CHAPTER – IV
DETERMINANTS AND IMPACT OF FDI IN INDIA

4.1 Introduction

In this chapter an attempt is made to test the determinant of FDI in India and the impact of FDI on major economic variables. In the first chapter on the section of theories of FDI and review of literature an attempt is made to provide theoretic exposition and the case studies review on the determinants of FDI.

As has been discussed earlier, FDI has emerged as the most important source of external resource flows for developing countries, in general and India in particular since 1991. Since FDI flows as a bundle of resources including capital, technology, organizational and managerial skills, market know-how, as well as market access through marketing networks of multinational corporations who undertake FDI (Kumar and Pradan 2002). The high growth of southeast Asian economies in 1980s and that in China in 1990s is largely attributed to huge inflow of FDI. A number of studies confirm the positive effect of FDI inflows on host country's growth. Precisely, because of this, many developing countries of the world are competing among themselves to attract FDI. India is not an exception to this. But as already discussed, FDI flow into India is not comparable to that of the other developing countries and there is wide gap between approvals and actual realization. This is so despite a number of policy measures, concessions, exemptions and incentives announced. Hence the question is which factors determine the FDI flows into a country.

The present section attempts at an econometric analysis of identification of important determinants of FDI in India.
The Model

Following UNCTAD (1993), the basic model for FDI flows is specified as follows.

\[ FDI_t = a_0 + b_1 GNP_{t-1} + a_2 \Delta GNP_t + a_3 \left( \frac{GDI}{GNP} \right)_{t-1} + a_4 TROP_t + a_5 POP_t \]

where,
- \( FDI_t \) = inflow of FDI to India in year 't';
- \( GNP_{t-1} \) = Level of GNP in the year t-1;
- \( \Delta GNP_t \) = Change in the GNP between year t and t-1;
- \( \left( \frac{GDI}{GNP} \right)_{t-1} \) = Gross Domestic Investment as the ratio of GNP in the year t-1.
- \( GDI_{t-1} \) = Level of GDI in the year t-1
- \( TROP_t \) = The degree of openness of the economy in year 't' measured as the ratio of exports + imports to GNP; and
- \( POP_t \) = Population in the year t.

The model presumes that FDI depends upon, the size and growth of the economy; domestic investment; trade openness and size of the population, and while UNCTAD model used exchange rate as an independent variable, in our model it is dropped for the reason that capital account convertibility in not fully implemented in India. In its place population is used as a proxy for market size.

Results and discussions

The model was estimated in SPSS using OLS method and the results are presented here below.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Beta Co-efficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>( GNP_{t-1} )</td>
<td>0.005 (0.177)</td>
</tr>
<tr>
<td>( \Delta GNP_t )</td>
<td>31.771 (0.257)</td>
</tr>
<tr>
<td>( GDI )</td>
<td>0.158 (1.817)</td>
</tr>
<tr>
<td>( \left( \frac{GDI}{GNP} \right)_{t-1} )</td>
<td>-110480.498 (-1.497)</td>
</tr>
<tr>
<td>( TROP_t )</td>
<td>31950.710 (2.030)</td>
</tr>
<tr>
<td>( POP_t )</td>
<td>-847.796 (-1.320)</td>
</tr>
</tbody>
</table>

\( R^2 = 0.967 \) \hspace{1cm} F value = 67.946 \hspace{1cm} DW statistics = 1.841
Unlike the cross-country regression results, the regression results for India are not so robust despite a very high R2. The F-value is significant and the Durbin-Watson statistic which is nearer to two shows that autocorrelation problem is not that severe.

The results indicate that, two variables, \((GDI/\text{GNP})_{t-1}\) and \(\text{POP}_t\) do not bear the expected sign. However, the coefficient of \((GDI/\text{GDP})_t\) is significant at 5 per cent level, that for population is not statistically significant.

But \(GDI\) \(_{t-1}\) and \(\text{TROP}_t\) are found to be significant affecting the FDI flow. The size of investment especially in the development and betterment of the socio-economic infrastructure is an important factor that attracts the investors. Greater openness of the economy too brings in higher investment flow of FDI.

The other variables of \(\text{GNP}_{t-1}\) and \(\text{GNP}_t\) though have expected sign do not seem to be significant determinant of FDI inflow. This is clearly evident even in the cross-country comparison, as the FDI flow to southeast Asian countries is huge despite small size of their economies. The same argument may be forward for the variable \(\text{POP}_t\). Population of a country need not be a significant determinant as compared to other ones.

**4.2 The effect of FDI on Growth**

In this section an attempt is made to analyse certain variables that determine FDI, so that we can estimate the effect of FDI on economic growth. To assess the effect of four major variables namely Gross Domestic Investment (GDI), Foreign Direct Investment (FDI), Human Capital (HC), Labour Force (LF) on Gross Domestic Product (GDP). The data for the variables have been collected from the publications of Government of India, Central Statistical Organisation, Reserve Bank of India and EPW Research Foundation.

The familiar Cobb-douglas Production Function has been used for such an analysis, that is
\[ Y = A + X_1 \alpha + X_2 \beta + X_3 \gamma + X_4 \lambda \] ... (1)

where
\[ Y = \text{Gross Domestic Product in Year 't'} \]
\[ X_1 = \text{Gross Domestic Investment in year 't-1'} \]
\[ X_2 = \text{Foreign Direct Investment in Year 't-1'} \]
\[ X_3 = \text{Human Capital in Year 't-1'} \]
\[ X_4 = \text{Labour Force in Year 't-1'} \]

Further A is the total factor productivity that explains output growth i.e. not accounted by all the four factors listed. \( \alpha, \beta, \gamma, \lambda \) are the respective elasticity coefficient of the concerned variables as usual. This equation is transformed into linear one to facilitate to use of ordinary least square method by taking logarithmic transformation.

i.e.

\[ \log Y = \log A + \alpha \log X_1 + \beta \log X_2 + \gamma \log X_3 + \lambda \log X_4 \] ... (2)

After making such a transformation the final equation is expressed as follows by the corresponding lower case letters.

\[ \log y = \log a + \alpha \log x_1 + \beta \log x_2 + \gamma \log x_3 + \lambda \log x_4 \] ... (3)

The ordinary least square method yielded the following regression equation:

\[ y = 2.349* + 0.497* + 0.121*** + 0.346* + 0.069** \]

\[ (5.916) \quad (3.928) \quad (1.655) \quad (3.710) \quad (2.339) \]

\[ R^2 = 0.996 \quad R'^2 = 0.993 \quad F = 532.30 \quad \text{Durbin-Watson} = 1.825 \]

* - Significant at 10% level
** - Significant at 5% level
*** - Significant at 1% level
the $t$ ratio for the constant($a$), GDI($x_1$), HC ($x_3$), LF ($x_4$) all are greater than two implying the strong significance of these variables on the GDP, but FDI is showing positive but not relatively significant effect on GDP.

The $R^2$ for the model as a whole is 0.93, the F value is significantly high revealing the significance of the fitness of the model. the D-W Statistics for the model is 1.825 revealing, the problem of auto-correlation has been fairly solved. The model shows that 1 percent increase in GDI leads to increase in GDP by all most 0.5 percent. the 1% increase in FDI brings about an increase in GDP by 0.12 percent. the coefficient for human capital is 0.34 percent and that of the labour force is 0.7 percent. thus GDI and HC significantly effect the GDP. however the coefficient of FDI though not significant as other variables in the study, but is positive.

Nagesh Kumar, Jaya Prakash Pradan(2002) highlights a positive effect of FDI on their host countries growth along with other factors of production such as labour deployment, domestic capital and skill accumulation.

The previous studies suggests that the effect of FDI on growth varies across countries depending upon among other factors, on the nature of the effect on domestic investment and backward linkages and knowledge spillovers generated, which intern determined by the nature of FDI received, the local absorptive capacity and technology gap between domestic and foreign enterprises (Fry 1992, De Mello 1999).
4.3 The IMPACT OF FDI in India

In this section an attempt has been to assess the impact of FDI separately on various macro economic variables. As we all by now known, FDI involves the transfer managerial resources to the host country. There have been disagreements about the costs borne and the benefits enjoy by host and recipient country between pro-liberalization and anti-liberalization/anti-market views .one country losses need not necessarily be another country gains. Kindelberger (1969) argues that the relationship arising from the FDI process is not a zero sum game. Ex-ante, both countries must believe that the expected benefits to them must be greater than the costs to be borne by them, because an agreement would not otherwise be reached and the under lying project would not be initiated. However, believing in something ex-ante is not guarantee that it materializes ex-post. The impact of FDI on host country can be classified into economic, political, and social effects. The main intention at heart of every MNC is profitability and hence they invest where the returns are high, buy raw materials including cheap labour where it is relatively cheap. MNCs succeed because of market imperfections and cast doubts on it as claim on welfare of host country. The conventional wisdom that FDI is always improving is no longer a conventional wisdom (Leahy and Montangna, 2000). The economic effect of FDI can be classified into micro and macro effects.

**Micro Effects**: The micro effects of FDI reflect on structural changes in the economic and industrial organization. An important issue is whether FDI is conducive to the creations of competitive environment in the host country. Markusen and Venables (1997) put forward two simple analysis channels to find the micro effect of FDI. They are

1. Product Market Competition.

2. Linkage Effect
Product Market Competition (PMC)

Through PMC the MNCs will be substituting the products of domestic firms in host country.

Linkage Effect

MNCs may work as complimentary firms to domestic firms in host country where it is possible for FDI to act as a catalyst leading to the development of local industry. FDI may have benefits, but it will not come without costs. The decade of liberalization and the impact of the FDI on macro economic factors in India have to be found in this study.

To assess the impact of FDI on various relevant macro-economic variables namely exports, private final consumption expenditure, forex, gross domestic investment, gross domestic savings, trade balance, balance of payments.

21 years data from 1980-81 to 2000-01 has been taken to analyse the impact of FDI, the independent variable here is FDI which has been lagged (t-1) to assess the impact on said macro-economic variables.

Partial Coefficients with respect to FDI

<table>
<thead>
<tr>
<th></th>
<th>Constant</th>
<th>β- coefficients</th>
<th>$R^2$</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exports</td>
<td>19084.47</td>
<td>7.899*</td>
<td>0.933</td>
<td>264.113</td>
</tr>
<tr>
<td></td>
<td>(4.434)</td>
<td>(16.252)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDS</td>
<td>74930.04</td>
<td>19.472*</td>
<td>0.925</td>
<td>233.354</td>
</tr>
<tr>
<td></td>
<td>(6.638)</td>
<td>(15.276)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PFCE</td>
<td>444033.259</td>
<td>18.044*</td>
<td>0.855</td>
<td>111.859</td>
</tr>
<tr>
<td></td>
<td>(29.389)</td>
<td>(10.576)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDI</td>
<td>3.910</td>
<td>0.378*</td>
<td>0.829</td>
<td>86.997</td>
</tr>
<tr>
<td></td>
<td>(31.359)</td>
<td>(9.327)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BOT</td>
<td>-8275.833</td>
<td>-3.0988*</td>
<td>0.962</td>
<td>483.442</td>
</tr>
<tr>
<td></td>
<td>(-6.632)</td>
<td>(-21.987)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forex</td>
<td>8518.077</td>
<td>7.957**</td>
<td>0.934</td>
<td>286.329</td>
</tr>
<tr>
<td></td>
<td>(1.980)</td>
<td>(16.381)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BOP</td>
<td>578.479</td>
<td>1.278*</td>
<td>0.632</td>
<td>32.67</td>
</tr>
<tr>
<td></td>
<td>(0.292)</td>
<td>(5.716)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note : * - Significant at 1% level
** Significant at 5% level
The table furnishes the estimates of relationship of the selected individual variables with FDI. The R² has been significantly high excepting for the BOP variable. The signs are also as expected and the coefficient is statistically significant. Therefore, when looked at from individual variable angle, FDI is significantly affected by different by different Macro-economic variables. However, FDI being affected by several factors, the results should be cautiously read. The results should be cautiously read. The results should be cautiously read. The results do not indicate the exact ‘contribution’ of each variable to FDI. But at this stage it would be revealing to quote some of the studies that have arrived at similar conclusions.

Lall(1985) found a positive relationship between FDI and exports, in India whereas Subramanyam and Pillai (1979) Panth(1993 and Kumar(1994) did not find any empirical evidence supporting the thesis of better export performance by foreign enterprises. Fry(1993) indicated that increase in FDI reduced national savings in the cross section data for 16 developing countries. But that does not seem to have occurred in India(Kumar and Pradhan,2002). There is also a vibrant discussion regarding whether FDI crowds out or crowns in domestic investment, but in many cases, FDI is found to complement GDI which is also the case in India.

4.4 Conclusion

Hence if we look at the impact results partially, FDI certainly has beneficial impact on the macro-economic variables.