

**Arnob Paul and Sushanta Kumar Nayak**

## **DYNAMICS OF FDI INFLOWS IN INDIA: AN APPLICATION OF ARDL AND FMOLS**

### **ABSTRACT**

This study examines Foreign Direct Investment (FDI) inflows in India, focusing on sectoral trends and determinants from 1980 to 2021. The primary objectives are to analyze the trend of FDI inflows at the sectoral level and to identify the key determinants influencing FDI inflows to India. The methodology involves the use of time-series data sourced from the RBI Databank, World Bank Databank, and OECD Databank. The unique contribution of this study over previous research lies in its detailed sectoral analysis of FDI inflows in India from 1981 to 2021, employing econometric techniques such as the Auto Regressive Distributed Lag (ARDL) Model and Error Correction Model. It not only identifies key macroeconomic determinants but also offers insights into both long-term and short-term dynamics of FDI inflows, providing a more comprehensive understanding of the factors influencing foreign investment in India. The findings reveal no significant structural change in sectoral FDI inflows. Moreover, the study highlights that Gross Domestic Product (GDP), Trade Openness, and Inflation rate are pivotal factors determining FDI inflows in India.

*Keywords: Foreign direct investment inflows, Economic growth, Autoregressive Distributed Lag (ARDL) Model, Error correction, Fully modified ordinary least square, India*

### **Arnob Paul**

*Research Scholar, Department of Economics, Rajiv Gandhi University*

### **Sushanta Kumar Nayak**

*Professor and Head, Department of Economics, Rajiv Gandhi University*

### **Correspondence: Mr. Arnob Paul**

*Department of Economics, Rajiv Gandhi University, Itanagar – 791112, Arunachal Pradesh, India.*

Email: arnobpaul1996@gmail.com

## INTRODUCTION

Foreign Direct Investment (FDI) is crucial for a country's economic development and its openness to global markets (Levin, 2001). Foreign capital inflow allows the host country to strengthen infrastructure, increasing productivity, creating employment opportunities, helps acquire advanced technology and mobilize foreign exchange resources, and thereby, helps in increasing the total factor productivity of the nation (Li and Liu, 2005; Woo, 2009).

The flow of foreign capital follows the law of gravitation in the sense that it flows from the capital surplus countries to the deficient countries. According to the traditional view, the FDI flow is a result of differential in return on capital among the nations, in other words, it flows from one country to another country due to the existing difference in returns on capital. According to Neo-classical theory, economic development is an increasing function of the foreign capital inflows. It also helps in capital formation of the hosting nation which in turn again helps in attracting more foreign capital. The inflow of foreign capital reduces the balance of payments deficit as well as it helps to replace the obsolete/traditional technologies of production and helps the host countries to adopt new technologies. Studies like Kojima (1978, 1982), Fischer (1998, 2003), Dwivedi (2012) etc. have highlighted that FDI inflow benefits the host nations by transferring modern technology to the host nations, bringing in better management and improving marketing skills to the host nation.

Dependency theory, on the other hand, highlights the need for developing nations, which possess abundant natural resources, to adopt innovative strategies to enhance productivity. Initially embraced by various countries of East Asia and Latin America in the 1970s, this theory later proved detrimental to their development. Consequently, these nations shifted from its stringent principles to more liberal policies, aiming to attract increased capital inflows and transition from closed to open economies. This shift was driven by the recognition of the adverse effect of dependency theory on emerging economies (Cardoso and Faletto, 1979; Hein, 1992; Dixon and Boswell, 1996; Anoruo and Mustafa, 2007). On the other hand, industrialization theory emphasised Foreign Direct Investment (FDI) as a comprehensive transfer of technology, capital, and management. FDI is seen as an extension of industrial organization theory, fostering the adoption of advanced management practices and technology in host countries. This process serves as a catalyst for growth by facilitating the transmission of technology from multinational corporations to their subsidiaries situated in foreign (Wang and Blomstrom, 1992; Findlay, 1978; Behera et al., 2012; Xu et al., 2014).

Growing FDI inflows during the 1990s have led governments in developed and developing nations to offer incentives and packages to the MNEs for gaining access to their resources in order to hasten their development (Kumar, 2002). Liberalisation and globalisation have increased the global trade volume and FDI. With the liberalization, the role of the government has been redefined. With the belief that economic integration increases the rate of economic growth and the general income level of an economy, many developing countries have opened up and thereby, experienced rapid economic growth. Due to the aggressive approach toward globalisation by the developing countries, the trend, direction and composition of FDI inflows have changed drastically.

The FDI in developing countries acts as an instrument to bridge the gap between the available capital and required capital. It is noted in UNCTAD, 2022 that in 2021, out of the total world FDI inflow, 52.90 per cent was directed towards developing countries out of which 73.95 per cent of the inflow was directed towards Asia and Oceania. Therefore, for foreign investors, the profitable destinations are the developing countries. On looking at the data, we find that, the FDI inflow has increased more than 2.24 fold during the period of 2013 and 2021. In the case of India, during 2019, the secondary sector was the sector getting the highest percentage of FDI (54.33 per cent) followed by the tertiary sector (47.47 per cent). Due to such trend of FDI new researches are done to answer questions like (a) How a particular area of the domestic country is profitable for foreign investors, and (b) How FDI is helping a centrally planned economy to become a market economy.

Though huge mobilization of investment in favour of the developing countries is seen, yet, the pattern of FDI inflow remained uneven, especially for India. Therefore, it is necessary to study the determinants of FDI inflow in India which will enable the policy makers to forecast the its pattern and will offer policymakers guidance on enhancing foreign direct investment (FDI) inflows. Given this context, the present study aims to achieve two primary objectives (1) to analyse the trend and composition of the FDI inflow to India for the years from 1981 to 2021. And, (2) to identify the factors which determine the FDI inflows of to India for the same period. Unlike previous research, which often focused on shorter time frames or broader regional contexts, this extensive longitudinal analysis captures long-term patterns and shifts in FDI inflows specific to India, offering a nuanced understanding of how these flows have evolved over four decades. The study employs advanced econometric techniques to identify the key factors influencing FDI inflows in India over an extended period. By focusing on both macroeconomic variables and sectoral specifics, it reveals unique insights into the determinants of FDI that previous studies have

not comprehensively explored. This dual focus on trend analysis and determinant identification provides a richer, more detailed framework for understanding FDI dynamics in India, contributing significantly to the existing body of literature on foreign investment.

## **REVIEW OF THEORITICAL AND EMPIRICAL LITERATURES**

The motives and factors influencing the FDI inflows changes from time to time and place to place. A number of studies, such as Greene and Villanueva (1991); Singhania and Gupta (2011); Miskinis and Juozenaite (2015); Azam and Lukman (2010); while Rangkakulnuwat and Paweenawat (2015), have tried to recognize the determinants of FDI which varies from country to country. Thus, in this study, an attempt has been made to identify various factors affecting the inflow of FDI in India.

The first and pioneering contribution was made by Hymer (1976) which explained the reason for foreign direct investment in the industrial organization tradition; according to him, a firm (MNC) indulges in FDI (FDI outflow) if it has some advantage over the local firm (in terms of well-known brand name, patent-protected technology, etc.) of the host country. Internalization theory (Rugman, 1981), on the other side of Hymer's explanation, stated that the FDI takes place because firms want to replace market transactions with internal transactions (this will help them in saving marketing costs) which is possible because of the existence of imperfection in factor and product market. The location theory, on the other hand, tells that FDI arises because of the immobility of certain factor of production from one place/country to another. The differences in the cost of production arises because the factors of production are immobile in nature.

Dunning (1988) proposed the eclectic theory of FDI in the ownership-location-internalization context. This was his attempt to establish a theoretical structure of FDI inflows. He stated that in order to attract FDI, one country should have advantages in any of these three advantages. A number of other studies (such as Parry, 1985; Itaki, 1991) which aimed to establish a comprehensive general theory, were questioned in the literature. However, these theories have contributed to the development of a systematic conceptual framework for understanding the nature and determinants of FDI flows.

Apart from these theoretical literatures, many researchers, over a period of time, tried to find the factors that affect the FDI flows. Studies in different regions identified different factors as determinants of FDI, in other words, the factors which affect the FDI inflow are different from one place to another.

The study by Reuber, Crockell, Emersen, and Gallais-Hamonno (1973) found that United States's FDI flow to Western Europe depends on the profitable nature of the market, liberal government policies, cultural proximity and technological infrastructure. On the other hand, Agarwal (1980) for developing countries found that factors like labour cost, size of the nation, exchange rate system and political stability affect the FDI inflow. Similarly, in the study of Schneider and Frey (1985), political stability is found to be a significant factor affecting FDI. They further added, that political instability affects the FDI inflow adversely and also, a country's development level plays an important role in determining the FDI inflow. Reuber et al. (1973) found that the MNCs invest in the countries with a better and reliable infrastructure, because this ensures an efficient distribution system. This finding supports the findings of Munteanu (1991), Wheeler and Mody (1992) and UNCTAD (1998).

Previous studies have identified various determinants of FDI inflows. Tsai (1994) found market size and economic growth as positive factors. Shamsuddin (1994) highlighted per capita income, energy availability, investment climate, and wage rates. Dawn and Nigel (1998) suggested factors like privatization methods, proximity to the EU, labor costs, investment risk, and trade linkages.

Garibaldi, Mora, and Sahay (2001) conducted an analysis aiming to understand the factors influencing FDI in 26 economies for the period of 1990 to 1999. Their findings show various critical factors that influence FDI inflows in these regions, including budget deficits, size of the market, trade openness, inflation rates, exchange rates, economic reforms, natural resources, investment barriers, and bureaucratic obstacles. Further, the study by Nunnenkamp and Spatz (2002) has examined the determinants of FDI inflows for 28 countries; their findings show that per capita income, foreign trade restrictions, years of schooling, inefficient administration and cost factors are determinants of FDI inflow. The findings of Aqeel and Nishat (2004) highlight that the size of the market, tariff, exchange rate, tax rate, and the size of credit to the private sector are the important factors that affect the FDI inflows in Pakistan. On the other hand, the result of the study by Sahoo (2006) suggests that by maintaining the growth momentum, South Asian countries can attract more foreign capital (similar finding in Clegg, 1995). Studies like Ali and Guo (2005) and Azizov (2007) have found that market size, inflation, and coverage of telephone lines are the significant factors determining the FDI in China and the transition economies of CIS.

Herzer and Klasen (2008) tested the long-run association among FDI and other variables for 28 developing countries for the years 1970 to 2003. Their findings indicate that there is no unidirectional causality moving from FDI to GDP. Also, they have not found

any clear relationship between FDI inflow and education level, GDP per capita, and trade to GDP ratio of these countries; this finding is consistent with the findings of Lansbury et al. (1996), which found that there is no direct relationship between FDI and economic growth rather, low labour cost attracts the inflow of FDI. On the contrary, in the study of 24 developing countries, Kok and Ersoy (2009) found that FDI inflow is a positive function of economic growth. Apart from this, the ratio of total debt service to GDP and inflation rate in the host nation impacts inversely the FDI inflow. For BRICS economies, FDI inflow is more influenced by economic factors like market size rather than institutional and political factors (Jadhav, 2012).

Alam and Shah (2013), supporting the findings of Ali and Guo (2005) and Azizov (2007), De Castro et al. (2013), found that infrastructure facility, market size and labour cost are the important determinants which attract FDI in a country. Also, Aziz and Mishra (2015) found that a well-developed financial institution along with skilled and literate labour force of Arab are the main determinants attracting FDI. This study has been carried out for 16 Arab Economies during the period of 1984 to 2012.

Saini and Singhania (2018) in their study found that in developed nations, FDI is influenced by economic growth, level of freedom, and trade openness. FDI was found to be a positive function of trade openness and gross fixed capital formation in developing countries.

The findings of Canh,, Binh, Thanh, and Schinckus (2020) show that the policy uncertainty in the host nation affects the volume of FDI inflow adversely while the world economic policy uncertainty, measured as the economic policy uncertainty in other nations, impacts the volume of FDI inflow positively. Their study was done for the period from 2003 to 2013. Mousavian, Mirdamadi, Hosseini, and Najafabadi (2023) for 37 developed and developing countries reveal that the FDI inflow in the agricultural sector is a negative function of trade openness. Further, other studies (such as Alam and Shah, 2013; de Castro, Fernandes, and Campos, 2013) suggest that FDI inflow is a positive function of market size and real GDP per capita. A recent study by Akinwalere and Chang (2023) done for Nigeria, revealed that interest rate, oil rents, economic growth, and external debt are significant variables which determine the FDI inflows to this country.

The survey of the literature has identified various factors, both push and pull, that influence foreign direct investment inflows into both developed and developing countries. These include economic growth, inflation rate, domestic rate of interest, openness of the

economy, per capita income, exchange rates, etc. All of these significantly shape the patterns of foreign capital inflows to a country.

## **DATA AND METHODOLOGY**

### **Data sources and description of the variables**

To meet the first objective of the study, the data from the RBI database have been collected for the years 2010 to 2021. Here, the sector-wise trend of FDI inflow has been studied. Further, Using the time-series data collected from the OECD data bank, the major sources of FDI inflow are identified. To study the composition of FDI inflow, the share of industry-wise FDI inflow is calculated. Whether any structural change in the composition of FDI inflow has taken place or not is tested using Spearman's Rank correlation method.

To meet the second objective of this study, the secondary data have been collected from various sources like the World Bank Databank and OECD FDI Databank for the year of 1981-2021. Total Foreign Direct Investment inflow (in USD) is used in its natural logarithmic form as a dependent variable in the model; it includes equity capital, other long & short-term capital, and reinvested earnings. The required data is collected from OECD databank. This variable is denoted by LFDIT in the model.

#### *Justification for inclusion of the explanatory variables*

Gross Domestic Product (LGDP): In this study, the GDP at constant LCU is considered. This variable is used in its natural logarithmic form. The GDP is taken into consideration because it shows the size of the economy/market. It is believed that the country with a larger market is expected to attract more FDI. Veugelers (1991) and Grosse and Trevino (1996) stated that GDP is positively correlates with FDI inflows to the host nation. Asiedu (2001) suggested that higher GDP per capita increases the inflow of FDI (however, we have used GDP at constant USD 2015 to reflect both economic growth and market size). The data is sourced from the databank of the World Bank.

Trade Openness (TO): Dividing the total trade (import+export), we get the trade openness. A country which is competitive in export is expected to attract more FDI inflows. The study by Chakrabarti (2001) stated that FDI inflow is positively influenced by trade openness. The data is sourced from the databank of the World Bank.

Inflation Rate (IR): To attract the FDIs, a country must have economic stability as well as the political stability (Wint and Williams, 1994). In this study, the Rate of inflation is used as a proxy to measure the economic and political stability. The variable IR is expressed as

(Rate of Inflation / 100). Price variation is highly related to the economic as well as political stability of a country and therefore, this variable will serve its objective. The data is sourced from the databank of the World Bank.

Expenditure on Gross Capital Formation as a share of GDP (GCF): This ratio serves as a proxy for infrastructure development. High-quality infrastructure enables cost-effective production, which in turn attracts FDI (Wheeler and Mody, 1992). In other words, it can be said that better infrastructure in an economy attracts FDI inflows since the MNCs find it profitable to operate in a country with better infrastructure (in terms of transportation and communication) which will help them producing and distributing their product at a lower cost of production. The data is sourced from the databank of the World Bank.

Real Rate of Interest (RIR): The real rate of interest is used as a host country's return to investment, higher the real rate of interest, the return on the investment will relatively be lower. Therefore, this variable is expected to have a negative impact on the FDI inflow. In this study, the variable is expressed as the Real Rate of Interest divided by 100. The data is sourced from the databank of the World Bank.

**Table 1. Summary of the data**

Variables	Average	Standard Deviation	Minimum	Maximum	Observation
LFDIT	23.74	0.37	20.09	27.05	42
LGDP	31.46	0.11	30.31	32.64	42
IR	0.071	0.004	0.023	0.14	42
RIR	0.06	0.004	-0.01	0.10	42
TO	0.31	0.02	0.12	0.56	42
GCF	0.30	0.01	0.19	0.42	42

*Source:* Calculated from the data compiled from the databank of World Bank.

The summary statistics of the variables are shown in Table 1. It is seen that the average log FDI inflow of India is 23.74 which is around US Dollar 20424.47 million with a standard deviation of 0.37; looking at the minimum and maximum values, it can be said that between the years 1980 to 2001, the FDI inflow to India has increased from log FDI inflow of 20.09 (USD 530.86 million) to 27.05 (USD 559326.94 million). The mean of log GDP is 31.46 (USD 46015527.05 million) and its standard deviation is 0.11 which is very low. The mean of trade openness (TO) is 30.59 per cent with its minimum of 12.22 per cent in 1986 and maximum of 55.79 per cent in the year 2012; the standard deviation is 0.02 which is also very low. On observing the Inflation rate (IR) and Real Interest Rate (RIR) it can be said that the average Inflation rate for these years is 0.71 and the real rate of Interest is 0.06 with the standard deviations of 0.004 for both. Finally, the average gross capital formation as a



proportion of GDP (GCF) is 29.95 per cent with the lowest in the year 1980 at 19.55 per cent and highest in the year 2007 at 41.95 per cent. The Standard deviation is 0.01.

### Empirical methods and models

To study the trend, the simple percentages and Compound Annual Growth rates are calculated using Formula (a) and Formula (b). Further, to test if there is any significant change in the composition of FDI inflow has taken place or not, Spearman's Rank Correlation (Spearman, C., 1904) (Formula c) is used.

$$\text{Annual Growth Rate (\%)} = \frac{\text{New Value} - \text{Old Value}}{\text{Old Value}} \times 100 \quad (\text{a})$$

$$\text{Compound Annual Growth Rate (\%)} = \left[ \left( \frac{\text{End Value}}{\text{Beginning Value}} \right)^{\frac{1}{t}} - 1 \right] \times 100 \quad (\text{b})$$

Here, t represents the number of periods

$$\text{Rank Correlation Coefficient } (\rho) = 1 - 6 \left[ \frac{\sum_{i=1}^n D_i^2 + \sum \frac{1}{12} (m_k^3 - m_k)}{n(n^2 - 1)} \right] \quad (\text{c})$$

*Note:* D<sup>2</sup> is the square of Rank differences. m<sub>k</sub> is the number of items obtaining same rank. And n is number of observation.

In Formula (c), the ρ is the rank correlation coefficient whose value ranges from -1 to 1. A significant positive correlation coefficient signifies that there is no significant change in the composition of FDI inflows to India. On the other hand, an insignificant value equal to or greater than 0 or a significant negative ρ value will tell us that a significant change in the composition of FDI inflow has taken place.

To study the determinants of FDI inflow (Objective 2), time-series data has been used. In this study to find the determinants affecting the FDI inflows, the following models are used:

$$LFDIT_t = \beta_0 + \beta_1 LGDP_t + \beta_2 GCF_t + \beta_3 IR_t + \beta_4 TO_t + \beta_5 RIR_t + \beta_6 D_1 + u_t \quad (1)$$

$$LFDIT_t = \beta_0 + \beta_1 LGDP_t + \beta_2 GCF_t + \beta_3 IR_t + \beta_4 TO_t + \beta_5 RIR_t + \beta_6 D_1 + \beta_7 D_2 + u_t \quad (2)$$

$$LFDIT_t = \beta_0 + \beta_1 LGDP_t + \beta_2 GCF_t + \beta_3 IR_t + \beta_4 TO_t + \beta_5 RIR_t + \beta_6 D_1 + \beta_7 D_2 + \beta_8 D_3 + u_t \quad (3)$$

Here,  $t$  is the time period, the slope coefficients are  $\beta$ , and,  $u_t$  is the error term.  $D_1$ ,  $D_2$  and  $D_3$  are the year dummies representing the year 1991, 2008 and 2014.

For the analysis, a Unit Root test is performed to assess the stationarity of the model, specifically using the Augmented Dickey-Fuller test. Subsequently, the Autoregressive Distributed Lag (ARDL) bound test method, developed by Pesaran, Shin, and Smith (2001), is applied to evaluate cointegration. This method offers advantages over Johansen's cointegration test as it does not require all variables to be stationary at the same level, as long as none are stationary at  $I(2)$  or higher. The Unit Root test ensures no variable is stationary at  $I(2)$  or above before applying the ARDL bound test. To examine the long-term relationships among the variables, Model 4 is utilized.

$$\begin{aligned} \Delta LFDIT_t = & \beta_0 + \sum_{i=1}^p \beta_{1ik} \Delta LFDIT_{t-i} + \sum_{i=1}^p \beta_2 \Delta LGDP_{t-i} + \sum_{i=1}^p \beta_3 \Delta GCF_{t-i} + \sum_{i=1}^p \beta_4 \Delta IR_{t-i} \\ & + \sum_{i=1}^p \beta_5 \Delta TO_{t-i} + \sum_{i=1}^p \beta_6 \Delta RIR_{t-i} + \alpha_1 LFDIT_{t-i} + \alpha_2 LGDP_{t-i} + \alpha_3 GCF_{t-i} \\ & + \alpha_4 IR_{t-i} + \alpha_5 TO_{t-i} + \alpha_6 RIR_{t-i} + u_t \end{aligned} \quad (4)$$

To test for the presence of cointegration, the F-statistic is utilized, considering the null hypothesis of no cointegration, i.e.,  $H_0: \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = \alpha_6 = 0$ . According to Pesaran, Shin, and Smith (2001), there are two critical values for the F-statistic, assuming variables are stationary at either  $I(0)$  or  $I(1)$ . The critical value at  $I(0)$  is referred to as the lower bound, while the value at  $I(1)$  is known as the upper bound. If the calculated F-statistic exceeds the upper bound critical value, the null hypothesis of no cointegration is rejected. The number of regressors in the ARDL model is determined as  $(p+1)K$ , where  $p$  represents the number of lags and  $K$  denotes the number of variables. The maximum lag length for the test is determined using the Akaike Information Criterion (AIC). Once the appropriate lag length is selected, if cointegration is detected, to see the short run dynamics of the variables, an Error Correction Model (ECM) is employed. The ECM can be represented as Equation 5:

$$\begin{aligned} \Delta LFDIT_t = & \beta_0 + \sum_{i=1}^p \beta_{1ik} \Delta LFDIT_{t-i} + \sum_{i=1}^p \beta_2 \Delta LGDP_{t-i} + \sum_{i=1}^p \beta_3 \Delta GCF_{t-i} + \sum_{i=1}^p \beta_4 \Delta IR_{t-i} \\ & + \sum_{i=1}^p \beta_5 \Delta TO_{t-i} + \sum_{i=1}^p \beta_6 \Delta RIR_{t-i} + \theta ECT_{t-i} + u_t \end{aligned} \quad (5)$$

After the ARDL bound testing, and Error Correction estimation, to check the long-run impact of the independent variables on the outcome variable, the Newey West least square method is employed to estimate the equations 1, 2 and 3, and the model having the least AIC value is chosen to interpret the relationship. The Newey-West least square has the advantage over the ordinary least square method that it can counter the problem of both Heteroscedasticity and Autocorrelation, since the regression on time-series data proves to be problematic because of the presence of Autocorrelation, the Newey-West least square method is employed in this study. Therefore, this method is known as Heteroscedasticity and Autocorrelation consistent (HAC) (Newey and West, 1987).

To assess the robustness of the Newey-West least squares estimators, the equation (excluding dummy variables) is estimated using the fully-modified ordinary least squares (FMOLS) method (Pedroni, 2001a; Pedroni, 2001b). FMOLS is recognized for addressing issues with nonstationary regressors and endogeneity in long-run cointegrating equations.

Finally, the stability of the long-run parameters has been examined using the Cumulative Sum test and Cumulative Sum Squares test introduced by Borensztein et al. (1998). The regression model will be deemed stable if these test statistics fall under the critical range of the 5% significance level. Pesaran and Pesaran (1997) in their study have used this method to test the stability of the long-run coefficients. Suleiman (2005) has used this method too.

## RESULT AND DISCUSSION

### Trend and composition of FDI inflows in India:

In this section, the trend and composition of FDI inflows is studied. Table 2 shows that the inflows of FDI have increased from US Dollar 635.59 Million in 1980 to US Dollar 1806.81 million in 1991 which is roughly about 2.8 fold. By 2011, the value of Total FDI inflow had increased to USD 242544.7 Million which is an increase nearly 134 fold over the period 1991. It is observed that during the period 2001 to 2016, the value of total FDI

inflow has increased steeply from USD 25153.56 Million to USD 362800.20 Million (nearly 1342 per cent).

**Table 2. Trend of total FDI inflows to India during 1981 to 2021**

Year	Total FDI Inflow (USD Million)
1981	635.59
1986	982.18
1991	1806.81
1996	10690.81
2001	25153.56
2006	91198.05
2011	242544.70
2016	362800.20
2017	417190.70
2018	428325.00
2019	477517.40
2020	544300.70
2021	559026.70

*Source:* OECD Databank.

Table 3 shows the composition of FDI inflows in India during 2011 to 2022. It is seen that during 2011, the services sector received the highest FDI (18.76 per cent) followed by the Telecommunication sector (8.24 per cent) and the construction sector (6.67 per cent). After a decade, in 2021 also, the situation has not changed much. It is noticed that the leading sector in terms of receiving FDI is the computer and software and hardware sector (29.69 per cent) followed by the services sector (16.22 per cent) and the automobile industry sector (15.76 per cent).

**Table 3. Inflow of FDI at sectoral level**

Sectors	2011	2021	Percentage Change	Sectors	2011	2021	Percentage Change
Metallurgical Industries	74859.2 (5.88)	13292.7 (4.44)	-82.24	Food Processing	8648.41 (0.68)	5192.34 (1.73)	-39.96
Mining	6307.7 (0.50)	798.18 (0.27)	-87.35	Consultancy Services	14448.4 (1.13)	12104.2 (4.04)	-16.22
Petroleum & Natural Gas	9869.54 (0.77)	539.03 (0.18)	-94.54	Services Sector	238886.1 (18.76)	48564.0 (16.22)	-79.67
Computer Software & Hardware	31351.0 (2.46)	88889.4 (29.69)	183.53	Hotel & Tourism	41933.7 (3.29)	5076.84 (1.70)	-87.89
Telecommunications	104926.2 (8.24)	4632.2 (1.55)	-95.59	Trading	25931.22 (2.04)	25549.1 (8.53)	-1.47
Information & Broadcasting	18109.8 (1.42)	1772.6 (0.59)	-90.21	Agriculture Services	2387.01 (0.19)	1665.42 (0.56)	-30.23
Automobile Industry	39266.6 (3.08)	47187.5 (15.76)	20.17	Diamond / Gold Ornaments	1721.00 (0.14)	82.34 (0.03)	-95.22
Air Transport	1451.5 (0.11)	2109.6 (0.70)	45.34	Construction Activities	84982.5 (6.67)	17073.4 (5.70)	-79.91
Sea Transport	4563.3 (0.36)	3197.8 (1.07)	-29.92	Housing & Real Estate	42151.34 (3.31)	3909.91 (1.31)	-90.72
Chemicals (Other Than Fertilizers)	30256.1 (2.38)	5284.7 (1.77)	-82.53	Others	497880.4 (39.09)	12425.3 (4.15)	-97.50
Result of Rank Correlation							
Spearman's Rank Correlation Coefficient					$\rho = 0.66^*$		

Note: (1) Figures in parenthesis represent percentage.

(2) \* represents that the coefficient is significant at 1 per cent level.

(3) Figures are in Rupees Crore.

Source: RBI Databank

The sectoral share of total FDI inflow to the Computer software and hardware sector has increased from 2.46 in 2011 to 29.69 per cent in 2021. However, the structure of FDI inflow has not changed much. To check if there is any significant change in the structure of FDI inflow, Spearman's rank correlation method is used. Further, it is noticed that the computer software and hardware sector has experienced tremendous growth followed by the air transport industry and automobile industry during the same period 2011 to 2021. The positive Spearman's rank correlation coefficient indicates that the ranking of the sectors based on FDI inflow received is has not significantly changed over the period of 2011 to 2021 (Table 3).

## Determinants of FDI-inflows in India

### *Unit Root Test*

The result shows that all variables except the Real Interest Rate (RIR) are I(1); the RIR is I(0) (when checking for the equation with trend and intercept or intercept alone) and I(1) if the equation has neither trend nor intercept (Table 4). Therefore, it cannot be concluded that all the variables are stationary at the same level, and therefore, the Johanson cointegration method will not be appropriate for test of cointegration.

**Table 4. Unit root test**

Variables	Intercept Only		Model Specification Trend and Intercept		None	
	Level	First Difference	Level	First Difference	Level	First Difference
LFDIF	-1.02	-6.64*	-2.78	-4.74*	1.28	-6.39*
LFDIS	-0.67	-3.54**	-1.62	-3.53***	2.64	-1.96**
LFDIT	-0.74	-3.74*	-1.60	-3.73**	2.61	-2.30**
IR	-2.69	-7.46*	-2.71	-7.46*	-1.15	-7.54*
LGDP	0.13	-6.16*	-2.33	-6.08*	13.89	-1.05
LGDPPEC	1.03	-5.97*	-2.11	-6.15*	9.64	-1.34
TO	-0.71	-5.37*	-1.57	-5.29*	0.98	-5.16*
GCF	-1.40	-9.14*	-1.17	-9.09*	0.26	-9.22*
RIR	-2.99**	---	-3.78**	---	-1.29	-7.95*

*Note 1:* Augmented Dickey Fuller Test is employed for Unit Root Test.

*Note 2:* \*, \*\*, \*\*\* denote significance levels at 0.01, 0.05, and 0.10, respectively.

### *Cointegration test and short run estimation*

Since the variables are not stationary at the same level, it is be appropriate to employ the ARDL Bound test method for testing the cointegration. In Table 5, it is evident that the F-statistic value of 4.94 exceeds I(1) at a 5 per cent significance level. Consequently, the null hypothesis of “No Level Relationship” cannot be accepted, indicating a presence of cointegration among the variables.

Further, It is seen that GDP (LGDP), Trade openness (TO), share of gross capital formation to GDP (GCF) and Real interest rate (RIR) has a positive impact on the FDI inflows. That means, 1 per cent increase in the log of India’s GDP leads to an increase in the FDI inflow to India by 1 per cent; also, any increase in GDP of India in period t-3 will lead to an increase in the FDI Inflow in India in period t by 2.70 per cent.

**Table 5. ARDL Bound test for cointegration**

Variables	AIC Lags	t-statistic	Result	
LFDIT	4	(Dependent Variable)		
LGDP (LFDIT, IR, RIR, TO, GCF)	4	6.82*	Cointegration	
IR (LFDIT, LGDP, RIR, TO, GCF)	4	1.86***	Cointegration	
TO (LFDIT, IR, RIR, LGDP, GCF)	4	2.48**	Cointegration	
RIR (LFDIT, IR, LGDP, TO, GCF)	4	2.26***	Cointegration	
GCF (LFDIT, IR, RIR, TO, LGDP)	3	-1.13	No-Cointegration	
Critical bound values for F-statistics				
Significance Level	I (0)	I (1)	F-statistics	Result
10 %	2.31	3.35	4.94**	Cointegration
5 %	2.73	3.92		

Null Hypothesis ( $H_0$ ): No Level Relationship

Note: \*, \*\*, \*\*\* denote significance levels at 0.01, 0.05, and 0.10, respectively.

A positive coefficient of Real Interest Rate in period  $t$  represents that any increase in Real Rate of Interest in period  $t$  increases the FDI inflow to India in period  $t$ , however, it impacts the inflow of FDI negatively in periods  $t-2$  and  $t-3$ . At period  $t$ , both trade openness and the inflation rate are found to be positive and significant, it reflects that as the intensity of trade openness increases, the country is expected to receive more FDI in various sectors. Also, at least in the short-run, an increase in the price level incentivise the producers to produce more as this increase in price is due to the increase in the country's income (GDP). Finally, a positive coefficient of Gross Capital Formation as a share of GDP indicates that the FDI inflow increases when the country makes more investment in the capital formation. This is because, when a country increases expenditure on capital formation, its infrastructure facilities get better. So, it is obvious that the multinational companies tend to invest or set up their firms in a country having better infrastructure facilities like roadways, railways, etc. The Error Correction Term (ECT) is negative, significant and less than 1; it represents that the model is stable and any disequilibrium will be adjusted at a speed of 65 per cent each period. So, in long run, there is a tendency that any disequilibrium will move back to the equilibrium (Table 6).

**Table 6. Short run result**

ARDL (4,4,4,4,4,3)	
Variable	Coefficient
ECT	-0.65*
$\Delta$ LFDIT <sub>t-1</sub>	0.39*
$\Delta$ LFDIT <sub>t-2</sub>	0.10
$\Delta$ LFDIT <sub>t-3</sub>	0.34**
$\Delta$ LGDP <sub>t</sub>	1.00***
$\Delta$ LGDP <sub>t-1</sub>	-1.77**
$\Delta$ LGDP <sub>t-2</sub>	-0.003
$\Delta$ LGDP <sub>t-3</sub>	2.70*
$\Delta$ RIR <sub>t</sub>	9.22**
$\Delta$ RIR <sub>t-1</sub>	-36.75
$\Delta$ RIR <sub>t-2</sub>	-24.45*
$\Delta$ RIR <sub>t-3</sub>	-15.72*
$\Delta$ IR <sub>t</sub>	8.51**
$\Delta$ IR <sub>t-1</sub>	-27.35
$\Delta$ IR <sub>t-2</sub>	-13.07*
$\Delta$ IR <sub>t-3</sub>	-13.20*
$\Delta$ TO <sub>t</sub>	3.19*
$\Delta$ TO <sub>t-1</sub>	-2.59*
$\Delta$ TO <sub>t-2</sub>	-0.19
$\Delta$ TO <sub>t-3</sub>	3.49*
$\Delta$ GCF <sub>t</sub>	2.33**
$\Delta$ GCF <sub>t-1</sub>	-0.45
$\Delta$ GCF <sub>t-2</sub>	1.57***
Model Summary	
R <sup>2</sup>	0.90
Adjusted R <sup>2</sup>	0.76

Note 1: Dependent Variable is  $\Delta$ LFDIT<sub>t</sub>

Note 2: \*, \*\*, \*\*\* denote significance levels at 0.01, 0.05, and 0.10, respectively.

#### *Long-run result and test of robustness*

For long-run analysis, in the study, all the equations (Equation 1, Equation 2 and Equation 3) are estimated using the Newey-West ordinary least square method. Then the model with least the AIC is considered. Further to check the robustness of the model, the FMOLS is employed.

Model 1 has the least AIC with -0.06 and therefore, the model 1 is considered for the analysis. It is found that the Gross Domestic Product (LGDP), and Trade openness (TO) be significant at 1 per cent level, on the other hand, the Inflation Rate (IR) is significant at 10 per cent level. In the long run, both GDP and Trade openness positively influence the inflow of FDI in India. Multinational companies set up and sell in countries where the



demand for their product is very high, so, as GDP increases, both the size and income of the country increases. This, increasing size and income attracts more foreign capital inflow to the host nations. Further, in the long run, if the inflation persists to be high, the foreign nationals consider this as a situation of instability and therefore they restrain from investing. Lastly, the year dummy (1991) is found to be statistically significant at 1 per cent level with a coefficient of 0.48. The positive coefficient of the year dummy represents that the average yearly FDI is higher for all the years after 1990 than the years between 1981 and 1990. The f-statistics of the model is significant at 1 per cent level which represents that all the coefficients in the model are non-zero.

**Table 7. Determinants of Inward FDI to India**

Variables	Description	Model 1	Model 2	Model 3	FMOLS
Intercept	---	-45.07*	-42.49*	-39.69*	-53.33*
LGDP	Natural Log of GDP (Constant LCU)	2.17*	2.08*	1.99*	2.43*
GCF	Ratio of Gross Capital Formation to GDP	1.79	2.19	2.44	2.53
IR	Annual Inflation Rate	-9.85***	-10.69**	-11.00**	-8.36***
TO	Ratio of Total Trade to GDP	2.76*	2.46**	2.64**	2.79***
RIR	Real Interest Rate	-7.69	-8.31	-7.74	-5.36
D1 (1991)	D1 = 0, for years before 1991 D1 = 1, for years from 1991	0.48*	0.53*	0.57*	---
D2 (2008)	D2 = 0, for years before 2008 D2 = 1, for years from 2008	---	0.11	0.14	---
D3 (2020)	D3 = 0, for years before 2014 D3 = 1, for years from 2014	---	---	0.19	---
F Statistic		840.123*	705.87*	613.64*	---
Adjusted R <sup>2</sup>		0.99	0.99	0.99	0.98
AIC		-0.06	-0.02	0.004	---

Note 1: Bartlett-Kernel, Newey-West (HAC) least square is employed for estimation (BW=4)

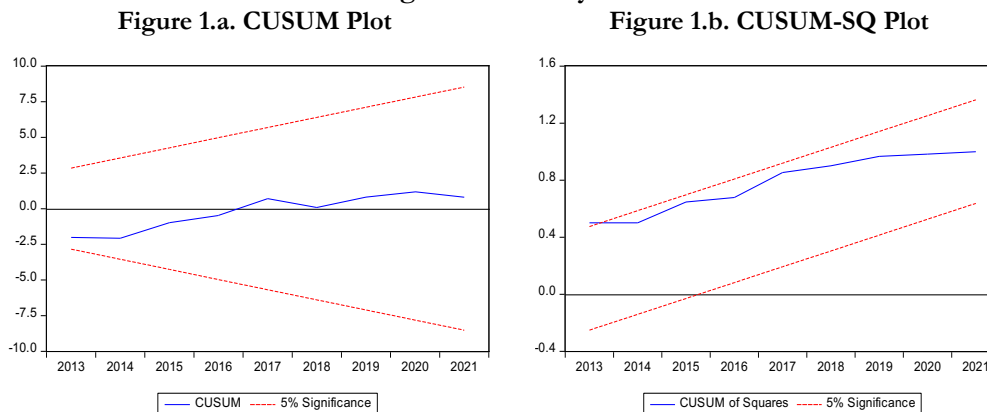
Note 2: \*, \*\*, \*\*\* denote significance levels at 0.01, 0.05, and 0.10, respectively.

Note 3: The dependent variable is Natural Log of Total Inward FDI (LFDIT)

The robustness of the model is tested employing the Fully Modified OLS (FMOLS). The estimated coefficients of the model using FMOLS have similar signs and significance as the model estimated with the Newey-west least square method. Therefore, the result of the model 1 is considered for the discussion.

#### *Test of stability*

The Cumulative Sum (CUSUM) determines the change in the regression coefficients and, on the other hand, Cumulative Sum of Square (CUSUM-SQ) tests are done to check sudden change from the consistency of the regression coefficients.

**Figure 1. Stability test**

*Note.* The straight lines represent the critical bound at 5 per cent level.

Both tests are done to check the stability of the estimated parameter (Pesaran and Pesaran, 1997). Figure 1 represents the plots of the CUSUM and CUSUM-SQ; it is seen that both the plots of CUSUM and CUSUM-SQ fall inside the critical bounds and this represents that the coefficients are from any kind of instability for the study period.

## CONCLUSION AND IMPLICATIONS

The present study is done with the objectives to know the trend, composition, and determinants of FDI inflows to India. The data has been collected from the various sources. The sectoral level data has been obtained from like RBI databank, and for analysis of determinants, the data has been obtained from OECD FDI databank and World Bank databank. The study is conducted using the time-series data for the period between 1980 and 2021 employing the ARDL and FMOLS approach to study the trend and determinant of FDI in India. It is found that the value of FDI inflow to India has increased by around 3 fold during the period of 1980 to 1991. After the reform of 1991, the inflow of FDI to India has increased very sharply from USD 1806 million to around USD 559026 million. While looking at the sectoral growth of FDI, the Computer ‘Software & Hardware sector’ has seen the highest growth in terms of receiving FDI during the period of 2011 to 2021 followed by ‘Air Transport’ and ‘Automobile Industry’. After the Computer software & hardware sector (29.69 per cent), the services sector (16.22 per cent) is found to have the share among the recipient of sector. Further, the bound test results confirm a cointegrating relationship between FDI inflows, inflation, GDP, interest rates, gross capital formation as a share of GDP, and trade openness. Additionally, the Newey-West Least Squares analysis

indicates that, in the long term, GDP, annual inflation rate, and trade openness are significant determinants of FDI inflows into the country. Moreover, the dummy variable for the year 1991 is significant and positive, suggesting a notable increase in FDI inflows following the liberalization period.

The results of this study have significant implications for policymakers in India which can be summarised as:

- a. The sharp increase in FDI inflows post-1991 liberalization highlights the importance of economic reforms in attracting foreign investment. This highlights the need for continued policy support for liberalization and openness to maintain and further boost FDI inflows.
- b. The sectoral analysis reveals that the Computer Software & Hardware sector, along with the Services sector, has been the major recipient of FDI, indicating the critical roles of these sectors in India's economic growth. Therefore, policies that support innovation, and infrastructure development in these key sectors to sustain their attractiveness to foreign investors should be taken.
- c. Moreover, the findings point to the potential of targeted sectoral policies to boost FDI in underperforming areas, thereby fostering balanced economic development across different industries. By leveraging these insights, India can craft more effective strategies to attract and retain FDI, fostering sustainable economic growth and development.
- d. The identification of GDP, inflation, and trade openness as significant long-term determinants of FDI inflows suggests that maintaining a stable macroeconomic environment is crucial. Policies aimed at sustaining economic growth, controlling inflation, and promoting trade liberalization could enhance India's appeal as an FDI destination. Also, the significant impact of the 1991 reforms emphasizes the value of ongoing structural reforms to attract foreign investment.

## REFERENCES

- Agarwal, J. P. 1980. Determinants of foreign direct investment: A survey. *Weltwirtschaftliches Archive* 116, 739–773.
- Akinwalere, S., and K. Chang. 2023. The determinants of Foreign Direct Investment (FDI) inflows in Nigeria. *The Journal of Developing Areas* 57(4): 91–105.
- Alam, A., S. Zulfiqar Ali Shah. 2013. Determinants of foreign direct investment in OECD member countries. *Journal of Economic Studies* 40(4): 515–527.

- Ali, S., and W. Guo. 2005. Determinants of FDI in China. *Journal of Global Business and Technology*. [https://www.researchgate.net/profile/Shaukat-Ali-5/publication/252703493\\_Determinants\\_of\\_FDI\\_in\\_China/links/5562d29008ae9963a11b4f48/Determinants-of-FDI-in-China.pdf](https://www.researchgate.net/profile/Shaukat-Ali-5/publication/252703493_Determinants_of_FDI_in_China/links/5562d29008ae9963a11b4f48/Determinants-of-FDI-in-China.pdf).
- Anoruo, E. and M. Mustafa. 2007. An empirical investigation into the relation of oil to stock market prices. *North American Journal of Finance and Banking Research* 1 (1): 22–36.
- Aqeel, A. and M. Nishat. (2004). The determinants of foreign direct investment in Pakistan. *Pakistan Development Review* 43 (4II): 651–664.
- Asiedu, E. 2001. On the determinants of foreign direct investment to developing countries: Is Africa different? *World Development* 30 (1): 107–119.
- Azam, M., and L. Lukman. 2010. Determinants of foreign direct investment in India, Indonesia and Pakistan: A quantitative approach. *Journal of Managerial Sciences* 4 (1): 31–43.
- Aziz, O. G. and A. V. Mishra. 2015. Determinants of FDI inflows to Arab economies. *The Journal of International Trade and Economic Development* 25 (3): 1–32.
- Azizov, A. 2007. Determinants of FDI in CIS countries with transition economy. Master's thesis, Aarhus School of Business.
- Behera, S. R., P. Dua, and B. Goldar. 2012. Foreign direct investment and technology spillover: Evidence across Indian manufacturing industries. *The Singapore Economic Review* 57 (2): 1250011.
- Borensztein, E., J. De Gregorio, and J. W. Lee. 1998. How does FDI affect economic growth? *Journal of International Economics* 45 (1): 115–135.
- Canh, N. P., N. T. Binh, S. D. Thanh, and C. Schinckus. 2020. Determinants of foreign direct investment inflows: The role of economic policy uncertainty. *International Economics* 161: 159–172.
- Cardoso, F. H. and E. Faletto. 1979. *Dependency and Development in Latin America*. University of California Press.
- Chakrabarti, A. 2001. The determinants of foreign direct Investment: Sensitivity analyses of cross-country regressions. *Kyklos* 54 (1): 89–113.
- Clegg, J. 1995. The determinants of United States Foreign Direct Investment in the European community: A critical appraisal. 21st annual conference of the European business academy, University of Urbino.

- Dawn, H. and P. Nigel. 1998. The diffusion of innovations in central and eastern Europe: A study of the determinants and impact of foreign direct investment. NIESR Paper No. 137, National Institute of Social Sciences and Economics Research, London.
- de Castro, P. G., E. A. Fernandes, and A. C. Campos. 2013. The determinants of foreign direct investment in Brazil and Mexico: An empirical analysis. *Procedia Economics and Finance* 5 (1): 231–240.
- Dixon, W. J. and T. Boswell. 1996. Dependency, disarticulation, and denominator effects: Another look at foreign capital penetration. *American Journal of Sociology* 102 (2): 543–562.
- Dunning, J. H. 1988. The eclectic paradigm of international production: A restatement and some possible extensions. *Journal of International Business Studies* 19: 1–52.
- Dwivedi, A. 2012. Effect of FDI and trade on productivity in Indian electronics firms. *The Economic Journal* 60 (3): 76–90.
- Findlay, R. 1978. Relative backwardness, direct foreign investment, and the transfer of technology: A simple dynamic model. *Quarterly Journal of Economics* 92 (1): 1–16.
- Fischer, S. 1998. The Asian crisis: A view from the IMF. *Journal of International Financial Management & Accounting* 9 (2): 167–176.
- Fischer, S. 2003. Globalization and its challenges. *American Economic Review* 93 (2): 1–30.
- Garibaldi, P., N. Mora, and R. Sahay. 2001. What moves capital to transition economies. *IMF Staff Papers* 48(special issue): 114–121.
- Greene, J. and D. Villanueva. 1991. Private investment in developing countries: An empirical analysis. *IMF Staff Papers* 38 (1): 33–58.
- Grosse, R. and L. J. Treviño. 1996. Foreign Direct Investment in the United States: An analysis by country of origin. *Journal of International Business Studies* 27 (1): 139–155.
- Hein, S. 1992. Trade strategy and the dependency hypothesis: Comparison of policy, foreign investment, and economic growth in Latin America and East Asia. *Economic Development and Cultural Change* 40 (3): 495–521.
- Herzer, D. and S. Klasen. 2008. In search of FDI-led growth in developing countries: The way forward. *Economic Modelling* 25 (5): 793–810.
- Hymers, S. 1976. *The International Operations of Multinational Firms 1959: Ph.D. Thesis*. Cambridge, MA: MIT Press.
- Itaki, M. 1991. A critical assessment of the eclectic theory of the multinational enterprise. *Journal of International Business Economics* 25: 445–460.

- Jadhav, P. 2012. Determinants of foreign direct investment in BRICS economies: Analysis of economic, institutional and political factors. *Procedia-Social and Behavioral Sciences*: 37 (2012): 5–14.
- Kojima, K. 1978. *Direct Foreign Investment: A Japanese model of multinational business operations* 116. Croom Helm, London: 388–390.
- Kojima, K. 1982. Macroeconomic versus international business approach to foreign direct investment. *Hitotsubashi Journal of Economics* 23 (1): 1–19.
- Kok, R. and B. Acikgoz Ersoy. 2009. Analyses of FDI determinants in developing countries. *International Journal of Social Economics* 36(1/2): 105–123.
- Kumar, N. 2002. *Globalisation and the Quality of FDI*. Oxford University Press.
- Lansbury, M., Pain, N. and K. Šmídková. 1996. Foreign direct investment in Central Europe since 1990: An econometric study. *National Institute Economic Review* 156: 104–114.
- Levin, R. 2001. International financial liberalization and economic growth. *Review of International Economics* 9 (4): 688–702.
- Li, X. and X. Liu. 2005. Foreign direct investment and economic growth: An increasingly endogenous relationship. *World Development* 33 (3): 393–407.
- Munteanu, C. 1991. On the determinants of Foreign Direct Investments. Working Paper, A.E.S.
- Miskinis, A. and I. Juozenaite. 2015. A comparative analysis of foreign direct investment factors. *Ekonomika* 94 (2): 7.
- M, Bahmani-Oskooee, and R. W. Ng. 2002. Long run demand for money in Hong Kong: An application of the ARDL model. *International Journal of Business and Economics* 1 (2): 147–155.
- Mousavian, S. R. Z., S. M. Mirdamadi, S. J. F. Hosseini, and M. O. Najafabadi. 2023. Determinants of foreign direct investment inflow to the agricultural sector: A panel-data analysis. *Mağallať Al-‘ulum Al-iqtisadiyyať Wa-al-idariyyať* 39 (3): 709–729.
- Newey, W. K. and K. D. West. 1987. A simple, positive semi-definite, heteroskedasticity and autocorrelation consistent covariance matrix. *Econometrica* 55 (3): 703–708.
- Nunnenkamp, P. and J. Spatz. 2002. Determinants of FDI in developing countries: Has globalization changed the rules of the game? *Transnational Corporations* 11 (2): 1–34.
- Parry, T. G. 1985. Internalization as a general theory of foreign investment: A critique. *Weltwirtschaftliches Archive* 121: 564–569.
- Pedroni, P. 2001a. Asymptotic and finite sample properties of pooled time series tests with an application to the PPP hypothesis. *Indiana University Working Paper*.

- Pedroni, P. 2001b. Purchasing power parity tests in cointegrated panels. *Review of Economics and Statistics* 83 (4): 727–731.
- Pesaran, M. H., Y. Shin, and R. J. Smith. 2001. Bounds testing approaches to the analysis of level relationships. *Journal of Applied Economics* 16: 289–326.
- Pesaran, M. H. and B. Pesaran. 1997. *Working with Microfit 4.0: Interactive Econometric Analysis*. Oxford: Oxford University Press.
- Rangkakulnuwat, P. and S. W. Paweenawat. 2015. The determinants of foreign direct investment in ASEAN. *International Journal of Social Economics* 42 (3): 239–250.
- Reuber, G., H. Crockell, M. Emersen, and G. Gallais-Hamonno. 1973. *Private Foreign Investment in Development*. Oxford: Clarendon Press and OECD.
- Rugman, A. M. 1981. A test of internalization theory. *Managerial and Decision Economics* 2 (4): 211-219.
- Sahoo, P. 2006. Foreign Direct Investment in South Asia: Policy, trends, impact and determinants. Working Paper No. 56. ADB.
- Saini, N. and M. Singhania. 2018. Determinants of FDI in developed and developing countries: A quantitative analysis using GMM. *Journal of Economic Studies* 45 (2): 348–382.
- Schneider, F. and B. S. Frey. 1985. Economic and political determinants of foreign direct investment. *World Development* 13: 161–175.
- Shamsuddin, A. F. M. 1994. Economic determinants of foreign direct investment in less developed countries. *The Pakistan Development Review* 33 (1): 41–51.
- Singhania, M. and A. Gupta. 2011. Determinants of foreign direct investment in India. *Journal of International Trade Law and Policy* 10 (1): 64–82.
- Suleiman, W. A. 2005. The impact of investment and financial intermediation on economic growth: New evidence from Jordan. *Arab Journal of Administrative Science* 22 (2): 27-44.
- Tsai, P. 1994. Determinants of Foreign Direct Investment and its impact on economic growth. *Journal of Economic Development* 19: 137-163.
- UNCTAD. 2022. *Handbook of Statistics 2022*. New York and Geneva.
- UNCTAD. 1998. World Investment Report. [https://unctad.org/system/files/official-document/wir1998\\_en.pdf](https://unctad.org/system/files/official-document/wir1998_en.pdf)
- Veugelers, R. 1991. Locational determinants and ranking of host countries: An empirical assessment. *Kyklos* 44: 363–382
- Wang, J. Y. and M. Blomstrom. 1992. Foreign investment and technology transfer: A simple model. *European Economic Review* 36 (1): 137–155.

- Wheeler, D. and A. Mody. 1992. International investment location decisions: The case of US firms. *Journal of International Economics* 33: 57–76.
- Wint, A. G. and D. A. Williams. 1994. International investment location decisions. The case of US Firms. *Journal of International Economics* 33: 57–76.
- Wint, A. G. and D. A. Williams. 2002. Attracting FDI to developing countries. *International Journal of Public Sector Management* 15 (5): 361–374.
- Woo, J. 2009. Productivity growth and technological diffusion through foreign direct investment. *Economic Inquiry* 47 (2): 226–248.
- Xu, H., D. Wan, and Y. Sun. 2014. Technology spillovers of foreign direct investment in coastal regions of east China: A perspective on technology absorptive capacity. *Emerging Markets Finance and Trade* 50 (S1): 96–106.