Abstract

FDI refers to capital inflows from abroad that are invested in or to enhance the production capacity of the economy. Foreign direct investment (FDI) in India has played an important role in the development of the Indian economy. It has in lot of ways facilitated India to achieve a certain degree of financial stability, growth and development. The objective of the paper is to empirically analyse how FDI is stimulating the economic growth. This paper investigates the causal relations between foreign direct investment and economic growth in a developing country like India. The analysis has been made under Johansen's Co integration framework based on 21 years of data covering the post reform era of the country. The Co integration analysis finds strong positive relation between FDI and economic growth in India. The study concludes with a suggestion that the policy makers in India should extend investor friendly environment which is conducive for attracting more amount of capital from the developed world.

JEL Classification: F23 F43 C23

Key words: Foreign direct investment, Indian economy, Globalization, transfer technology, Economic growth.

SECTION 1 : INTRODUCTION:

Foreign direct investment (FDI) or foreign investment refers an investment made by a company or entity based in one country, into a company or entity based in another country. Entities making direct investments typically have a considerable degree of influence and control over the company into which the investment is made. Investors are granted management and voting rights if the level of ownership is greater than or equal to 10% of voting stock. It is the summation of equity funds, reinvested earnings, other long-term capital, and short-term capital as shown in the balance of payments. Ownership shares amounting to less that the stated amount is termed portfolio investment and is not categorized as FDI. Open economies with good growth prospects and skilled workforces tend to attract larger amounts of foreign direct investment than closed, highly regulated economies. There are many major modes through which firms undertake foreign direct investment (FDI): merger and acquisition (M&A), joint venture, new plant, transfer of expertise and technology. It is a significant type of fast international expansion to increase ownership of assets, derive location-specific advantages and acquire additional knowledge. The post-liberalization period witnessed an increasing trend of FDI inflows in India with a high growth rate see Table 1.
The relaxation of policies towards international trade and investment supported by a positive response from capital exporting countries is also considered as a major determinant of FDI inflows into India. At present Mauritius, Singapore, U.S.A, U.K, Netherlands Japan, Cyprus, Germany, France, U.A.E are the top 10 nations investing in India. The major tapped areas in India are telecommunications, services (usually off shoring), power, oil refinery, food processing, and electrical equipment agro industries, logistics, water management, information technology, health, financial services and renewable energy and so on. In India FDI inflow made its entry during the year 1991-92 with the aim to bring together the intended investment and the actual savings of the country. Following these major economic reforms, and a strong focus on developing national infrastructure, the country’s economic growth progressed at a rapid pace, with relatively large increases in per-capita incomes.

Objectives:
The study covers the following objective:

The objective of the paper is to empirically analyse how FDI is stimulating the economic growth. To achieve the objective of the study the paper is divided into following sections. Section 1 i.e the present section gives the insights of FDI and how it impacts economic growth. Section II gives review of literature, followed by data and methodology issues entailed in Section III. Section IV gives analysis and interpretations of results. Section V gives summary and implications of the study. References form the part of last section.

SECTION II: REVIEW OF LITERATURE

The complete literature emphasised on economies pertaining to empirical findings and Growth and development of any economy in the post liberalization period. The studies of Kasibhatla and Sawhney (1996) studied that U.S. supports a unidirectional causality from GDP to FDI and not the reverse causation. This may be owing to the fact that for a developed country, FDI follows GDP, as GDP is an indicator for market size. A study by Aitken, et al. (1997) have shown the external effect of FDI on export with example of Bangladesh, where the entry of a single Korean Multinational in garment exports led to the establishment of a number of domestic export firms, creating the country’s largest export industry. Morris Sebastian44 (1999) presented 14 case studies of firms in the textiles, paper, light machinery, consumer durables and oil industry in Kenya and South East Asia . This study founded that the home-grown private corporate sector is the major source of investments. The current system of tariff and narrow export policy are other reasons that have motivated market seeking FDI.
Wealth seeking FDI has happened to generate a substantial portion of FDI from India. Naga Raj R45 (2003) presented the trends in FDI in India in the 1990s and compared them with China. Based on the analytical conversation and comparative experience, the study suggested that a more realistic origin investment policy framework is required to expect increased flow of FDI. It was found that India does not outline very much in the investment plans of Canadian firms due to indifferent attitude of Canadians towards India and lack of information of investment opportunities in India and there was a suggestion that regular publications in this regard will go a long way in increasing the flow of investment in India. Chandan Chakraborty, Peter Nunnenkamp8 (2004) analysed the growth implications of FDI in India by subjecting industry – specific FDI and output data to Granger causality tests within a panel co-integration framework and suggested that FDI is unlikely to work wonders in India if only remaining regulations were relaxed and still more industries opened up for FDI. Kulwinder Singh38 (2005) critically examined FDI in India and founded that the impact of the reforms in India on the policy environment for FDI presents a mixed picture. Also the industrial reforms have gone so far; though they need to be supplemented by more infrastructure reforms to look India a better investment center. There were conclusions drawn by Nirupam Bajpai and Jeffrey D. Sachs47 (2006) that a restricted FDI regime, high import tariffs, exit barriers for firms, stringent labor laws, poor quality infrastructure, centralized decision making processes, and a very limited scale of export processing zones make India an Unattractive investment spot. The comparative study between the levels of FDI inflows in India and China by Balasubramanyam V.N Sapsford David (2007) established that FDI in India is one tenth of that of China. According to their findings the country may need much larger volumes of FDI than it currently attracts if it were to attain growth rates in excess of 10 per cent per annum. Finally, they concluded that India is now in a position to implement the FDI Package efficiently and also rely on sources other than FDI for its requirements of capital owing to its potential.

Basu P., Nayak N.C, Vani Archana5 (2007) studied the qualitative shift in the FDI inflows in India in – depth in the last fourteen odd years and concluded that the country is not only cost – effective but also hot target for R&D activities. There were findings that R&D is a significant determining factor for FDI inflows for most of the industries in India. It was also concluded strong negative influence of corporate tax on FDI inflows. The examination of the attempts of The Government of India to attract FDI inflows was done by A S Shiralashetti and S S Hugar (2009) to boost the Indian economy since economic liberalization on the basis of different parameters such as year-wise, country-wise, sector-wise and region-wise FDI inflows. The study concluded though FDI inflows into India have raised, yet it is very less compared to some developing countries like China, Russia, Mexico, Brazil and Chile, etc. therefore, there is an critical need to adopt inventive policies and good corporate Governance practices correlated with international standards, by the Government of India, to attract more and more foreign capital in various sectors of the economy to make India a developed country. Narayan Chandra Pradhan (2011) in his studies analysed that although there is governance of manufacturing sector in the East Asian economies, the FDI to India has flown principally to the services sector. This reflects the service led growth of the Indian economy. Sehgal (2011) analyzed the trends and patterns of foreign investment in India and concluded that Indian has proved itself as the Investment attractive country especially in the service sector which provides low employment opportunities. The study asserted that foreign investments assisted the Indian Economic Growth but it assisted only the internal growth not as the external India’s Export level is still low as compare to Import.

SECTION 111: DATA AND METHODOLOGY

DATA

To achieve the objectives of the study secondary data is used which is collected from various sources i.e. World Investment Reports, publications from Ministry of Commerce, Asian Development Bank’s Reports, Reserve Bank of India bulletins, Economic and Social Survey of Asia (S.Hooda et al, 2007) and the Pacific, United Nations, Asian Development Outlook, Country Reports on Economic Policy and Trade Practice-Bureau of Economic and Business Affairs, U.S. Department of State and from
websites of World Bank, IMF, WTO, RBI, UNCTAD, EXIM Bank etc. Time series data and the relevant data have been collected for the period 1991 to 2013.

**METHODOLOGY**

In this analysis we employ the Johansen and Juselius (JJ) procedure of testing for the presence of multiple co-integrating vectors. Johansen (1991) method of multivariate approach is well established model to trace out co-integration relationship between the time series variables. We utilized this approach in this paper to find out the co-integrating relation between FDI and Economic growth (GDP).

The first step of this process involves a test for stationarity; the order of integrated of the variable is estimated. For this purpose, Augmented Dickey- Fuller (ADF) test for unit roots has been carried out. Once the order of each variable is determined, we perform the cointegration analysis to determine whether the time series of these variables display a stationary process in a linear combination.

Johansen’s methodology requires the estimation of the vector auto regression regression (VAR) equation and the residuals are then used to compute two likelihood ratio (LR) test statistics that can be used in the determination of the unique cointegrating vectors $X_t$. The first test which considers the hypothesis that the rank of $\Pi$ is less than or equal to $r$ cointegrating vectors is given by the trace test below:

$$\text{Trace} = -T \sum_{i=r+1}^{n} \ln(1 - \lambda_i)$$

The second test statistic is known as the maximal eigenvalue test which computes the null hypothesis that there are exactly $r$ cointegrating vectors in $X_t$ and is given by:

$$\lambda_{max} = -T \ln (1 - \lambda_r)$$

The distributions for these tests are not given by the usual chi-squared distributions. The asymptotic critical values for these likelihood ratio tests are calculated via numerical simulations (see Johansen and Juselius 1990; and Osterwald-Lenum 1992).

**Toda and Yamamoto Version of Granger Causality:**

Traditionally to test for the causal relationship between two variables, the standard Granger (1969) test has been employed in the relevant literature. This test states that, if past values of a variable $Y$ significantly contribute to forecast the value of another variable $X_{t+1}$, then $Y$ is said to Granger cause $X$ and vice versa. However, as econometric research has shown, such tests focus on time precedence, rather than causality in the usual sense. Therefore, they are particularly weak for establishing the relation between forward-looking variables. These tests are based on null hypotheses formulated as zero restrictions on the coefficients of the lags of a subset of the variables. However, such tests are grounded in asymptotic theory; yet, it must be borne in mind that asymptotic theory is only valid for stationary variables, thus if a series is known to be non-stationary, $I(1)$, then such inferences can only be made if the VAR is estimated in first differences, and therefore stationary. In other words, Granger causality is invalid if the variables are $I(1)$. New developments in econometric offers the error correction model (due to Engle and Granger (1987)) and the vector auto regression error-correction model (due to Johansen and Jesulius, 1990) as alternatives for the testing of non-causality between economic time series. Unfortunately, these tests are cumbersome and sensitive to the values of the nuisance parameters in finite samples and therefore their results are unreliable (see Toda and Yamamoto, 1995; Zapata and Rambaldi, 1997). In other words, it is possible that incorrect inferences could be made about the issue of causality simply due to the sensitivity of stationarity or co-integration tests.

Only recently, Toda and Yamamoto (1995) proposed a complementary procedure which allows causal inference to be conducted in level VARs that may contain integrated processes but does not involve rigorous attention and strict reliance upon integration and cointegration properties of any or all variables in the system. In essence, this procedure circumvents some of the pre-test biases that
practitioners may be confronted with in VECM and other modeling formulations involving unit root and co integration pre-testing. Furthermore, the Toda- Yamamoto procedure is simple and convenient to apply and permit linear as well as non-linear tests of restrictions. These restrictions themselves would then imply long-run causal inference since, unlike ordinary difference VARs, this formulation involves only variables appearing in their levels. Toda and Yamamoto (1995) have suggested an alternative approach to causality testing which has the advantage of not requiring pretesting for the co integration rank, and still produces valid statistical inference. This is the technique we use below for the empirical analysis. The basic idea is to artificially augment the correct order, K, of the VAR by the maximal order of integration, say T_{max}. The augmented (K+T_{max}) is then estimated, and Wald tests for linear or non-linear restrictions are carried out on the first K coefficient matrix as follows:

Consider the following VAR:

$$Z_t = Φ + Φ_t + Π_1 Z_{t-1} + Π_k Z_{t-k} + E_t, t = 1 \ldots T$$  \hspace{1cm} (1)

Where $E_t \sim N(0, Ω)$

Economic hypotheses can be expressed as restrictions on the coefficients of the model as follows:

$$H_0: f(π) = 0$$ \hspace{1cm} (2)

where $π = vec(p)$ is a vector of parameters from model (1), $P = [Π_1, \ldots, Π_k]$, and $f(.)$ is a twice continuously differentiable m-vector valued function with $F(0) = ∂f(π)/∂π$ and rank $F(0) = m$.

Assume that the maximum order of integration which is expected to characterize the process of interest is at most two, i.e. $d_{max} = 2$. Then, in order to test the hypothesis (2), one estimates the following VAR by OLS:

$$Z_t = Φ + Φ_t + Π_1 Z_{t-1} + \ldots + Π_{k-1} Z_{t-k-1} + Π_k Z_{t-k} + E_t$$ \hspace{1cm} (3)

Where $p ≥ k+d_{max} = k+2$, i.e. at least two more lags than the true lag length $k$ are included. The parameter restriction (2) does not involve the additional matrices $Π_{k+1}, \ldots, Π_p$, since these consist of zeros under the assumption that the true lag length is $k$.

Equation (3) can be written in more compact notation as follows:

$$Z_t = ΦT + ΨY + Π + E_t$$ \hspace{1cm} (4)

Where

$$Ψ = [Π_k + 1, \ldots, Π_p]$$

or in the matrix notation

$$Z' = ΦT + ΨX + Π + E'$$ \hspace{1cm} (5)

One can then construct the following Wald statistics $W_2$ to test the hypothesis (2):

$$W_2 = f(Φ)'[F(Φ)^{-1} (X'QX)^{-1} F(Φ)^{-1} ] f(Φ)$$

where $E_t \sim T^{-1} E' \sim E, Q = Q_t - Q, Y(Y'QX)'Y Q_t$ and $Q_t = I_T - T(T' T)^{-1}$ T.

Toda and Yamamoto’s (1995) theorem 1 (pp. 234-235) proves that the Wald statistic (5) converges in distribution to a $χ^2$ random variable with $m$ degrees of freedom, regardless of whether the process $Z_t$ is
stationary, I(1), I(2), possibly around a linear trend, or whether it is cointegrated. This method also requires some pretesting in order to determine the lag length of the process. Sims et al (1990) showed that lag selection procedures, commonly employed for stationary VARs, which are based on testing this significance of lagged vectors by means of Wald (or LM or LR) tests, are also valid for VARs with I(1) processes which might exhibit cointegration. Toda and Yamamoto (1995) extended their analysis and proved that the asymptotic distribution of a Wald of Likelihood Ratio test for the hypothesis that the lagged vector of order p is equal to zero is $\chi^2$, unless the process is Markovian and I(2). To set the stage for the Toda-Yamamoto test, the order of integration of the variables is initially determined using the ADF test. The testing procedures are based on the null hypothesis that a unit root exists in the autoregressive representation of the series.

SECTION IV: ANALYSIS AND INTERPRETATIONS OF RESULTS

FDI is as an engine of capital, technology, managerial skills, technological progress & capacity, access to foreign markets and in maintaining economic growth and development for developing countries, where as for developed countries it is considered as a tool for accessing the market of emerging economies. It is also considered as tool of filling the savings, foreign exchange reserves, revenue, trade deficit, management and technological gaps. Its impact on economic growth depends on country’s domestic policy and foreign policy.

The analysis started with testing the unit root test of the sample series, the results of which are reported in Table 1. It confirms non stationarity of sample data; hence we repeat stationarity tests on return series (estimated as first difference of log prices) which are also provided in Table 1. The table describes the sample series that have been tested using Augmented Dickey Fuller, (ADF) 1981. The ADF test uses the existence of a unit root as the null hypothesis. To double check the robustness of the results, Phillips and Perron (1988) test of stationarity has also been performed for the sample series and then both the test are performed on return series. The sample return series exhibit stationarity thus conforming that both Real GDP and FDI are integrated to the first order, see table 1. If two or more series are themselves non-stationary, but a linear combination of them is stationary, then the series is said to be co-integrated. Given that series are integrated of the same order, co-integration techniques are used to determine the existence of a stable long-run relationship between sample data.

<table>
<thead>
<tr>
<th>Table 1 Stationarity Test for Sample Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORIGINAL SERIES (Panel A)</td>
</tr>
<tr>
<td>ADF (T-STATS)</td>
</tr>
<tr>
<td>REAL GDP</td>
</tr>
<tr>
<td>FDI</td>
</tr>
</tbody>
</table>

The table 1 describes the sample price series that have been tested using Augmented Dickey Fuller (ADF) 1981. The ADF test uses the existence of a unit root as the null hypothesis. To double check the robustness of the results, Phillips and Perron (1988) test of stationarity has also been performed for the price series and then both the test are performed on return series also as shown in Panel-A (price series) and Panel B (Return series) are integrated to I(1). All tests are performed using 5% level of significance (**).

The linkage between sample data is examined using co-integration (Johansen, 1991) analysis that has several advantages. First, co-integration analysis reveals the extent to which two markets move together towards long run equilibrium. Secondly, it allows for divergence of respective markets from long-run equilibrium in the short run. The co-integrating vector identifies the existence of long run equilibrium, while error correction dynamics describes the price discovery process (LEAD LAG) that helps the markets to achieve equilibrium (Schreiber and Schwartz, 1986). Co-integrating methodology fundamentally proceeds with non-stationary nature of level series and minimizes the discrepancy that arises from the deviation of long-run equilibrium. The observed deviations from long-run equilibrium
are not only guided by the stochastic process and random shocks in the system. Theoretically it is claimed that if sample series are co-integrated, then it implies presence of causality at least in one direction. On the other hand, if some level series are integrated of the same order, it does not mean that both level series are co-integrated. Co-integration implies linear combinations of both level series cancelling the stochastic trend, thereby producing a stationary series. Johansen’s co integration test is more sensitive to the lag length employed. Besides, inappropriate lag length may give rise to problems of either over parameterization or under parameterization. The objective of the estimation is to ensure that there is no serial correlation in the residuals. Here, Akaike information criterion (AIC) is used to select the optimal lag length and all related calculations have been done embedding that lag length. The co-integration results are reported in Table 2.

Table 2. Results of Johansen's Co-Integration Test

<table>
<thead>
<tr>
<th>Name of variable</th>
<th>Lag Length</th>
<th>Max Eigen Value</th>
<th>Trace Statistics</th>
<th>Critical Value</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real GDP</td>
<td>2*</td>
<td>0.516615</td>
<td>24.97919</td>
<td>15.49471</td>
<td>0.0014</td>
</tr>
<tr>
<td>FDI</td>
<td></td>
<td>0.335338</td>
<td>8.986494</td>
<td>3.841466</td>
<td>0.0027</td>
</tr>
</tbody>
</table>

This table provides the Johansen's co-integration test, maximal Eigen value and Trace test statistics are used to interpret whether null hypothesis of r=0 is rejected at 5 % level and not rejected where r=1. Rejection of null hypothesis implies that there exists at least one co-integrating vector which confirms a long run equilibrium relationship between the Real GDP and FDI. The null hypothesis is rejected which reveals that two co-integration relationship exists between them.

Maximal Eigen value and trace test statistics are used to interpret whether null hypothesis of r =0 is rejected at 5% level and not rejected when r =1. Rejection of the null hypothesis implies there exists at least one co-integrating vector which confirms a long run equilibrium relationship between the two (GDP AND FDI).Thus they share a common long run information.

After confirming the co integration, next we calculate the direction of causality, for which we employ Granger Causality Test. The results of which are reported in Table 3.

Table 3 : Pairwise Granger Causality Tests

<table>
<thead>
<tr>
<th>Null Hypothesis</th>
<th>F-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDI does not Granger Cause GDP</td>
<td>4.60241</td>
<td>0.0202</td>
</tr>
<tr>
<td>GDP does not Granger Cause FDI</td>
<td>2.92257</td>
<td>0.0048</td>
</tr>
</tbody>
</table>

The results confirm bilateral causality between the sample series (FDI and GDP).This is a very important implication for policy makers, market regulators that policy framework of FDI has to be cautiously designed as it is playing a very important role in economic growth an vice-versa.

SECTION V: IMPLICATIONS OF THE STUDY

The increased flow of FDI in a country has boost up the country’s economy. FDI has provided better access to technologies for the local economy and has led to indirect productivity gains through spillovers. Multinational firms has increased the degree of competition in host country markets which will force existing inefficient firms to invest more in physical or human capital. Thus Government should take certain measures to ensure that the flow of FDI in our country continues to grow. The Government should offer additional incentives to foreign investors to invest in states where the level of FDI is very low. It should ensure the equitable distribution of inflows among states and must give freedom to states, so that they can attract inflows at their own level. It must target at attracting specific
types of FDI that will be able to create spillovers effects in the overall economy like investing in human capital, R & D activities, environmental issues, productive capacity, sectors with high income elasticity of demand. The policy makers should focus more on attracting diverse types of FDI and should design policies where foreign investment can be utilized as means of enhancing domestic production, exports and savings and also as medium of technological learning and diffusion and in providing access to the external market. Government must exercise strict control over inefficient bureaucracy, red-tapism and rampant corruption, so that investor’s confidence can be maintained for attracting more FDI inflows to India.

SECTION VI - REFERENCES

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