Impact of Foreign Direct Investment on growth

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ABSTRACT: This study examines effect of FDI on economic growth in the developing economies. The study uses regression tools to examine why few emerging markets have significantly benefited from Foreign Direct Investment and hence grown at a higher rate while few have been laggards. The study also analyses spillover effects of FDI in pharmaceutical sector of India wherein the effect of FDI on domestic firms has been studied and compared using the productivity measure ROCE. On the basis of regression results and macroeconomic data predications policy recommendations have been made. In this paper, a collective analysis has been done on the effect of FDI on growth of the following countries: India, Vietnam, Brazil, Thailand, Mexico, China and Indonesia. With GDP chosen as the growth parameter, the impact of FDI on growth has been evaluated using regression tools for these countries. Consequently, the reasons for variations in the results of various countries have then been studied and compiled. Then, a study of FDI and spillover effects in the pharmaceutical industry in India has been done. The productivity efficiency of domestic and foreign firms over the years has been plotted and compared to demonstrate the spillover effect. The results obtained are attached in the report.

KEYWORDS: Foreign Direct Investment, Pharmaceutical, FDI, Spillover, Regression

1. INTRODUCTION

It is essential to clearly explain to the readers what the term FDI means and what its significance to a country’s economy is. FDI can be simply defined as “an investor based in one country acquires assets in another country with the purpose of managing that asset”. However, the following is the most popular definition given by IMF: “The acquisition of at least ten percent of the ordinary shares or voting power in a public or private enterprise by non-resident investors. Direct investment involves a lasting interest in the management of an enterprise and includes reinvestment of profits”

For the past couple of decades, the world is witnessing the monumental impacts of globalization which have revolutionized the way business is done. This has been concurrent with a substantial growth in international trade. One of the primary results of globalization is growth in global FDI. Globalization provides an amazing opportunity for developing countries to attain faster economic growth through trade and investment. FDI is an important step in the globalization process as it enhances the interaction between states, regions and firms. The stupendous growth of FDI since the 1980s has given incentive to a detailed research in this field.
FDI is a major element in a country’s industrial development and growth and its increasing role in international production has evoked interest in its effects on the economies. The significance of FDI to an economy is multi-fold: It provides capital inflow, it offers managerial skills, foreign technology and improvement of the international competitiveness of domestic firms.

It is widely assumed that foreign firms possess better resources in terms of knowledge, skills, patents and trademark which might “spill over” to the economy. This might initially affect the market share of the domestic firms but may eventually cause their productivity to increase. This results in increased competition in the market which is extremely beneficial to the economy as a whole. As a result, many governments are taking steps to stimulate the growth of FDI. India is a major economy on the world map and the promotion of foreign investments forms an integral part of its economic policy.

2. LITERATURE REVIEW

2.1 LITERATURE

Study by Chadee and Schlichting (1997) highlights that foreign direct investment has made a positive contribution for all economies in the in the Asia-Pacific region. A study of 69 developing countries by Borensztein et al. (1998) showed that least developed countries do not benefit from FDI, if they have the ability to absorb advanced technology.

Zhang (2001), with his analysis of East Asia and Latin America countries, showed that positive impact of FDI on economic growth if the host country has a liberal trade policies and educated and skilled workforce. Further the FDI assists the host country to participate in the globalization process by providing immediate access to global markets [Ram and Zhang (2002)].

Baharumshah and Thanoon (2006) have demonstrated the positive contribution of FDI on growth of East Asian economies with the help of dynamical models. Hsiao and Shen (2003) argue that a feedback relationship exists between FDI and GDP and thus growth is related with FDI.

Several studies stress that FDI has a significant positive effect on economic growth of developing countries. Most of these studies use time-series regression, and panel data analysis to draw the relationship between FDI and growth. Other studies have used per capita GDP as a substitution for growth but since FDI mostly impacts the income of labor force, overall GDP of country would show better result if taken.

2.2 HOW FDI EFFECTS DEVELOPMENT IN EMERGING MARKETS?

In emerging markets, government doesn’t have enough resources and private sector lacks capital which leads to a scarcity of internal capital. Further, these countries are devoid of insights on how to invest in large projects. As a result, emerging markets depend largely on foreign capital for growth. Studies by Seid (1988), Srinivasan (2002) and Jenson (2003) have shown that FDI is one of the primary sources of foreign capital for these countries.

It is observed that impact of FDI is ambiguous. It often decreases the domestic investment but at the same time it is likely to create the environment favorable for domestic investment in addition to transfer of technologies and management techniques.

![Fig.1. FDI Inflows for Developing Countries (1990-2013) in Billion US$](image-url)
Survey done by de Mello (1997) suggests two ways through which FDI can stimulate growth. First, FDI can promote the introduction of new technologies in production due to corporate services.

Second, FDI can promote knowledge transfer, both in terms of workforce training and skills and introduction of alternative management practices and best organized transitional provisions. An OECD study (2002) conducted supports these observations and additional documentation that 11 of 14 studies found a positive contribution of FDI towards income growth and factor productivity.

Previous studies suggest that effect of foreign direct investment on growth is likely to depend on the economic and technical conditions in the host country. In particular, it seems that the developing countries need to reach a certain level of development before they could in a position to capture the potential benefits associated with FDI. Therefore, FDI has limited growth effects in less technologically advanced countries.

3. **RESEARCH METHODOLOGY**

3.1 **IMPACT OF FACTORS ON GDP FOR DEVELOPING COUNTRIES**

3.1.1 **MULTIPLE REGRESSION**

The technique of multiple regression is widely used to predict the correlation between independent and dependent variables and determine the relationship of various factors on the dependent variable. This method in economics has proved to be accurate predictions for various factors dependency.

3.1.2 **PROPOSED MODEL**

To begin with the model, the basic function of the macroeconomic variables that would affect the overall growth of the country. Assuming that the level of output in an economy is defined as the function defined below:

\[ Y = f(K, L) \]

Where, \( Y \) refers to the GDP (Output level), \( K \) refers to the capital (Gross capital formation) and \( L \) is the labor force of the respective country. The technology involved is hypothetically assumed to be constant for the data involved over the year 1990-2013. Human capital also plays a crucial role when output is studied however it has not been included to effect in the calculations.

It is found that FDI leads to economic growth of the host country. One of the reasons is that it brings forth technology as well as management in addition to capital in the country. Also, when investors make profit they tend to reinvest their profit instead of remitting abroad which is good for the host country. Therefore, FDI has been added to the production function to study its effect on economic growth. The production function can be written as follows:

\[ Y = f(K, L, FDI) \]

Considering the above production function in context of multiple regression, the evaluation of the above function can be done on the basis of following equation:

\[ Y = \beta_0 + \beta_1(K) + \beta_2(L) + \beta_3(FDI) + e \]

Where,

\( Y = \) Gross Domestic Product

\( K = \) Gross Capital Formation

\( L = \) Labor Force

\( FDI = \) Foreign Direct Investment

Moreover, \( \beta_0 \) is the total factor productivity that explains output growth i.e. not accounted by all the four factors and \( e \) is the error term. The below figure shows the correlation coefficients of FDI, capital and Labor with respect to GDP calculated with the help of regressions for each country separately over 2.5 decades.
### Table 1. Correlation coefficient data

<table>
<thead>
<tr>
<th>Variable</th>
<th>Brazil</th>
<th>China</th>
<th>Indonesia</th>
<th>India</th>
<th>Mexico</th>
<th>Thailand</th>
<th>Vietnam</th>
</tr>
</thead>
<tbody>
<tr>
<td>GFCF (current US$)</td>
<td>0.46</td>
<td>0.36</td>
<td>0.59</td>
<td>0.92</td>
<td>0.61</td>
<td>0.69</td>
<td>0.89</td>
</tr>
<tr>
<td>FDI (current US$)</td>
<td>0.24</td>
<td>0.42</td>
<td>0.62</td>
<td>0.11</td>
<td>0.38</td>
<td>0.52</td>
<td>0.33</td>
</tr>
<tr>
<td>Labor</td>
<td>4.84</td>
<td>8.34</td>
<td>3.56</td>
<td>3.04</td>
<td>6.79</td>
<td>6.90</td>
<td>2.07</td>
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</table>

#### Fig. 2. Correlation coefficient comparison for various countries

The graph and table depicts the effect of various variable over the GDP growth rate of various developing countries. There are different effects of FDI, capital and labor on different countries. The table depicts the actual data obtained for the correlations using regression.

### 3.2 FDI in the Indian Pharmaceutical Industry

The FDI inflow to India has increased significantly over the last 15 years. The pharmaceutical industry, accounting for about 5% of total inflow, is the 5th largest sector in the country attracting FDI.

India provides a large domestic market with a 1.2 billion population. India's highly skilled work-force is an major advantage in pharmaceuticals. Additionally, the presence of cheap manpower and a strong production base makes India an attractive market for foreign firms. Thus, most of the foreign multinationals have presence in India. However, the present scenario in comparison with the above-mentioned potential is pretty dismal. According to Pfizer, India's political and bureaucratic environment results in unreasonable price controls and other repressive laws which hinders growth in the sector. A large number of foreign firms pointed out that weak patent regime is the prime reason for firms' disinvestment in the country. The intellectual capital protection is not strong enough, both in regard to product patent and data protection. Declining profits, over the years, has been another reason for lack of interest of foreign firms in India. Due to the weak patent laws, rigid price controls and labor laws, firms tend to outsource a large chunk of their production in India which leads to cost reduction for the firm and hence do not invest much in R&D.

The MNCs in India match the largest domestic firms in terms of sales. They had similar figures of net sales in 1996, but since then the share of domestic firms in the market has been consistently on the rise, primarily because of their increased export and expansion overseas. The government of India intends to increase FDI inflow and is hopeful for the same by liberalization of policies in the pharmaceutical sector.
3.3 SPILLOVER EFFECT OF FDI ON INDIAN PHARMACEUTICAL INDUSTRY

Statistical estimation and case study of transmission channel (Competition, Demonstration and imitation, Transfer of technology and R&D, Human capital and labor turnover) are the two ways to evaluate spillover effect. Following is a study of spillover over effects of transmission channels and future predictions.

1. The spillover effect from competition lead to swept off of unproductive firms in small run and in long run better allocation of resources lead to industry improvement. To stimulate competition Indian government wants increased FDI in pharmaceutical sector.

2. Due to adaptation of new patent regime, spillover effect of imitation is going to decrease in future but establishment of foreign companies is turning out to be productive because they are introducing new technologies in India and collaboration with them will still cause demonstration spillover effect. As there are no regulations on imitation of marketing and management strategies there is scope of improvement in these aspects.

3. Most of MNC don’t have their R&D in India and they provide technical assistance to their Indian counterpart or suppliers to raise product quality and they provide inputs do that suppliers can upgrade their production facilities to international standards. In future a new strong patent regime might increase scope for technology spillover.

4. In terms of R&D there is a vast gap between Indian firms and global companies causing negligible. But emergence of collaborative projects between foreign and domestic firms and shifting of culture from marketing to R&D led to potential increase in spillover effect due to R&D. If MNC decide to establish R&D units in India competitive spillover will increase and involvement of domestic firms in research will decrease knowledge gap and absorption capability of spillover effects increase.

5. Labor turnover between foreign and domestic firms enables original knowledge transfer and helping in improvement of well-trained workforce. MNC pay extra attention for training of their labor force and Indian workforce is very well educated and exposure to more advanced foreign management skills and technology will increases the possibility for spillover effect from MNC.

From above produced evidences arguments can be imposed on continuous generation of spillover effect in future.

3.4 IMPACT OF SPILLOVER EFFECTS STUDY

This section analyzes impact of FDI on productive efficiency of domestic firms in the pharmaceutical sector using performance indicator – Return on Capital Employed (ROCE). ROCE is the ratio of operating profit to long-term capital. For capturing the impact of FDI dummy variable “DD” is used which differentiates firms as domestic or foreign firms based on the ownership shareholding pattern. DD is taken 0 for foreign firms while 1 for domestic firm. Negative coefficient of DD signifies foreign firms performing better than domestic firms while positive shows domestic firms outperforming in terms of operating efficiency.

**Hypothesis**

It is assumed foreign firms possess higher technology initially; however, slowly ROCE should become equal for foreign and domestic firms upon domestic firms gaining the operating practices used by the foreign firms. As ROCE depends on sales, we have controlled sales and formed the following regression equation:

$$ROCE_i = \beta_0 + \beta_1 DD_i + \beta_2 (\ln(sales)_i) + \epsilon_i$$

The data has been collected from MoneyControl and Capitaline website for 17 companies – 12 domestic and 5 foreign over the span of 12 years from 2001-2013. Actual data of net sales has large amount of variation from a firm to another. To limit for this heteroscedasticity we have use the natural log of net sales in the regression equation. Apart from regression, direct comparison of ROCE for domestic and foreign firms is done to analyze the convergence or divergence because of FDI.

4. RESULT

4.1 IMPACT OF FDI ON GDP

The empirical analysis of the above regression on FDI show that India’s 0.11% growth in GDP with 1% increase in FDI. Thailand, China and Indonesia also show a comparatively larger correlation value with respect to India. Labor and Capital effects for various economies can be seen from the table 1. Since the structure of economies for every country is different and thus the parameter of growth determination differs, it is difficult to conclude the relative better economy.
4.2 STUDY OF SPILLOVER EFFECT ON PHARMACEUTICAL SECTOR

Average ROCE of domestic and foreign firm over the given span is calculated. Below graph show the trend of ROCE for firms.

![Comparison of ROCE of foreign and domestic firms](image)

Convergence is observed over the years as per the hypothesis. ROCE of Indian firms has consistently increased (but with some irregularities due to other external/internal factors) from 17% in 2001 to 23% in 2013. Convergence proves spillover effects being realized in the pharmaceutical industry of India. During the initial years, ROCE of foreign firms was significantly higher domestic firms, but technological transfer has allowed Indian pharmaceutical industry to develop and emerge as one of the world leaders in this sectors.

![Variation of DD Coefficient over years](image)

Table 2. Year wise DD and Sales coefficient

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</thead>
<tbody>
<tr>
<td>DD Coeff.</td>
<td>0.776</td>
<td>-9.15</td>
<td>-17.5</td>
<td>-11.3</td>
<td>-10.9</td>
<td>-11.2</td>
<td>-13.7</td>
<td>-21.9</td>
<td>-26.2</td>
<td>-18.8</td>
<td>-17.0</td>
<td>-20.6</td>
<td>-17.5</td>
</tr>
<tr>
<td>Sales Coeff.</td>
<td>0.955</td>
<td>1.316</td>
<td>1.513</td>
<td>1.899</td>
<td>2.76</td>
<td>1.714</td>
<td>3.723</td>
<td>2.628</td>
<td>5.222</td>
<td>2.836</td>
<td>2.602</td>
<td>5.024</td>
<td>1.513</td>
</tr>
</tbody>
</table>
Results of regression are shown in the above table. Consistent negative coefficient of domestic dummy variable is a clear indication that foreign firms have performed better than domestic firms. However, positive point has been the decrease in the value of coefficient which has currently moved towards zero signifying consistent improvement in Indian firms and competing at the same level with foreign firms.

5. **Conclusion**

5.1 **Impact of FDI on GDP**

Among the developing countries, as per the correlations obtained above India seems to have not utilized FDI to foster its growth i.e. GDP. On the other hand, other economies including Indonesia, China and Thailand the effect of FDI on GDP is relatively more. FDI inflow is the main factor affecting growth however not solely its measure. There are several other factors including the above variables that are not measured quantitatively. Labor force is more talented in India as compared to other countries whereas there are many quantitative and in-determinant factors that would take time to have considerable impact on GDP in various countries before they yield profits.

In spite of having a strong capital base on an average for the past years, the utilization of FDI for GDP is poor as explained above. India needs to take various concrete steps to have optimized rate of investments directed more towards the economic growth. However due to multiple other factors contributing to the growth, there is a need to include the contribution of other factors. The dependency of these factors used in the regression model proves to give satisfactory results and are thus included. As the number of factors increase, comparison between various countries becomes difficult.

5.2 **Study of Spillover effect on Pharmaceutical sector**

When a host country opens economy for investment from foreign firms, they assume that a part of their technology spills will benefit the host country firms. However, competition effect argues that FDI drives out domestic firms as foreign firms undertake offensive strategies to capture the market. In this study, it is concluded that spillover effects are being realized slowly in Indian pharmaceutical sector and convergence is observed in terms of operational efficiency. At the time of independence of India, the pharmaceutical industry was very small but began to rise because of government’s initiative of developing a powerful indigenous industry. MNCs were welcomed and they have significantly contributed to the industry in form of technology and introduction of new drugs. Success of India in this sector has been predominantly dependent on its ability to generate formulations of drugs already been discovered and industry growth has been significant because of possibilities of regenerating foreign developed molecules. Study proves that it is clear that domestic firms have gained from FDI in terms of net sales, size and growth rate. However, the spillover effect’s existence seems has variation from time to time, depending on the development stage of the industry.

5.3 **Major impediments**

Here are a few major impediments to larger FDI flows to India:

5.3.1 Weak Infrastructure: India lags far behind other developing countries on infrastructure parameters such as ports, power supply, skill set, education etc. which results in massive company losses and irreversible damages to perishable products. This is reflected in India’s poor ranking in the World Competitiveness Index.

5.3.2 Complicated Tax Structure: The taxation policies in India are extremely complex. To add to that, India has witnessed several tax disputes regarding cross border transactions involving big MNCs. India’s indirect tax regime is pretty complex, imposing several taxes such as central sales tax, VAT, service tax, central excise duty etc. which increases burden on companies.

5.3.3 Restrictive labor laws: Indian economy has turned inflexible due to the stringent and rigid labor laws and over-regulated labor market. These are put in place to protect the interests of the workers. On several occasions OECD and World Bank studies have highlighted the need to bring reforms in Indian labor laws.

5.3.4 Bureaucracy, regulations and corruption: A major hurdle India faces is bureaucracy, red tapism and corruption. It takes months to obtain licenses, approvals and permits. Quite often the FDI approvals are kept pending for months which prompts the investor to quit. To add to that, corruption is widespread where; licenses, clearances, and contracts are given not on merit basis but based on bribery.
5.4 Policy Recommendations

Undoubtedly, India is obtaining FDI inflows far below her potential. However, Indian government has taken several steps to make the FDI policies simplified and transparent, have increased the FDI limits in different sectors, opened many new sectors for FDI, and have placed many sectors on the automatic approval route. In spite of all this, India receives much lesser FDI as compared to developing economies of China and Brazil. India stands the chance of losing its comparative advantage in lower labor costs and large domestic markets to the newly emerging low cost economies of Indonesia, Vietnam and Philippines. If some reform measures are not implemented quickly, chances will soon take the shape of reality.

In the Global Competitive Report of 2013-14, India is ranked at 60 out of 148 countries, much below other developing economies like Malaysia (rank 24), China (rank 29), Thailand (rank 37), Indonesia (rank 38), Turkey (rank 44), South Africa (rank 53), Mexico (rank 55), Brazil (rank 56), and Philippines (rank 59). Hence, it is time that India learns lessons from other countries and launches another generation of reforms. Reforms in labor laws; liberalizing FDI policies in sectors like insurance, airports and media; introduction of Goods Sales Tax to avoid the levy of multiple taxes; reduction in corporate tax rates; cutting down the bureaucratic hurdles; and simplification of regulatory procedures and development of world class infrastructure is the need of the hour. Only by implementing these reforms, can India expect to attract larger flows of FDI in the years to come.

References