

Nexus between economic factors and FDI equity inflows: a causality analysis in ARDL approach

Economic factors and FDI equity inflows

Nikhil Kumar Kanodia
Amity Business School, Noida, India

Dipti Ranjan Mohapatra
Amity College of Commerce and Finance, Amity University, Noida, India, and

Pratap Ranjan Jena
National Institute of Public Finance and Policy, New Delhi, India

Received 22 May 2023
Revised 21 July 2023
29 August 2023
Accepted 17 September 2023

Abstract

Purpose – Economic literature highlights both positive and negative impact of FDI on economic growth. The purpose of this study is to confirm the relationship between various economic factors and FDI equity inflows and find out deviations, if any. This is investigated using standard time-series econometric models. The long and short run relationship is inquired with respect to market size, inflation rate, level of infrastructure, domestic investment and openness to trade. The choice of variables for Indian economy is purely based on empirical observations obtained from scientific literature review.

Design/methodology/approach – The study involves application of autoregressive distributive lag (ARDL) model to investigate the relationship. The long run co-integration between FDI and economic growth is tested by Pesaran ARDL model. The stationarity of data is tested by augmented Dickey Fuller test and Phillip–Perron unit root test. Error correction model is applied to study the short run relationship using Johansen’s vector error correction model method besides other tests.

Findings – The results show that the domestic investment, inflation rate, level of infrastructure and trade openness influence inward FDI flows. These factors have both long and short-term relationship with FDI inflows. However, market size is insignificant in influencing the foreign investments inflows. There lies an inverse relation between FDI and inflation rate.

Originality/value – To the best of the authors’ knowledge, the study is original. The methodology and interpretation of results are distinct and different from other similar studies.

Keywords Foreign direct investment, Economic growth, ARDL model, Economic factors, Short-run and long-run relationship

Paper type Research paper

1. Introduction

Dunning (1988) proposed the OLI framework, often known as the Eclectic Paradigm of International Production by combining the “Ownership”, “Localization” and “Internalization”

© Nikhil Kumar Kanodia, Dipti Ranjan Mohapatra and Pratap Ranjan Jena. Published in *Vilakshan – XIMB Journal of Management*. Published by Emerald Publishing Limited. This article is published under the Creative Commons Attribution (CC BY 4.0) licence. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this licence may be seen at <http://creativecommons.org/licenses/by/4.0/legalcode>

JEL classification – F14, F21, F23, F40, F47



theories. This framework is extensively used to comprehend the phenomena of foreign direct investment (FDI). Research on FDI has drawn attention of academicians since Dunning's pioneering work and that of several other researchers in succeeding years (Kneller *et al.*, 2008). According to World Investment Report 2023 by UNCTAD, India stood among the top ten FDI recipients in 2022. Table in Appendix 1 presents the FDI equity received in India during the period 2000–2001 to 2021–2022. FDI equity inflows have seen a tremendous improvement from ₹ 103679.78m in 2000–2001 to ₹ 4371880.84m in 2021–2022. The year 2020–2021 marks the highest ever FDI equity received in India. The surge in FDI inflow recorded in the year ending March 2022 was against the backdrop of several policy changes made to facilitate ease of doing business, encourage investments into domestic manufacturing capacity and support an ambitious pipeline of infrastructure projects.

A number of variables, including market size, trade openness and human capital, have an impact on the quantity of FDI that enters a country (Pesaran and Shin, 1998). However, the connections vary depending on the level of development from one country to the other.

The structure of the manuscript is detailed below. Section 1 is introduction; Section 2 provides a brief discussion of the empirical review of literature on FDI. Section 3 mentions the objective of the study undertaken. Section 4 provides hypothesis of the study. Section 5 presents the research methodology, the variables undertaken for the study and the data sources. The empirical findings are detailed in Section 6. Results of the tests done are depicted in Section 7. Section 8 provides the conclusion and policy recommendation. Section 9 details about the social, research and practical implications. The limitations and scope of the study are mentioned in Section 10.

2. Review of literature

2.1 Market size

The two major factors that encourage FDI are market size of the host economy and anticipated demand that results from projected growth rate of host market. Market size proxied by GDP has been widely used as a significant determinant of FDI. In a study by Sharma and Kautish (2020), short run upside movements in GDP are found to be insignificant in influencing the flow of FDI. However, it was noticed that downfall in GDP led to decline in the FDI inflows in India. Saleem *et al.* (2020) and Tsitouras *et al.* (2020) in different studies based on determinants of FDI observed that GDP was positively associated with inward FDI.

2.2 Inflation rate

In a study based on factors responsible for attracting FDI in 29 African countries, Onyeiwu and Shrestha (2004) found that among other variables, inflation was a key driver of FDI inflows.

2.3 Trade openness

Openness of an economy is a significant factor in linking the domestic economy with world economy. In a study by Saleem *et al.* (2021), trade openness is observed to have a considerable positive influence on FDI inflows. Similarly, Saini and Singhania (2018), for both developed and developing countries & Sabir *et al.* (2019) for different income group nations, observed trade openness having a positive impact on FDI. In a study by Binatli and Sohrabji (2019), on determinants of FDI in Turkey, it was observed that trade openness had a significant role in long and short run.

2.4 Infrastructure

Infrastructure facilities have a beneficial effect on FDI inflows as found for ECOWAS countries for the period 1985–2015 (Wheeler and Mody, 1992). Poor infrastructure can be viewed as a barrier creating a negative impact, but it can also be viewed as an opportunity. By offering incentives for infrastructure-related projects, nations with inadequate infrastructure strive to draw more and more FDI into the construction industry.

2.5 Domestic investment

In a study by Moreau and Lautier (2012), the authors using cross-country data found strong impact of domestic investment on FDI inflows to developing countries. In an empirical study on the determinants of FDI in Nigeria by Ojong *et al.* (2015), it was observed that Gross Fixed Capital Formation (GFCF) of Nigeria had an inverse effect and weak relation with FDI inflows.

There is no reliable collection of explanatory variables that can be regarded as the core or the “genuine” FDI determinants, despite the fact that several research have been undertaken to determine the factors that influence FDI attractiveness. The literature results lack robustness since they are very susceptible to sample size and technique as seen from analysing data of 138 countries (Moosa and Cardak, 2006).

Tecel *et al.* (2020) in an empirical study highlighted the strong positive nexus between tourism and economic growth in 14 Mediterranean countries applying PMG-autoregressive distributive lag (ARDL) model and supported tourism led growth hypothesis so as also revealed by Dumitrescu and Hurlin (2012) in their study.

Olorogon *et al.* (2020) re-investigated the connection between FDI and financial development using multiple covariates such as total labour force, GCF and economic growth in Nigeria with data set of 1970–2018. The study established a long run relationship between FDI and economic growth in the country.

Joshua *et al.* (2022) in their research highlighted FDI led growth hypothesis for South Africa. The outcome confirms that FDI inflows have a strong, positive and unidirectional impact on economic growth.

3. Objectives

The objectives of this study are as follows:

- to identify the significant economic factors influencing FDI inflows; and
- to examine the impact of economic factors affecting FDI inflows to India in short run and long run.

4. Hypothesis

H1. Market size has a significant positive influence in attracting FDI inflows to India.

H2. Rate of inflation has a significant adverse effect on FDI inflows to India.

H3. Trade openness has a significant positive influence in attracting FDI inflows to India.

H4. Infrastructure has a significant positive influence in attracting FDI inflows to India.

H5. Domestic investment has a significant positive influence in attracting FDI inflows to India.

5. Research methodology

5.1 Description of variables

FDI is impacted by multiple variables such as labour skills, wage rates, tax rates, market size, political stability, transport, infrastructure, exchange rate and free trade areas. Different studies have focused on combination of factors based on spatial factors and resource availability. The variables considered in the manuscript are based on theoretical understanding, as explained above. However, authors have identified key determinants namely market size, inflation rate, trade openness, infrastructure and domestic investment as significant drivers of FDI inflows based on literature review. [Table 1](#) provides a detailed empirical background of the variables.

Name of variable	Definition	Source of data
Foreign direct investment (FDI) inflows	FDI refers to the net inflows of investment as the sum of equity capital and investment of earnings	DPIIT
Market size (MS)	Market size, measured by GDP directly influences the return on investment. It the market value of final goods and services produced in a country in a given period	RBI
Inflation rate (IR)	Inflation, as proxied by the consumer price index (CPI), is the annual change in percentage for the consumer's cost bearing for purchasing a similar basket of goods and services	RBI
Trade openness (OPEN)	Trade openness is treated as, ratio of total of exports and imports as a percentage of country's annual GDP	RBI
Infrastructure (INF)	Being the cheapest source of transportation, infrastructure has been proxied by freight carried by railways in million-ton km annually. Along with the transport infrastructure, tele-density has also been taken as an important proxy to infrastructure	World Bank
Domestic investment (INV)	Investment, proxied by gross fixed capital formation is the aggregate of gross additions to fixed assets (that is fixed capital formation) and change in stocks in the same financial year	RBI

Source: Authors' compilation from DPIIT, RBI and WB

Table 1.
Description of variables and data sources

5.2 Data source

The yearly statistics of the variables have been obtained from Department for Promotion of Industry & Internal Trade (DPIIT), Ministry of Commerce & Industry, Government of India, Reserve Bank of India (RBI) and World Bank. The study is based on data from the financial year 2000–2001 to 2021–2022. The data on variables of key determinants of FDI is placed in [Appendix 2](#).

5.3 Empirical model

Based on the existing literature, the potential determinants of FDI are examined on a linear framework ([Ang, 2008](#)). Past literature emphasized on linear regression as a reliable method of testing the relationship between FDI and economic growth. The preliminary results at 95% confidence level indicate that FDI in India is determined by the level of investment of the country, however at 90% confidence level, openness to trade & domestic investment hold significance. The linear regression model of factors determining direct investment from overseas in India is constructed as follows:

$$\ln FDI_t = \alpha_0 + \beta_1 \ln MS_t + \beta_2 \ln IR_t + \beta_3 \ln OPEN_t + \beta_4 \ln INF_t + \beta_5 \ln INV_t + \mu_t$$

where \ln stands for logarithm natural:

- $\ln FDI_t$ = log of total inward FDI in period t ;
- $\ln MS$ = log of market size proxied by GDP;
- $\ln IR$ = log of inflation rate;
- $\ln OPEN$ = log of trade openness;
- $\ln INF$ = log of infrastructure proxied by railway routes and tele-density;
- $\ln INV$ = log of investments; and
- μ_t = error term of the equation

5.4 Quantitative methodology

Figure 1 entails the econometric methodology adopted for making analysis of time-series data. The time-series analysis begins with the testing of presence of unit root in each of the variables. Unit root determines the stationarity of the series and its order of integration. Cointegration test is conducted for knowing the long-run relationship between the variables. If there lies cointegration among the variables, the error correction model (ECM) is applied which can be further bifurcated as application of ECM is done when only one endogenous variable is present, whereas application of vector error correction model is made (VECM) when more than one endogenous variable is present. If no integration among the variables is observed vector auto regression (VAR) model is applied.

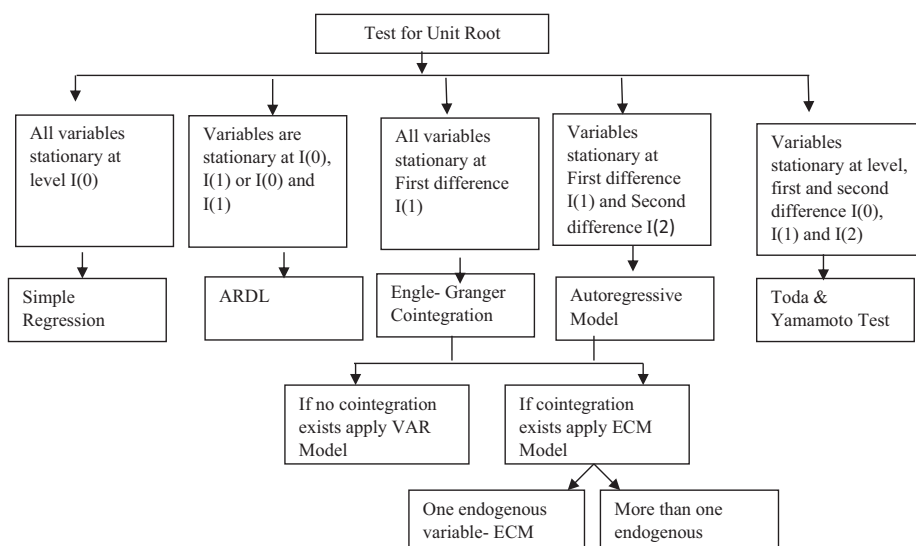


Figure 1. Econometric methodology for analysis of time series

Source: Created by authors

Cointegration test: As the time series variables are stationary integration order of $I(0)$ and $I(1)$, the ARDL model of cointegration is used in this study (Tables 2 and 3). This model includes an adequate number of lags to accurately portray the data generation process which minimizes the problem of endogeneity and autocorrelation. The model examines the association between variables in long run. If F test statistics for cointegration is found to be greater than the value of upper bound, it shows that cointegration exists and vice-versa. A study by Monte-Carlo shows that the ARDL approach is preferable and yields reliable findings even for samples with lesser values. The following equation represents the ARDL framework used in this research study:

$$\begin{aligned}
\Delta \ln FDI_t = & \alpha_1 + \alpha_{FDI} \ln FDI_{t-1} + \alpha_{MS} \ln MS_{t-1} + \alpha_{IR} \ln IR_{t-1} + \alpha_{OPEN} \ln OPEN_{t-1} \\
& + \alpha_{INF} \ln INF_{t-1} + \alpha_{INV} \ln INV_{t-1} + \sum_{i=1}^p \alpha_i \Delta \ln FDI_{t-i} + \sum_{j=0}^q \alpha_j \Delta \ln MS_{t-j} \\
& + \sum_{x=0}^y \alpha_x \Delta \ln IR_{t-x} + \sum_{l=0}^m \alpha_l \Delta \ln OPEN_{t-l} + \sum_{c=0}^d \alpha_c \Delta \ln INF_{t-c} + \sum_{u=0}^v \alpha_u \Delta \ln INV_{t-u} \\
& + \varepsilon_{1t}
\end{aligned}$$

The α_1 constant is a drift element and ε_1 depicts error term, which is considered to be white noise. Residual errors being white noise indicates that there is no autocorrelation, residuals are not heteroscedastic and the residual has a mean of zero. A lag length of 1 has been undertaken for the variables under study.

Stability estimates: CUSUM and CUSUMSQ tests have been applied to assess the model's stability. These explorations are often done in statistics and econometrics to depict if a regression equation being worked upon has structural changes or breaks in it.

Error correction model: This is used to understand the factors influencing FDI inflows in short run. ECM is a theoretically based method for assessing the influence of one time series on the other in short span of time.

Methodology described above have following benefits:

Firstly, this is one of the best methodologies, when data source is limited. Secondly, it removes the endogeneity problems as evident in other methodologies. Thirdly, the short run and long run analysis is considered together in this method.

6. Empirical findings

6.1 Time-series unit root tests

It has been observed in the empirical works that both the augmented Dickey Fuller test and Phillip–Perron (PP) test have been applied to check stationarity. The findings of unit root tests have been presented in Tables 2 and 3. The stationarity of the variables has been examined at constant as well as constant with a trend. It is observed that most of the variables become stationary at first order of integration i.e. I(1) with few variables being stationary at level i.e. I(0).

Variables	Stationary at Level I(0)		Stationary at first difference I(1)	
	Constant	Constant and trend	Constant	Constant and trend
ln FDI	0.9622	-1.8033	-3.7525**	-3.5958**
ln Market size	-1.8344	-1.5531	-4.1706*	-4.6552*
ln Inflation	-4.8671*	-5.0830	-2.4801	-2.3851
ln Infrastructure (railways)	0.0464**	0.9945	0.2084	0.6196
ln Infrastructure (tele-density)	0.2882	0.5803	0.0696***	0.2170
ln Investment	-2.0024	-0.8396	-1.9996	-3.7059**
ln Openness	-2.6462***	-1.7258	-2.0926	-2.9750

Table 2.
Augmented Dickey
Fuller test results

Note: * ** and *** denote acceptance of the alternate hypothesis for absence of unit root at 1, 5 and 10% level, respectively

Source: Authors' calculation

Economic factors and FDI equity inflows

Variables	Stationary at Level I(0)		Stationary at first difference I(1)	
	Constant	Constant and trend	Constant	Constant and trend
ln FDI	-0.9622	1.9857	-3.7525	-3.6535**
ln Market size	-2.7096***	-1.3184	-4.1700*	-5.9942*
ln Inflation	-1.6397	-1.5037	-4.3099*	-4.2920**
ln Infrastructure (railways)	0.0693***	0.9961	0.2086	0.0891***
ln Infrastructure (tele-density)	0.0165**	0.9843	0.0615***	0.0239**
ln Investment	-2.3495	-0.6153	-2.2615	-2.3886
ln Openness	-2.0190	-1.0816	-3.6459**	-4.9518*

Table 3.
Phillip-Perron test results

Note: *, ** and *** denote acceptance of the alternate hypothesis for absence of unit root at 1, 5 and 10% level, respectively

Source: Author's calculation

6.2 Autoregressive distributive lag estimation

The estimation is carried out through ARDL bound test analysis presented in Table 4. This table demonstrates that the model passed all requirements for the best fit. For the purpose of assessing if there exist long run linkages between the variables, ARDL bound testing method (Pesaran *et al.*, 2001) has been used. The test findings reveal that the computed *F* test statistic is 3.5270, which is significant and greater than the upper limit value for 10% and 5% statistical significance and lies between upper limit and lower limit values at 2.5% and 1% as specified by Pesaran *et al.* (2001). The *F* test statistics being greater than the test's upper bound values indicates that the various factors under study are linked over the long run.

Level of significance (%)	Lower limit	Upper limit	Wald test- <i>F</i> statistics
10	2.08	3.00	3.5270
5	2.39	3.38	
2.5	2.70	3.73	
1	3.06	4.15	

Table 4.
Cointegration test results

Source: Authors' calculation

7. Result

The results obtained from ARDL model long run estimates are presented in Table 5. Market size is observed to be not statistically significant in influencing the flow of foreign investment in long run. Over time, domestic investment, as measured by GFCF, is observed to significantly favour FDI. The *p*-value and the coefficient value indicate that 5% increase in domestic investment would lead to 2.4% increase in FDI inflows. Level of inflation is observed to have an adverse effect on direct investment inflows. A 10% increase in inflation rate would lead to decline in foreign investment inflows by 0.06%. Trade openness has a remarkable positive influence on FDI inflows. It is observed that a one percent rise in trade openness would lead to 2.94% increase in FDI to India. Infrastructure proxied by railways is observed to be insignificant in

influencing direct investment inflows; however, tele-density significantly influences direct investment inflows to India in the long run.

Table 5.
Findings of
normalized long-run
coefficients

Variables	Dependent variable: LFDI			Significance
	Coefficient	<i>t</i> -statistics	Probability (<i>p</i> -values)	
ln Market size	-0.54074	-0.925285	0.3747	Not significant
ln Investment	2.407782	3.136375	0.0095**	Significant and positive
ln Inflation rate	-0.066531	-1.690898	0.119***	Significant and negative
ln Infrastructure (railways)	-2.343487	-0.782005	0.4507	Not significant
ln Infrastructure (tele-density)	1.2663	3.0730	0.0069*	Significant and positive
ln Trade openness	2.9462	3.0286	0.0096*	Significant and positive

Note: *, ** and *** denotes that variables are statistically significant at 1, 5 and 10%
Source: Authors' calculations

Stability estimates: Figures 2 and 3 depict the results of CUSUM and CUSUMQ tests advanced by Brown *et al.* (1975) to assess whether the regression model is stable or not. The plotting of CUSUM and CUSUMQ line has not surpassed the dotted line denoting 5% significance, which is the significant value line and determines the stability of the estimated methodology. The model emphasizes that it holds robust results.

Error correction model: It helps in understanding the short run interactions, i.e. whether the variables are significant in short run or not. It also analyses if the model is capable to adjust towards long run equilibrium after bearing some shock. Table 6 depicts the reported results for the ECM model. Error correction term coefficient is negative and highly noteworthy which indicates substantial long run causal association among the factors undertaken in this study.

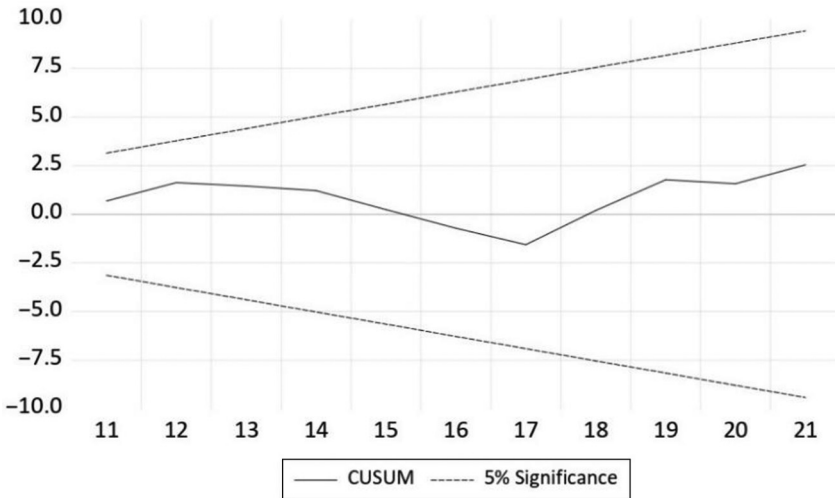


Figure 2.
Stability test
(CUSUM)

Source: Authors' calculations

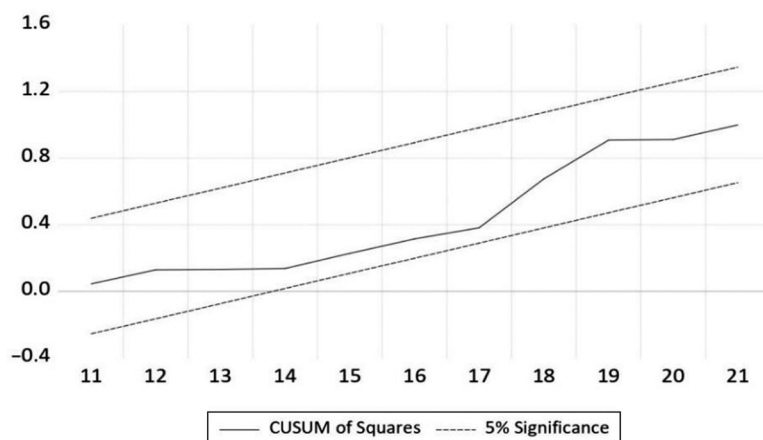


Figure 3. Stability test (CUSUMQ)

Source: Authors' calculations

Findings presented in Table 6 exhibit that size of market is in-deterministic in influencing flow of FDI in India. Inflation is observed to have a significant adverse effect on flow of FDI in India. It is observed that a 10% rise in inflation will lead to decline in investment inflows by 0.57%. The result is in line with previous literature suggesting a negative association amongst the level of inflation and direct investment inflows. Domestic investment is observed to be significant and positive which indicates that a percent rise in domestic investment would lead to 2.60% increase in FDI. Openness to trade is also observed to be significantly associated with FDI inflows. A 5% boost in trade openness is supposed to enhance FDI inflows by 1.45%. Infrastructure proxied by freight carried by railways and tele-density is noted to have a considerable positive effect on direct investment inflows.

Variables	Coefficient	t-Statistic	Probability (p-values)	Significance
D (Market size)	-0.54074	-0.92259	0.3747	Not significant
D(Inflation)	-0.5771	-3.0026	0.0149**	Significant and negative
D (Infrastructure, railways)	3.1458	2.9742	0.0589***	Significant and positive
D (Infrastructure, tele-density)	0.8974	0.2838	0.0057*	Significant and positive
D (Investment)	2.6043	6.1705	0.0002*	Significant and positive
D (Trade openness)	1.4535	2.7690	0.0218**	Significant and positive
CointEq (-1)	-1.1611	-6.4147	0.0001*	
<i>Diagnostic tests</i>	<i>t-Statistic</i>	<i>Probability (p-values)</i>	<i>Range</i>	<i>Outcome</i>
R^2	0.7679		0 to 1	High correlation
Adjusted R^2	0.6905		0 to 1	High correlation
Durbin-Watson stat	1.9691		0 to 4	No first-order autocorrelation
Heteroscedasticity test (ARCH)	0.3947	0.5377		Regression model is free from heteroscedasticity
Ramsey RESET test	1.4776	0.1778		Regression model is correctly specified
Normality test	0.9164	0.6324		Data is normally distributed

Note: *, ** and *** denotes that variables are statistically significant at 1, 5 and 10%

Source: Authors' calculation

Table 6. Results of error correction model

Result obtained above confirms the findings of the earlier studies such as [Das and Pant \(2006\)](#), [Sharma and Kaur \(2013\)](#), [Sharma and Kautish \(2020\)](#), [Teceş et al. \(2020\)](#), [Olorogun et al. \(2020\)](#), [Dossu \(2021\)](#) and [Joshua \(2022\)](#).

8. Conclusion and policy recommendation

The study identifies four key factors that significantly affect the flow of FDI in long run i.e. domestic investment, level of inflation, infrastructure development and openness to trade. The results show that market size proxied by GDP does not appear to be significant driver of FDI inflows, as the coefficient for this variable is observed to be insignificant in long run. While exploring the influence of domestic investment on direct investment, it is observed that domestic investment has significant positive influence in attracting FDI. Further, the findings suggest that the rate of inflation has an adverse impact on the inflow of foreign investments. The coefficient of infrastructure proxied by railways and tele-density is observed to be positive and significantly correlated with FDI in the short run. However; infrastructure proxied by railways tends to become insignificant in attracting FDI in India in long run.

ECM is used in the research to further investigate the statistical interaction between FDI & its important short-term drivers. Market size is found to be insignificant in influencing foreign investment in short run as well. Level of inflation and infrastructure are observed to be significant at 5% and 10%, whereas the former is having an inverse relationship with flow of FDI in short run. Openness to trade and domestic investment are observed to be statistically significant at 5% and 1% in short run as well.

Our study has emphasized on the nexus between inflation, domestic investment, trade openness and infrastructure development thus soliciting attention of the policy makers on the above-mentioned. Moderate rate of inflation enhances the FDI inflows. Thus, the monetary authority can play an important role in curbing the inflationary spiral. FDI increases in a liberal economy prioritizing trade openness. Developing nations including India have exercised different non-tariff barriers, which inhibit trade openness. Thus, removal or minimization of non-tariff barriers is an important policy decision that can generate more FDI for the economy. Infrastructure development also facilitates FDI. Pointed channelization of public finance can help an economy to grow by expanding the infrastructure.

9. Implications

9.1 Social implications

The present study suggests that there is a significant long run association between FDI and domestic investment, inflation, infrastructure development and openness to trade. FDI brings scarce capital and modern technology, which is necessary for economic growth. It also generates huge employment opportunities for the skilled as well as semi-skilled/unskilled population. Economic growth and employment increase the income and standard of living which has a direct impact on the society.

9.2 Research implications

This study uses a series of established econometric tools to drive home the relation between marked determinants and FDI. The use of long period data for India gives credence to the results obtained.

9.3 Practical implications

FDI affects economic growth by influencing GDP. FDI increases, when there is improvement in economic parameters that affects economic growth. The point to note here is that FDI and growth are bi-directional. Thus, both FDI and economic parameters require moving simultaneously in the positive direction unless the relationship is inverse. Creating congenial environment to attract FDI will ensure better standard of living for the masses.

10. Limitations and scope

The limitation of this research is that the focus is confined to the location dimension of FDI as the primary goal was to advance a perspective on the factors influencing direct investment inflows to India. The geographical focus of the study is on India for data spanning 22 years. Future research may concentrate on cross-sectional analyses of factors affecting the flow of FDI in developing nations as well as on the qualitative approaches to FDI. To comprehend how regional variations might conflict with and counterbalance the national, institutional and economic drivers, the regional approach to FDI can be undertaken.

References

- Ang, J.B. (2008), "Determinants of foreign direct investment in Malaysia", *Journal of Policy Modeling*, Vol. 30 No. 1, pp. 185-189.
- Binatli, A.O. and Sohrabji, N. (2019), "Factors influencing foreign direct investment flows into Turkey", *Entrepreneurial Business and Economics Review*, Vol. 7 No. 2, pp. 159-174.
- Brown, R.L., Durbin, J. and Evans, J.M. (1975), "Techniques for testing the constancy of regression relationships over time", *Journal of the Royal Statistical Society: Series B (Methodological)*, Vol. 37 No. 2, pp. 149-163.
- Das, S.K. and Pant, M. (2006), "Incentives for attracting FDI in South asia: a survey", *International Studies*, Vol. 43 No. 1, pp. 1-32.
- Dossu, T.A.M. (2021), "Trade openness, FDI and income inequality: evidence from Sub-Saharan Africa", *African Development Review*, Vol. 33 No. 1, pp. 193-203, doi: [10.1111/1467-8268.12511](https://doi.org/10.1111/1467-8268.12511).
- Dumitrescu, E.I. and Hurlin, C. (2012), "Testing for granger non-causality in heterogeneous panels", *Economic Modelling*, Vol. 29 No. 4, pp. 1450-1460.
- Dunning, J.H. (1988), "The theory of international production", *The International Trade Journal*, Vol. 3 No. 1, pp. 21-66.
- Joshua, U., Güngör, H. and Bekun, F.V. (2022), "Assessment of foreign direct investment-led growth argument in South Africa amidst urbanization and industrialization: evidence from innovation accounting tests", *Journal of the Knowledge Economy*, pp. 1-21.
- Kneller, R., Pisu, M. and Yu, Z. (2008), "Overseas business costs and firm export performance", *Canadian Journal of Economics/Revue Canadienne D'économique*, Vol. 41 No. 2, pp. 639-669.
- Moosa, I.A. and Cardak, B.A. (2006), "The determinants of foreign direct investment: an extreme bounds analysis", *Journal of Multinational Financial Management*, Vol. 16 No. 2, pp. 199-211.
- Ojong, C.M., Arikpo, O.F. and Ogar, A. (2015), "Determinants of foreign direct investment inflow to Nigeria", *IOSR Journal of Humanities and Social Science*, Vol. 20 No. 8, pp. 34-43.
- Olorogun, L.A., Salami, M.A. and Bekun, F.V. (2020), "Revisiting the nexus between FDI, financial development and economic growth: empirical evidence from Nigeria", *Journal of Public Affairs*, Vol. 22 No. 3, p. e2561, doi: [10.1002/pa.2561](https://doi.org/10.1002/pa.2561).
- Onyeiwu, S. and Shrestha, H. (2004), "Determinants of foreign direct investment in Africa", *Journal of Developing Societies*, Vol. 20 Nos 1/2, pp. 89-106.

-
- Pesaran, H.H. and Shin, Y. (1998), "Generalized impulse response analysis in linear multivariate models", *Economics Letters*, Vol. 58 No. 1, pp. 17-29.
- Pesaran, M.H., Shin, Y. and Smith, R.J. (2001), "Bounds testing approaches to the analysis of level relationships", *Journal of Applied Econometrics*, Vol. 16 No. 3, pp. 289-326.
- Sabir, S., Rafique, A. and Abbas, K. (2019), "Institutions and FDI: evidence from developed and developing countries", *Financial Innovation*, Vol. 5 No. 1, pp. 1-20.
- Saini, N. and Singhania, M. (2018), "Determinants of FDI in developed and developing countries: a quantitative analysis using GMM", *Journal of Economic Studies*, Vol. 45 No. 2, pp. 348-382.
- Saleem, H., Shabbir, M.S., Khan, B., Aziz, S., Husin, M.M. and Abbasi, B.A. (2021), "Estimating the key determinants of foreign direct investment flows in Pakistan: new insights into the co-integration relationship", *South Asian Journal of Business Studies*, Vol. 10 No. 1, pp. 91-108.
- Sharma, R. and Kaur, M. (2013), "Causal links between foreign direct investments and trade: a comparative study of India and China", *Eurasian Journal of Business and Economics*, Vol. 6 No. 11, pp. 75-91.
- Sharma, R. and Kautish, P. (2020), "Examining the nonlinear impact of selected macroeconomic determinants on FDI inflows in India", *Journal of Asia Business Studies*, Vol. 14 No. 5, pp. 711-733.
- Tecel, A., Katircioğlu, S., Taheri, E. and Victor Bekun, F. (2020), "Causal interactions among tourism, foreign direct investment, domestic credits, and economic growth: evidence from selected Mediterranean countries", *Portuguese Economic Journal*, Vol. 19 No. 3, pp. 195-212.
- Tsitouras, A., Mitrakos, P., Tsimpida, C., Vlachos, V. and Bitzenis, A. (2020), "An investigation into the causal links among FDI determinants: empirical evidence from Greece", *Journal of East-West Business*, Vol. 26 No. 1, pp. 17-55.
- Wheeler, D. and Mody, A. (1992), "International investment location decisions: the case of U.S. firms", *Journal of International Economics*, Vol. 33 Nos 1/2, pp. 57-76.

Further reading

- Lautier, M. and Moreaub, F. (2012), "Domestic investment and FDI in developing countries: the missing link", *Journal of Economic Development*, Vol. 37 No. 3, p. 1.
- Pesaran, M.H., Shin, Y. and Smith, R.P. (1999), "Pooled mean group estimation of dynamic heterogeneous panels", *Journal of the American Statistical Association*, Vol. 94 No. 446, pp. 621-634.

Appendix 1

Year	FDI equity inflows (in ₹ m)	Year	FDI equity inflows (in ₹ m)
2000–2001	103,679.78	2011–2012	1,651,455.31
2001–2002	184,862.76	2012–2013	1,219,067.30
2002–2003	128,706.72	2013–2014	1,475,177.76
2003–2004	100,641.00	2014–2015	1,816,821.26
2004–2005	146,527.00	2015–2016	2,623,215.61
2005–2006	245,843.72	2016–2017	2,916,963.33
2006–2007	563,902.20	2017–2018	2,888,885.01
2007–2008	986,420.89	2018–2019	3,098,666.69
2008–2009	1,428,289.04	2019–2020	3,535,583.80
2009–2010	1,231,196.45	2020–2021	4,425,688.38
2010–2011	973,203.93	2021–2022	4,371,880.84

Source: Factsheets on FDI inflow published by DPIIT, Government of India

Economic
factors and
FDI equity
inflows

Table A1.
Foreign direct
investment equity
inflows in India

Appendix 2

Year	GDP at constant prices (₹ crores)	Trade openness (ratio)	Inflation rate (in %)	Investment (GFCF) (₹ crore)	Railway (goods transported million-ton km)	Tele-density (sum total of fixed telephone and mobile cellular per 100 person)
2000-2001	2,554,004	26.9	4.01	591,610	312,400	3
2001–2002	2,680,280	25.99	3.78	682,143	333,200	5
2002–2003	2,785,013	29.51	4.3	679,170	353,200	5
2003–2004	3,006,254	30.59	3.81	750,940	381,200	7
2004–2005	5,480,380	37.5	3.77	931,028	411,300	9
2005–2006	5,914,614	42	4.25	1,405,052	439,596	12
2006–2007	6,391,375	45.72	5.8	1,636,060	480,993	17
2007–2008	6,881,007	45.69	6.37	1,863,048	521,370	23
2008–2009	7,093,403	53.37	8.35	2,167,264	551,478	32
2009–2010	7,651,078	46.27	10.88	2,236,602	600,546	46
2010–2011	8,301,235	49.26	11.99	2,408,303	625,723	64
2011–2012	8,736,329	55.62	8.91	2,674,328	667,607	74
2012–2013	9,213,017	55.79	9.48	2,997,732.87	649,645	70
2013–2014	9,801,370	53.84	10.02	3,145,793.195	665,810	71
2014–2015	10,527,674	48.92	6.67	3,194,924.31	681,696	75
2015–2016	11,369,493	41.92	4.91	3,278,096.095	654,481	78
2016–2017	12,308,193	40.08	4.95	3,492,183.058	620,175	87
2017–2018	13,144,582	40.74	3.33	3,787,567.62	654,285	89
2018–2019	13,992,914	43.6	3.94	4,083,079.091	654,285	89
2019–2020	14,515,958	39.39	3.73	4,486,204.722	654,285	86
2020–2021	13,558,473	37.87	6.62	4,730,416.263	654,285	85
2021–2022	14,771,681	38	5.13	4,220,508.207	654,285	85

Source: RBI and WB

Table A2.
Data on determinants
of FDI

About the authors



Nikhil Kumar Kanodia is a researcher at Amity Business School, Amity University Uttar Pradesh, Noida, Pin code: 201313.



Dipti Ranjan Mohapatra is a Professor of Economics in Amity University Uttar Pradesh, Noida, Pin Code: 201313. Dipti Ranjan Mohapatra is the corresponding author and can be contacted at: drmohapatra@amity.edu



Pratap Ranjan Jena is a Professor in National Institute of Public Finance and Policy, New Delhi- 110016.