GDP$	0.888	4.29E-06

Correlation coefficient value between total FDI inflows in India and GDP, foreign exchange reserves, total trade, balance of payment, exchange rate and inflation rate are 0.89, 0.92, 0.86, 0.19, 0.53 and 0.62 respectively as given in Table 3. It is observed that the strength of relationship between FDI and GDP, foreign exchange reserves and total trade is very high, between FDI and exchange rate and inflation rate is moderate whereas between FDI and balance of payment is very low. Very high strength of relationship between FDI and GDP, foreign exchange reserves and total trade suggest that any increase or decrease in GDP, foreign exchange reserves and total trade will result in same level of increase or decrease in the value of FDI.

Table 3 Regression model of FDI and determinants

Sl. No.		Correlation coefficient	p- value
1.	FDI= -7457.1955+0.0191*GDP	0.89	3.79E-06
2.	FDI=-6685.65+0.112521*Foreign Exchange	0.918	5.39E-07
3.	FDI= 2701.44-0.1785*Total Trade	0.855	2.39E-05
4.	FDI=16124.26+0.023545*BOP	0.19	0.091385
5.	FDI=-30269+ 978.4914*Exchange Rate	0.526	0.036534
6.	FDI=-1795.76+ 2894.099*Inflation	0.618	0.01065

Multiple regression method was used in study to calculate how factors influence the flow of FDI into India. The determinants of FDI inflows are put in the equation as follows:

$$FDI = a + b_1 GDP + b_2 \text{Foreign Exchange} + b_3 \text{Total Trade} + b_4 \text{BOP} + b_5 \text{Exchange Rate} + b_6 \text{Inflation}$$

The results of the multiple regressions for all the sectors are given in Table 4. Table 4 illustrates the regression model for all the sectors along with p value and coefficient of determination R-square. The degree of relationship between the independent variables for total FDI inflow is calculated by the multiple correlation coefficients. The value more than 0.90 show that there exist strong positive relationships between the independent variables (GDP, foreign exchange reserves, total trade, balance of payment, exchange rate and inflation rate) and total FDI inflow also FDI inflows in services, housing, computer, and automobile sectors. The value of R square of 0.90 means that nearly 90 percent of the variation is explained.

Table 4 Multiple regression models for FDI

Sl. No.	Equation	F Value	R square	p- value
1.	FDI(Total)= -19018.7-0.007*GDP+ 0.08*ForeignExchange-0.06*Total Trade+0.013*BOP+306.27*Exchange Rate+ 1052.67* Inflation	F(6,9)=13.5	0.949	0.000473
2.	FDI(Services)=-1517.940.006*GDP+ 0.03* Foreign Exchange-0.019* Total Trade+ 0.004* BOP+ 28.83* Exchange Rate+ 240.58* Inflation	F(6,9)=11.2	0.939	0.000975
3.	FDI(Housing)= -4348.02-0.002*GDP +0.016*Foreign Exchange + 0.017* Total Trade-0.0005*BOP+37.40* Exchange Rate+ 690.83* Inflation	F(6,9)=9.81	0.931	0.001603
4.	FDI(Computer)= 50.16+0.0004*GDP +0.005*Foreign Exchange + 0.007* Total Trade+ 0.004* BOP+ 0.79* Exchange Rate -6.66* Inflation	F(6,9)=8.39	0.921	0.002821
5.	FDI(Telecom)=-3733.7+0.0003* GDP +0.007*Foreign Exchange+ 0.013Total Trade-0.001*BOP + 55.67 * Exchange Rate+ 218.27* Inflation	F(6,9)=2.28	0.777	0.127449
6.	FDI(Automobile)=-4654.920.0004* GDP+0.006*ForeignExchange+0.003 * Total Trade-0.00014* BOP +93.32 * Exchange Rate+ 71.53* Inflation	F(6,9)=16.2 8	0.957	0.000228



Table 4 results showed that except the telecom sector results of regression models of all sectors are significant at 1 % level of significance. The null hypothesis 2 which stated that there is no significant factor which influences FDI inflow in the country is therefore rejected at 1% level of significance as p value is less 0.001. Group comprising of GDP, Foreign Exchange, Total Trade, balance of payment, Exchange Rate and Inflation rate has effect on total FDI inflow in India and FDI inflow in services, housing, computer and automobile sectors. The model used was considered as good statistical fit by the adjusted value of R-square and F ratio. It was concluded that these variables influences the FDI flow in India.

Conclusions

The analysis revealed that the main determinants of FDI inflows to India are GDP, Foreign Exchange, Total Trade, balance of payment, Exchange Rate and Inflation. These variables have an intense impact of FDI inflow in India. The model disclosed the positive relationship of GDP, Foreign Exchange, Total Trade, balance of payment, Exchange Rate and Inflation rate variables with FDI which are considered pull factors for FDI inflows to India.

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