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Impact of Foreign Direct Investment on Economic Growth of India

Prof. Keerti Kulkarni, Dr. H.N.Shivaprasad, Dr. M M Munshi

Asst. Professor, DVHIMSR Dharwad
Professor, DVH IMSR, Dharwad
Associate Professor, V.T.U., Belagavi

Abstract
International capital flows have a significant role for growth and development of recipient countries by providing necessary capital, resources and technology. One aspect of such international investment is Foreign Direct Investment (FDI) which has become an important source of external finance since they are considered as more stable and prominent source of capital inflows. The present study has been conducted to evaluate long-run and short-run impact of FDI on economic growth of India. Gross Domestic Product (GDP) has been considered as indicator of economic growth for this study. The empirical analysis has been conducted using Autoregressive Distributed Lag Approach (ARDL) of Cointegration. The period of study was 1991-92 to 2018-19. The findings of the study indicate presence of long-run relationship between FDI and economic growth of India. The study concludes that Foreign Direct Investment helps to enhance economic growth of India.

Key words: *FDI, GDP, ARDL, Indian Economy, Economy Growth*

Introduction

International capital flows have a significant role for growth and development of recipient countries by providing necessary capital, resources and technology. One aspect of such international investment is Foreign Direct Investment (FDI). The analysis of national growth of any country is difficult as combination of factors determine the growth of economy as measured by Gross Domestic Product (GDP). There are many determinants to explain a nation's growth. Studies have indicated Foreign Direct Investment (FDI) as one of the most significant determinant of a nation's economic growth.

FDI plays a vital role to make significant contribution to the national growth by investing in various sectors and enhancing efficiency through transfer of technology, innovation in product and market, transferring managerial skills and improving the conditions of balance of payments. It is also believed that FDI makes impact on economy viz, growth of country, increase in domestic savings, employment, export-import, etc. and society at large viz., poverty reduction, enhancing employment skills, upward mobility etc.

As India requires huge investments to overhaul its economy in the coming years, it requires good inflow of FDI on a continuous basis. If there is a decline in foreign inflows it puts pressure on the country's balance of payments and in turn impacts the value of the Indian Rupee.

Literature Review

The present study is focused on FDI and economic growth in Indian economy. An attempt has been made to exhaustively review the existing literature in this area.

Sethi and Patnaik (2007) undertook a study to know the impact of Foreign Capital Flows on Indian Financial markets and economic growth. The variables for the study were Foreign Direct Investment, Foreign Institutional Investment and Foreign Portfolio Investment for the time period from April 1995 to December 2004. The empirical results have revealed that FII has negative impact on economic growth and FDI has

positive and stable impact on growth whereas total capital flows have positive impact on growth. They concluded that FDI has huge contribution to influence the economic behaviour.

Sharma, Kumar and Sengupta (2009) examined the relationship between GDP and FDI growth India for pre and Post financial crisis by considering GDP and FDI as variables for the period 2005 to 2009. The study tested variables by regression analysis. They concluded that economic slowdown has made a significant downward impact on FDI flow to India, and that capital flows had more significant impact on construction and service sector.

Jayachandran & Seilan (2010) conducted a study to know the relationship between Trade, Foreign Direct Investment and Economic Growth for India for the period 1970 to 2007. They examined relationship by using co-integration test and Granger Causality test. They used variables such as FDI, GDP and Export. They concluded that there exists a long term relationship between FDI, GDP and export and further that there exists a causal relationship between the examined variables.

M. Bhattacharya and S. Bhattacharya (2011) studied the data related to the volume of merchandise trade and FDI inflows influenced economic growth in India during 1996 to 2008. They analyzed the variables such as FDI, GDP, Import and export by using Unit Root Test, Co-Integration Test, and Granger Causality test. They observed unidirectional causality between trade to economic growth and bidirectional causality between FDI and economic growth. They also found that long term relationship exists between GDP and FDI.

Aurangzeb and Huq (2012) undertook a study to find know the impact of foreign capital inflows on Economic growth in Pakistan by using Granger Causality test for the period 1981 to 2010. The study was carried out by using variables like: GDP, Remittances from abroad, Foreign Direct Investment and External Debt. They found that there is unidirectional relationship between GDP and FDI. They concluded that foreign capital has positive and significant impact on economic growth of Pakistan.

Devajit (2012) studied the Impact of Foreign Direct Investment on Indian economy and concluded that Foreign Direct Investment is the predominant strategic components of investment which is needed for sustainable economy growth.

Ray (2012) studied the impact of Foreign Direct Investment on economic growth in India. The relationships was studied OLS method, Unit Root Test, Co-integration test and Granger Causality Test. The study used variables like GDP and Foreign Direct Investment for the period from 1990 to 2011. He concluded that there is a positive and log run equilibrium relationship between FDI and GDP. Further, he found uni- directional causality from GDP to FDI in India.

Shen et al (2010) studied as to what promotes international capital flows and in turn promotes economic growth. The authors studied broader panel data that covered 80 countries for the period from 1976 to 2007 and found that FDI and FPI directly and unconditionally affect economic growth.

Sultana and Pardhasaradhi (2012) studied the Impact of flow of Foreign Direct Investment and Foreign Institutional Investment of Indian Stock Market. The study was conducted for the period 2001 to 2011. The study had four variable - Sensex, Nifty, Foreign Direct Investment and Foreign Institutional Investment. The study concluded that there is strong relationship which exists between Foreign Direct Investment and Sensex and also between FDI and Nifty. They further concluded that moderate positive relationship exists between FDI and Sensex.

Jain, Meena and Mathure (2013) studied the role of Foreign Direct Investment and Foreign Institutional Investment in Indian economy. The variables for the study were:Foreign Direct Investment, Foreign Institutional Investment and GDP. The study period was 2001 to 2010. They concluded that positive relationship exists between Foreign Institutional Investment or Foreign Direct Investment and GDP.

Carlos Encinas-Ferrer and Eddie Villegas-Zermeño (2015) They investigated the impact of FDI on economic growth considering FDI as a independent variable and GDP growth as a dependent variable. They found proportion of FDI in total gross fixed capital formation was insignificant. Hence, its influence on economic growth was marginal.

The results obtained in the previous studies are diverse and therefore are not able to provide the extent of the impact of FDI's influence on economic growth of India. Considering that attracting foreign capital is the avowed policy and major priority goal of Government of India's external policy, it is absolutely necessary to study this area. Therefore, the present study was undertaken.

Methodology and Data Source

This paper aims to investigate effect of Foreign Direct Investment on Economic Growth India uses the annual time series data from 1991-92 to 2018-19. The data in respect of variables such as Foreign Direct Investment and Gross Domestic Product has been considered for the purpose of the study. In this study, Gross Domestic Product (GDP) is used to indicate economic growth. The data are extracted from Handbook of Statistics on Indian Economy and from Bulletin of Reserve Bank of India.

We have applied Unit Root test (i.e. Augmented Dickey Fuller test and Phillip-Perron test) to evaluate stationarity. In order to check effect of FDI on economic growth of India in the long-run and short- run, Autoregressive Distributed Lag Approach (ARDL) of Cointegration has been used on the variables. This study differs from existing studies in the following aspects. Firstly, it was conducted to know changes that happened in India for a longer time frame for the period 1991-92 to 2016-17. Secondly, the study evaluated the data by using econometrics tools like Autoregressive Distributed Lag Approach (ARDL) of Cointegration which used to measure effect of studied variables during long-run as well as in short-run. Finally, this study a l s o used Perron Break Point Unit Root test to evaluate structural break in time series.

Unit Root Test

Prior to testing to co-integration test and the Granger causality test, econometric methodology needs to examine the stationarity for each individual time series. Most macroeconomic data are non-stationary i.e., they tend to exhibit a deterministic and stochastic trend. A series is said to be stationary if the mean and variance are time-invariant. A non-stationary time series will have a time dependent mean or make sure that the variables are stationary, because if they are not, the standard assumptions for asymptotic analysis in the Granger test will not be valid. Researcher should then perform the test for the unit root in potentially non-stationery time series.

A more formal method of detecting non-stationarity is often described as testing for unit roots, for reasons that need not concern us here. The standard test, pioneered by Dicey and Fuller (1979), is based on the model

$Xt = \beta 1 + \beta 2Xt- \gamma t + \varepsilon t$ Rewritten as:

$\Delta Xt = \beta 1 + (\beta 2 -1)Xt-1 + \gamma t + \varepsilon t$

Where $\Delta Xt = Xt - Xt-1$, the series will be non-stationary if either the coefficient of Xt-1 is zero or the coefficient of t is non zero.

Perron Break Point Unit Root test

Perron (1997) re-examine his 1989 results with modification by introducing unknown break point. He represented statistical procedure which is used to test unit root with unknown structural break in trend function.

Autoregressive Distributed Lag (ADRL) Approach of Cointegration

As the reasons and advantages mention above, the ARDL approach of cointegration has been implemented in this study to evaluate impact of international capital inflows on economic growth, considering variables of ICF and GDP and relevant structural breaks.

The ARDL bound test approach involves two steps for estimating the long-run relationship. First, the

existence of a long-run relationship among the variables has been established by using Wald test (F-statistics). Second, the long-run and Short-run coefficients are estimated to evaluate impact of FDI on economic growth of India.
This study uses the following error correction regressions, taking LGDP as a dependent variables:

Results and Discussion
To set the stage for Autoregressive Distributed Lag (ARDL) approach of cointegration test, the order of integration of variables is initially determined by using ADF and PP test. The unit root result of ADF and PP test, with constant and trend, for time series variables are shown in following table.

Table 1: Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) Unit Root Test Result

Variable		ADF test	Result	PP test	Result
LFDI	Level	-2.7343 (0.2018)	Unit Root	-3.3826 (0.0612)	Stationary
	1st difference	-3.7235 (0.0560)	Stationary		
LGDP	Level	-0.0578 (0.9904)	Unit Root	0.0511 (0.9941)	Unit Root
	1st difference	-4.7564 (0.0039)	Stationary	-4.7790 (0.0046)	Stationary

The table-1 show that ADF test does not reject null hypothesis of unit root both for LFDI and LGDP. Butat first difference, ADF test reject null hypothesis of unit root for both FDI and gross domestic product (LGDP). However, PP test does not reject null hypothesis of unit root for gross domestic product (LGDP) but it does so foreign direct Investment (LFDI). After taking first difference, the gross domestic product (LGDP) has been turn into stationary series. Thus, result of ADF test indicates that LGDP and LFDI follows I(1) process while PP test indicates that LFDI follows I(0) while LGDP follows I(1) process.

As ARDL model of co integration can be applied for time series with mixed order integration, the time series included in study has been not going to create any issue. But to make result of order of integration more clear and to identify structural break point, Perron (1997) Break Point Unit Root test has been used. The result of Perron break point unit root test represented in following table:

Table 2: Perron Break Point Unit Root test

Variables	Perron test statistic	Break point	Result
LFDI	-2.9187	2005	Unit root with a structural break
LGDP	-0.9012	2009	Unit root with a structural break

Critical Values: at 1%, 5% & 10% are -6.39, -5.63& -5.42 respectively.

The result indicates that LICF and LGDP contain unit root with structural break at level. However, the break dates are not identical. In LFDI, structural breaks have been identified before global financial crisis of 2008. In contrast, LGDP series indicated structural break during the crisis period.

After evaluating stationarity properties of time series and structural break point, ARDL bound test has been applied to evaluate existence of long run relationship between the time series. As the objective of the study is to evaluate effect of FDI on economic growth in India, LGDP has been considered as dependent variable, LFDI has been considered as independent variable and dummy variables of year 2009 as fixed regressor; identified as structural break point. The following table shows the result of ARDL bound test:

Table 3: ADRL Bound test Result: LGDP, LFDI and its Structural Break points.

Equation	Calculated F- statistic
F (LGDP / LFDI, D1)	5.4301

The relevant critical value bounds are obtained from Table CI (iv). Case iv: unrestricted intercept and restricted trend (Pesaran et al. 2001). The critical values are 4.68 (lower bound) and 5.15 (upper bound) at the five percent as well as 4.05 (lower bound) and 4.49 (upper bound) at ten percent significancelevel.
The table 3 shows computed F-statistic for LGDP is more than lower bound critical value at five percent level of significance; indicating rejection of null hypothesis. Thus, it can be said that there is long-run relationship which exist among LGDP, LFDI and structural break point. After evaluating long run relationship, the subsequent estimations of long-run and short-run parameters help us to obtain further information of significance of the variables.
We now set out to estimate long-run and short-run coefficients of ARDL model for LFDI, LGDP and its break point for LGDP.

Table 4: Estimated Long-Run Coefficients and Short-Run Error Correction Model(ECM) Dependent Variable: LGDP

The long-run Coefficients estimates based on ARDL (1,3)			**ECM- ARDL: dependent variable: Δ LGDP based on ARDL (1, 3)**		
Regressors	**Coefficient**	**t-ratio**	**Regressors**	**Coefficient**	**t-ratio**
LFDI	39.8323	3.2692***	Δ LFDI	-2.6784	-2.4356**
D_2009	-34739.14	2.1569*	Δ $LFDI_{t-1}$	9.2256	7.2476***
@trend	-409.26	-0.8265	Δ $LFDI_{t-2}$	6.0921	4.5336***
			Δ D_2009	3681.72	2.1096*
			Constant	-4044.12	- 6.1983***
			Ecm (-1)	-0.2135	-10.8959***

Note: ***significant at 1% level, ** significant at 5% level and * significant at 10% level.
The result indicates that FDI has a positive impact on economic growth in India during long-run while it has negative impact on economic growth in short-run. A one percent change in FDI will have a significant positive impact on GDP by 39.83 percent in long-run, significant at the one percent level. As the study used restricted linear trend, trend variables included only in long-run and constant has been included only in short run. The trend variable is not significant and have a negative impact on LGDP in long run. In short-run, the constant is also negative and significant at the one percent level.

The structural dummy variable of year 2009 has positive significant coefficient in short-run while negative significant coefficient in long-run. The error correction model with selected ARDL is (1, 3) as shown in Table 3 is significant at the one percent level with the expected negative sign. The ecm (-1) of - 0.25 suggests that a deviation from the long-term path of GDP in this period is corrected by 25 percent over the following year. However, a significant error correction confirms the existence of a stable long- run relationship between the significant regressors and dependent variable, LGDP.

Conclusion

Many studies have established that there exists relationship between foreign investment and economic growth in all the countries where studies have been undertaken. From few sectors in 1991 FDI has been allowed in a large number of sectors The present study attempts to find out whether FDI makes impact on economic growth of India or not. The period of study was 1991-92 to 2018-19. The Autoregressive Distributed Lag (ARDL) approach of cointegration has been used to evaluate effect. The results indicate that there is an existence of long-run relationship between economic growth and foreign direct investment in India. The estimation of long-run and short-run indicate that there is positive significant effect of foreign direct investment on economic growth off India during long run. This means that economic growth accelerates and augments foreign direct investment inflows into India. These findings suggests that policies should be designed to promote inflow of foreign capital inflow in India in order to promote economic growth. This finding is in line with Sethi (2007), Sethi & Patnaik (2007), Jain et al. (2013) and Sethi (2013) who concluded that international capital inflow have positive effect on Indian economic growth.

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