

SMART

Journal of Business Management Studies

(A Professional, Refereed, International and Indexed Journal)

Vol-17 Number-1

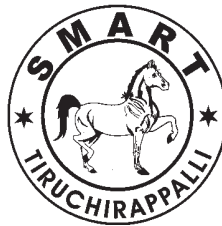
January - June 2021

Rs.500

ISSN 0973-1598 (Print)

ISSN 2321-2012 (Online)

Professor MURUGESAN SELVAM, M.Com, MBA, Ph.D, D.Litt
Founder - Publisher and Chief Editor



**SCIENTIFIC MANAGEMENT AND ADVANCED RESEARCH TRUST
(SMART)**

TIRUCHIRAPPALLI (INDIA)

www.smartjournalbms.org

**CAUSAL DYNAMICS BETWEEN FOREIGN DIRECT INVESTMENT,
ECONOMIC GROWTH AND FINANCIAL DEVELOPMENT IN
ALGERIA DURING 1970–2017**

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Abstract

This study looks at the connection between foreign direct investment, economic growth and financial development, in the Algerian economy, over the period of 1970–2019, within a multivariate framework. Empirical evidence, supported by the ARDL estimates, revealed that there was long-run equilibrium in the relationship, between the competing variables. Regarding the VECM results, bi-directional Granger causality existed between foreign direct investment and economic growth. The study could provide more accurate and comprehensive understanding of the dynamic association between foreign direct investment, economic growth and financial development, by helping policymakers to understand the character of dynamic relationships between foreign direct investment, economic growth and financial development.

Keywords: *Foreign Direct Investment, Growth Economic, Financial Development and Algeria Economy.*

JEL Code : *F23, F43 and F34.*

Paper Received : *25-09-2020*

Revised : *14-10-2020*

Accepted : *11-12-2020*

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1. Introduction

During the past 20 years, a fundamental shift has occurred in the attitude of developing countries towards foreign direct investment (FDI). Before the mid-1980s, many developing countries viewed the foreign direct investor as the sole beneficiary. They restricted the investors' freedom of action, by imposing out right prohibitions and restrictions on their operations in the industries in which they were allowed to operate and restrictions on profit transfer and repatriation and/or strict performance conditions (Gurtner, 2010).

Now, many developing countries welcome FDI and have introduced a great deal of legislation and regulations in this regard. The development trend includes reducing the obstacles to FDI inflows and making significant efforts to ensure that the markets are competitive, by permitting FDI to operate in many economic activities. Further, restrictions on the transfer of profits and capital to the home country, have either been abolished entirely or substantially modified. The practice of imposing performance requirements, as a prerequisite for receiving tax incentives, has also become less critical with FDI giving incentives to domestic firms. Indeed, some developing countries are treating foreign investors better than they treat indigenous investors. There is now widespread acceptance of the principle that foreign investors deserve to be treated at par with the local investors (Chaudhuri and Mukhopadhyay, 2014). This trend also signals the end of the practice of nationalisation and the confiscation of inward investment. Indeed, there is a general trend towards privatisation, including the privatisation of previously confiscated investments.

It can be said that in the current situation, many developing countries are in mutual competition to attract FDIs. The incentives offered to attract such investment, have become universal and more generous. While facilitating

FDI flows, we must identify the benefits or advantages that FDI can add to our economy. On the other hand, we must also identify the disadvantages associated with it because FDI is not all positive. FDI is accompanied by some disadvantages, that must be taken into account, before giving approval for FDI. Permissive or hostile aspects of approval must be considered with caution, to maximise the various accruing benefits and ensure the diversity needed to develop the economy of the host country. One of the reasons for the growing interest of developing countries in FDI is the decline in their borrowing capacity because of the escalation of the external debt crisis. This motivated the developing countries to remove the restrictions imposed on FDI. It has led to a decline in the role of the State and the trend towards free-market economies, that depend on attracting foreign investment, as one of the primary mechanisms for achieving reform, economic growth and integration into the world economy.

Since the early 1990s and the collapse of the socialist economic systems, the FDI has played an increasingly important role globally, as it became one of the most important sources of finance for developing countries in their transition to a market economy. Thus the importance of an assessment of the effects of FDI, on the transition economies, has increased. Since the transfer of FDI between States, like every economic activity, has both positive and negative aspects from the host countries' perspective, it is essential for each state to weigh the advantages and burdens of such investment. One of the essential advantages of this investment is that it accelerates economic growth and contributes to the development of the financial sectors of host countries. Many studies have identified economic growth as the determinant of the utility of FDI (Azman-Saini et al., 2010; Bengoa and Sanchez-Robles, 2003; Iamsiraroj, 2016; Iamsiraroj and Ulubapoğlu, 2015; Louail, 2019; Shahbaz et al., 2011; Wang and Wong, 2009). Other

studies have also identified financial sector development as a determinant of FDI (Ang, 2009; Dutta and Roy, 2011; Gürler and Kara, 2020; Henri et al., 2019; Korgaonkar, 2012). Some studies (Anetor, 2020; Nasir et al., 2019; Ogbuagu et al., 2020; Pradhan et al., 2018; Salahuddin et al., 2018) have also addressed the causal relationship between FDI, economic growth, and financial development. Algeria is seeking to attract more FDI to meet future development needs, especially under the announced programmes to support economic growth for the period 2005–2009. Favourable growth rates were recorded in recent years (2002–2005) after a period of economic contraction and low growth, during the 1990s, which can be attributed mainly to the surge in oil prices in international markets, which was positively reflected in the performance of the Algerian economy.

2. Review of Literature

According to Dunning's (1981) theory, FDI determinants of the host country are classified into three types: first, ownership advantages – these are significant determinants of FDI, that show that factors such as research and development and advertising expenditure, organisational resources, technology, capital intensity, labour skills, firm size, the scale of economies, and experience, affect activities of FDI or multinational enterprises (Faeth, 2009); second, site advantage – this is an advantage that an investing firm derives by operating in a specific host country (instead of another country or the investor's home country) (Tintin, 2013); third, internal adjustment feature – it is the advantage an investing firm gets if it bundles its production or services instead of unbundling technical consultation, maintenance, and others.

The causal relationship between FDI, economic growth, and financial development, which has generated a wide range of literature during the past decades, have also become a

new area of research. Many studies have focused on specific countries while others focused on a group of countries within the framework of panel data. Studies are divided into three classes. The first class includes studies on the relationship between FDI, economic growth, and financial development. Among these are those, that used panel data and GMM and confirmed the existence of a relationship between the studied variables (Choong, 2012; Nasir et al., 2019; Ogbuagu et al., 2020; Pradhan et al., 2018; Sghaier et al., 2013). Some used ARDL and vector error correction model (VECM) and confirmed the existence of relationship in the short and long term (Alzaidy et al., 2017; Jahfer and Inoue, 2014; Salahuddin et al., 2018; Shahbaz and Rahman, 2012; Suliman and Elia, 2014). Further, some studied the causal relationship between the study variables and confirmed the existence of a uni- or bi-directional causal relationship (Adeniyi et al., 2012; Anetor, 2020; Tang and Tan, 2014).

The second class includes studies on the relationship between FDI and financial development. Among these are those who used panel data and confirmed the effect of financial development on FDI (Gürler and Kara, 2020; Henri et al., 2019) and those who used ARDL and VECM and confirmed the existence of a relationship in the short and long term (Ang, 2009; Shahbaz et al., 2011). The third class includes studies on the relationship between FDI and economic growth, which used panel data to confirm the effect of economic growth on FDI (Iamsiraroj, 2016; Iamsiraroj and Ulubapoğlu, 2015; Wang and Wong, 2009).

3. Statement of the Problem

Since Algeria undertook economic reforms in its effort to develop its economy, it had to open up to the outside world, and this has become evident in recent years. The following question was posed in this context: Was there a causal relationship between the flow of FDI,

economic growth, and financial development in Algeria during the period of study?

4. Need for the Study

The findings from this investigation would provide several significant policy options for governments, policymakers, investors, managers, researchers, and practitioners, seeking to understand the economic importance of financial development and economic growth, as the driving determinants of FDI inflows into developing countries.

5. Objective of the Study

The main objective of the present study was to examine the causal relationship between FDI, economic growth, and financial development in Algeria, during the period 1970–2018. The analysis was performed by using the Granger Causality Approach and the ARDL Bounds Testing Technique.

6. Hypotheses of the Study

To achieve the desired research objectives, following hypotheses were framed.

- H-1:** Economic growth and financial development influence FDI flows into Algeria.
- H-2:** Economic growth and FDI flows influence development in Algeria.
- H-3:** Financial development and FDI flows influence economic growth in Algeria.
- H-4:** There is causal relationship between FDI, economic growth, and financial development in Algeria.

7. Research Methodology

7.1 Sample Selection

The purpose of the present study was to examine the causal relationship between FDI and the growing economic and financial development in Algeria. The year 1970 was used as the starting year for data collection because it was the year when FDI data became available

in the database. Hence the sample consisted of a total of 48 observations.

7.2 Sources of Data

The study relied on secondary data sources. As a result, data, for all variables, were sourced from the World Development Indicator (WDI) database, published by the World Bank (2019). We used the following variables in this study: FDI inflows, being the first variable, was measured in current US dollars in line with prior literature (Adeniyi et al., 2012; Anetor, 2020; Hermes and Lensink, 2003). The second variable was economic growth, measured as the annual percent change in the gross domestic product (GDP), which has advantages and drawbacks as a measure of growth. The third variable, financial development, was represented by domestic credit to the private sector, which was compared with GDP (Table-1).

7.3 Period of the Study

This investigation was based on the annual data series, for the period from 1970 to 2017.

7.4 Tools Used in the Study

In this study, the ARDL bounds testing approach was employed, to examine co-integration and VECM to examine the long-term causal relationships between FDI, economic process, and financial development.

8. Data Analysis

8.1 Integration Analysis

Table-2 provides information on the order of integration of all variables, included in our study, based on the results of the ADF and PP tests for unit root. The results showed that the variable (LNFDI) integrated to order one, I(1), in the ADF test and I(0) in the PP test (LNDCPS) were found integrated to different orders I(1), and (LNGDPG) integrated to the level I(1). Thus, both tests (ADF and PP) demonstrated that none of the series integrated into order two, I(2). As a result, the ARDL bounds testing procedure could be adopted to estimate our model.

8.2 Co-Integration Analysis

The main purpose of this paper was to conduct a simultaneous analysis of the short-and long-run dynamics between FDI, economic growth, and financial development in Algeria. Therefore, the auto regressive distributed lag (ARDL) model was employed, which is a relatively new co-integration developed by **Pesaran et al. (2001)**. This approach has been extensively used in empirical modelling, due to its more desirable properties, compared to the standard Johansen co-integration technique developed by **Johansen and Juselius (1990)**. First, ARDL can be applied to a small sample size and performs better than Johansen's technique (**Ghatak and Siddiki, 2001**). Second, the ARDL approach can accommodate stationary I(0), non-stationary I(1), or mutually cointegrated

variables in the same regression, a task that is not possible with Johansen's technique, that requires all variables to be integrated to order one. Third, the ARDL approach deals with the endogeneity issues of some variables in the regression, by providing unbiased long-run estimates, with valid t-statistics (**Narayan, 2005; Odhiambo, 2009**). Fourth, the ARDL approach allows assessing simultaneously both the short-and long-term effects of a particular variable on the other variables, and it also separates short-term and long-term effects (**Bentzen and Engsted, 2001**). After testing for the unit-roots, the subsequent step consisted of investigating the long-run relationships between the variables using the ARDL bounds testing approach. The ARDL representation, between the competing variables, maybe:

$$\Delta LNFDI_t = \alpha_{10} + \sum_{i=1}^{k=1} \alpha_{1i} \Delta LNFDI_{t-1} + \sum_{i=0}^{l=1} \beta_{1i} LNGDPG_{t-1} + \sum_{i=1}^{m=1} \gamma_{1i} \Delta LND CPS_{t-i} + \varphi_{11} LNFDI_{t-1} + \varphi_{12} LNGDPG_{t-1} + \varphi_{13} LND CPS_{t-1} + \varepsilon_{1t} \quad (1)$$

$$LNGDPG_t = \alpha_{20} + \sum_{i=1}^{k=2} \alpha_{2i} LNGDPG_{t-1} + \sum_{i=0}^{l=2} \beta_{2i} LNFDI_{t-1} + \sum_{i=1}^{m=2} \gamma_{2i} \Delta LND CPS_{t-i} + \varphi_{21} LNGDPG_{t-1} + \varphi_{22} LNFDI_{t-1} + \varphi_{23} DCPS_{t-1} + \varepsilon_{2t} \quad (2)$$

$$\Delta LND CPS_t = \alpha_{30} + \sum_{i=1}^{k=3} \alpha_{3i} \Delta LND CPS_{t-1} + \sum_{i=0}^{l=3} \beta_{3i} LNGDPG_{t-1} + \sum_{i=1}^{m=1} \gamma_{3i} \Delta LNFDI_{t-i} + \varphi_{31} LND CPS_{t-1} + \varphi_{32} LNGDPG_{t-1} + \varphi_{33} LNFDI_{t-1} + \varepsilon_{3t} \quad (3)$$

where Δ is the first difference operator, $\alpha_{j0}, \alpha_j, \beta_j, \gamma_j, \varphi_{ji}$ ($j=1, \dots, 3$) are parameters to be estimated, k_j, l_j, m_j ($j=1, \dots, 3$) are the optimal lag length to be used, and ε_{jt} ($j=1, \dots, 3$) are white noise error terms.

8.2.1 Bounds Tests for Co-Integration

Statistical findings, for the bound testing for each model, are given in **Table-3**. The computed F-statistics for the model (2.7849) was higher than the corresponding upper bound critical value at the 10% level of significance in the model. Hence the null hypothesis of no co-integration was rejected, implying robust evidence of long-term co-integration relationships, among all variables, under both models.

8.2.2 Parameter Diagnostic Test

To ensure the quality of the model used in the analysis and to ensure that it is free from legal problems, LM test as a stability test, heteroskedasticity tests, and the ARCH, RESET, and normality tests were employed. The results of the parameter diagnostic tests are reported in **Table-4**. The results indicated that there was no problem of instability of variance in model (1) and model (3) and indicated instability for model (2).

8.2.3 Long- and Short-Run Estimation Findings

Once the bounds testing approach confirmed the existence of co-integration for the

models, the long-and short-run coefficients were estimated. **Table-5** shows the empirical results of the long-term estimates, by using ARDL modelling. To check the robustness, the long-run coefficients were estimated by the same method as the ARDL model. Generally, one can say that the coefficients remain consistent across the three estimation techniques. Accordingly, the estimated coefficients indicated that in the long-term, the first model, i.e. equation (1), where FDI was the follower and economic growth and financial development were the variables, yielded results that revealed positive and moral impact of a 5% level of economic growth, on the long-term flow of FDI in Algeria. The negative and moral impact on the level of 1% of financial development on the long-term flow of FDI in Algeria was significant. In the second model, i.e. **equation (2)**, where economic growth were the follower and FDI and financial development was the variables, the results indicated positive and moral impact of 10% growth in FDI on the long-term growth of the Algerian economy. Moreover, there was positive and moral impact of a 5% level of financial development on the long-term growth of the Algerian economy. The third model, set in **equation (3)**, where financial development was the follower, while FDI and economic growth were the variables, yielded results that revealed positive but non-significant impact on both FDI and long-term economic growth in Algeria.

Table-6 presents the short-term estimates. Majority of conclusions, derived from the long-term estimates, remained robust in the short-term. Notably, in the short-term, the results from the first model revealed negative effect of the change in FDI flow, during the previous two years on the short-term flow of FDI in Algeria. The second model brought out negative and significant impact at the level of 5%. The third model did not report any impact on the short-term development of the Algerian financial sector on both FDI and economic growth. The coefficients of ECTs were negative, statistically significant and supportive. In other words, there was an established long-run equilibrium relationship between the competing variables. Notably, in the Algerian economy, when FDI was a dependent variable, the ECT coefficient was -0.4. It implied that the speed of convergence was 40%. If the GDPG were to be the dependent variable, the ECT coefficient would be -1.17. It implied that the speed of convergence was 117%. In the case where DPCS was the dependent variable, the ECT coefficient was -0.024, which signified that the speeds of convergence was 2.4%. These coefficients indicated the moderate speed of adjustment to shocks given to the forcing variables.

8.3 Causality Analysis

AVECM, is used for testing the Granger causality among FDI, economic growth, and financial development, can be written as follows:

$$\begin{aligned}
 \Delta \text{LNFDI}_t &= \beta_{10} \\
 &+ \sum_{i=1}^p \vartheta_{1i} \Delta \text{LNFDI}_{t-i} \\
 &+ \sum_{i=1}^q \delta_{1i} \Delta \text{LNGDPG}_{t-i} \\
 &+ \sum_{i=1}^q \rho_{1i} \Delta \text{LNDCPS}_{t-i} + \varphi_1 \text{ECT}_{t-1} + \varepsilon_{1t}
 \end{aligned} \tag{4}$$

$$\begin{aligned}
\Delta \text{LN}GDPG_t &= \beta_{20} \\
&+ \sum_{i=1}^{p_2} \vartheta_{2i} \Delta \text{LN}GDPG_{t-1} \\
&+ \sum_{i=1}^{q_2} \delta_{2i} \Delta \text{LN}FDI_{t-1} \\
&+ \sum_{i=1}^{r_2} \rho_{2i} \Delta \text{LN}DCPS_{t-1} + \varphi_2 ECT_{t-1} + \varepsilon_{2t}
\end{aligned} \tag{5}$$

where Δ is the first difference operator, $\beta_{j0}, \vartheta_j, \delta_j, \rho_j$, ($j=1, \dots, 3$) are the parameters to be estimated, and ε_{jt} ($j=1, 2$) are white noise error terms. ECT is the error correction term derived from the corresponding long-run equilibrium relationship. The coefficients φ_i ($i=1, 2$) of the ECTs represent the deviation of the dependent variables from the long-run equilibrium.

The error correction model allows testing for the existence of Granger causality in three possible ways (Sebri and Abid, 2012). First, the short-term Granger causality is investigated by testing the significance of the sum of lagged differences of explanatory variables, by using the partial F-statistic. Second, the long-term causality is checked by examining the coefficients of the ECT_{t-1} based on t-statistics. Notably, long-term Granger causality exists if this coefficient is negative and statistically significant. Lastly, a strong Granger causality means that the two sources of causality are jointly significant. They can be exposed by testing the joint hypothesis is through the joint F-test on both ECT_{t-1} and the sum of lagged differences of explanatory variables. The Granger causality results are reported in Table-7. Empirical evidence shows that in the short-term, there was bi-directional causal relationship between FDI and economic growth in Algeria. Further, there was unidirectional causality between FDI and financial development and between economic growth and financial

development in Algeria. Comparing the findings of the current study with the findings in the literature, one can argue that they were consistent. The bi-directional causal relationship between FDI and economic growth in North African countries was previously found by Sghaier et al. (2013) and in Malaysia by Tang and Tan (2014). Our conclusion that in the long-term, the growth hypothesis could be supported, was previously established by Salahuddin et al. (2018).

The first model shows that there was positive and significant effect of economic growth and financial development on the flow of FDI into Algeria, in the long and short-term. This concurs with the findings of other researchers (Azman-Saini et al., 2010; Bengoa and Sanchez-Robles, 2003; Iamsiraroj, 2016; Iamsiraroj and Ulubapoölu, 2015; Henri et al., 2019; Shahbaz et al., 2011) and hence **H-1: Economic growth and financial development are also taking effect on FDI flows in Algeria**, was accepted.

The second model showed that there was positive and significant effect of FDI and financial development on economic growth in Algeria, in the long and short-term. This corresponds with the findings of Wang and Wong (2009), Borensztein et al. (1998), Anetor (2020), and Sghaier et al. (2013). Hence **H-2: Economic growth and FDI flows are also taking effect on financial**

development in Algeria, was not rejected. The third model indicated that there was positive but non-significant effect of FDI and the economic growth on the financial development in Algeria in the long and short-run in order and hence **H-3: Financial development and FDI flows are also taking effect on economic growth in Algeria**, was rejected. In the Granger causality, there was bi-directional causal relationship between FDI and economic growth and unidirectional causality between FDI and financial development and economic growth in Algeria. Hence **H-4: There is a causal relationship between FDI, economic growth, and financial development in Algeria**, was rejected.

9. Findings of the Study

Results of the evaluation of the three models present the short and long-term effects. The first model revealed that there was positive and significant effect of economic growth and financial development on the flow of FDI into Algeria in the long and short-term. The second model established that there was positive and significant effect of FDI and financial development on economic growth in Algeria, in the long and short-term. The third model showed that there was positive but non-significant effect of FDI and the economic growth on the financial development in Algeria, in the long and short-run. In the Granger causality, there was bi-directional causal relationship between FDI and economic growth and unidirectional causality between FDI and financial development and economic growth in Algeria.

10. Suggestions of the Study

Based on the results of this research, we propose the following recommendations and suggestions. First, the financial sector must be developed in all its aspects. Second, FDI must be directed into value-added economic activities, that would have positive effect on the

performance of the Algerian economy. Third, there is a need to create a kind of cooperation and full coordination among all state institutions and to make them aware of the importance of investment, to ensure the success of the investment policy.

11. Conclusion

FDI is generally positive for the host country's economy, and the Algerian economy is no exception. The analysis of the impact of FDI is premature, as the policy of opening up to foreign capital has not taken root, and majority of investments are concentrated in the fuel sector, which is the driver of leading the national economy and explains much of the growth achieved. The inflow of FDI recorded in Algeria is not an indicator of the growth of the national economy and the emerging picture reflects a situation of mutual support as domestic investment grows. Algeria's ability to attract more FDI and its expected growth effect remain contingent on Algeria's ability to promote investment ideas and opportunities, to highlight the available investment projects, to enhance economic capabilities and expand the productive base as well as diversify economic partners and tap their potential and expertise. Further, it has to develop its financial sector to keep pace with developments in the world and to move it out of tradition through radical reforms.

12. Limitations of the Study

As with all empirical investigations, the present study also suffers from several limitations. First, there is a lack of studies on financial development in the Algerian economy. Second, some variables, that could have improved the quality of the model, especially control variables, were neglected. Third, this empirical research only paid attention to a single setting, namely, Algeria. Therefore, an extension of this empirical study is needed to cover the

relationship between FDI inflows, economic growth, and financial development in other developing countries.

13. Scope for Further Research

In the light of the above limitations, this study opens the doors for future research in several directions. First, future research should seek to investigate the impact of investment climate on the relationship between financial development and FDI inflows. Second, further research is recommended to shed light on the association between banking sector reform and FDI inflows. Third, future research could also take the form of comparative studies among developing countries.

14. References

- Adeniyi, O. A., Omisakin, D., Olusegun, A., Egwaikhide, F., & Oyinlola, A. (2012).** Foreign direct investment, economic growth and financial sector development in small open developing economies. *Economic Analysis & Policy*, 42(1). Available at SSRN: <https://ssrn.com/abstract=2156883>
- Alzaidy, G., Niaz, M. N. B., & Lacheheb, Z. (2017).** The Impact of Foreign-direct Investment on Economic Growth in Malaysia: The Role of Financial Development. *International Journal of Economics and Financial Issues*, 7(3), 382. <https://doi.org/10.17576/pengurusan-2018-51-02>
- Anetor, FO (2020).** Foreign Capital Inflows, Financial Development and Growth In Nigeria: A Structural VAR Approach. *The Journal of Developing Areas*, 54 (3). DOI:10.1353/jda.2020.0025.
- Ang, J. B. (2009).** Foreign direct investment and its impact on the Thai economy: the role of financial development. *Journal of Economics and Finance*, 33(3), 316-323. <https://doi.org/10.1007/s12197-008-9042-6>
- Azman-Saini, W. N. W., Baharumshah, A. Z., & Law, S. H. (2010).** Foreign direct investment, economic freedom and economic growth: International evidence. *Economic Modelling*, 27(5), 1079-1089. <https://doi.org/10.1016/j.econmod.2010.04.001>
- Bengoa, M., & Sanchez-Robles, B. (2003).** Foreign direct investment, economic freedom and growth: new evidence from Latin America. *European Journal of political economy*, 19(3), 529-545. [https://doi.org/10.1016/S0176-2680\(03\)00011-9](https://doi.org/10.1016/S0176-2680(03)00011-9)
- Bentzen, J., & Engsted, T. (2001).** A revival of the auto regressive distributed lag model in estimating energy demand relationships. *Energy*, 26(1), 45-55. [https://doi.org/10.1016/S0360-5442\(00\)00052-9](https://doi.org/10.1016/S0360-5442(00)00052-9)
- Borensztein, E., De Gregorio, J., & Lee, J. W. (1998).** How does a foreign direct investment affect economic growth?. *Journal of International Economics*, 45(1), 115-135. [https://doi.org/10.1016/S0022-1996\(97\)00033-0](https://doi.org/10.1016/S0022-1996(97)00033-0)
- Chaudhuri, S., & Mukhopadhyay, U. (2014).** Role of FDI in Developing Countries: Basic Concepts and Facts. In *Foreign Direct Investment in Developing Countries* (pp. 1-17). Springer, New Delhi. https://doi.org/10.1007/978-81-322-1898-2_1
- Choong, C. K. (2012).** Does domestic financial development enhance the linkages between foreign direct investment and economic growth?. *Empirical Economics*, 42(3), 819-834. <https://doi.org/10.1007/s00181-011-0455-2>
- Desbordes, R., & Wei, S. J. (2014).** The effects of financial development on foreign direct investment. The World Bank.

- Dunning JH (1981).** Explaining the international direct investment position of countries: Towards a dynamic or developmental approach. *Weltwirtschaftliches Archiv*, 117(1): 30–64. <https://doi.org/10.1007/BF02696577>
- Dutta, N., & Roy, S. (2011).** Foreign direct investment, financial development and political risks. *The Journal of Developing Areas*, 303-327. <https://www.jstor.org/stable/23215253>
- Ghatak, S., & Siddiki, J. U. (2001).** The use of the ARDL approach in estimating virtual exchange rates in India. *Journal of Applied statistics*, 28(5), 573-583. <https://doi.org/10.1080/02664760120047906>
- Gürler, M., & Kara, F. (2020).** The Relationship Between Foreign Direct Investment and Financial Development in OECD Countries. In *Handbook of Research on Decision-Making Techniques in Financial Marketing* (pp. 206-226). IGI Global. DOI: 10.4018/978-1-7998-2559-3.ch010
- Gurtner, B. (2010).** The financial and economic crisis and developing countries. *International Development Policy | Revue internationale de politique de développement*, 1(1), 189-213. <https://doi.org/10.4000/poldev.144>
- Henri, N., Luc, NN, & Larissa, N. (2019).** The Long-run and Short-run Effects of Foreign Direct Investment on Financial Development in African Countries. *African Development Review*, 31 (2), 216-229. <https://doi.org/10.1111/1467-8268.12379>
- Hermes, N., & Lensink, R. (2003).** Foreign direct investment, financial development and economic growth. *The Journal of Development Studies*, 40(1), 142-163. <https://doi.org/10.1080/00220380412331293707>
- Iamsiraroj, S. (2016).** The foreign direct investment – economic growth nexus. *International Review of Economics & Finance*, 42, 116-133. <https://doi.org/10.1016/j.iref.2015.10.044>
- Iamsiraroj, S., & Ulubapođlu, M. A. (2015).** Foreign direct investment and economic growth: A real relationship or wishful thinking?. *Economic Modelling*, 51, 200-213. <https://doi.org/10.1016/j.econmod.2015.08.009>
- Jahfer, A., & Inoue, T. (2014).** Financial development, foreign direct investment and economic growth in Sri Lanka. *International Journal of Economic Policy in Emerging Economies*, 7(1), 77-93. <https://doi.org/10.1504/IJEPEE.2014.059889>
- Johansen, S., & Juselius, K. (1990).** Maximum likelihood estimation and inference on cointegration - with applications to the demand for money. *Oxford Bulletin of Economics and Statistics*, 52(2), 169-210.
- Korgaonkar, C. (2012).** Analysis of the impact of financial development on foreign direct investment: A data mining approach. *Journal of Economics and Sustainable Development*, 3(6), 70-78.
- Louail, B. (2019).** Determinants of foreign direct investment in Arab countries during 1970–2016. *International Journal of Advanced and Applied Sciences*, 6(3) 2019, Pages: 102-110. <https://doi.org/10.21833/ijaas.2019.03.015>
- Narayan, P. K. (2005).** The saving and investment nexus for China: evidence from co-integration tests. *Applied Economics*, 37(17), 1979-1990. <https://doi.org/10.1080/00036840500278103>
- Nasir, MA, Huynh, TLD, & Tram, HTX (2019).** Role of financial development, economic growth & foreign direct investment in driving climate change: A case of emerging ASEAN. *Journal of environmental management*, 242, 131-141. <https://doi.org/10.1016/j.jenvman.2019.03.112>

- Odhiambo, N. M. (2009).** Energy consumption and economic growth nexus in Tanzania: An ARDL bounds testing approach. *Energy Policy*, 37(2), 617-622. <https://doi.org/10.1016/j.enpol.2008.09.077>
- Ogbuagu, M., Iwegbu, O., & Saibu, O. (2020).** Foreign Direct Investment, Financial Development and Growth Convergence in ECOWAS. *Iranian Economic Review*. DOI:10.22059/IER.2020.74560
- Pesaran, M. H., Shin, Y., & Smith, R. J. (2001).** Bounds testing approaches to the analysis of level relationships. *Journal of applied econometrics*, 16(3), 289-326. <https://doi.org/10.1002/jae.616>
- Pradhan, R. P., Arvin, M. B., Hall, J. H., & Bennett, S. E. (2018).** Mobile telephony, economic growth, financial development, foreign direct investment, and imports of ICT goods: the case of the G-20 countries. *Economia e Politica Industriale*, 45(2), 279-310. <https://doi.org/10.1007/s40812-017-0084-7>
- Salahuddin, M., Alam, K., Ozturk, I., & Sohag, K. (2018).** The effects of electricity consumption, economic growth, financial development and foreign direct investment on CO2 emissions in Kuwait. *Renewable and Sustainable Energy Reviews*, 81, 2002-2010. <https://doi.org/10.1016/j.rser.2017.06.009>
- Sebri, M., & Abid, M. (2012).** Energy use for economic growth: A trivariate analysis from the Tunisian agriculture sector. *Energy Policy*, 48, 711-716. <https://doi.org/10.1016/j.enpol.2012.06.006>
- Sghaier, IM, & Abida, Z. (2013).** Foreign direct investment, financial development and economic growth: Empirical evidence from North African countries. *Journal of International and Global Economic Studies*, 6 (1), 1-13.
- Shahbaz, M., & Rahman, M. M. (2012).** The dynamic of financial development, imports, foreign direct investment and economic growth: co-integration and causality analysis in Pakistan. *Global Business Review*, 13(2), 201-219. <https://doi.org/10.1177/097215091201300202>
- Shahbaz, M., Leitão, N. C., & Malik, S. (2011).** Foreign direct investment-economic growth nexus: the role of domestic financial development in Portugal. *Economics Bulletin*, 2824-2838. <http://hdl.handle.net/10400.15/549>
- Suliman, A. H., & Elian, M. I. (2014).** Foreign direct investment, financial development, and economic growth: a co-integration model. *The Journal of developing areas*, 219-243. <https://www.jstor.org/stable/24241236>
- Tang, C. F., & Tan, B. W. (2014).** The linkages among energy consumption, economic growth, relative price, foreign direct investment, and financial development in Malaysia. *Quality & Quantity*, 48(2), 781-797. <https://doi.org/10.1007/s11135-012-9802-4>
- Tintin C (2013).** The determinants of foreign direct investment in flows in the Central and Eastern European Countries: The importance of institutions. *Communist and Post-Communist Studies*, 46(2): 287-298. <https://doi.org/10.1016/j.postcomstud.2013.03.006>
- Wang, M., & Wong, M. S. (2009).** Foreign direct investment and economic growth: The growth accounting perspective. *Economic Inquiry*, 47(4), 701-710. <https://doi.org/10.1111/j.1465-7295.2008.00133.x>
- World Bank. (2019).** World development indicators. World Bank, Washington, DC.

Table-1: Result of Variables Measurements and Data Collection Sources

Variable	Proxy	Description	Source
Foreign Direct Investment	FDI	FDI flows as a percentage of GDP	WDI
Growth Economic	EG	The annual per cent change of gross domestic product (GDP)	
Financial Development	DCPS	Domestic credit to the private sector over GDP	

Source : Data collected from the World Bank and computed using E Views 10

Table-2: Result of Unit Root Tests for checking Stationarity

		LNFDI	LNGDPG	LNDPCS
At level	ADF test	-3.8366***	-8.9767***	-
	PP test	-	-8.6397***	-
at first difference	ADF test	-6.8241**	-	-5.6002***
	PP test	-	-	-5.6410***
Order of Integration		I(1) and I(0)	I(0)	I(1)

Note: *, **, and *** indicate rejection of the null hypothesis at 1%, 5%, and 10%, respectively.

ADF: Augmented Dickey-Fuller test

PP: Phillips-Perron test

Source: Data collected from the World Bank and computed using E Views 10

Table-3: Result of F-Statistic for Co-Integration Tests - ARDL bounds Tests

		[I(0)-I(1)]	Conclusion
Lower-upper bound (10%)		2.63-3.35	Co-integration
Lower-upper bound (5%)		3.1-3.87	Co-integration
Lower-upper bound (1%)		4.13-5	Co-integration
DV: LNFDI	F-statistics	2.7849*	
DV: LNGDPG	F-statistics	6.9470	
DV: LNDPCS	F-statistics	0.7457	
K		2	

Note: * denotes statistically significant at 1%; ** denotes statistically significant at 5%; *** denotes statistically significant at 10%. K, the number of regressors included in the models.

DV: Dependent variable.

Source : Data collected from the World Bank and computed using E Views 10

Table-4: Result of Diagnostic Tests of the Variables

Diagnostic Test	LM test	ARCH test	RESET test	Normality test
F_{LNFDI} (LNGDPG, LNDCPS)	0.8	0.40	0.23	0.007
F_{LNGDPG} (LNFDI, LNDCPS)	0.000	0.000	0.000	0.000
F_{LNDCPS} (LNFDI, LNGDPG)	0.69	0.82	0.91	0.000

Note: LM test, ARCH test, RESET test, and normality test refer to the Breusch-Godfrey Lagrange multiplier test for residual serial correlation, the autoregressive conditional heteroscedasticity test, Ramsey's test for functional misspecification, and the Jarque-Bera normality test, respectively.

Source: Data collected from the World Bank and computed using E Views 10

Table-5: Result of Long-run Estimation of the Variables

		coef	P-value
Dependent variable:	LNFDI		
Independent variables	LNGDPG	9.57**	0.04
	LNDCPS	-0.37***	0.01
	Constant	-18.59*	0.056
Dependent variable:	LNGDPG		
Independent variables	LNFDI	0.04*	0.005
	LNDCPS	0.01**	0.02
	Constant	1.99***	0.000
Dependent variable:	LNDCPS		
Independent variables	LNFDI	2.06	0.69
	LNGDPG	22.48	0.52
	Constant	-44.4	0.53

Source : Data collected from the World Bank and computed using E Views 10

Table-6 : Results of Short-run Estimation of the Variables

		coef	P-value
Dependent variable:	LNFDI		
Independent variables	$\Delta LNFDI_{t-1}$	-0.33**	0.02
	$\Delta LNFDI_{t-2}$	-0.21	0.16
	$\Delta LNGDPG$	-1.44	0.39
	$\Delta LNGDPG_{t-1}$	-3.48***	0.0006
	ECT_{t-1}	-0.4***	0.0013

Table-6 contd.,

Table-6 contd.,

Dependent variable:	LNGDPG		
Independent variables	Δ LNGDPG _{t-1}	-0.038	0.76
	Δ LNFDI	0.007	0.68
	Δ LNFDI _{t-1}	-0.048**	0.024
	ECT _{t-1}	-1.17***	0.000
Dependent variable:	LNCPS		
Independent variables	ECT _{t-1}	-0.024*	0.08

Source : Data collected from the World Bank and computed using E Views 10

Table 7: Result of VEC Granger Causality

Dependent variable: D(LNFDI2)			
Excluded	Chi-sq	df	Prob.
D(LNGDPG)	10.38638*	2	0.0056
D(LNCPS)	0.347346	2	0.8406
All	10.60829**	4	0.0313
Dependent variable: D(LNGDPG)			
Excluded	Chi-sq	df	Prob.
D(LNFDI2)	4.607199*	2	0.0999
D(LNCPS)	5.975137*	2	0.0504
All	11.13281**	4	0.0251
Dependent variable: D(LNCPS)			
Excluded	Chi-sq	df	Prob.
D(LNFDI2)	0.143188	2	0.9309
D(LNGDPG)	0.365564	2	0.8329
All	0.558479	4	0.9676

Source : Data collected from the World Bank and computed using E Views 10