



## An Empirical Examination of the Determinants of Foreign Direct Investment in India

**Sharmiladevi J.C.**

Research Scholar, Bharathiar University  
Asst Prof, Crescent Business School, B.S.Abdur Rahman University, Vandalur, Chennai

**Saifilali M.I.**

Director, Dhannish Ahamed School of Management, Padappai, Chennai

### ABSTRACT

Developing countries around the world needs huge capital for financing their strategic goals. Capital in the form of foreign direct investment (FDI) is the most favored destination for such countries. This paper examines the macroeconomic variable that act as determinants of FDI inflow into India. The potential FDI determinant is comprehensive, and includes variables proposed from literatures. The authors makes use of time series data for the period 2000-01 to 2011-12, and the study employs ordinary Least Square (OLS) method. Order of integrity for all the variables is I (1). Results indicate that among the selected variables, export, index of industrial production, inflation shows statistically significant at 5 % level.

*Keywords: Foreign Direct Investment, determinants, Ordinary Lest Square.*

### 1.0 INTRODUCTION

Foreign direct investment (FDI) is becoming an increasingly important element in global economic development and integration after globalization, as it opens possibilities for accelerating growth, technical innovation and enterprise restructuring, as well as capital account relief ( Garibaldi et al (1999); Holland and Pain (1998)), produces economic benefits to the recipient countries by providing capital, foreign exchange, technology and by enhancing competition and access to foreign markets ( World Bank, 1999; Crespo and Fontura, 2007; Romer, 1993). Developing countries around the globe are competing with each other to attract FDI by liberalizing their policy regimes and offering various incentive packages, such as tax rebate, trade liberalization, establishment of special economic zones and incentive packages to the foreign investors. In 1997, 76 countries made 151 changes in the FDI related policies of which, 89 percent changes were made to create FDI friendly environment (UNCTAD, 1998). With a few exceptions, however, most of the developing countries are not very successful in attracting FDI. Thus, the question arises as to what determines the inflow of FDI? Although there is consensus on a few economic variables as the major determinants of FDI, much more is still unexplored or sometime it was wrongly predicted. As a result, empirical findings on the determinants of FDI are quite chaotic and misleading. This necessitates undertaking more and more empirical study with well defined variables and new data sets to clearly understand the determinants of FDI.

### 2.0 REVIEW OF LITERATURE

Issues related to FDI determinants is multidimensional, because different types of motives work behind the decision of investment in foreign countries by the multinational corporations. FDI can be for market seeking, resource seeking, efficiency seeking, etc., Athukorala (2009). The literature on FDI has been thickening day by day to identify the determinants of FDI (e.g., Nunnenkamp and Spatz, 2002; Bandera and White, 1968; Schmitz and Bieri, 1972; Root and Ahmed, 1979; Torrissi, 1985; Schneider and Frey, 1985; Petrochilas, 1989; Wheeler and Moody, 1992; Jun and Singh, 1996).



## 2.1 POTENTIAL VARIABLES DETERMINING FDI INFLOWS

Based on the literature review, this study gauges a set of potential determinant variables that influence the FDI flows and we classify the variables into four variables viz., growth rate of gross domestic product, exports, index of industrial production, inflation.

### 2.1.1 GROSS DOMESTIC PRODUCT

Gross Domestic Product (GDP) is a positive and significant determinant of FDI flows (see: Lankes and Venables, 1996; Resmini, 2000; Duran, Bevan and Estrin, 2000; Nunes et al., 2006; Sahoo, 2006). Studies pertaining to identify the relation between FDI and GDP are diverse and contrast. A study conducted by Sahoo and Mathiyazhagan (2003), finds a long run relationship between GDP and FDI. Chakraborty and Basu (2002) reports that there is one-way causality between GDP and FDI. Dua and Rashid [1998] report similar results. Kumar and Pradhan (2002) consider FDI-growth relationship to be neutral for India. Agrawal (2005), by obtaining panel estimates for five South Asian countries, including India, for the period 1965-96 finds that the growth impact of FDI is negligible. However, Pradhan (2002) estimates a Cobb-Douglas production function using aggregate data for 1969-97 finds that FDI has no significant impact on growth

### 2.1.2 EXPORT

Export growth in India is much faster than GDP growth over the past few decades. Several factors are responsible for this phenomenon and important among them is FDI. FDI has both direct and indirect effect on host countries' exports. The direct effects refer to exports by foreign affiliates. Multinationals use their affiliates as "export platforms" through FDI (Helpman, Melitz & Yeaple, 2002). The indirect effects include spillover effects of MNCs on local firms' export activities. (UNCTAD, 2002). In the theories of international trade and FDI, exports and FDI are playing the role of both substitutes and compliments. Vernon (1966) in his Product Life Cycle theory explained about the positive role of FDI in promoting exports from host country. Kojima (1973, 1985) found that when FDI is made in sectors where host country has comparative advantage, it results in trade creating effects, implying that it creates exports. Khan and Leng (1997) found a positive relation between FDI and exports in Singapore and a negative relation between the two in Taiwan and South Korea. Positive relation between exports and FDI is studied by Helpman (1984), Helpman and Krugman (1985). More such studies in this area was done by Liu et al (2002) and K.H. Zhang (2005) for China, Soliman. M (2003) for MENA countries, Metwally (2004) for Egypt, Jordan and Yeman. Empirical studies done so far in the case of India show mixed results. Studies in this line is done by Lall and Mohammed (1983), Kumar and Siddharthan (1994), Agarwal (1997), Kumar (1998), Aggarwal (2001). Sharma [2000] examined the contribution of FDI in India's export performance for the period 1970-98 and found that FDI is not playing a significant role. Pailwar [2001] argues that India has not been able to attract FDI in export-oriented areas. Banga (2003) finds that FDI not only led to export diversification but also indirectly improved export via export spillovers in India. According to ADB (2004) FDI accounts for about three per cent of India's export compared to 50 per cent in various East Asian host countries.

### 2.1.3 INFLATION

A host country's economic instability can be a major deterrent to FDI inflow. Any form of instability introduces a form of uncertainty that distort investors' perception on the future profitability in the country (Erramilli and D'Souza, 1995). Ekpo (1997) identified inflation as one of the influencing factor for FDI inflow. Akinboade, Siebrits and Roussot (2006) states that low inflation is taken to be a sign of internal economic stability in the host country. High inflation indicates the inability of the government to balance its budget and the failure of the central bank to conduct appropriate monetary policy. Inflation can be used as an indicator of economic and political condition of the host country, but the difference between high and low inflation is not distinct. (Ahn, Adji and Willett, 1998). High inflation can cause various problems within the country to reduce its attractiveness to foreign investors (Glaister and Atanasova, 1998). Low inflation and interest rate coupled with high economic growth can attract foreign investors and increase FDI inflow. (Coskun 2001). Wint and Williams (2002) show



that a stable economy attracts more FDI, thus a low inflation environment is desired in countries that promote FDI as a source of capital flow.

#### **2.1.4 INDEX OF INDUSTRIAL PRODUCTION (IIP)**

Compared to a volatile economy a country which has stable macroeconomic condition with high and sustained growth rates will receive more FDI inflows. IIP along with few other variables are usually used as a proxy for measuring growth rates. (Duran 1999, Dasgupta and Rath, 2000), Vijayakumar et al (2010). It is expected that IIP rates would influence FDI flows directly. But studies conducted by Dua and Rashid (1998) do not support this view

#### **2.1.5 EXCHANGE RATE**

One of the many influences on FDI activity is the behavior of exchange rates. Exchange rates, defined as the domestic currency price of a foreign currency, matter both in terms of their levels and their volatility. Exchange rates can influence both the total amount of foreign direct investment that takes place and the allocation of this investment spending across a range of countries. When a currency depreciates, meaning that its value declines relative to the value of another currency, this exchange rate movement has two potential implications for FDI. First, it reduces that country's wages and production costs relative to those of its foreign counterparts. All else equal, the country experiencing real currency depreciation has enhanced "locational advantage" or attractiveness as a location for receiving productive capacity investments. By this "relative wage" channel, the exchange rate depreciation improves the overall rate of return to foreigners contemplating an overseas investment project in this country. The exchange rate level effects on FDI through this channel rely, on a number of basic considerations, like the exchange rate movement needs to be associated with a change in the relative production costs across countries, the importance of the "relative wage" channel, anticipated exchange rate moves reflected in a higher cost of, expected rates of returns across countries. (Goldberg, 1996). Aizenman (1992) demonstrated, the extent to which exchange rate variability influences foreign investment on the sunk costs. Higher exchange-rate variability lowers the certainty equivalent expected exchange-rate level, as found by Cushman (1985, 1988). He further found that certainty equivalent levels are used in the expected profit functions of firms that make current investment decisions in order to realize profits in future periods. If exchange rates are highly volatile, the expected values of investment projects are reduced, and FDI is reduced accordingly. the exchange rate effects on FDI are viewed as exogenous, unanticipated, and independent shocks to economic activity. So, exchange rates are best described as a random walk, making it a reasonable treatment. Zubair Hasan (2003) shows that foreign exchange rate, is an important factor in attracting FDI into Malaysia. In the United States economy, exchange rate volatility has not had a large contractionary effect on overall investment (Goldberg 1993). Overall, the current state of knowledge is that exchange rate volatility can contribute to the internationalization of production activity without depressing economic activity in the home market. The actual movements of exchange rates can also influence FDI through relative wage channels, relative wealth channels, and imperfect capital market arguments. New and extensive datasets must be used to empirically identify the extent to which exchange rates influences FDI.

### **3.0 METHODOLOGY**

#### **3.1 OBJECTIVES AND DATABASE**

The objective of this research study is to examine the determinants of FDI in India. We consider macro economic variables like aggregate GDP growth rate, exports, inflation and index of industrial production as independent explanatory variable and FDI inflow as dependent variable. The period taken for study is from 2000-01 to 2010-2011, and secondary data is taken from Reserve Bank of India database, which is shown in Table 1.



Table: 1

YEAR	AGG GR GDP	FDIINF	INF	IIP	EXP	REER
2000-01	-964.98	184.04	155.7	162.5	2035.71	99.30
2001-02	-1292.78	292.45	161.3	167.0	2090.18	100.90
2002-03	-986.38	243.97	166.8	176.6	2551.37	98.90
2003-04	2071.23	198.30	175.9	189.0	2933.67	99.04
2004-05	1936.51	269.47	187.3	211.1	3753.40	99.68
2005-06	2816.09	394.57	104.5	108.6	4564.18	102.20
2006-07	3112.91	1026.52	111.4	122.6	5717.79	101.23
2007-08	3322.72	1394.20	116.6	141.7	6558.64	107.60
2008-09	2620.4	1906.00	126.0	145.2	8407.55	101.18
2009-10	3489.61	1578.00	130.8	152.9	8455.34	93.04
2010-11	3783.17	1181.00	143.3	165.5	11429.22	101.44
2011-12	3165.6	1550.00	156.1	170.3	14592.81	100.81

Multiple regression analysis has been used to find out the determinants of FDI in India. In the regression model the dependent variable is FDI in India and the independent variables considered in the model are, AGG GR GDP-Aggregate Growth Rate of GDP, FDIINF-FDI Inflow, WPI-Wholesale Price Index for inflation , IIP-Index of Industrial Production, EXP-Exports, REEF-Real Effective Exchange Rate. The data set is checked for stationarity, as regression of one time series data on another may at most of the time leads to spurious results. For this purpose Augmented Dickey Fuller test is used with one period lag. The researchers have applied Ordinary Least Square (OLS) method of estimation.

### 3.2 HYPOTHESIS OF THE STUDY

To achieve the objectives of the study the following hypotheses have been developed:

- H1: There is no effect of GDP aggregate growth rate on the inflow of FDI in India
- H2: There is no effect of exports on the inflow of FDI in India
- H3: There is no effect of inflation on the inflow of FDI in India
- H4: There is no effect of IIP on the inflow of FDI in India
- H5: There is no effect of REEF on the inflow of FDI in India

### 3.3 Model Building

The model can be written as:-

$$FDI\ INF = f(AGGDP, INF, IIP, EXP, REEF) \dots \quad (1)$$

Where,

FDI INF = Foreign Direct Investment Inflow

AG GDP = Aggregate growth rate of Gross Domestic Product

INF = Inflation (WPI)

IIP = Index of Industrial Production

EXP = Export

REEF- Real Effective Exchange Rate

The transformation of the estimated regression model is:-

$$I(-1) FDI\ INF = b_0 + b_1 I(-1)AG\ GDP + b_2 I(-1)INF + b_3 I(-1)IIP + b_4 I(-1)EXP + U_i \dots (2)$$

The estimation results using OLS has been presented in the following Table 2

### Regression Results

Variables	Coefficient	Std Error	t -Stat	Probability
AG GDP	-0.142401	0.088893	-1.601942	0.1532
INF	-56.81803	18.36078	-3.094532	0.0175
IIP	43.45512	16.00416	2.715239	0.0300
EXP	0.118552	0.030162	3.930529	0.0057
REEF	-24.23590	27.76209	-0.872985	0.4162
CONSTANT	4300.154	3048.039	1.410794	0.2080



$$R^2 = 0.898187$$

$$\text{Adjusted } R^2 = 0.813344$$

$$\text{SEE} = 281.2847$$

$$\text{F Stat} = 10.58636$$

$$\text{Probability} = 0.006149$$

$$\text{Durbin-Watson stat} = 2.415281$$

Residual Statistics

Heteroskedasticity Test: Breusch-Pagan-Godfrey Test = 0.9770

Breusch-Godfrey Serial Correlation LM Test = 0.2437

Jarque-bera Normality Test = 0.315412

#### 4.0 INTERPRETATION OF REGRESSION RESULTS:-

The regression results presented in above table (1.6) shows that model is able to explain 88.5 percent of variation in the dependent variable. The  $R^2$  value is 88.5 %, which means that, 88.5% variations in FDI can be explained jointly by aggregate GDP growth rate, IIP, inflation and exports. The variables IIP, inflation, exports are individually significant at 5% level and aggregate GDP growth is significant at 15% level. The Durbin-Watson (D.W) statistics is 2.4, which indicates that this model is free from collinearity. From the residual statistics we can understand that the model is free from auto correlation. Breusch-Godfrey Serial Correlation LM Test value is 0.4927, which indicates that residuals are not auto-correlated. The test for heteroskedasticity - Breusch-Pagan-Godfrey Test value is 0.8035, which indicates absence of heteroskedasticity. Residuals follow normal distribution and this is shown by the Jarque-bera Normality statistics 0.199651. Overall this model is found to be statistically significant.

#### 5.0 CONCLUSION

The purpose of this paper was to identify the significant variables which act as determinants for FDI inflow into India. From the results one can understand that all the four variables are significantly influencing FDI inflow. Hence the null hypotheses H1, H2, H3 and H4 are rejected. The research gives an indication that, those vital parameters which influences the internal business environment of a nation like growth rate, inflation, IIP, exports is having a direct influence upon India's credibility in the international arena in terms of attracting more FDI. So it is the duty of the government and the reserve bank to keep these vital internal macro variables under effective control so as to ensure more FDI inflow in future.

#### REFERENCES

1. ADB, 2004; Asian Development Outlook 2004, Part 3: Foreign Direct Investment in Developing Asia, Asian Development Bank, Manila
2. Agrawal, P., 2005; Foreign Direct Investment in South Asia: Impact on Economic Growth and Local Investment', in: E.M. Graham (ed.), Multinationals and Foreign Investment in Economic Development, Palgrave Macmillan, Basingstoke.
3. Ahn, Y.S., Adji, S.S. and Willett, T.D. (1998) The effect of inflation exchange rate policies on direct investment to developing countries. *International Economic Journal*. 12 (1), 95-104.
4. Aizenman, J. "Exchange Rate Flexibility, Volatility and Patterns of Domestic and Foreign Direct Investment", *International Monetary Fund Staff Papers* vol.39 no. 4 (1992) 890-922
5. Ana Marr (1997): " Foreign Direct Investment Flows to Low-Income Countries: A review and Evidence", Overseas Development Institute, pp.1-11
6. Athukorala, Prema-Chandra, 2009. "Trends and Patters of Foreign Direct Investment in Asia: A Comparative Perspective." *Margin-The Journal of Applied Economic Research*. Vol. 3, No. 4: 365-408.
7. Akinboade, O.A., Siebrits, F.K. and Roussot, E.N. (2006), Foreign Direct Investment in Sub-Saharan Africa-Origin, targets, impact and potential. Nairobi: Africa Economic research Consortium.



8. Bandera, V.N. and, J.T. White, 1968. "US Direct Investment and Domestic Markets in Europe." *Economia Internazionale*. Vol., 21:117-233.
9. Beven, A.A. and Estrin, S. (2004) "The determinants of foreign direct investment into European transition economies", *Journal of Comparative Economics*, Vol. 32, pp. 775-787.
10. Chakraborty, C., and P. Basu, 2002, 'Foreign Direct Investment and Growth in India: A Cointegration Approach', *Applied Economics*, Vol. 34.
11. Coskun, R. (2001) Determinants of direct investment in Turkey. *European Business Review*, 13 (4), 221-226.
12. Crespo, Nuno and Maria Paula Fontoura, 2007. "Determinant Factors of FDI Spillovers- What do we Really Know?" *World Development*, Vol. 35, No. 3: 410-425.
13. Cushman, D.O., "Real Exchange Rate Risk, Expectations, and the Level of Direct Investment," *Review of Economics and Statistics* vol.67 no. 2 (1985) 297-308.
14. Cushman, D.O., "Exchange Rate Uncertainty and Foreign Direct Investment in the United States" *Weltwirtschaftliches Archiv* 124:2 (1988) 322-334.
15. Dua, P. and Rasid , A.I. (1998), "FDI and Economic Activity in India", *Indian Economic Review*, 33(2): 153-168.
16. Erramili, M.K. and D'Souza, D.E. (1995) Uncertainty and Foreign direct investment: the role of moderators. *International Marketing Review*, 12(3), 47-60.
17. Garibaldi, P., Mora, N., Sahay, R. and Zettelmeyer, J. (1999) 'What Moves Capital to Transition Economies', IMF Conference "A decade of transition", Washington, DC, February
18. Glaister, K.W. and Atanasova, H. (1998) Foreign direct investment in Bulgaria: Patterns and Prospects. *European Business Review*, 98 (2), 122-134.
19. Goldberg.L.S Exchange Rates and Foreign Direct Investment, Princeton Encyclopedia of the World Economy (Princeton University Press)
20. Goldberg, L., "Exchange Rates and Investment in United States Industry", *Review of Economics and Statistics* vol. 75 no.4 (1993) 575-588.
21. Helpman. E, Melitz. M.J and Yeaple. S.R. (2003) Discussion Paper No: 1998, Harvard Institute of Economic Research.
22. Helpman E., 1984; Simple Theory of International Trade with Multinational Corporations', *Journal of Political Economy*, Vol. 92, No. 3.
23. Helpman E. and Krugman P.R., 1985; Market Structure and Foreign Trade, Increasing Returns, Imperfect Competition and International Economy, MIT Press, Cambridge, Massachusetts.
24. Holland, D. and Pain, N. (1998) 'The Diffusion of Innovations in Central and Eastern Europe: A Study of the Determinants and Impact of Foreign Direct Investment, NIESR Discussion Paper No.137, National Institute of Social and Economic Research, London
25. Jun, Kwang W. and Harinder Sing, 1996. "The Determinants of Foreign Direct Investment in Developing Countries." *Transnational Corporations*, Vol. 5, No.2: 67-105.
26. Kojima, K. 1973. A Macroeconomic Approach to Foreign Direct Investment. *Hitotsubashi Journal of Economics* 14 (1): 1-21.
27. Kumar N. and Pradhan J.P. (2002) "Foreign direct investment, externality and economic growth in developing countries: Some empirical explorations and implications for WTO negotiations on investment" Research and information system, New Delhi India.
28. Kulwinder Singh (2005): "Foreign Direct Investment in India: A Critical analysis of FDI from 1991-2005", [papers.ssrn.com/sol3/papers. Cfm\\_id\\_822584](http://papers.ssrn.com/sol3/papers.cfm_id_822584)
29. Lall, S. and Mohammad, S., 1983; Foreign Ownership and Export Performance in the Large Corporate Sector in India, *Journtnl oJ Development Studies*, Vol.20.
30. Lankes, H.P. and Venables,A.J. (1996) 'Foreign Direct Investment in Economic Transition: The Changing Pattern of Investments', *Economics of Transition*, Vol.4, pp. 331-347.
31. Resmini, L. (2000) "The determinants of foreign direct investment into the CEECs: New evidence from sectoral patterns", *Economics of Transition*, Vol.8(3),pp.665-689
32. Romer, P, 1993. "Idea Gaps and Object Gaps in Economic Development." *Journal of Monetary Economics*." Vol. 32, No. 3: 543-573.



33. Nunnenkamp, Peter and Julius Spatz, 2002. "Determinants of FDI in Developing Countries: has globalization changed the rules of the game?" *Transnational Corporations*. Vol. 11, No. 2: 1-34.
34. Nunes, C.L., Oscategui. J. and Peschiera. J. (2006) 'Determinants of FDI in Latin America', *Documento De Trabajo* 252.
35. Pailwar, V., 2001; 'Foreign Direct Investment Flows to India and Export Competitiveness', *Productivity*, Vol.42.
36. Petrochilas, G.A., 1989. *Foreign Direct Investment and Development Process*. Aldershot: Avebury.
37. Pradhan, J.P., 2002; *Foreign Direct Investment and Economic Growth in India: A Production Function Analysis*, *Indian Journal of Economics*, Vol. 82, 327
38. Root, F. R. and A. A. Ahmed, 1979. "Empirical Determinants of Manufacturing Direct Foreign Investment in Developing Countries." *Economic Development and Cultural Change*. Vol. 27: 751-767.
39. Sahoo, D., and Mathiyazhagan M.K., 2003; 'Economic Growth in India: Does Foreign Direct Investment Inflow Matter?', *Singapore Economic Review*, Vol.48, No.2.
40. Sahoo, P. (2006) 'Foreign Direct Investment in South Asia: Policy, Trends, Impact and Determinants', *ADB Institute Discussion paper* No.56.
41. Salisu, A. Afees (2002): "The Determinants and Impact of Foreign Direct Investment on Economic Growth in Developing Countries: A study of Nigeria", *Indian Journal of Economics*, pp. 333-342.
42. Sapna Hooda (2011), "A study of FDI and Indian Economy". PhD Thesis, National institute of Technology, Kurukshetra.
43. Schmitz, A. and J. Bieri, 1972. "EEC Tariff and US Direct Investment." *European Economic Review*. Vol. 3: 259-270.
44. Schneider, Friedrich and Bruno S. Frey, 1985. "Economic and political determinants of foreign direct investment." *World Development*. Vol. 13, No. 2: 161-175.
45. Sharma, K., 2000; *Export Growth in India: Has FDI Played a Role?* Economic Growth Centre Dissuasion PaperNo.,816, Yale University.
46. Torrisi, C.R.,1985. "The Determinants of Direct Investment in a Small LDC." *Journal of Economic Development*. Vol. 10: 29-45.
47. United Nations Conference on Trade and Development (UNCTAD), (2002), *World Investment Report: Transnational Corporations and Export Competitiveness (2002)*, New York: United States.
48. UNCTAD, Various Years; *World Investment Reports 1998*, United Nations Conference on Trade and Development, Geneva
49. Vernon, Raymond (1966) "International investment and international trade in the product life cycle", *Quarterly Journal of Economics*, 80, pp. 190-207.
50. Wheeler, David. and Ashoka Mody, 1992. "International Investment Location Decisions, the case of US Firms." *Journal of International Economics*. Vol. 33, No. 1 & 2, Pp. 57-76.
51. Wint, G.W. and William, D.A.(2002) *Attracting FDI to developing countries: A changing role for government?* *The International Journal of Public Sector Management*, 15 (5), 361-374.
52. World Bank, 1999. *Foreign Direct Investment in Bangladesh: Issues of Long-run Sustainability*. World Bank, Bangladesh Country Office, Dhaka, Bangladesh
53. Zubair Hasan, 2003. "Determinants of FDI flows to developing economies: Evidence from Malaysia", *International Islamic University Malaysia*.