

Considering Corruption, Inflation, Infrastructure and Trade to Explain Foreign Direct Investment Inflows in India Post Liberalization

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Abstract: This paper considers corruption, inflation, infrastructure and trade to fit models to explain the inflow of foreign direct investment in India post liberalization. For this purpose, data from 1995 to 2019 is used considering the consistent availability of data for all the variables during this period. Time-series regression is performed on standardized independent variables to control for multicollinearity. Two models are estimated- one having a double-log form and one without converting the explanatory variables into logarithms. It is found that corruption is significant at 5% significance level in both the models. Trade is significant at 10% significance level in the double-log model while it is insignificant in the other model. Also, infrastructural variables i.e. energy and transportation are both insignificant in double-log model while energy is significant and transport is insignificant in the other model. Consumer price index is used in place of inflation as it does not make sense to convert inflation rate into logarithm. It is found to be insignificant in both the models.

Keywords: Foreign direct investment, corruption, time-series regression, trade

JEL Classification: C32, F21, F23

1. Introduction

Foreign Direct Investment refers to investment made directly into the production and/or services of another country by buying a business or by expanding an existing business. It is a mode of doing business in a foreign country. It is beneficial for both the host country and the investor. For the host country, it can lead to economic stimulation, employment generation, development of human resource and provide managerial expertise, technology, etc. For investors, the benefits are mostly based on tax incentives, lowering risk and cost cutting.

Today, India is considered a lucrative investment destination globally which explains the trust of investors on the Indian economy. Being a developing country, India has immense growth potential. It has been Asia's one of the fastest growing economies along with China for the past few

years. Not surprisingly, both the countries receive huge FDI inflows annually.

2. A Brief History of Foreign Direct Investment in India

After achieving independence, India focused on planning in the policy making. In the late 1970s, some policy changes were made that restricted the foreign shareholdings of companies to a maximum of 40%. However, the Indian government had to take loan from IMF to cope up with a balance of payments crisis in 1980s. This was followed by some relaxation in the policies and hence flourishing joint ventures of Indian companies with their Japanese counterparts.

In 1991, India had to face a serious crisis. The government introduced some landmark reforms that changed the regulatory landscape of the Indian economy. Earlier, there were constraints on entry and exit of firms, licensing requirements and inefficiency in the markets.

There were stringent government controls on almost all the aspects of business and trade. Certain sectors were reserved for public sector which led to inefficiency. There were import controls like high tariff rates as well as export controls. There was serious deficiency of capital.

The liberal policies of the 1990s focused on improving the condition of Indian economy by encouraging investment. Entry barriers were removed to a great extent, procedures were simplified and de-licensing was practiced. Constraints on foreign direct investment and foreign portfolio investment were by and large removed.

3. Review of Literature

There is an extensive body of research available to study about the factors influencing FDI inflows, Dunning (1979, 1988) being one of the most important theoretically. It links the decision of foreign investment by a firm to the 'stage of production evolution' and to the 'related costs'. The firm selects FDI strategy if there are OLI advantages associated with it (Ownership advantage, Localization abroad and Internalizing and controlling markets). Vernon (1966) in his product life cycle hypothesis assumes imperfect markets and suggests that firms seek cost efficient and high domestic demand markets in foreign countries during a stage of the product life cycle. Schneider, Friedrich and Frey (1985) study FDI inflows in developing economies and find political instability to have a significant negative impact on FDI inflows. Assuming imperfect capital markets, a weaker domestic currency causes increase in FDI inflow to the host country, Froot and Stein (1991).

Wheeler and Mody (1992) through a case study of U.S. firms find an empirical evidence of clustering effects which means that the new investors

can experience positive spillovers by clustering with the existing investors. Dunning (1993) looks at the firm level and gives four motives for FDI, access to- resources, markets, efficiency gains and strategic assets. Hence, government policies, country-level factors and conditions can also impact the flows.

Blonigen (1997) finds that exchange rate depreciation increases FDI inflows in the host country. As per Michalet (1999), investors seek cost efficiency while establishing production process in foreign economies (vertical investments framework). Cheng and Kwan (2000) study FDI in China find infrastructure, government policy and income to positively effect and wages to negatively impact FDI. The investor seeks to new markets to sell its products and hence prefers economies where the domestic demand is growing (horizontal investments framework). Corruption adversely affects FDI inflows as it increases firm costs, Wei (2000).

Resmini (2000) studies FDI in Central and Eastern Europe (manufacturing sector) and finds that countries with larger population attract more FDI. Hence, market size also plays an important role. Also, increasing openness improves vertical FDI inflows. Similar conclusions are drawn in Bevan and Eastin (2000). Zhang (2001) in his study of China from 1977-1997 finds that trade policy, market size, labor cost, economic growth and political stability majorly determine the flow of FDI in China while level of education does not have a significant effect for the period of study. Howard and Banik (2001) define domestic pull (market size and investment in the host country) and external push (exchange rate and openness of the host country) factors. According to their study, degree of openness of the economy (export/GDP) is the only important economic factor affecting the flow of FDI in the economy.

Campos and Kinoshita (2003) also find that firms seem to gather due to interlinkages in projects or to form herds/larger FDI stocks to signal an environment conducive to business. Vani, N. and Basu (2007) find that low cost of production and research and development are the main factors to have positive impact and corporate tax to have negative impact (in India).

Kamath (2009) performs a regression for Asian countries during 1985-2005 and finds that only human capital significantly affects FDI inflow in India. Also, he disregards the model (in which he considers variables like exchange rate, GDP, technology, openness of economy, etc.) in case of India. J.P.W. and Jiangyan (2010) in a working paper (IMF) perform a sectoral analysis (primary, secondary, tertiary) using quantitative and qualitative factors. They use the data for 27 developed and emerging economies during 1985-2008. Their analysis is noteworthy because they try to address some very important issues in the study of FDI. For instance, they take into

account the fact that FDI inflows are not homogenous. Also, the factors attracting FDI to developing and developed economies might not be the same. Indeed, they find that these factors do not affect emerging and developed countries in similar ways. This might be because of different macroeconomic environments prevailing in the two types of economies.

Javorcik suggests that Investment Promotion Agencies play a significant role in attracting FDI especially in case of developing countries. They find that the sector promoted by IPAs receive 155% more FDI inflows than non-promoted sectors. (2012) Panda and T.R. Panigrahi (2012) in their article study FDI into Asian countries (China, India and Malaysia) using correlation analysis. However, they also mention that regression is required for a better understanding.

Bartel (2014) finds quality of life, environment conducive for industries and innovation to be the main factors. Salike (2016) in his study of 31 regions of China finds that human capital is the only major factor. He finds that health, supply and talents of the workforce attract investors. Hence, providing good education, sound legal system and infrastructure will help in attracting FDI into the country. Huyen (2015) in his survey finds that availability of raw materials, finance and infrastructure are the key factors for foreign companies to set-up in Vietnam. The research conducted by Mistura and Roulet (2019) points that legal and institutional set-up of a country significantly affects FDI inflow. In case of both the developed and developing economies, more legal restrictions lead to decrease in the inflow of FDI. Hebous, Kher and Tran (2020) find regulatory risk to be a significantly factor.

Bechir, Sofiene (2020) in their working paper analyze regional FDI in Tunisia and observe that it is highly clustered along coastal areas. The uneven distribution of investment in Tunisia has created a vicious cycle of unbalanced regional growth. It has been observed that the coastal regions attract the major part of foreign investments while the interior regions lag behind. An assessment has been made of the key regional factors in determining the spatial disparities in foreign investments. They first analyze the factors influencing the choice of location. Then, they analyze the distribution of FDI among various regions in Tunisia. The study has found that infrastructure, market size, government practices are the major determinants.

Abhishek Saurav, Ryan Kuo (2020) in their working paper use a more granular approach i.e. a survey-based approach to study the impact of economy's legal and regulatory environment and policy of investment promotion on FDI inflow. They also consider heterogeneity among investors' preferences to go beyond the general policy implications. They

find that host countries' policy stance towards FDI to be an important factor. However, more export-intensive firms do not give much importance to the country's legal and regulatory environments. On the other hand, firms with large workforces give a lot of importance to them. Also, investors from high-income countries are more concerned about the legal and regulatory environments. Same is the case with firms that import a huge portion of their raw materials and inputs. The study also gives valuable insights into the significance of investor types, for example, it finds that service affiliates consider joint venture requirements to be huge obstacles as compared to the manufacturing affiliates. This could be due to the fact that constraints on control might hinder the performance because of the higher skill content of services.

Going through the existing literature makes one wonder if different factors influence the inflow of FDI into the different economies, i.e. they are country-specific. Most of the studies give different conclusions. Also, a factor that is significant in one study is found to be insignificant in another study. The incoherence in the findings leaves scope for further research. Therefore, this paper is an attempt to explain the determinants of foreign direct investment inflows specifically in India's context post liberalization.

4. Datasources and Methodological Framework

The data for foreign direct investment net inflows, consumer price index, trade, energy and transport have been collected from the World Bank website. For corruption, the score available on the Transparency International website has been used. The organization publishes the Corruption Perceptions Index report every year since 1995 that uses a scale from 0 to 100 to rank countries; the higher the score, the better the ranking. Prior to the year 2012, the scores used to be on a scale of 0 to 10. Hence, to make the data comparable, unitary method has been used to convert the scores prior to 2012. Time period considered is from 1995 to 2019 considering consistent availability of data for all the variables during this period.

The net inflows of foreign direct investment in India are expressed in current US dollars. Consumer price index reflects changes in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or revised from time to time. It has been given with the base year 2010 i.e. the index equals to 100 for the year 2010. It can be considered if we cannot use inflation rate in our models. It has been used because it makes sense to convert it into logarithm but it does not make sense to convert inflation rate into logarithm. Trade is the sum of exports and imports of goods and services expressed as a percentage of the gross domestic product.

Energy is basically investment in energy with private participation, expressed in current US dollars. Similarly, transportation is investment in transportation with private participation, expressed in current US dollars.

Two following functional forms are used:

$$\log FDI_t = \alpha_0 + \alpha_1 * z \log TRADE_t + \alpha_2 * z \log TRANSPORTATION_t + \alpha_3 * z \log ENERGY_t + \alpha_4 * z \log CPS_t + \alpha_5 * z \log CPI_t + e_t \quad (1)$$

$$FDI_t = \beta_0 + \beta_1 * z TRADE_t + \beta_2 * z TRANSPORTATION_t + \beta_3 * z ENERGY_t + \beta_4 * z CPS_t + \beta_5 * z CPI_t + e_t \quad (2)$$

Where t is the time in year, e is the error term for year t, z stands for standardization of a variable, CPS stands for corruption perception score and CPI stands for consumer price index.

I refer to these models as Model 1 and Model 2 respectively. Both the models are estimated using time-series regression in the software Stata14. Tests for autocorrelation and heteroskedasticity in the data are also performed.

5. Empirical Results and Interpretation

The regression results for the two models are given below.

Table 1: Model 1

<i>Variables</i>	<i>Coefficient</i>	<i>P-Value</i>
zlogTRADE	0.38719	0.077
zlogTRANSPORTATION	0.10404	0.595
zlogENERGY	0.06380	0.593
zlogCPS	0.44354	0.041
zlogCPI	0.27316	0.279
Number of observations	25	
R-squared	0.9329	
Adjusted R-squared	0.9152	
F(5, 19)	52.81	
Prob> F	0.0000	
Breusch-Godfrey LM test for autocorrelation		
Chi2(1)	2.476	
Prob> Chi2	0.1156	
Breusch-Pagan test for heteroskedasticity		
Chi2(1)	0.04	
Prob> Chi2	0.8432	

Software used: Stata14

The model is overall statistically significant at 5% significance level. It has both a high R-squared of about 93% and a high Adjusted R-squared of about 91%. The P-value for zlogCPS is below 5% meaning that its coefficient is statistically different from zero i.e. the variable is statistically significant at 5% significance level. The P-value for zlogTRADE is not below 5% but it is below 10% meaning it is statistically significant at 10% significance level. For rest other variables, the P-value is neither below 10% nor 5% meaning they are not statistically significant at either of the two significance levels.

The Breusch-Godfrey LMtest for autocorrelation is performed under the null hypothesis that there is no serial correlation. At 5% significance level, we fail to reject the null hypothesis since $0.1156 > 0.05$. Hence, there is no problem of autocorrelation in this model. The Breusch-Pagan test for heteroskedasticity is also performed under the null hypothesis that there is no heteroskedasticity. Hence, at 5% significance level, we fail to reject the null hypothesis as $0.8432 > 0.05$, meaning there is no problem of heteroskedasticity in this model.

Table 2: Model 2

<i>Variables</i>	<i>Coefficient</i>	<i>P-Value</i>
zTRADE	2.99e+09	0.197
zTRANSPORTATION	-3.13e+09	0.119
zENERGY	4.68e+09	0.012
zCPS	9.07e+09	0.025
zCPI	6.01e+09	0.120
Number of observations	25	
R-squared	0.9127	
Adjusted R-squared	0.8898	
F(5, 19)	39.75	
Prob> F	0.0000	
Breusch-Godfrey LM test for autocorrelation		
Chi2(1)	0.557	
Prob> Chi2	0.4554	
Breusch-Pagan test for heteroskedasticity		
Chi2(1)	2.29	
Prob> Chi2	0.1309	

Software used: Stata14

The model is overall significant at 5% significance level. The R-squared is high, about 91% while Adjusted R-squared is 88% in this model. Both zENERGY and zCPS are statistically significant at 5% significance level since their P-values are lower than 0.05. Rest other variables are not significant at either 5% or 10% significance levels in this model.

The Breusch-Godfrey LM test for autocorrelation assures us that there is no problem of autocorrelation in this model since $0.4554 > 0.05$, meaning we fail to reject the null hypothesis of no serial correlation at 5% significance level. The Breusch-Pagan test for heteroskedasticity also reveals that there is no issue of heteroskedasticity in this model as $0.1309 > 0.05$.

6. Conclusion

As per the findings of this paper, corruption is a significant factor in determining the foreign direct investment inflows in India. It has been found that the better India scores in the Corruption Perceptions Index, the more it leads to the inflows of foreign direct investment in India. Hence, good governance and transparency in the procedures is important to maintain India's status of being one of the most attractive destinations for foreign direct investment. Trade is also an important factor as per one of our two models. Since trade is the sum of exports and imports in goods and services expressed as a percentage of gross domestic product, the higher it is, the more open India is for trade. It is therefore not surprising that trade openness leads to increasing inflows of foreign direct investment. Consumer price index does not impact the inflows according to this paper. Inflation could also have been used but since double-log model requires one to convert all the variables into logarithms, it does not make sense to convert a variable that is expressed in percentage to logarithm. Infrastructural variables like energy and transport are both insignificant in Model 1 while energy is significant in Model 2. Infrastructure is an important factor when it comes to attracting foreign direct investment in India as it supports the production procedure by facilitating easy movement of various factors of production, including labor. It could be because of multicollinearity among some variables that the results do not emphasize much on the importance of infrastructure.

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