Research Article

Relationship Between Foreign Direct Investments and Economic Growth of India: Empirical Evidence from India

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Abstract

Since 1991 Foreign Direct Investment(FDI) has been continuously contributing towards the economic development of Indian economy. On the basis of various literature review it can be said that foreign direct investment contributes positively towards growth domestic product(GDP) growth and employment generation in the developing countries like India. Therefore, the present study is conducted to analyse the role of the foreign direct investment on the economic growth of India for the sample period 1992 to 2019.In the study the economic growth is represented by the variables like gross domestic product(GDP) and employment generation in Indian for the time period 1992-2019. For the study various econometric tools like Augmented Dickey-Fuller(ADF) unit root test, Granger Causality test, Ordenary Least Square(OLS) regression method, Johansen Cointegration test and Error Correction test are applied. The ADF unit root test reflects that all three variables i.e GDP, FDP, and employment are stationary at 1st difference I(1). The result of Granger causality test between Foreign Direct Investment and Gross Domestic Product shows unidirectional causality from economic growth to foreign direct investment in India. But The Granger Causality test shows no casual relationship between foreign direct investment and employment generation. The OLS regression analysis shows a positive relationship between FDI and GDP in India with R square value 0.886177. But the relationship between FDI and number of employment generation is not significant as it has the P value 0.3559. Johansen Cointrgration Test shows a long run positive relation among GDP, FDI and employment generation as both trace statistic and eigen value statistic reject the null hypothesis at 5% level of significance. The result of Error Correction Model(ECM) shows that the speed of adjustment among the variables toward long run is 25.5 percent per year. As FDI has positive impact on the economic growth in India so the government of India should take various policies to attract the foreign investors to India and Increase the FDI inflows.

KEYWORDS: Employment, Economic growth, Foreign Direct Investment, India.

1.INTRODUCTION: Generally, the concept of FDI(Foreign Direct Investment) refers to an investment i.e , a controlling ownership in a trade in one country by a company or an individual investor in another country. According to Dr. RaguramRajan(Governor of RBI), Foreign Direct Investment is the safest form of financing as it is long term investment. Dr. Rajan also argued that the economy should more open up to Foreign Direct Investment. Foreign Direct Investment increases the efficiency in the economy as it increases the competition among the local firms.[15] The foreign direct investment is done on the production facilities , capital equipemnets etc. The role of Foreign Direct Investment o economic growth is now becoming one of the most debating concept in the world economy. The foreign direct investment promotes market size, generates employment opportunities, contributes towards balance of payments, increases capital formation, supplies new technologies and innovations and also contributes towards industrialization and over all economic growth in the developing countries like India. The global foreign direct investment have been raised from 239.414 billion USD in 1990 to 1.5 trillion USD in 2019. But after sudden hit of COVID 19 pandemic in world economy reduces the FDI by 35% in 2020 to 1trillion USD from 1.5 trillion USD in 2019, according to World Investment Report 2021 by UN Conference on Trade and Development(UNCTAD).[18]In India foreign direct investment was introduced by then Finance Minister Manmohan Singh in 1991 under the FEMA(Foreign Exchange Management Act). After the enactment of New Economic Policy, 1991 the Indian economy was liberalized, privatized

and globalised (LPG). The LPG leads to open the Indian economy which further encourages the foreign investors to increase their investment in India. So, after the adoption New Economic Policy ,1991 the inflows of foreign direct investment in India increased and which generated more than one crore jobs.[19]As per The World Investment Report 2021 by UN conference on Trade and Development (UNCTAD), India recorded the world's fifth largest position in Foreign Direct investment inflows. According to the report, Foreign Direct Investment inflows in India raised 27 percent to 64billion USD in 2020 from 51billion USD in 2019. This improvement of foreign direct investment inflowes in India is due to the increased demand for the Information and Communication Technology(ICT) during Pandemic period. According to the Department for Promotion of Industry and Internal Trade(DPIIT), India's Foreign Direct Investment inflows was 17.56 billion USD between April 2021 and June 2021. During April 2021 to June 2021 the automobile sector attracted the highest foreign direct investment inflow of USD 4.66 billion, followed by computer software and hardware sector (USD 3.06billion), service sector (USD 1.89 billion).[20]For the period April 2021 and June 20201, India recorded the highest FDI inflows from Singapure (USD 3.31 billion), followed by Mauritius (USD 3.29 billion), US (USD 1.95 billion) , Cayman Island (USD 1.32 billion) , Netherlands (USD 1.09 billion) , Japan(USD 539 million) and UK (USD 345 million). In state level, Karnataka records the highest Foreign Direct Investment inflows of USD 8.45 billion, followed by Maharashtra (USD 4.09 billion) , Delhi(USD1.95 billion) and Gujarat(USD765 million).[20]The developing countries like India always tries to attract the foreign investors by providing various incentives like tax exemption, providing subsidies etc. Recently, The government of India has taken various initiatives like relaxing foreign direct investment norms across sectors such as defense, PUS oil refineries, telecom, power exchanges and stock exchanges among others.[20] In the present paper the relationship among Foreign Direct Investment (FDI) , economic growth representiong by Gross Domestic Product (GDP) and employment generation in India is studied by applying regression analysis, Granger Causality and Cointegration test . The sample time period for the study is from 1992 to 2019.

2. LITERATURE REVIEWS:

Some reviews of literature on the impact of Foreign Direct Investment on economic growth are as followes-

Baharumshah A.Z & Thanoon M. A(2005) in their paper 'Foreign capital flows and economic growth in East Asian countries' found that Foreign Direct investment impact on economic growth both in short and long run. They suggest that the successful countries in attracting Foreign Direct Investment can finance more investments and grow faster than those that deter foreign direct investment.

Borensztein E, Gregorio J. D & Lee J.W(1995), in their working paper ' How does Foreign Direct Investment affect economic growth?' studied about the impact of foreign direct investment on economic growth in a cross-country regression framework by using the panel data on foreign direct investment flows from industrial countries to 69 developing countries for the two decates 1970-79 and 1980-89. In their study they found that foreign direct investment is an important vehicle for the transfer of technology , contributing relatively more to growth than domestic investment. Another importany findings of their study is that the effect of foreign direct investment on economic growth is dependent on the level of human capital available in the host country.They found a strong positive relationship between foreign direct investment and educational attainment level.

Chakraborty C and Basu P(2002), in their paper ' Foreign Direct Investment and growth in India: a cointegration approach' studies about the impact of Foriign direct investment on economic growth by using structural cointegration test and vector error correction model for the period 1974-1996. They found two way link between the foreign direct investment and economic growth.By using conintegration they explored long run relationship between foreign direct investment and gross domestic product in india. The result of their vector error correction model reveals that gross domestic product does not granger cause foreign direct investment , government's trade liberistion policy positively impact on foreign direct investment and also found that foreign direct investment in india is labour displacing.

Das G and Chaudhuri B R(2018), in their work ' Impact of FDI on Labour Productivity of Indian IT Firms: Horizontal Spillover Effects' studied about the impact of FDi on Indian IT sectors over the period 2002 to 2016.They considered capital intensity and labour quality as determinant of labour productivity of India IT firms. And they found that all the determinents have statistically positively impact on productivity of domestic IT firms.

Khandare Dr. VB(2016), in his paper ' Employment generation in India:Role of GDP and FDI' studied about the relationship between employment and GDP and employment and FDI for the period 2001 to 2012. He found

positive relationship between FDI and employment , and between Employment and GDP in India by using Ordinary Least Square(OLS) method.

Kirti R and Prasad S(2016) in their work 'FDI Impact on Employment Generation and GDP Growth in India' found a positive but weak relationship between GDP and FDI in India. But The relationship between the GDP and employment generation is positive with decreasing rate of growth of labour employment , capital intensive technology is become an important growth engine in India. They also concluded that if capital intensive technology is applied in agriculture sector then the contribution of this sector to Gross domestic product would increase.

Mehra N(2013) in his paper ' Impact of foeign direct investment on employment and gross domestic production' examines the relationship among FDI, GDP and employment generation in India for the time period 1970 to 2007. He used the multiple regression analysis to depict the relationship among the GDP, FDP and employment generation. The result of the regression analysis shows positive relationship between FDI and GDP but it did not show significant relationship between the FDI and employment.Mehra in his study found that India is estimated experience a growth of 23.6% with a 1% increase in the inflows of Foreign Direct investment.

Rizivi S Z and Nishat M(2009), in their paper ' The impact of foreign direct investment on employment opportunities: panel data analysis: Empirical evidence from Pakistan, India and China 'studied about the relationship among the foreign direct investment, gross domestic product and employment generation by using panel data from 1985 to 2008. The result of impulse response reveals that the growth elasticity of employment on average is extremely low in Pakistan, India and China. And they did not find any impact of FDI on employment opportunities in these three countries. According to the authors it may be due to the time lag as FDI can also have impact on employment through economic growth.

By observing the above literature review , it can be said that most of the literature reveals a positive relationship among foreign direct investment, economic growth and employment generation. Therefore, the present study make an attempt to examine the relationship among the FDI, GDP and employment generation in India during 1992 to 2019.

3. OBJECTIVE: The present study is based on the following objective-

- To analyze the relationship among the Foreign Direct Investment , Gross Domestic Product and number of employment generation in India during 1992-2019.

4. METHODOLOGY: This paper is solely based on the secondary data. These data are collected from World Bank Database and Reserve Bank of India(RBI) bulletin. The study is based on the time series data from 1992 to 2019. Various econometric tools like Augmented Dickey- Fuller(ADF) test, Granger Causality test, OLS regression test, Johensen Cointegration test and Error Correction Model(ECM) are used to study the relationship among FDI,FDI and employment generation india. All the test are conducted by using Eviews8 software.

5. RESULTS AND DISCUSSION:

5.1.STATIONARITY TEST BY ADF UNIT ROOT TEST:

In time series literature, most of the time series data are non- stationary. A time series data is called as non-stationary when it has time varying mean and variance. On the other hand, non-stationary time series data's mean and variance are constant over time. Regressing a non-stationary time series on other non- stationary time series results the problem of spurious or nonsense regression. That means the result of regression will be meaningless. The result of regression can show very high R square value. But in reality there is no meaningful relationship between the variables. So, before proceed to OLS (Ordinary Least Square), Cointegration test and Granger causality test in the time series data, it is very necessary to conduct stationary test. Here, in the study ADF (Augmented Dickey- Fuller) unit root test is conducted to test stationarity of the variables. The results of ADF unit root test of the variables are as follows-

Table 1-Result of ADF(Augmented Dickey-Fuller) unit root test-

variables	ADF t statistics	P value	stationarity
lngdp	-4.043766***	0.0046	I(1)
lnfdi	-5.371738***	0.0002	I(1)
lnemp	-4.670008***	0.0011	I(1)

Source: author's estimation.

*statistically significance at 10% level of significance.

**statistically significance at 5% level of significance.

***statistically significance at 1% level of significance.

Ho1: lngdp has unit root.

H02: lnfdi has unit root

Ho3: lnemp has unit root.

From the result of Augmented Dickey-Fuller(ADF) unit root test in table 1, it can be said that Gross domestic production, foreign direct investment and number of employment generation are stationary at 1st difference, I(1). These variables are non-stationary at their levels, I(0). The variables i.e, gross domestic product(GDP), foreign direct investment(FDI) and number of employment generation reject the null hypothesis that they have unit root(non-stationary) and becomes stationary at their 1st difference or integrated at 1st order, I(1).

5.2.GRANGER CAUSALITY TEST:

Granger causality test was first proposed by C.W.J Granger (1969) in his study "Investigating Casual Relations by Econometric Models and Cross – spectral Method". Granger causality test is statistical hypothesis test which is used to estimate whether one time series variable predicts another time series variable. In Granger Causality Test , one variable (X_t) is said to granger cause another variable(Y_t) if the lagged values of X_t can forecast Y_t and vice versa. The result of the Granger causality test between Foreign Direct Investment(FDI) and Gross Domestic Product (GDP) is as follows-

Table2- Granger Causality test-

Null hypothesis	F- statistics	Probability(p) value	Decision
Lnfdi does not Granger cause lngdp	2.21418	0.1341	accept
Lngdp does not Granger Cause lnfdi	3.82047	0.0385	reject

Source: authors estimation.

From the result of Granger Causality Test in table 4, between Foreign Direct Investment(FDI) and Gross Domestic Production (GDP) , it is seen that the null hypothesis (Lnfdi does not Granger cause gdp) in accepted. That means the changes in GDP does not forecast the changes in the FDI in India. But the null hypothesis , lngdp does not Granger cause lnfdi, is rejected. In the other word, the changes in the foreign direct investment in India can accelerate the gross domestic production or economic growth in India. Therefore, the Granger causality test result reflects unidirectional causality from economic growth to foreign direct investment in India.

Table 3_ Granger causality test

Null hypothesis	F- statistics	P value	Decision
Ln fdi does not Granger cause emp	2.02973	0.1564	accept
Ln emp does not Granger cause fdi	0.20772	0.8141	accept

Source: authors estimatin.

The table 4 shows that there is no causality between foreign direct investment and number of employment generation. Both null hypotheses are accepted. Therefore, according to the result of Granger causality changes in foreign direct investment do not impact on the number of employment generation in India and vice versa.

5.3.OLS (ORDINARY LEAST SQUARE) REGRESSION METHOD:

In this study to the Ordinary Least square (OLS) technique is applies to know whether there is any relationship among the variables (Foreign Direct Investment, Gross Domestic Production and number of employment generation in India). The result of OLS estimation is presented as follows-

Table 4: Result of OLS estimation

Independent variable	Dependent variable is ln gdp				
	Coefficient	Standard error	t statistics	Probability value	R^2
Ln fdi	0.325	0.0228	14.22761	0.0000	0.886177
	Dependent variable is lnemp				
Ln fdi	0.383	0.407	0.939936	0.3559	0.032863

Source:authors estimation.
Ho: There is no relationship between the variables.
H_1: There is relationship between the variables.

In this study the OLS (Ordinary Least Square) method is applied for the following two simple regression equation equation-

$lngdp_t = \alpha + \beta\ lnfdi$ ……1

$lnemp_t = \alpha + \beta\ lnfdi$……..2

Here gdp = Gross domestic product of India.
fdi= Foreign direct investment in India.
emp= Total number of employment in India.

By running the OLS method in equation (1) obtained the following regression equation-
lngdp= 390.8365 + 0.325 lnfdi ………3

From the table 4 it can be said that the result of the OLS estimation of equation (1) reject the null hypothesis i.e., there is positive relationship between GDP(Gross Domestic Product) and FDI(Foreign Direct Investment). From the equation it can be said that 1 unit increase in GDP will lead to increase 0.325 unit of FDI. But according to the result of the OLS estimation on the equation (2) accept the null hypothesis that is there is no relationship between FDI and employment generation in India.

5.4.JOHANSEN COINTEGRATION TEST:

According to Granger, "A test for cointegration can be thought of as a pre-test to avoid 'spurious regression situation' situation."(Granger C. W. J, 1986). Cointegration is used to test the long run or equilibrium relationship between two or more time series variables. That means cointegration is regression of a unit root time series on another unit root time series. The cointegration test reveals that whether there is a group of non- stationary variables are cointegrated or not. In the present study cointegration test is used to determine whether there is any long run relationship among the Gross Domestic product (GDP), Foreign Direct Investment(FDI) and employment generation in India. The equation for the test can be write as-

$Lngdp_t = \alpha + \beta_1\ lnfdp_t + \beta_2\ lnemp_t + u_t$.............(4)

Here, β_1 and β_2 are coefficients. α represents intercept term. u_t is the error term of the model and t represents time. The variables will be cointegrated if they are co integrated of order one, I(1) (non- stationary) and the linear combination of them is stationary at levels,I(0). By testing the unit root test of ADF(Augmented Dickey- Fuller) test ,obtained that

the independent variables i.e, Foreign Direct Investment(FDI) and employment generation (EMP) are stationary at 1st difference, I(1) and error terms or residuals u_t are stationary at levels, I(0). Therefore, the regression of GDP(Gross Domestic Product) on FDI(Foreign Direct Investment) and employment generation is not spurious, i.e, the regression would be meaningful. So, it can be said that the cointegration among the variables on long run relationship exist. In this study the Johansen cointegrtion test is conducted to determine the number of cointegrated vectors for any given number of non-stationary variables of the same order.

Table 5: Johansen Cointegration Test

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.642281	40.40174	29.79707	0.0021
At most 1	0.380840	14.70158	15.49471	0.0656
At most 2	0.102975	2.716791	3.841466	0.0993

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.642281	25.70016	21.13162	0.0106
At most 1	0.380840	11.98479	14.26460	0.1112
At most 2	0.102975	2.716791	3.841466	0.0993

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: authors own estimation.
Ho:Has no cointegration. H1: has cointegration.

Both trace statistic and eigen value statistic reject the null hypothesis at 5% level of significance.. That means there is cointregation among GDP, FDI, and employment variables.

The normalized cointegrating equation = Lngdp+ 0.221lnfdi + 744.58 lnemp……… (5)

The equation (5) shows a long run positive relationship among the variables. From the equation (5) it can be said that FDI (Foreign Direct Investment) and employment generation has a positive significant impact on Gross Domestic Product of India. Therefore, it can be concluded that Johansen Cointrgration Test shows a long run positive relation among GDP, FDI and employment generation.

5.5. ERROR CORRECTION MODEL(ECM):

Sargan(1984) used the Error correction model for the first time in his work " Wages and Prices in the United Kingdom: A study in Econometric Methodology" . Later the ECM was popularized by Engel and Granger. According to an important theorem, known as Granger representation theorem, if two time series are cointegrated then the relationship between the two series can be considered as Error correction mechanism. That means there is short run adjustment mechanism between the two time series. The cointegration test shows only long run relationship between the variables. But Error Correction Model is used to estimate both the short run and long run effects of one time series on another time series. The error correction term (ECT) represents the changes in the long run equilibrium in the

previous year influences its short run dynamics. Therefore, the ECM estimates the adjustment towards long run equilibrium. That is ECM estimates at what speed the dependent variable again return to equilibrium after facing a shock in the other variables of the model.

Table 6: Result of Error Correction Model

Dependent Variable: D(LNGDP)
Method: Least Squares

Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	58.03484	16.67879	3.479560	0.0020
D(LNFDI)	3.08E-09	2.90E-09	1.064475	0.2982
D(LNEMP)	278.4913	149.8763	1.858141	0.0760
ECM(-1)	-0.254833	0.098539	-2.586112	0.0165
R-squared	0.242888	Mean dependent var		60.24255
Adjusted R-squared	0.144135	S.D. dependent var		89.18720
S.E. of regression	82.50974	Akaike info criterion		11.79966
Sum squared resid	156580.7	Schwarz criterion		11.99164
Log likelihood	-155.2955	Hannan-Quinn criter.		11.85675
F-statistic	2.459537	Durbin-Watson stat		2.015003
Prob(F-statistic)	0.088368			

Source: authors own estimation.

In the present study the ECM can be built as-

$$dlngdp_t = \alpha + \beta_1\, dlnfdi_t + \beta_2\, dlnemp_t + \gamma\, ect_{t-1} + u_t$$

Here β_1 and β_2 shows the short run coefficients .u_t represents white noise error term of the model. ECT is error correction term. If γ is negative and significant , then the model will adjust towards long run . γ is negative because there is a negative relationship between the change in dependent variable and lag error term. The model can face any shock. So, the equilibrium value may change which leads to changes in equilibrium error term. The ECT shows at what speed equilibrium is again achieved. Now run the short run model with the lag ECT as an independent variable. From the result of table 6 , it is seen that the ECT is 0.255 , which shows the speed of adjustment towards equilibrium. Here the speed of adjustment toward long run is 25.5 percent per year.

6. CONCLUSION: From the above study it can be conclude that there is positive significant relationship between Gross Domestic Product and Foreign Direct Investment India for both short run and long run. But impact of Foreign Direct Investment on employment generation is insignificant in short run. The result of Johansen Cointegration test shows long run positive relationship among Foreign direct investment, gross domestic product and employment generation during the time period 1992-2019. And also Error Correction Term (ECT) is statistically significant and has a negative sign. This reflects that there is not any problem in the long run equilibrium relationship among the variables. In Error Correction Model(ECM) the speed of adjustment among the variables toward long run is 25.5 percent per year. To increase the employment generation in the country the government of India should provide proper education and training to make the manpower eligible to work in various multinational companies (MNC's). And also to attract the foreign investors to make investment in India, government should provide favorable environment, proper infrastructure facilities , subsidies and tax relaxation etc.

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