THE DETERMINANTS OF INDIA'S FDI INFLOWS: THE BOUND TEST ANALYSIS

Md. Qaiser Alam[1], Md. Shabbir Alam[2*]
[1]Associate Professor, Department of Economics, D. S. College, Agra University, India, [2]Assistant Professor, Department of Finance and Economics, CCBA, Dhofar University, Oman.
Email: [1]qaiseralm@gmail.com, [2*]shabbir.alam28@gmail.com

Abstract

Purpose of the study: This paper aims to empirically examine the determinants of FDI inflows which include policy factors along with macroeconomic aggregates prevailing in India that serve as an important factor for attracting FDI in the country.

Methodology: This paper has applied the Auto Regressive Distributed Lag (ARDL) modeling technique to empirically examine the co-integration relationship among FDI inflows and various macroeconomic aggregates prevailing in India to determine the factors affecting the flow of FDI in India.

Main Findings: The study finds that there exists a co-integration relationship between the variables in the model. The estimated coefficient reveals that FDI inflows in India are positively influenced by trade openness, domestic investment, moderate domestic prices and exchange rate in the long-run. The outcomes also reveal that FDI inflows are positively influenced by the past level of FDI inflows, the past year of GDP per capita, past level of trade openness and currency exchange rate in the country in the short-run.

Applications of the study: The study will be helpful in the formulation of suitable policies towards foreign investment inflows and to optimize its role in the host country. The study will be also helpful to the government for the enrichment of socioeconomic overheads in the host country to maximize the gains from FDI inflows.

The novelty of the Study: The outcome of the study with an addition to the existing literature by incorporating the new variables in the model provides a new variable specific influence on FDI inflows in the country. This will also provide a scope for further study by establishing backward and forward spill over effects of FDI inflows in enhancing income, output, and employment in the country.

Keywords: FDI, GDP, Domestic Investment, Domestic Prices, Trade Openness, Exchange Rate.

JEL Classification: F21, F13, F31, F44.

INTRODUCTION

FDI inflows are playing a significant role in the growth and development of developing countries. It induces income, output, and employment in the FDI recipient economies. It is considered as a vehicle for industrial restructuring, better investment prospects, production and trade in the recipient countries. This has resulted in an advancement of economic growth in Japan, Hong-Kong, Republic of Korea, Singapore, Taiwan, Indonesia, Malaysia, Philippines, and Thailand. This has brought changes in the structure of economic activity, advancement of manufacturing industries and promoted market-oriented growth in the developing countries. The outbreak of the financial crisis in 1997 has led to a shift in the emphasis on FDI inflows over trade flows for fostering economic growth among the developing countries. The sum of policy factors and macroeconomic aggregates in the home and host countries has made a shift towards the FDI regime (Alam, 2010).

In the 1990s has recorded a major shift in the FDI inflows among the developing economies annually from US$23225 million during the 1980s to US$134620 million during the 1990s and further to US$385874 million during the 2000s. FDI inflows in the developing countries increased to US$706043million which is 54.4 percent of the world FDI inflows in the year 2018. Developing Asia accounted for 42.6 percent of FDI flows to the developing economies and 39.4 percent of the world FDI inflows in the year 2018 (UNCTAD, 2019). FDI inflows in developing countries have been quite uneven. The developing Asian region with 39.4 percent of world FDI inflows is now the most important developing country in the world. Investment inflow shows that the region is in the leading position. This is following the better performance of Asian countries among the developing countries with strong macroeconomic indicators including the GDP growth rate, export growth rates, manufacturing growth rates along with their declining reliance on indebtedness along with their favorable changes in the foreign investment regime. This has made developing Asia, particularly the East and Southeast Asian region with 22.3 percent and 11.5 percent of the world FDI flows as the largest recipient of FDI among the developing countries in 2018. In developing countries, China continued to be the largest absorber of FDI inflows. In developing Asia, China with US$139044 million that is 19.7 percent and India with US$42286 that is 6.0 percent were the largest absorber of FDI inflows in 2018. India's economic reform policy measure of July 1991 has accelerated the inflow of FDI over the 1980s and it increased many folds during the post-1990s. (World Investment Report, 2019).

The paper attempts to evaluate the determinants of FDI inflows in India. It aims at finding out the theoretical and empirical evidence that is affecting the flow of FDI in the country. This paper has been presented in five sections followed by conclusions and valuable suggestions. The first section provides an introduction. The second section describes the factors affecting the flow of FDI in the country. The third section provides the literature review. The fourth section outlines the research methodology and empirical findings followed by conclusions and valuable suggestions.

Determinants of FDI Inflows

"FDI inflows" in a country are being influenced by socioeconomic, political and human factors. The economic factors consist of economic stability, prospects of market growth, economic overheads, policies related to investment, trade, wages, financial markets, level of government expenditure and industrial regulations, etc. FDI flows in a country are also determined by tax and non-tax incentives such as tax holidays, duty-free import of capital equipment, intermediates, and raw materials, relaxation in income tax, capital gain tax, and exemption from withholding taxes, ownership rights, patent protection, and easy investment approvals. The socio-political factors include political stability, attitudes towards growth and development, present political and judicial system and laws, trade unions, social infrastructure like education, health, skills, research, and development, etc. FDI inflows are also affected by wage rates, financial markets feasibility, government expenditure, industrial regulations, educated and skilled labor force, etc. (Calhoun et al. 2002; Dutta, N and Roy, S. 2011; Othman et al. 2018).

The macro organizational policies, namely resource allocation, structural and organizational policies also influence FDI inflows. The structural policies influencing the sunset and sunrise industries, the spatial composition of economic activities, the functional composition of activities by type of ownership and intensity of competition and the environmental policies which influence FDI flows. FDI inflows in an economy are also determined by macroeconomic conditions including GDP per capita, GDP growth rate, financial development, domestic price level, interest rate, exchange rate and openness in the country. The quality of human capital formation is also an important determinant of FDI inflows. It is also driven by the cost of production depending on with the objective as to resource seeking, market seeking and efficiency-seeking benefits of FDI inflows. The location and culture, efficiency and profits are also found to influence FDI inflows. FDI flows in the countries of East and Southeast Asia are being driven by a different set of factors such as innovation-driven in Hong Kong and Taiwan, investment-driven in Singapore and Malaysia and factor-driven in Thailand, Indonesia, and the Philippines. Thus, based on the above facts, it can be said that the existing atmosphere in which firms operate, location, market size, skill and expertise along with macroeconomic factors that influence FDI inflows in a country (Othman et al. 2018 and OECD, 2000).

LITERATURE REVIEW

There are numerous theoretical literature and empirical studies that have indicated different factors that determine FDI inflows. There have been numerous empirical studies about the significance of FDI inflows on the NIEs and ASEAN-4 economies (Galenson, 1985). It is generally accepted by economists that FDI is a supplement to domestic capital and a means to get applicable technologies. Caves (1996), found that FDI inflows are being attracted due to its spillover effects on the maximization of output, transfer of technology, know-how, training of the personnel and access to the international markets. FDI is also taken as an important vehicle for optimizing growth (Borenszteinand others 1998). Gregorio Josh 2003, pointed out that FDI inflows promote the transfer of know-how and technology which causes economic growth. The various studies also observed that FDI inflows are also influenced by socioeconomic and political Agarwal prevailing in the host and home countries.

Agarwal (1980), observed that return and costs, liquidity and diversification significantly affect FDI inflows. Franklin, Root, and Ahmad (1979) and Schneider and Frey (1985), observed that numerous factors namely per capita income, GDP growth rate, the extent of urbanization, availability of infrastructure, political uncertainty and BOP position which affects the flows of FDI in a country. Dunning (1980), observe that population and level of skills as an important factor affecting FDI flows in a country. He further advocated that FDI inflows are also determined by natural resource availability, market efficiency, and profitability level.

Kravis and Lipsey (1982); Contractor (1991); Shatz and Venables (2000); Nasser and Gomez (2009); Hasen and Gianluigi (2009) and Mottaleb and Kalirajan (2010) in their empirical studies observed that size of the market and GDP growth rate as an important determinant of FDI inflows. Wheelers and Wheeler and Mody (1992), in a study, observed that infrastructure quality, the pace of industrialization and the size of the market in influencing FDI inflows. Montiel and Reinhart (1999), observed that financial globalization affects the volume and composition of FDI inflows. De-Mello (2009), in a study, observed a proximity-concentration and internalization based theory of FDI. He further advocated location as an important factor affecting FDI inflows.

Thompson and Poon (2000), in a study, observed that reform expectation affects FDI inflows. Cheng K.L. and Kwan Y. (2000), observed that location, size of the market, infrastructural availability and liberal tax policies have a positive influence

on FDI inflows location, size of the market, infrastructural availability and liberal tax policies have a positive influence on FDI inflows. He further observed that a high wage rate effect negatively to FDI inflows. Donnefield and Weber (2000)Sung and Lapan (2000) in their empirical studies observed that volume of trade, banks' foreign assets, costs of capital and exchange rates influence FDI inflows. Sin and Leung (2001), observed that regulatory changes and liberalized regime as an important determinant of FDI inflows. Busse et al. (2010), in a study, observed that bilateral investment agreements are less effective as a determinant of FDI inflows. Egger and Pfaffermayr (2004), in a study, observed that distance affects FDI flows and export and FDI is not necessarily substituting.

Froot and Stein (1991), observed that host currency appreciation increases FDI inflows. Tuman and Emmert(1999), in a study, have not found any linkages between exchange rates on FDI inflows. Bellack, Leibrecht, and Damijan(2009), in an empirical study, observed that infrastructure endowment is more effective over tax rate sensitivity as determinants of FDI inflows. Benassy-Quere, Coupet and Mayer (2007), observed that level of institutional quality as an important and positive determinant of FDI inflows. Aqeel and Nishat(2005), in a study, observed that high tax rates influence negatively while openness affects positively to FDI inflows. Dar and Malik(2004), observed that political and economic factors influence FDI inflows. Hussain and Kaibuli (2012), in an empirical study, observed that market size, suitable macroeconomic conditions, quality of labor force, feasible financial sector and growing internationalization are important determinants of FDI inflows.

DATA, METHODOLOGY AND MODEL FORMULATION

This study analyses the co-integration relationship between FDI inflows and various determinants namely GDP per capita, trade openness, domestic investment, inflation, and exchange rate in India. The study assumed that FDI inflows are partly affected by policy factors and macroeconomic aggregates. FDI inflows are also influenced by strong macroeconomic variables that are expected to bring desired changes in the economy. The proposed study can be symbolically expressed as follows.

$$FDI = f(Y, TO, DI, INF, EX)$$

The above equation can be stated that FDI inflows (FDI) are being driven by GDP per capita, the openness of trade, domestic Investment, inflation rate, and exchange rate. In line with the available existing studies, this paper has attempted to find out the linkages between FDI inflows and its various determining macroeconomic factors in the country. The above relationship can be algebraically put in an equation form.

$$FDI_t = \beta_o + \beta_1 Y_t + \beta_2 TO_t + \beta_3 DI_t + \beta_4 INF_t + \beta_5 EX_t + \mu_t \qquad (1)$$

Where, (FDI_C) represent FDI inflows, (Y_t) represents the GDP per capita, (To_t) represents trade openness, (DI_t) represents a domestic investment, (INF_t) represents inflation, (EX) represents exchange rate and (u_t) represents the error term. The coefficients $\beta_1, \beta_2, \beta_3, \beta_4$ and β_5 are the respective elasticity coefficients.

The study applied the ADF test to determine the time series nature of the above data. If the outcomes reveal an integrated of an order of I(1), then the ARDL model developed by the Pesaran et al. 2001 will be applied to find out the co-integration relationship in the model. It is based on UECM and will facilitate the OLS technique to estimate the model. Equation (1) can be expressed as follows.

$$\Delta FDI_t = \gamma_{0+} \sum_{i=1}^{n-1} \gamma_{1i} \Delta FDI_{t-i} + \sum_{i-o}^{n-1} \gamma_{2i} \Delta Y_{t-i} + \sum_{i-o}^{n-1} \gamma_{3i} \Delta TO_{t-i} + \sum_{i-o}^{n-1} \gamma_{4i} \Delta DI_{t-i} + \sum_{i-o}^{n-1} \gamma_{5i} \Delta INF_{t-i} + \sum_{i-o}^{n-1} \gamma_{6i} \Delta EX_{t-i} + \delta_1 FDI_{t-1} + \delta_2 Y_{t-1} + \delta_3 TO_{t-1} + \delta_4 DI_{t-1} + \delta_5 INF_{t-1} + \delta_6 EX_{t-1} + \mu_t \qquad (2)$$

The null hypothesis can be stated $H_0: \delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = \delta_6 = 0$ as no co-integration relationship between the variables and the alternative hypothesis can be expressed as $H_1: \delta_1 \neq \delta_2 \neq \delta_3 \neq \delta_4 \neq \delta_5 \neq \delta_6 \neq 0$

The acceptance and rejection of null and alternative hypotheses depend upon the value of the F-statistics. The null hypothesis will be rejected when the value of F-statistics becomes greater than the upper limit of the upper bound values proposed by Pesaran et al. (2001). An alternative hypothesis will be accepted when the value of the F-statistics becomes lower than the lower bounds values. The outcomes will become inconclusive if the values of the F-test lie within the critical bound limits.

EMPIRICAL RESULTS

The study applied the ADF test for unit root properties of the time series data and the outcomes depict that variables are stationary at the first difference. The results are presented in Table 1, below.

Table 1: Unit Root Test

Variables	ADF Test		Significance Level		
	Level	**First Difference**	1 percent	5 percent	10 percent
FDI	-1.61	-6.817*	-3.611	-2.939	-2.608
Y	12.51	-4.332*	-4.212	-3.530	-3.196
TO	-0.717	-5.331*	-3.611	-2.939	-2.608
FI	-1.534	-6.301*	-3.611	-2.939	-2.608
INF	-3.758	-7.863*	-3.611	-2.939	-2.608
EX	0.383	-5.143	-3.611	-2.939	-2.608

Note Unit root test for stationary of the series. *indicates significance

The outcome of the Bounds test for long-run co-integration relationship is presented in the above table. The outcomes reveal the long-run cointegration relationship among the variables. The computed F-test statistics are greater than the upper and lower bound critical values given by the Pesaran et.al (2001). This implies that we can reject the null hypothesis of no co-integration among the variables in the model. The results satisfying diagnostic tests are presented at the below panel in table 1.

Table 2: Bounds test outcomes for the co-integration relationship

Calculated F-value: 5.543		
Significance Level	**Critical Bounds**	
	Lower Bounds	**Upper Bounds**
1 percent	2.08	3.00
5 percent	2.62	3.79
10 percent	3.41	4.68

Source: The outcome of bounds test values is reported by Pesaran et.al (2001), Table CI (iii) Case II: b restricted intercept and no trend at 5% and 10% level of significance.

The below table 3, depicts the estimates of the co-integration relationship among FDI inflows, GDP per capita, trade openness, domestic investment, inflation, and exchange rate in the country. The long-run coefficient of FDI inflows and GDP per capita is negative and significant in the long run. This depicts that though FDI inflows are negatively being influenced by GDP growth rate its intensity is very low. This outcome is not in line with the studies by Deichhmanand Sayek2010, which establishes that market size and GDP per capita growth has a positive impact on FDI inflows. The estimated outcome reveals that trade openness, domestic investment, moderate prices, and exchange rate are an important factor which positively affects FDI inflows in the country in the long run. The estimated outcome of trade openness and domestic investment is positive and significant which shows that both of the variables are an important determinant of FDI inflows in the country.

Table 3: Results of Long – run coefficients for the selected ARDL Model

Dependent variable: (FDI) inflows

Variable	Coefficient	t-statistic
Y	-0.001	[-2.027]
TO	0.027	1.572]
DI	0.088	[1.963]
INF	0.004	[0.117]
EX	0.013	[1.250]
Diagnostic Test		
Adjusted R Square		0.501
Jarque-Bera Normality test		0.551 (0.759)
Breusch-Godfrey Serial		0.410(0.669)

Correlation test	
ARCH test	1.280(0.291)
Durbin Watson test	2.041

Source: World Development Indicators, World Bank, 2019. Note: The values in the brackets show p-values.
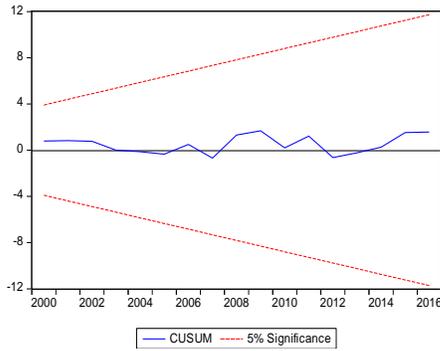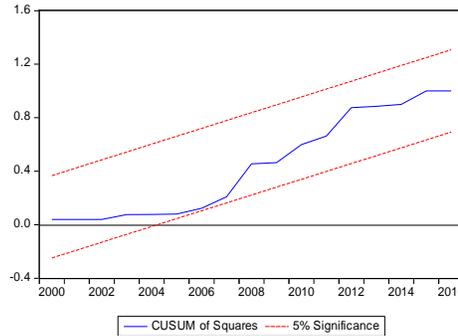

Figure: 1

Figure: 2

Figures 1 & 2: The Plot of Stability test of Recursive estimates (OLS) using the CUSUM test and CUSUM of squares test

The outcomes of ECM for the ARDL model are depicted in table 4. The outcomes evidence the existence of ECM as negative and significant. Estimated coefficients of GDP per capita income, trade openness and FDI inflows with lags show a positive impact on FDI inflows in the short-run. Similarly, the depreciating value of Indian rupee also shows a positive impact on FDI inflows in the short run. The observations also reveal that current year GDP per capita, trade openness and domestic investment does not show any positive influence on FDI inflows in the short run.

Table 4: Results of the ECM for the Selected ARDL Model.

Dependent Variable: (FDI)

Variables	Coefficients	t-statistics
C	0.178	[0.888]
ΔFDI(-1)	0.332	[1.306]
ΔY	−0.010	[-2.173]
ΔY(-1)	0.011	[1.714]
ΔY(-2)	-0.001	[-0.085]
ΔTO	-0.008	[-0.183]
ΔTO(-2)	0.047	[1.731]
Δ(FI)	-0.010	[-0.137]
ΔFI(-1)	-0.070	[-0.944]
ΔINF	-0.019	[-0.650]
ΔINF(-1)	-0.020	[-0.712]
ΔEX	0.010	[0.222]
ΔEX(-1)	-0.0.91	[-1.917]
ECM(-1)	-0.812	[-2.343]
Diagnostics Test		
R-squared	0.500	
Adjusted R-square	0.218	
Jarque-Bera Normality Test	0.677 (0.713)	
Breusch-Godfrey Serial Correlation Test	0.003(0.995)	
ARCH Test	1.333(0.264)	

Source: World Development Indicators, World Bank, 2019.

The outcomes reveal that strong macroeconomic variables including the past year performance of the macroeconomic aggregates are significant determinants of the inflow of FDI in the short run. The diagnostic test outcomes satisfying the statistical properties of the ECM model are presented at the below panel of table 4.

The above findings reveal that FDI inflow in the country is positively influenced by trade openness, domestic investment, moderate domestic prices and exchange rate in the long-run. FDI inflows are positively influenced by the past level of FDI inflows, past level of GDP per capita; past level of trade openness and current exchange retain the short-run. This reflects that inflows of FDI in India are largely affected by the policy factors and the prevailing macroeconomic variables in the country. The study has signified that FDI inflow needs to be attracted by fair and stable macroeconomic conditions for their better long term future prospects. This may be helpful in establishing a backward and forward spillover effect in enhancing income, output, and employment in the country.

CONCLUSIONS AND SUGGESTIONS

This paper has applied the ARDL method to examine the co-integration relationship among the variables in the model for the period 1978-2018. The long-run coefficient of trade openness, domestic investment, moderate prices, and exchange rate shows a positive influence on FDI inflows in the country in the long run. The estimated coefficients reveal that FDI inflows with lags, GDP per capita with lags, trade openness with lags and current year exchange rates are important factors that have a significant influence on FDI inflows in the short run. The above findings reveal that FDI inflows in the country are positively being influenced by macroeconomic aggregates in the country. Although, the country is able to attract FDI inflows it has failed to reap the true benefits of multinationals and turning the country as an export-oriented hub and also to record the positive and significant impact on increasing, income, output, and employment in the country. There exists a bulk of sectors namely natural gas exploration, construction sector, transport sector development, education sector, health sector, defense and many more sectors which are placing enormous opportunities for foreign investors in the Indian economy. This will enable the country to widen its structural base, infrastructural facility and to provide lots of employment opportunities before the economy.

LIMITATIONS AND FORWARD OF THE STUDY

The study is related to the time series data for a specific period and for a specific country. The study has considered a set of data which in general acts as a catalyst for foreign direct investment in a particular country. The study has applied the ARDLmodeling and ECM based techniques to analyze the short-run and long-run relationship only and have not considered the panel analysis due to time and data limitations. The above study has considered the set of macroeconomic variables as determinants of FDI inflows in a country can be used for promoting FDI inflows in another country as well. Negative factors retarding FDI inflows in a country can be conducive to another country and served as a base for further study. The outcomes of the study can be also used for establishing the specific impact of a set of macroeconomic aggregates in a country.

IMPLICATIONS OF THE STUDY

The outcome of the study suits the nature of the country and its socio-economic conditions. The outcomes of the study will not be suitable for every country and may result in spurious outcomes.

AUTHOR'S CONTRIBUTION

First Author Contribution was involved in planning and supervised the work, analyzes the data and interpret the results. The second author involves processing the work, drafted the manuscript, collects the data and designed the figures and tables.

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