

IMPACT OF FOREIGN DIRECT INVESTMENT ON INDIAN ECONOMY: A STUDY

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Abstract

Foreign Direct Investment plays a very important role in the development of any economy, because it not only brings capital but will also give other benefits in the form of technology, managerial skill and human capital for the economic growth. Developing countries make their policy liberal to attract FDIs. India is one of the developing country which needs capital for its further growth and development, which is filled by FDI. It is evidently shown a positive trend of FDI on average of 55296.92 Rs. Crores and annual growth rate is 35.05 %. It is clearly established that there is strong correlation between the economic growth of a country and FDI inflows, in terms of a change in major macro economic variables. In the light of the above assumption the present research paper made an attempt to study and analyze the extent of impact of FDI on selective macro economic variables. The study has been used appropriate statistical techniques such as descriptive, correlation, regression analysis, ADF and Granger Causality Test by using E-Views Software. Variables used in the study are GDPFC, GRGDP, Foreign Exchange Reserves, Export, Import, Exchange Rate and Inflation and FDI.

Keywords: FDI, GDPFC, GRGDP, FDI, GRGDP, ADF, MNCs, FII, GDP, GDCE, Unit Root Test.

Introduction

Indian is a developing country. It required capital for its further growth and development. Foreign Investment is one of the source through which it can get capital which will be playing very important role in countries development. Foreign Investments are two types Foreign Direct Investment (FDI) and Foreign Institutional Investments (FII). Foreign Direct Investment (FDI) is an investment mad by Multi-National Corporation (MNCs) or by a non resident in an enterprise of host (recipient) countries over which they have a control and earn private return. It is important distinguish between FDI and FII. The indirect investment includes Portfolio investment, acquisition of stock of an enterprise, medium term and long term loans by financial institutions and intermediaries. The direct investment is among term equity investment in a foreign company that gives the investor managerial control over the company (Griffiths and hall 1984). In fact FDI is considered as an equity capital in India though the IMF guidelines prescribe to include reinvestments and venture capital on the FDI inflows (RBI).

Review of Literature

Erkan, Koch, & Orhan (2010) aim is to empirically investigate the relation between Growth and Foreign Direct Investment (FDI) in Turkey. Variables like FDI, Growth, Labour, Investment and BOP was taken for the period of 1980-2004. Statistical techniques of co integration and VAR estimation in E-Views were used. The results show positive relation between Growth and FDI.

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Egbo (2011) aim is to ascertain the extent at which growth in foreign direct investments (FDIs) influences economic growth in Nigeria. The annual time series data of variables computed from natural logarithms of gross domestic product (GDP) at current prices, net inflow of Foreign Direct Investment (FDI), inflation rate and exchange rates used was. The statistical tools used was the Ordinary Least Square, Unit root test to test for stationarity of the time series, the Johansen Co integration test to test for the existence of long-run relationship among the variables. The Co integration test using Johansen Co integration test revealed that the variables were co integrated and had a stable relationship in the long-run. The study concluded that there is a positive long-run relationship between FDI and GDP which was used as a proxy for economic growth.

Javed, Sher and Awan (2012) focus on linking among Foreign Direct Investment (FDI), Trade and Economic Growth in four South Asian economies namely, India, Bangladesh, Sri Lanka and Pakistan using data from 1973 to 2010. The study employs Unit root test and Granger Causality test. The Results indicate that FDI has mixed impacts on output expansion in different countries, while Exports have positive impact upon output growth in all countries. Domestic Investment (DI) and Labor force (LF) have also positive impact upon Growth. Sum of both of the coefficients is less than one which exhibits decreasing returns to scale in all the countries.

Paula (2014) aim is to the link between FDI inflows and GDP growth in Romanian economy. The period of study was from 1990 to 2012. Variables like FDI, GDP, Government Expenditure and Gross Fixed Capital Formation was taken for the study. The Durbin - Watson test was applied. The results show that FDI has a positive impact on GDP growth.

Jangir (2015) focus on impact of FDI on Indian Economy since 1991 to 2013. In order to find out impact of FDI on Indian economy, Exports, Imports, Employment, National Income of a country and foreign exchange reserves was taken as dependent variable in the study. Tools like simple regression were calculated. The study concluded that foreign direct investment is an important factor for the economy and it has significant and positive impact on macro variables such as national income, foreign exchange reserves of the country, exports, imports and some extent it is useful for improvement in employment.

Research Methodology

This study is based on secondary data. The required data have been collected from various sources i.e RBI, World Investment Report, United Nations Conference on Trade and Development, SIA Newsletter and Handbook of Statistics of Indian Economy. Variables in the study are Gross Domestic Product at Factor Cost (GDPFC), GRGDP, Gross Domestic Capital Formation (GDCF), Reserve, Export, Import Exchange rate and Inflation as dependent variable and Foreign Direct Investment Inflows (FDII) is independent variable. The data has been collected for the period 1991-2015.

Objectives of the Study

- To know the trends of Foreign Direct Investment inflow in India.
- To study the impact of Foreign Direct Investment on Indian Economy.

Techniques: - Regression, Unit Root Test and Granger Causality Test have been used in the study.

Hypothesis Testing

- H₀₁** : FDI inflows do not have a statistically significant impact on the Gross Domestic Product (GDP).
H₀₂ : FDI inflows do not have a statistically significant impact on the growth rate Gross Domestic Product (GRGDP).
H₀₃ : FDI inflows do not have a statistically significant impact on the Foreign Exchange Reserves (RES).
H₀₄ : FDI inflows do not have a statistically significant impact on the Gross Capital Formation (GCF)
H₀₅ : FDI inflows do not have a statistically significant impact on the Export (EXP)
H₀₆ : FDI inflows do not have a statistically significant impact on the Import (IMP)
H₀₇ : FDI inflows do not have a statistically significant impact on the Exchange Rate (EXC)
H₀₈ : FDI inflows do not have a statistically significant impact on the Inflation (INF)

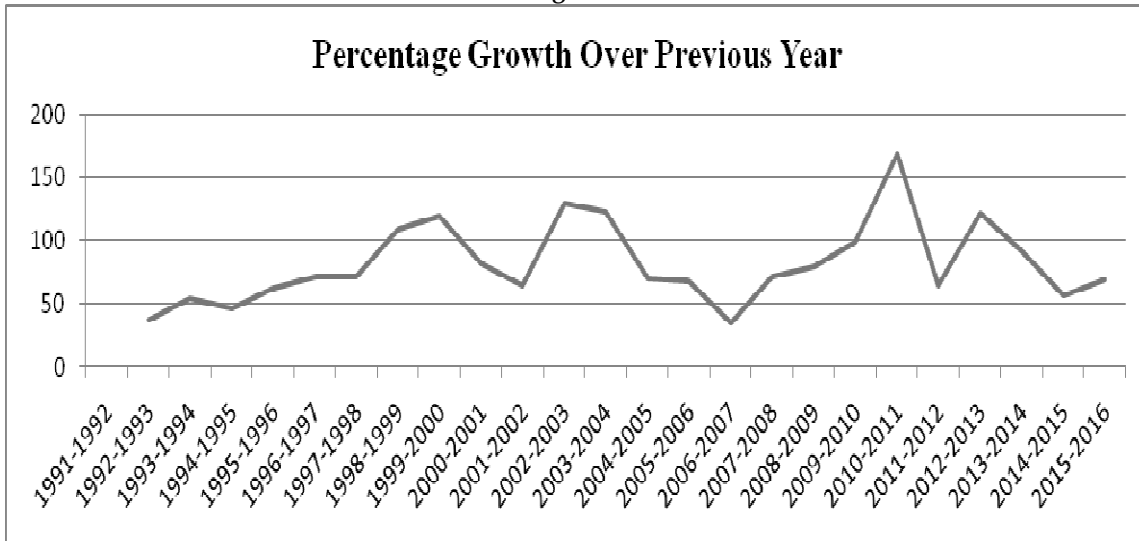
Analysis and Interpretations

To achieve the objective of the study we make an analysis on the basis of collected data. The results on the basis of secondary data are following as under:

Table 1 : FDI Inflows in India (Rs. Crores)

Year	FDI Inflows in India	Percentage Growth Over Previous Year
1991-1992	409	-
1992-1993	1094	37
1993-1994	2018	54
1994-1995	4312	47
1995-1996	6916	62
1996-1997	9654	72
1997-1998	13548	71
1998-1999	12343	110
1999-2000	10311	120
2000-2001	12645	82
2001-2002	19361	65
2002-2003	14932	130
2003-2004	12117	123
2004-2005	17138	71
2005-2006	24913	69
2006-2007	70630	35
2007-2008	98664	72
2008-2009	122919	80
2009-2010	123378	100
2010-2011	73177	169
2011-2012	112019	65
2012-2013	92237	121
2013-2014	99813	92
2014-2015	175313	57
2015-2016	252562	69

(Source: Department of Industrial Policy and Promotion, Ministry of commerce and Industry, GOI)

Figure 1

The figure 1 presents the inflow of FDI for the period of 1991-2016. The results show that there is a large fluctuation in the pattern of FDI inflows as compare to previous year. In the year 2010-11 there is a high increase in the FDI inflow where as in the year 2006-07 decrease in the growth of FDI.

The Selection of Functional Form

In order to avoid the misspecification of the functional form, this may lead to spurious result, the present study uses either linear or log-linear as the functional form. The functional forms are as follows:

Linear and Log Linear

Linear	Log Linear
GDP = $\alpha_1 + \beta_1 \text{FDII} + e$	LGDP = $\alpha_1 + \beta_1 \text{LFDII} + e$
GRGDP = $\alpha_2 + \beta_2 \text{FDII} + e$	LGRGDP = $\alpha_2 + \beta_2 \text{LFDII} + e$
Reserves = $\alpha_3 + \beta_3 \text{FDII} + e$	L Reserves = $\alpha_3 + \beta_3 \text{LFDII} + e$
Export = $\alpha_4 + \beta_4 \text{FDII} + e$	L Export = $\alpha_4 + \beta_4 \text{LFDII} + e$
Import = $\alpha_5 + \beta_5 \text{FDII} + e$	L Import = $\alpha_5 + \beta_5 \text{LFDII} + e$
Exchange Rate = $\alpha_6 + \beta_6 \text{FDII} + e$	L Exchange Rate = $\alpha_6 + \beta_6 \text{LFDII} + e$
Inflation = $\alpha_7 + \beta_7 \text{FDII} + e$	L Inflation = $\alpha_7 + \beta_7 \text{LFDII} + e$

Where 'L' represent logarithmic value of the series, α and β are the parameters of the models. In order to choose between the alternative functional by Godfrey and Wicknes (1984). The Sargan's Criterion can be established as:

$$S = [\text{RSS (L)} / \{\text{RSS (LL)} * \text{GM (DV)}\}]^n$$

Table 2 : Result of Sargan test

	RSS(L)	RSS(LL)	GM(DV)	N	S = [RSS (L)/{RSS (LL)*GM (DV)}]^n
GDP	2683532	0.97717	878.2825	21	2.49573E+73
GRGDP	1796579	0.9358	782.5385	21	1.53087E+71
RESERVE	4.61E+22	2.00227	1.14E+11	21	2.6924E+237
GDCF	228.598	0.17078	30.1962	21	3.80585E+34
EX	1.41E+11	1.47803	143024.9	21	2.0259E+122
IM	2.24E+11	1.54253	173838.5	21	2.2867E+124
EX RATE	806.794	0.05618	103.0433	21	1.06509E+45
INFL	46390.56	0.97807	130.362	21	6.01292E+53

Source: Author Compilation

According to the Sargan's Criterion, if the calculated 'S' value is greater than one (i.e., $S > 1$), the log-linear functional form is preferred over the linear functional form. On the other hand, when the calculated 'S' value is less than one (i.e., $S < 1$), the linear functional form is supposed to be the appropriate functional form between the two. Since the values of Sargan's test is more then 1, we will be using log linear function over linear function

Descriptive test

The descriptive statistics table below shows the summary of the variables used in the study to analyze the impact of FDI inflow form 1991-2015.

Table 3 : Descriptive Test

	FDI	LGDP	LGRGDP	IRESE	LGDCF	LEX	LIMP	LEXCH	LINFL
Mean	9.23	6.78	6.66	25.46	3.41	11.87	12.07	4.64	4.87
Median	8.94	6.73	6.58	25.65	3.47	11.95	12.11	4.60	4.76
Maximum	10.76	7.88	7.55	26.51	3.64	13.09	13.30	4.84	5.88
Minimum	7.67	5.90	5.56	23.85	3.09	10.55	10.78	4.53	4.21
Std. Dev.	1.12	0.65	0.65	1.01	0.18	0.96	0.96	0.09	0.44
Skewness	-0.06	0.16	0.09	-0.39	-0.23	-0.02	0.05	0.79	0.57
Kurtosis	1.34	1.53	1.61	1.51	1.48	1.40	1.35	2.43	2.57
Jarque-Bera	2.43	1.99	1.71	2.47	2.19	2.25	2.39	2.47	1.29
Probability	0.30	0.37	0.43	0.29	0.33	0.33	0.30	0.29	0.53
Sum	193.92	142.34	139.91	534.60	71.56	249.29	253.38	97.34	102.28
Sum Sq. Dev.	25.22	8.43	8.33	20.33	0.68	18.31	18.42	0.16	3.84

Source: Author Compilation

Correlation

The correlation table below shows the summary of the variables used in the study:

Table 4 : Correlation

	<i>FDI</i>	<i>GDP</i>	<i>GRGDP</i>	<i>Reserves</i>	<i>GDCF</i>	<i>Exports</i>	<i>Imports</i>	<i>Exchange</i>	<i>Inflation</i>
FDI	1								
GDP	0.84	1							
GRGDP	0.86	0.98	1						
Reserves	0.92	0.94	0.94	1					
GDCF	0.79	0.71	0.71	0.86	1				
Exports	0.87	0.98	1.00	0.95	0.74	1			
Imports	0.87	0.97	1.00	0.95	0.73	1.00	1		
Exchange	0.74	0.96	0.92	0.87	0.64	0.92	0.92	1	
Inflation	0.74	0.96	0.92	0.84	0.55	0.91	0.91	0.93	1

Source: Author Compilation

The correlation between FDI and GDP (0.84), GRGDP (0.86), Reserves (0.92), GDCF (0.79), Export (0.87), Import (0.87), Exchange Rate (0.74) and Inflation (0.74) has a positive correlation. On the other hand correlation among variables are also shows a positive correlation.

Table 5 : Regression Results (FDI as Independent Variable)

Variable	Coefficients	Standard Error	t-Statistics	P value	R2	F-statistic	Durbin-Watson stat
LGDP	0.543	0.045	12.037	0.00001***	0.88	144.90***	0.93
LGRGDP	0.541	0.044	12.255	0.00001***	0.88	150.19***	0.64
L Reserve	0.852	0.064	13.186	0.00001***	0.90	173.89***	1.03
LGDCF	0.142	0.018	7.544	0.00001***	0.74	56.91***	1.17
L Export	0.817	0.055	14.711	0.00001***	0.91	216.42***	0.90
L Import	0.818	0.056	14.418	0.00001***	0.91	207.90***	0.91
L Exchange rat	0.063	0.010	5.843	0.00001***	0.64	34.14***	0.98
L Inflation	0.336	0.045	7.457	0.00001***	0.74	55.60***	0.47

Source: Author Compilation

All the variables in the study have significant F value which shows the significance of the model. The value of R2 ranges between 0.64% to 0.91% which explains the how much various causes by independent variables in dependent. The analysis further reveals that the value of Durbin-Watson statistics is very low which signifies the existence of autocorrelation.

Unit Root Analysis

The table below is used to test the stationarity of data:

Table 6 : ADF Test at level

Particulars	At Level			
	t-Statistic	Critical Value		P- Value
LFDI	-0.978	1%	-3.808	
		5%	-3.020	
		10%	-2.650	
LGDPFC	0.754	1%	-3.808	0.99
		5%	-3.020	
		10%	-2.650	
LGRGDP	-1.224	1%	-3.808	0.64
		5%	-3.020	
		10%	-2.650	
L Reserve	-0.608	1%	-3.808	0.45
		5%	-3.020	
		10%	-2.650	
LGDCF	-1.15	1%	-3.808	0.67
		5%	-3.020	
		10%	-2.650	

L Export	-0.553	1%	-3.808	0.86
		5%	-3.020	
		10%	-2.650	
L Import	-0.445	1%	-3.808	0.88
		5%	-3.020	
		10%	-2.650	
L Exchange rate	-0.101	1%	-3.808	0.93
		5%	-3.020	
		10%	-2.650	
L Inflation	2.576	1%	-3.808	0.99
		5%	-3.020	
		10%	-2.650	

Source: Author Compilation

This test is applied to check data used in this research is stationary or non-stationary, and if it is non-stationary where it becomes stationary. Taking different logs or in difference levels data become stationary. All data used in the study are found stationary are level.

Pairwise Granger Causality Test

Granger causality test is used for testing of one variable whether it is useful in forecasting other variables. It shows that whether there is a relationship between dependent and independent variables or not.

Table 7 : Pairwise Granger Causality Test

Null Hypothesis:	F-Statistic	Prob.	Result
LGDP does not Granger Cause LFDI	6.81064	0.0086	Rejected
LFDI does not Granger Cause LGDP	0.45007	0.6465	Accept
LGRGDP does not Granger Cause LFDI	0.50862	0.612	Accept
LFDI does not Granger Cause LGRGDP	1.37659	0.2846	Accept
L Reserve does not Granger Cause LFDI	4.72096	0.0271	Rejected
LFDI does not Granger Cause L Reserve	1.64663	0.2279	Accept
LGDCF does not Granger Cause LFDI	7.31647	0.0067	Rejected
LFDI does not Granger Cause LGDCF	0.0131	0.987	Accept
L Export does not Granger Cause LFDI	3.43211	0.0612	Rejected
LFDI does not Granger Cause L Export	1.50229	0.2564	Accept
L Import does not Granger Cause LFDI	3.35458	0.0645	Rejected
LFDI does not Granger Cause L Import	1.39605	0.28	Accept
L Exchange rate does not Granger Cause LFDI	1.5478	0.247	Accept
LFDI does not Granger Cause L Exchange rate	1.77268	0.2059	Accept
L Inflation does not Granger Cause LFDI	1.42635	0.273	Accept
LFDI does not Granger Cause L Inflation	0.14654	0.865	Accept

Source: Author Compilation

The above table shows the Granger Causality test results. These are the Null hypotheses of the observations. If the probability is less than 5% i.e. $P < 5\%$ then we reject the null hypothesis. LFDI and LGDP, L Reserve, LGDCF, L Export, L Import hypothesis is rejected which means FDI and variables has unit directional causality where as LFDI and LGRGDP, L Exchange rate, L Inflation shows are independent to each other as change in one variable does not cause other to change.

Conclusion

In this paper an attempt has been made to find out the impact of FDI inflow on macroeconomic variables like Gross Domestic Product at Factor Cost, Growth Rate Gross Domestic Product at Factor Cost, Gross Domestic Capital Formation, Reserve, Export, Import Exchange rate, Inflation and FDI inflow in India. The result shows that there is significant relationship between FDI inflow and all variables selected in the study. The hypothesis states that FDI inflow does not have a statistically

significant impact on the variable used in the study but all hypotheses have been rejected as P value is less than 5%. Which means Inflow of FDI is do have impact on economy growth Hence we can conclude that FDI inflow have impact on economy growth of a country Mathiyazagan, (2005) while Lo, (2007).

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