Effect Of Foreign Direct Investment (FDI) On The Economic Development Of India

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ABSTRACT

In the recent times, there is a growing importance for Foreign Direct Investment (FDI). FDI is playing a vital role in filling investment gaps in various key sectors of the developing countries. Policy makers of many emerging countries have recognized the need for change in their policy frameworks to give a boost to foreign investment. In the present study, influence of FDI on economic development of India has been studied by employing simple OLS Regression and Autoregressive Integrated Moving Average (ARIMA) method. The study covers a period from 1st June, 1997 to 31st March, 2011. Index of Industrial production is used as a proxy of economic development. Monthly data of Foreign Direct Investment (FDI) and Index of Industrial Production (IIP) were collected from various issues of Reserve Bank's Hand Book of Statistics. Pearson's Correlation Coefficient results show strong association between FDI and IIP. Results of Ordinary Least- Squares Regression points out the significant influence of foreign investment on economic development of the country. Results of ARIMA also confirm that FDI has a significant impact on the economic development of the country.

Keywords : Foreign Direct Investment (FDI), Index of Industrial Production (IIP), Economic Development, ARIMA
JEL Classification: C22, F21, F23, F43, O47

INTRODUCTION

Foreign Direct Investment (FDI) plays a key role in building national capabilities. Developing countries, like India, are experiencing wide gaps between investment needs and domestic capital formation. FDI is considered as the best complement to domestic capital formation in such countries. FDI creates long-term and substantial impact on the economic development of a country. It helps in the transfer of technology and improving managerial capabilities. It also enhances competitiveness to the country's exports in the international markets. Unemployment, which is the main problem in many developing countries, can be reduced by inviting FDI to a country, as FDI results in additional job opportunities for the citizens of the host country. Many of the developing countries recognized the need for FDI and they liberalized their policies relating to foreign investments. Role of FDI in economic growth can be extensively observed in India and China, the world's two most populous growing economies and these countries treat FDI as a stimulus in the growth process. From World War II through the 1980s, many developing countries imposed restrictions on FDI, because they believed that FDI would hurt local economies. However, since late 1980s, the attitude of emerging countries towards FDI changed. They realized the need for FDI in filling the gaps in investment requirements in various key infrastructure areas like power generation, telecommunication, etc. The developing countries also recognized that without importing key technology from the developed countries, increasing the productivity to meet growing demands in the country is very difficult. Many regional blocks like ASEAN, SAARC, etc. have been formed by the developing countries to remove the barriers for foreign investments among themselves.

INDIA AND ITS FDI POLICY

Government of India has initiated a liberal, transparent and investor-friendly FDI policy. The new FDI policy allows for 100% FDI on the Automatic Route in most of the sectors. The Automatic Route involves notifying the RBI within 30 days of the inward remittance receipt, and filing the required documents within 30 days of issue of shares to foreign investors. Proposals not falling on the Automatic Route are considered by the Foreign Investment Promotion Board (FIPB). In a few sectors, some restrictions are imposed on FDI like maximum ceiling on equity investment, divestment conditions, minimum capitalization, lock-in period, etc. Such restrictions are imposed keeping in view the sectoral policies and security concerns. FDI is not permitted only in a few sectors like Agriculture, Plantation, Real Estate etc. The government has extended some concessions, especially for NRIs and Overseas Corporate Bodies having more than 60% stake by the NRI. These include 100% FDI in real estate and housing sectors; 100% FDI in

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domestic airlines sector; 40% FDI in the banking sector. Such facilities are not available to other persons. The FDI policy is reviewed on an ongoing basis, and appropriate liberalization measures are taken accordingly.

FOREIGN DIRECT INVESTMENT IN MULTI-BRAND RETAILING – ITS PROS AND CONS

In the context of high economic growth and increased consumer population, since the last five years, retail business in India is hailed as the sunrise sector for the economy of India. Modern retailing , which focuses mainly on end-to-end integration is changing the supply chain environment and is serving customer needs in a better way. Agriculture marketing in India has major drawbacks in the form of lack of cold storage facilities, key role of middlemen, lack of transportation facilities and no proper insurance schemes for risk faced by farmers and so on. FDI in multi-brand retailing will help the growth of agriculture marketing immensely, because when FDI is allowed in multi-brand retailing, it can be channelized to provide modern sophisticated cold storage units for agriculture produce. Farmers will get good marketing facilities for their products. International experience shows that FDI in multi-brand retailing would help in providing benefits like organized supply chains, and it will also reduce wastage and provide better prices both to the farmers and the consumers. Multi-brand retail giants like Wal-Mart want to enter India, but political agitation against FDI in multi-brand retailing is preventing them from making direct investment in the Indian multi-brand retail market. In the present era of high inflation, it is increasingly becoming extremely difficult for the middle class and the poor people to manage their livelihood within their monthly incomes. Their major share of income has to be spent for purchasing necessary grocery items and clothing only. Countries like India can enjoy real benefits of FDI in multi-brand retailing only when it will bring net gain to consumers and farmers in the form of better price to both the consumers and the farmers. The entry of multi-brand retail companies in India would transform the Indian retail market from its present unorganized form to an organized and end-to-end integrated form of retailing.

LITERATURE REVIEW

Velde (2006) studied the role of FDI in development of a country. He observed that while FDI is superior in terms of capital and technology, spillovers to local economic development is not automatic. He suggested that the government of host countries should frame appropriate policies to get maximum benefits from FDI. He also concluded in his study that the governments are realizing the need to bring about a change in their policies to influence the effect of FDI on development.

Nourbakhshian et al. (2012) have observed that FDI has promoted economic development in a number of developing countries, especially India and China. They also observed that policy makers in a large number of countries are considering providing various incentives to attract FDI. They concluded that policy makers have liberalized the FDI norms in many countries, but still, many countries are lagging in framing a comprehensive FDI policy for the development of their economy.

Uttama et al. (2012) have investigated the economic growth of ASEAN Countries. Using panel data of four ASEAN countries between 1981 - 2009 and applying the spatial panel data mode, the study found that inward FDI and Financial crisis are important for growth in the ASEAN. They concluded that the more deepening is the economic integration, the higher the economic development would be, but it seldom finds strong evidence on the spatial effects of FDI inflows and financial development on the ASEAN's growth.

Anwar et al. (2010) and others examined the impact of FDI on economic growth in 61 provinces of Vietnam by applying a simultaneous equation model. Their results disclosed that there was a two-way linkage between FDI and economic growth in Vietnam, but it was not the case with each and every province in Vietnam. The results of the study suggested that the outcome of FDI in the country will be more fruitful if the FDI is attracted to key areas like education and training, financial markets development and in reducing the technology gap between local firms and the foreign firms.

OBJECTIVES OF THE STUDY

The main objective of the present study is to assess the impact of Foreign Direct Investment (FDI) on the economic development of India. In the present research, an attempt has been made to build a suitable model under

Autoregressive Integrated Moving Average Method (ARIMA) for estimating future values of Index of Industrial Production (IIP), which is used as a proxy for economic development of the country.

HYPOTHESES OF THE STUDY

❖ **Null Hypothesis (H_0) : Foreign Direct Investment (FDI) does not influence the economic development of the country.**

❖ **Alternative Hypothesis (H_1) : Foreign Direct Investment (FDI) influences the economic development of the country.**

DATA DESCRIPTION

Index of Industrial Production (IIP) is used as a proxy for economic development of the country. Monthly data on Index of Industrial Production (IIP) and Foreign Direct Investment (FDI) were collected from various issues of RBI Handbook of Statistics. The period of the study is from 1st June, 1997 to 31st March, 2011.

METHODOLOGY OF THE STUDY

Monthly values of IIP and FDI were converted into natural logarithmic values. Descriptive Statistics like Minimum, Maximum, Mean, Standard Deviation, Skewness and Kurtosis were computed to study the characteristics of the variables. Simple Ordinary Least Squares (OLS) regression equation has been estimated by taking natural logarithmic values of IIP (LNIIP) as the dependent variable and natural logarithmic values of FDI (LNFDI) as the independent variable. Since most of the time-series data suffers from Autocorrelation and Heteroscedasticity, simple OLS regression equation will provide spurious results, if autocorrelation is present in the series. Hence, Ljung Box Q test was employed to study the presence of autocorrelation in the series of LNIIP. After confirmation of the presence of autocorrelation in the series of LNIIP, Autoregressive Integrated Moving Average Method (ARIMA) was used to capture the impact of LNFDI on LNIIP.

AUTOREGRESSIVE INTEGRATED MOVING AVERAGE METHOD (ARIMA)

ARIMA has three basic components i.e., Autogression (AR), differencing or integration (I) and Moving-Average (MA). All the three are based on the simple concept of random disturbances or shocks.
ARIMA model is classified as an "ARIMA (p,d,q)" model, where:

❖ **p** is the number of autoregressive terms,
❖ **d** is the number of non seasonal differences, and
❖ **q** is the number of lagged forecast errors in the prediction equation.

❖ **Auto - Regression :** In an Autoregressive (AR) Process, each value in a series is a linear function of one period lagged value or values. In the first-order autoregressive process, only the single preceding value is used and in the second order process, the two preceding values are used and so on.

$$\mathbf{X}_t = \zeta + \phi_1 \mathbf{X}_{t-1} + \phi_2 \boldsymbol{X}_{t-2} + \ldots\ldots\ldots\ldots\ldots \varepsilon \qquad \ldots\ldots\ldots\ldots \textbf{(1)}$$

In equation 1, X_t indicates observed value at time t, ζ refers to constant, ϕ refers to Parameters, and ε denotes noise.

❖ **Differencing (Integration) :** The common characteristic of many time series data is non-stationarity. Non-stationarity refers to not having a constant mean and variance throughout the period. In other words, mean and variance will change as the time period changes. Hence, in the present study, stationarity of the data series is tested by applying Augmented Dickey-Fuller test (ADF). If the data is not stationary at the level form, first differencing or second differencing will be made to make the data series stationary and accordingly, the order of differencing is decided.
ADF requires running a regression of the first difference of the series against the series lagged once, lagged difference terms, and a constant and a time trend. The equation of ADF test is as follows :

$$\Delta x_t = \lambda_0 + \lambda_1 X_{t-1} + \lambda_2 T + \sum \lambda_i \Delta x_{t-1} + \varepsilon_t \; i=1 \; \ldots\ldots\ldots\ldots k \qquad \ldots\ldots\ldots\ldots (2)$$

In equation 2, Δ is the first difference operator, ε is an error term, and k is the number of lagged first difference terms and λ is the parameter.

❖ **Moving Average :** The Moving Average (MA) component of an ARIMA model tries to predict future values of series based on deviations from the series mean observed for previous values. In a moving average process, each value is determined by the weighted average of the current disturbance and one or more previous disturbances. The equation of moving average is as follows.

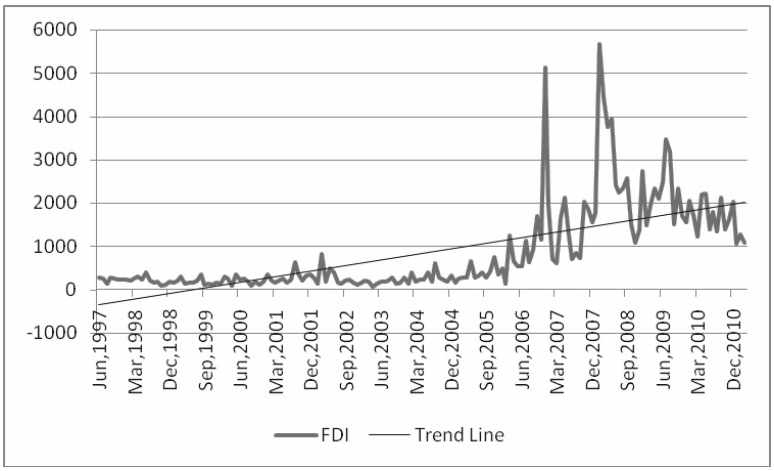
$$X_t = \mu + \varepsilon_t - \theta 1 \varepsilon_{t-1} - \theta_2 \varepsilon_{t-2} - \ldots\ldots\ldots\ldots\ldots (3)$$

In equation 3, μ is the constant, θ is the parameter and ε is noise.

❖ **Model Identification And Estimation :** At the first instance, order of integration of LNIIP was found out by applying the ADF test. As the data is integrated at the second order, i.e., I(2), Autocorrelation Function (ACF) and Partial Autocorrelation Function(PACF) of second order LNIIP was examined. Since, 'p' in ARIMA (p,d,q) measures the order of autoregressive component, and to get an idea of what orders to consider, partial autocorrelation function was examined. The 'q' measures the order of the moving average component. To get an idea of what orders to consider, the autocorrelation function was examined.

ANALYSIS AND RESULTS

Figure 1: Trend of FDI Inflows To India

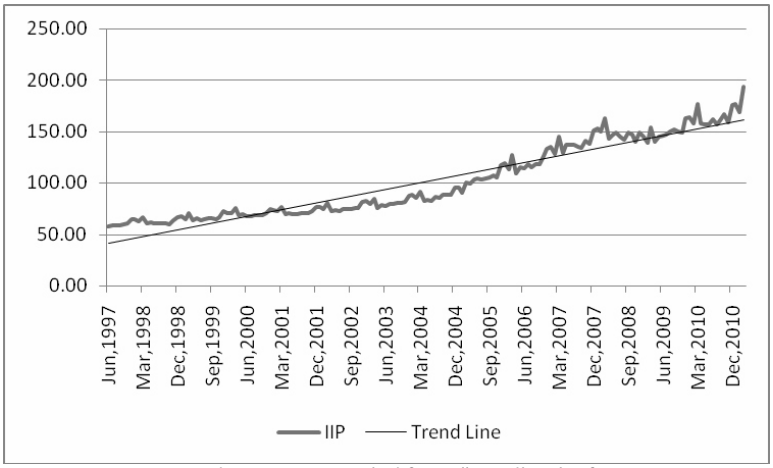


Source: Based on Data compiled from "Handbook of Statistics on the Indian Economy", RBI- various issues

❖ **Trend of FDI Inflows To India :** The Figure 1 depicts the monthly FDI inflows to India from 1st June, 1997 to 31st March, 2011. As shown in the Figure 1, from the beginning of the period until June 2006, there was nominal growth in the FDI inflows to India. Thereafter, FDI inflows to India have exhibited greater fluctuations. Highest FDI inflow was recorded in February 2008 at USD 5670 million. Second and third FDI inflows to India were recorded in the months of December 2006 and March 2008 at USD 5130 million and USD 4438 millions respectively. Lowest FDI inflow was recorded in the month of April 2003 at USD 58 million and the second lowest FDI inflow was recorded in the month of October 1998 at USD 75 million. The highest surge in FDI inflows was recorded in the month of March 2006, which was nearly 9 times higher than its previous month's inflows. The second highest growth in FDI inflows was recorded in the month of March 2002, which was nearly 5 times higher than its previous month's inflows. Nearly 3 times growth in FDI was recorded in the month of December 2006 and May 2000 as compared to their previous month's inflows. Greatest downfall in FDI inflows was recorded in the month of April 2002 at nearly 78% compared

to its previous month's inflows. The second highest downfall was recorded in the month of February 2006 at nearly 74% as compared to its previous month's inflows.

Figure 2: Trend of IIP In India



Source: Based on Data compiled from "Handbook of Statistics on the Indian Economy", RBI- various issues

❖ **Index of Industrial Production (IIP) :** The Figure 2 presents monthly values of Index of Industrial Production (IIP) from 1st June, 1997 to 31st March, 2011. As shown in the Figure 2, IIP is showing a continuous upward trend. From the beginning of the period till June 2000, IIP was above the estimated trend line. From July 2000 to December 2005, IIP was below the estimated trend line. Thereafter, the actual IIP was very close to the estimated trend line of IIP. The highest growth rate of IIP at nearly 15% was recorded in the month of March 2011, followed by March 2007 and March 2006 at nearly 13%. The highest downfall in IIP was recorded at nearly 14% in the month of April 2006 followed by April 2008 at nearly 12%.

Table 1: Descriptive Statistics

Statistic	FDI	IIP	LNFDI	LNIIP
Range	5612	135.883	4.583	1.216
Minimum	58	57.217	4.06	4.047
Maximum	5670	193.1	8.643	5.263
Mean	839.04	101.618	6.112	4.559
Std. Deviation	1017.9	36.659	1.099	0.352
Variance	1036120.12	1343.853	1.207	0.124
Skewness	2.084	0.546	0.459	0.278
Kurtosis	5.099	-1.157	-1.033	-1.43
No. of observations				
Source : Author's Calculations				

❖ **Descriptive Statistics of FDI And IIP :** The Table 1 presents the descriptive statistics of Index of Industrial Production (IIP) and Foreign Direct Investment (FDI). Average FDI during the period was nearly USD 839 million, with a standard deviation of nearly USD 1018 million. Average natural logarithmic value of FDI (LNFDI) is 6.112, with a standard deviation of 1.099. Average IIP is nearly 102, with a standard deviation of nearly 37. LNIIP is 4.559, with a standard deviation of 0.352. Skewness of the distribution is positive in the case of both FDI and IIP, indicating longer right tail and more number of lower values in the distribution. Leptokurtic distribution(k>3) of FDI points out

that values in the distribution are quite closer to their mean, indicating lesser erratic swings in the distribution of the series. However, distribution of LNFDI is showing negative kurtosis, which is called platykurtic distribution of data, and it indicates that the data is less concentrated around its mean due to large variations within observations. It indicates that in absolute terms, there are less fluctuations in FDI data distribution, but when compounding effect of changes in FDI growth is considered, there are more variations in FDI data distribution. Distribution of IIP and LNIIP is also platykurtic, indicating more erratic swings in the distribution of the data series.

Table 2: Correlation Between IIP And FDI

	Pearson's Correlation	'p' Value
Correlation between FDI and IIP	0.747	0.001
Correlation between LNFDI and LNIIP	0.862	0.001
Source : Author's Calculations		

❖ **Correlation Between Index of Industrial Production (IIP) And Foreign Direct Investment (FDI) :** The Table 2 presents Pearson's Correlation Coefficient between FDI and IIP and between LNFDI and LNIIP. Correlation between FDI and IIP is 0.747, which is significant at 1% ($P<0.01$). Correlation between LNFDI and LNIIP is 0.862, which is also significant at 1% ($P<0.01$). It clearly indicates a strong association between foreign direct investment and economic development of the country.

Table 3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.862	0.744	0.742	0.179
a Predictors: (Constant), LNFDI				
Source : Author's Calculations				

❖ **Estimation Of Simple OLS Regression Equation By Taking LNIIP As A Dependent Variable And LNFDI As An Independent Variable :** The Table 3 displays R, R squared, adjusted R squared, and the standard error. R represents the correlation between the observed and predicted values of the dependent variable. In the present case, R value is 0.862, which indicates strong correlation between the observed and predicted values of the LNIIP. R squared is the proportion of variation in the dependent variable explained by the regression model. In the present case, R-squared value is 0.744, which implies that nearly 74% of the variation in the LNIIP can be explained by the fitted regression model. Adjusted R squared attempts to correct R squared to more closely reflect the goodness of fit of the model in the population. Difference between R-squared and adjusted R-squared is negligible. So, the present regression model closely reflects its goodness of fit in the population. Standard Error is 0.179, which reflects standard deviation of the residuals obtained from the regression equation estimation.

Table 4: Analysis of Variance (ANOVA)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15.203	1	15.203	475.740	.000
	Residual	5.241	164	.032		
	Total	**20.444**	**165**			
a. Predictors: (Constant), LNFDI						
b. Dependent Variable: LNIIP						
Source : Author's Calculations						

The Table 4 presents the results of Analysis Of Variance (ANOVA). The sum of squares, degrees of freedom and mean square are shown for two variables i.e., regression and residual. The output for the Regression presents information

about the variation captured by the model. The output for Residual presents information about the variation that is not accounted for by the model. In the present case, regression sum of squares is 15.203, whereas, the residual sum of squares is 5.241.It clearly indicates that nearly 3/4th of the total variation in the dependent variable can be captured by the model. F –statistic tests the null hypothesis that independent variables do not explain the variation in the dependent variable or the proposed regression model does not fit the data well. In the present case, the null hypothesis is rejected and alternative hypothesis is accepted, inferring that the proposed regression model fits the data well (P<0.01).

Table 5 : Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t-statistic	Sig.
		Beta	Std. Error	Beta		
1	(Constant)	2.870	0.079		36.494	0.001
	LNFDI	0.276	0.013	0.862	21.811	0.001
a Dependent Variable: LNIIP						
Source : Author's Calculations						

The Regression equation has been estimated by taking LNIIP as the dependent variable and LNFDI as the independent variable. Beta coefficients in the regression equation indicate a change in the dependent variable due to a unit change in the independent variable. The unstandardized coefficients are the coefficients of the estimated regression model. When independent variables are measured in different units, standardized coefficients should be used, because the standardized coefficients or betas are an attempt to make the regression coefficients more comparable. In the present case, only one independent variable is used, and hence, the unstandardized coefficients are considered for the estimation of the regression equation. Comparatively higher value of coefficient of constant indicates that there are many other exogenous variables which can influence the LNIIP apart from LNFDI. Beta coefficient of LNFDI is 0.276 (Table 5), which indicates that one unit increase in LNFDI will lead to nearly 0.28 times increase in LNIIP. T-statistic tests the null hypothesis that the variables present in the model does not exhibit significant influence on the dependent variables. The analysis reveals that constant and LNFDI exert a stronger influence on the LNIIP (P<0.01) .

STUDY OF THE IMPACT OF FOREIGN DIRECT INVESTMENT ON ECONOMIC DEVELOPMENT OF THE COUNTRY BY APPLYING AUTOREGRESSIVE INTEGRATED MOVING AVERAGE METHOD (ARIMA)

❖ **Identification of The Model :** It involves identifying the order of three basic components of ARIMA (p, d, q).

Table 6: ADF Test Results At Level Form of LNIIP
Lag Length: 13 (Automatic Based On SIC, MAXLAG=13)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.160610	0.5076
Test critical values:	1% level	-4.019561	
	5% level	-3.439658	
	10% level	-3.144229	
Source : Author's Calculations			

Table 7: ADF Test Results At First Differenced Form Of LNIIP Lag Length: 11 (Automatic based on SIC, MAXLAG=13)			
		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.170788	0.0943
Test critical values:	1% level	-4.019151	
	5% level	-3.439461	
	10% level	-3.144113	
Source : Author's Calculations			

❖ **Step 1 : Identification of Order Of Integration Or Differencing :** To identify the order of integration of LNIIP, Augmented Dickey Fuller (ADF) test has been employed. Since the chart of LNIIP shows an upward trend in the given period, ADF test equation includes intercept and trend. Schwarz information criterion is used to decide the appropriate lag length. The results of the tests are presented in the Table 6.

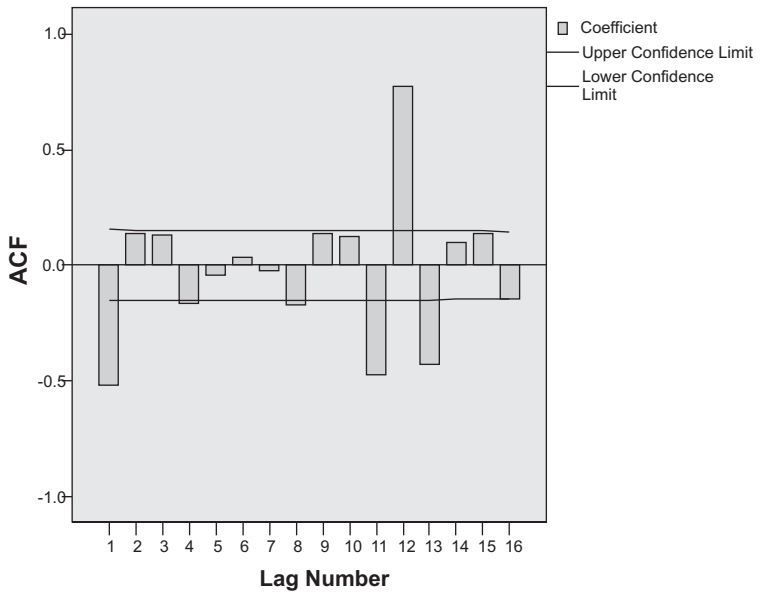
Table 8: Autocorrelation Function of First Differenced LNIIP					
Lag	Autocorrelation	Standard Error	Box-Ljung Statistic		
			Value	df	Sig.(b)
1	-.518	.077	45.017	1	.000
2	.138	.077	48.249	2	.000
3	.129	.077	51.087	3	.000
4	-.164	.076	55.694	4	.000
5	-.043	.076	56.018	5	.000
6	.037	.076	56.258	6	.000
7	-.023	.076	56.348	7	.000
8	-.174	.075	61.639	8	.000
9	.136	.075	64.901	9	.000
10	.123	.075	67.609	10	.000
11	-.476	.075	108.094	11	.000
12	.772	.075	215.488	12	.000
13	-.431	.074	249.090	13	.000
14	.102	.074	250.982	14	.000
15	.135	.074	254.355	15	.000
16	-.148	.074	258.409	16	.000
a The underlying process assumed is independence (white noise).					
b Based on the asymptotic chi-square approximation.					
Source : Author's Calculations					

❖ **Null Hypothesis :** LNIIP is not stationary at its level form.

❖ **Alternative Hypothesis :** LNIIP is stationary at its level form.

The ADF test has been performed at a maximum lag length of 13 as per Schwarz's information criterion. As shown in the Table 5, calculated value of the t-test statistic is less than the critical values, and hence, the null hypothesis is accepted at 10% level of significance, inferring that the LNIIP is not stationary at their level form. Since the data series is not integrated at their level form, first differenced LNIIP is used to compute ADF tests and the results of the tests are presented in the Table 7.

Figure 3 : Autocorrelation Function



Source : Author's Calculations

❖ **Null Hypothesis :** LNIIP is not stationary at the First Differenced form.

❖ **Alternative Hypothesis :** LNIIP is stationary at the First Differenced form.

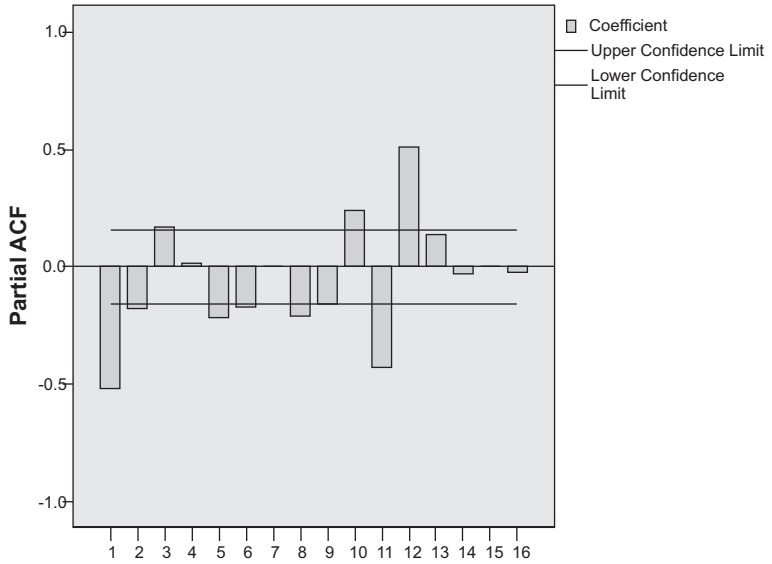
As shown in the Table 6, calculated value of t-test statistic is more than the critical values, and hence, the null hypothesis is rejected at 10% level of significance, concluding that LNIIP is stationary at its First Differenced form. Since the data series has become stationary at its first differenced form, it is said that the data is integrated at the first

Table 9: Partial Autocorrelation Function of Second Differenced LNGDP

Lag	Partial Autocorrelation	Std.Error
1	-.518	.078
2	-.177	.078
3	.172	.078
4	.014	.078
5	-.214	.078
6	-.168	.078
7	.001	.078
8	-.208	.078
9	-.156	.078
10	.240	.078
11	-.427	.078
12	.513	.078
13	.136	.078
14	-.030	.078
15	.006	.078
16	-.022	.078

Source : Author's Calculations

Figure 4: Partial Autocorrelation Function



Source : Author's Calculations

order i.e., I(1). Hence, one component of ARIMA, i.e., differencing (d) is at order '1'.

❖ **Step 2: Identification of The Order of 'Moving Average' and 'Autoregression' :** In order to find out the order of Moving Average, Autocorrelation function (ACF) of the LNIIP at its first differenced form is examined. The results of the ACF are given in the Table 8.

Table 10: Parameter Estimates Under ARIMA (2,1,1,)

		Estimates	Std Error	t-statistic	Approx Sig
Non-Seasonal Lags	AR1	-1.617	.007	-240.063	.000
	AR2	-.617	.005	-115.413	.000
	MA1	-.995	.150	-6.650	.000
Regression Coefficients	LNFDI	.013	.006	2.074	.040

Source : Author's Calculations

❖ **Null Hypothesis** : LNIIP at its first differenced form is randomly distributed.

❖ **Alternative Hypothesis**: LNIIP at its first differenced form is not randomly distributed.

In the Table 8, Box- LJung Statistic tests the null hypothesis of randomness of the data series. In the present analysis, the null hypothesis is rejected and alternative hypothesis is accepted ($P<0.01$) at 1% level of significance, inferring that LNIIP at its first differenced form is not randomly distributed. The Figure 3 depicts lag numbers on 'x' axis and coefficient of Autocorrelation function on 'y' axis. The two horizontal lines above and below the line are upper confidence limit and lower confidence limit respectively.

❖ **Deciding The Order Of Moving Average (q):** The autocorrelation function exhibits significant peaks at lags 1. There are significant peaks at lag 11 to lag 13 (Table 9) also, but these can be ignored. So, the order of moving average (q) is 1. The Figure 4 depicts lag numbers on 'x' axis and coefficient of Partial Autocorrelation Function (PACF) on 'y' axis. The two horizontal lines above and below the line are upper confidence limit and lower confidence limit respectively.

Table 11: Autocorrelation of Errors Computed Under ARIMA (2,1,1)					
Lag	Autocorrelation	Standard Error	Box-Ljung Statistic		
			Value	df	Sig.
1	-.014	.077	.033	1	.856
2	-.084	.077	1.235	2	.539
3	.242	.077	11.221	3	.011
4	-.275	.076	24.150	4	.000
5	-.183	.076	29.947	5	.000
6	-.014	.076	29.981	6	.000
7	-.163	.076	34.611	7	.000
8	-.256	.075	46.079	8	.000
9	.245	.075	56.655	9	.000
10	-.076	.075	57.681	10	.000
11	-.092	.075	59.186	11	.000
12	.692	.075	145.426	12	.000
13	-.054	.074	145.953	13	.000
14	-.072	.074	146.895	14	.000
15	.228	.074	156.461	15	.000
16	-.230	.074	166.266	16	.000
Source : Author's Calculations					

❖ **Deciding The Order of Autoregression (p):** The Partial Autocorrelation function exhibits significant peaks at lags 1 and 2. So, the order of Autoregression (p) is 2.
From the above analysis, the ARIMA (p,d,q) model is identified as follows :
P= the order of autoregression =2
d= the order of differencing (or integration) =1
p= the order of moving average =1
So, the identified model is ARIMA (2,1,1)

❖ **Estimation of ARIMA Equation Under ARIMA (2,1,1) :** Regression equation has been estimated under Autoregressive Integrated Moving Average Method (ARIMA) by considering LNIIP as a dependent variable. First order Autoregression AR(1), second order Autoregression AR(2), first order moving average MA(1) are used as non-seasonal lags. Predictor included in the equation is LNFDI. T- test statistic results reveals that AR(1),AR(2) and MA(1) are showing statistically significant negative impact on the LNIIP ($p<0.01$). Regression coefficient of LNFDI indicates that its impact on LNIIP is positive and significant ($P<0.05$) (Table 10) .

❖ **Model Diagnosis** : Diagnosing an ARIMA model is a crucial part of the model-building process and involves verifying that the residuals are random. Residuals from ARIMA (2,1,1) regression equation are saved and Autocorrelation function coefficients and Box-Ljung Statistic are computed for the residuals. The results are presented in the Table 11.

❖ **Null Hypothesis:** Residuals for the ARIMA model are random, and no essential components have been omitted from the model.

❖ **Alternative Hypothesis**: Residuals for the ARIMA model are not random, and some essential components have been omitted from the model. None of the Box-Ljung values in the vicinity of the first two lags are significant ($p>0.05$). This confirms that the residuals for the ARIMA (2,1,1) are random, and it also means that no essential components have been omitted from the model.

FINAL FINDINGS

The main focus of the present study is to assess the impact of foreign direct investment on economic development of the country. Regression results conclude that economic development of the country is influenced by foreign direction investment inflows to the country. Pearson's Correlation Coefficient indicates a very strong positive association between economic development and foreign direct investment. Existing literature also supports the positive impact of FDI on economic development of a country. ARIMA results also confirm that the FDI has a significant impact on economic development. The results of the study emphasize the economic rationale for offering special incentives to attract FDI.

CONCLUSION

Foreign investment produces positive externalities in the form of technology transfers and positive spillovers. It is worthwhile to note that foreign investment facilitates easy transfer of technology and business know-how from rich countries to poor countries, which will result in increased production and employment opportunities to the citizens of developing countries. At the same time, policy makers of developing countries should see that foreign investment should be channelized into the sectors which are in real need of foreign technology and the sectors which generate more employment to the countries' citizens. Countries like India, which have a major share of youth in their total population, have huge potential for employment generation and hence, it can be concluded that foreign investment inflows into required sectors in India will really benefit our country and policy makers should initiate constructive FDI policies, which will augment FDI inflows to India.

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