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*Original Paper*

# Impact of Foreign Direct Investment on Economic Growth in Nigeria

Magaji Ibrahim Yakubu & Zechariah Wanujeh

Department of Economics, Faculty of Social Sciences, Federal University Wukari, Taraba State, Nigeria

## Abstract

The world is a global village, as the economy of nations interrelates with one another; people take goods and services from one country to another for economic benefits. It is one of the viable tools that promote economic activities among nations. Hence, this study examined the impact of foreign direct investment on economic growth in Nigeria for the period of 1986-2022. It used time series data sourced from Central Bank of Nigeria Statistical Bulletins and World Bank Development Indicators of 2022. It applied Augmented Dickey Fuller (ADF) test which revealed that I(1) and I(0) order of integration existed among the studied variables. The ARDL F-bounds test revealed that long-run equilibrium exists among the variables. In addition, the main Autoregressive Distributed Lag (ARDL) model applied ARDL. Also, the error correction mechanism (ECM) confirmed long-run equilibrium in the analysis which indicated that the model will adjust by 62% to go back to equilibrium in the long run. This phenomenon would be adjusted back to equilibrium in one (1) year and seven (6) months based on the outcomes of the estimation. In the long run, the results revealed that foreign direct investment has positive and significant impact on economic growth. However, in the short-run result, it has positive and insignificant effect on economic growth in Nigeria. Hence, the study recommended among other things that export diversification policy, agricultural policy should be made by government to increase output growth for improvement in non-oil sectors of the economy.

**Keywords:** real GDP, Economic growth, export earnings, ARDL, FDI

## 1. Introduction

The world is a global village. As the economy of the nation interrelates with one another; people take goods and services from one country to another for economic benefits. It is one of the viable tools that promote economic activities among nations. Foreign direct investment has been prioritized in developing countries for achievement of macroeconomic goals (Agbonkhese, 2016). In line with the resources needed to meet the needs of domestic investment, no country can be regarded as an island unto itself. The amount of money saved at domestic economy is insufficient to meet the requirements or demand for domestic investment in the particular economy. This demonstrates the rationale behind why economies, especially emerging ones, periodically turn to making compromises in order to draw or sources foreign capital. Reason being that, it is less volatile and comes with the advantage of technological spill over.

Addition, Foreign Direct Investment (FDI), a component of foreign private capital, has been favoured over other types of foreign private capital. Typically, the benefits of foreign direct investment (FDI) to host nations include the transfer of technology, superior managerial skills, positive externalities, employment opportunities and improvement of foreign exchange earnings. All of these generally translate to positive economic transformation as they also help to increase income, savings, and domestic investments (Agbonkhese, 2016). Apart from that, FDI can also help a nation diversify her economy (Agya, 2013). This has been the main objective of the Nigeria government in order to achieve both fiscal and monetary policy of the current administration. In addition, many policymakers and stakeholders argued that foreign direct investment (FDI) can have robust positive effects on a host economy's development. In addition to the direct capital financing it supplies, FDI can be a source of

valuable technology and technical know-how and enhances linkages with local firms, which can help to boost growth in an economy.

Foreign Investors are mostly invited by transition and developing countries in anticipation that through this international activity, the positive experience from developed countries will come to their domestic economies (Silvio, & Ariel, 2019). Foreign direct investment helps in increasing export volume and the flow of capital assets into the economy (Pulatova, 2016).

In fact, due to the underdeveloped nature of the Nigerian economy, which has slowed down the country's overall rate of development, there is a demand for foreign direct investment in the country. The level of foreign exchange and domestic savings in Nigeria has not been sufficient to meet the required level of investment needed to achieve the desired rate of economic growth and balance of payment, which have created a saving investment and foreign exchange earning gap (Akiri et al. 2016). Therefore, investments from direct foreign companies are required to close the gap in the country. This gap has resulted in a saving- investment and foreign exchange earning deficit.

On the part of Nigeria, it has been ranked as one of the three leading African countries that have regularly received foreign direct investment (FDI) over the past decades. This ranking is based on Nigeria's big market size as well as its rich natural resource base. The trend of foreign direct investment in Nigeria has been fluctuating over the years (Central Bank of Nigeria, 2022). This can be illustrated in Figure 1.1, where the vertical axis represents amount of foreign capital imported into the Nigerian economy while horizontal axis represents the years.

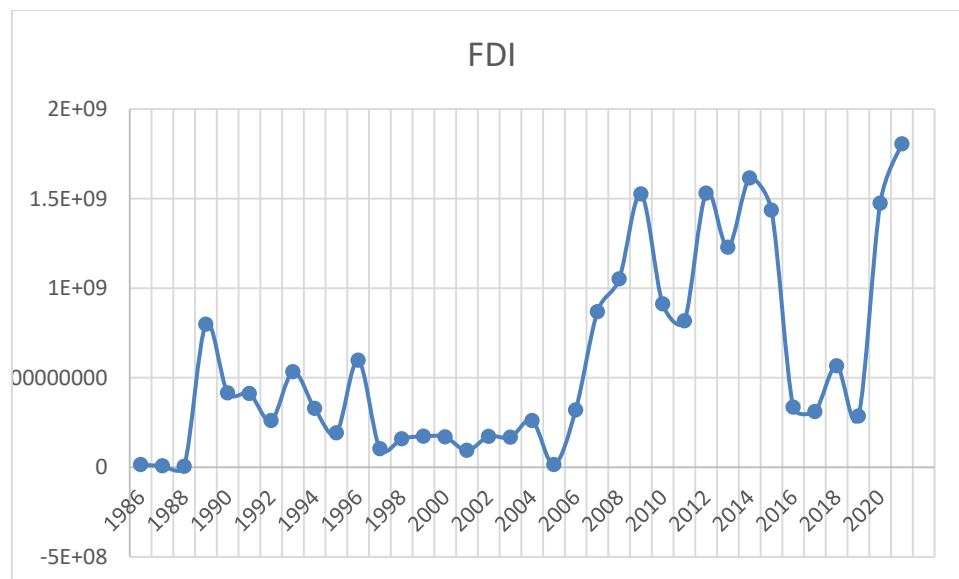


Figure 1. Trend of Foreign Direct Investment in Nigeria from 1986-2022

**Source:** Author's Computation using CBN Data, 2023

In the Figure 1, it indicated that FDI into the country is ₦ 14.4 million in 1986 which was very low compared to the value of FDI from 1988 to 1990. In addition, the value of FDI fluctuate ups and downs with the average of ₦247.9 million within the five (5) years. This evidence shows that FDI was minimal as of 1980s.

In the same vein, the statistics revealed that as of 1991, FDI was on the increase in the locomotive movement between ₦411.5 million to ₦191.7 million. It has average value of ₦344.8 million within the period of 1991 to 1995. This trajectory growth in FDI has been attributed to presence of military government in Nigeria as of 1990s.

However, the growth in FDI was not sustained due to the political instability and economic policy of the military government in authority. Therefore, the value of FDI declined to ₦102.9 million in 1997 and remained low until 2000 when it was valued at ₦168.9 million. This phenomenon was possible because of the change from military government to civilian government in Nigeria. As noted by Asiedu (2005) that the amount of foreign direct investment (FDI) into Nigeria is low compare to the resources endowed in the country.

Furthermore, the level of FDI into Nigeria valued at ₦172.2 million in 2003 and later dropped down to the lowest value of ₦146.4 million as result of monetary policy of Banks recapitalization of Nigerian economy (CBN, 2006). The foreign investors were afraid of the implication of policy whether it may affect the economy negatively or not. They tactically withdrew their investments from the country. However, the implication of this policy was positive effect on the economy and that made the foreigners to invest back to the country again. This can be seen in the high growth of the FDI value at ₦319.6 million in 2006 and it increases to ₦911.7 million in 2010. This was due to political stability in Nigeria since 1999 and the recapitalization policy of the banking sector in the year 2005 (CBN, 2005).

Apart from that, foreign direct investment has steady growth in between 2011 to 2015 which can be seen in Figure 1.1 as ₦816.7 million in 2011; it rose to ₦335.5 million in 2015. However, the general election of 2015 has affected the level of foreign direct investment in Nigeria. It is depicted in Figure 1.1, that is, FDI valued at ₦310.8 million and in 2015- 2016 when Nigeria went into recession twice within two years for the very first time in history. The effect of the economic recession has affected the value of FDI which was worst hit in 2016 which amounted to ₦210.8 million in that year.

Moreover, on the part of exchange rate fluctuation, it influences the flow of foreign direct investment into the Nigerian economy. This is evident in devaluation of naira which was N2.02 to 1\$ in 1986 but it devalued to as N427.6 per 1\$ in 2021. Furthermore, exchange rate fluctuates ups and downs within these periods. For instance, in the year (CBN) 1990, exchange rate was valued at N8.0378 per \$1, however, it steady devalued to N92.6 before the returned of democratic government in 1999. In this period, standard of living was relative good and manageable in Nigeria.

More to that, exchange rate further reduced the value of naira as from the year 2000 which amounted to ₦102.105 per 1\$ to ₦150.298 per \$1 in 2010. This has attracted the attentions of policy makers and analysts in the country. It can be attributed to 2008 global financial meltdown which have affected the global gross domestic product (GDP) and the weak Nigerian economy that cannot with stand international shocks among the world economies. In addition, the trend of this phenomenon has affected the level of foreign direct investment into Nigeria and its attendant aftermaths of high unemployment rate, weak production base and low export earnings for the economy. Furthermore, as of 2011 to 2020, exchange rate has been on the trajectory growth while devaluation of naira was child play phenomenon in the Nigerian economy. In-fact, in 2010, official exchange rate was ₦153.862 per \$1. However, the exchange rate grew up to ₦197 per \$1 in 2014 prior to the economic recession of 2016 (CBN, 2017). More to that, exchange rate has affected the economy to a point where it amounted to ₦427 per \$1 in 2021. This exchange rate fluctuation has been one of the determinants of foreign direct investment in any economy (Kolade, 2019).

Moreover, trade openness and export earnings have tendency to influence foreign direct investment into a particular economy. In Nigeria, these two factors have been the determinants of foreign direct investment. For instance, in 1986, the trade openness and export earnings were ₦0.87 million and ₦5.08 respectively which sum up to ₦14.4 million of FDI.

In addition, by the year 1995, both trade openness and export earnings which valued at ₦78.75 million and ₦3.65 million according to CBN have improve the level of foreign direct investment to the amount of ₦191.7 million in Nigeria. However, this level of foreign direct investment was not sustaining in Nigeria due to decrease in the amount of export earnings and trade openness of ₦1.8 million and ₦121.01 million respectively. This phenomenon resulted in reduction in the level of FDI which decrease from ₦191.7 million in 1995 to N938.8 million in 2001.

Moreover, FDI picked up to ₦172.2 million as a result of increase in trade openness and export earnings of ₦156.6 million and ₦2.4 million in 2003 (CBN, 2018). In addition, FDI rose to N911.7 million as

trade openness and export earnings went up to N369.4 million and ₦796.2 million according.

Finally, in that order, the FDI decrease steadily to the lower point of ₦210.8 million in 2016 as it attributed to the reduction in export earnings and trade openness of N269.6 million and ₦347 million respectively. However, the value of FDI that flow into Nigerian economy began to increase as a result of post-recession of 2016 to ₦310.8 million in 2017. This growth in FDI was possible as a result of improvement in level of export earnings and trade openness to ₦458.2 million and ₦361.9 million respectively.

More so, the Nigerian economy continued its downward spiral in spite of the numerous initiatives, policies, and strategies that have been put in place to attract international investors. Because of the underdeveloped state of the Nigerian economy, which, in essence, slows down the rate of economic development, there is a pressing requirement for foreign direct investments from other countries. In light of these considerations, this study will examine the impact of foreign direct investment on economic growth in Nigeria.

From the forgoing whether export earnings, trade openness, exchange rate and foreign direct investment influence the gross domestic product in Nigeria or not formed the focus of this work particularly investigated the impact of foreign direct investment in economic growth in Nigeria.

## **2. Literature Review**

### *2.1 Theoretical Review*

This study underpinned its analysis on endogenous growth theory credited to Roamer (1986). Helpman (2004) argued that endogenous growth theory emphasized two critical channels for investment to affect economic growth: Firstly, through the impact on the range of available products, and secondly, through the impact on the stock of knowledge accessible for research and development. Economic models of endogenous growth have been applied to examine the effect of Foreign Direct Investment on economic growth through the diffusion of technology (Khaliq & Noy, 2007; Barro, 1990; Barrel & Pain, 1997).

More to that, Grossman and Helpman (1991) have worked on endogenous growth model and assumed that endogenous technological progress is the main engine of economic growth. Similarly, Romer (1990) submitted that FDI accelerates economic growth through strengthening human capital that is the most essential factor in Research and Development in the economy. More so, Grossman and Helpman (1991) emphasize that an increase in competition and innovation will result in technological progress and increase in productivity and thus promote economic growth in long run.

According to this study, the country may have high gains through FDI inflows than domestic investment because of multinationals have technological capability, innovation and technical know-how that contribute to government revenue and non-oil revenue in Nigeria. It serves as channel of foreign exchange which improve the value of naira against dollar in Nigeria.

#### **2.2.1 Empirical Literature Review**

Literatures are abounding on the effect of foreign Direct Investment on economic growth in both developed and developing economies. However, some of these studies have been reviewed here to provide empirical basis for this current analysis to examine the effect of foreign direct investment on economic growth in the country.

Keita and Baorong (2022) empirically studied the impact of foreign direct investment on economic growth in the Guinean economy for the period of 1990-2017. It revealed that foreign direct investment in the long run positively affects economic growth in Guinea. Its outcome suggests that 1% rise in FDI per GDP leads to 0.45 % increase in GDP growth of the country.

In addition, Abdillahi and Mohd (2021) explored the impact of foreign direct investment inflows on Ethiopia's economic growth using 36 years' time series data. The vector auto regression (VAR) model is used and the result indicated that FDI to have a positive and significant effect on GDP advancement in the study area. The study submitted that opening up and restructuring of the financial and agriculture sectors would attract more foreign direct investment for the Ethiopian economy.

Furthermore, Chinedu *et al.* (2021) conducted a study on the effect of Foreign Direct Investment and Economic Growth using time series data 1986–2019. For the purpose of conducting data analysis covering the years 1986 and 2019, the Autoregressive Distributive Lag (ARDL) technique was utilized. According to the first findings of the ARDL, there may be a connection between economic growth in Nigeria and foreign direct investments from other countries over the long run. According to the finding that was presented, there is a significant positive correlation between real gross domestic product and the amount of foreign direct investment that is received.

In a similar vein, the rate of growth in real gross domestic product has a positive correlation with the volume of total exports. On the other hand, total non-oil imports as well as exchange rate indicated a significant inverse association with the rate of growth in real GDP. Moreover, during the course of the research period, foreign direct investment inflows into Nigeria were found to have had no appreciable impact on the pace of expansion of real gross domestic product.

Also, Ozigbo (2021) analysed the effect of FDI and portfolio flows on economic development in Nigeria. Time series data covered between 1980 and 2018 are analysed. Secondary sources used to compile this analysis include the Statistical Bulletin of the Central Bank of Nigeria, World Bank Publications, and the Nigerian Bureau of Statistics (NBS). Using a method called parsimonious Error Correction Modelling (ECM), it was discovered that FDI, FP, LF, and GFCF all have a positive and statistically significant effect on GDP growth in Nigeria. The long-term correlation between FDI, FP, LF, and GFCF in Nigeria is supported by the Johansen cointegration test. Based on the results of the variance decomposition, it can be seen that shocks to FDI, PF, GFCF, and GDP cannot account for a sizable fraction of the variation in GDP growth over the study period in Nigeria.

Another research conducted by Agya and Ogbole (2013), FDI has had a significant impact on China's economic growth in a few strategically chosen industries within 1995-2010 times period considered. The analyses make use of time series data collected from the primary, secondary, and tertiary sectors of the economy. Multiple linear regression using the method of ordinary least squares through the application of E-views statistical package Version 7.0. Kwiatkowski-Phillips-Schmidt Shin (SPSS) unit root tests for stationary showed that the variables are stationary at level. The data revealed that FDI and economic growth are negatively correlated in the primary sector but positively correlated in the secondary and tertiary sectors. However, there is a favourable correlation between FDI as a whole and economic growth in China. It's assumed that this study on domicile in china. However, the current research is on Nigerian economy spanning from 1986-2023 covering the previous gaps left on the preceding research.

In the study by Oscar and Edson (2016) they examined the linkage among foreign direct investment and economic growth in Botswana, employing yearly time series data for the period 1980-2012. After performing a dynamic causality test and the Johansen co-integration framework, the findings showed that FDI had a long term relationship with GDP growth within Botswana context. On the other-hand, they were not able to confirm whether it was FDI spurring economic growth or economic growth influencing foreign direct investment in the study area. More so, this current study adopted a method suitable for this research ARDL which was necessitated as the result of the mixed order of integration. And extended the scope from 2013-2023.

Apart from that, Masipa (2014) analysed the impact of foreign direct investment on economic growth and employment in South Africa over 24 years. After conducting Johansen cointegration technique and the Granger causality test, the study found a positive long run relationship among FDI, GDP and employment in South Africa. The study concluded that foreign investment should be considered as an instrument to boost long run economic growth in the South African context. The previous research couldn't specify vividly the techniques used for it analysis. Meanwhile, this current research aims at gearing a lasting solution of foreign direct investment on economic growth of Nigeria to partnership with the investors. Thereby, boostin the economy of the nation.

In the study by Okon *et al.* (2012) an empirical investigation on the effect of foreign direct investment and Nigerian economic growth between 1970 and 2008. Was arranged to determine whether FDI and economic growth in Nigeria have any kind of feed-back relationship, single and simultaneous equation systems are used. The findings indicate that FDI and economic growth in Nigeria are interdependent,

with a positive feedback loop between FDI and growth. The general policy implication of the findings is that in order to ensure that the domestic economy captures greater spill overs from FDI inflows and achieves higher economic growth rates, policies that increase foreign direct investment (FDI) inflows, increase economic openness, and increase private participation will need to be pursued and reinforced.

Apart from that, Egwaikhide (2012) explored the link between foreign direct investment (FDI) and economic growth in Nigeria between 1980 and 2009. Using Johansen Co integration technique and the Vector Error Correction Methodology, which breaks down FDI into several components. Similar to this, it investigates the factors that influence FDI in Nigeria, taking into account variables like Y, which stands for Gross Domestic Product, L, which stands for a population-based proxy for the labor force, K, which represents the ratio of FDI to GDP, FDI<sub>Ag</sub>, which stands for FDI in the agricultural sector, FDI<sub>Min</sub>, which stands for FDI in the mining sector, FDI<sub>Pet</sub>, which stands for FDI in the petroleum sector, FDI<sub>Man</sub> With the exception of the telecom sector, which has a bright and promising future, especially over the long term, the Johansen Co-integration result shows that the impact of the disaggregated FDI on real economic growth in Nigeria on the agriculture, mining, manufacturing and petroleum sectors revealed minimal effects in the country. Here on the previous studies, the Impact of FDI is minimal compare to this current work. But this current research extended the period from 1986-2023 and discovered that recommendations made by Egwaikhide were not put into use as government commitment to FDI is still low and shows a negative relationship on real economic growth.

In the work of Lyndon & Ayaundu (2020) examined the impact of foreign direct investment inflows on Nigeria's economic growth using secondary data from 2001 to 2018. The study employed GDP as its measure of economic growth and its dependent variable with FDI, FII portfolio, and the exchange rate serving as its explanatory variables. The information used in this study was culled from the CBN Statistical Bulletin, which included information on the study's variables for the years 2001 through 2018. Data was analysed using E-view software and descriptive statistics using a multiple regression analysis technique. Research showed that FDI, FII, and the exchange rate all had a beneficial impact on GDP. The study concludes that foreign investment inflows have had the intended favourable effect on the expansion of the Nigerian economy based on the findings of an empirical investigation. However, this research aim at extending this scope of study from 1986-2023 and advised the government to implement policies favourable for investors to come and invest.

Moreover, Uwubanmwun and Ajao (2012) analysed the causes and results of foreign direct investment (FDI) in Nigeria for the period 1970 to 2009. In this investigation, the Vector Error Correction Model is used (VECM). In order to determine the nature of the connection (if any) between FDI and its determinants on the one hand and economic development on the other, the Granger causality methodology was applied. Foreign Direct Investment, Real Gross Domestic Product, Government Size, Trade Openness, Exchange Rate, Inflation, and Interest Rate are some of the variables considered (INTR). Based on the data, it is clear that macroeconomic variables (exchange rate, interest rate, and inflation) and economic openness play a significant role in determining FDI into Nigeria during these time periods. Foreign direct investment (FDI) was positively influenced by GDP and government size, but only slightly. The present study uses time series data, extended the data to 2022 and uses ARDL as the method of the analysis and shows that foreign direct investment in the short run has negative and significant impact on economic growth while in the long run it has a positive and significant impact.

In the work of Uwazie, Igwemma, & Nnabu (2015) investigated the relationship between economic growth and foreign direct investment in Nigeria from 1970 to 2013. Their study included the period of time from 1970 to 2013 and it used multiple regression to arrive at an agreement on foreign direct investment and economic growth in Nigeria. In the study, the method of causality known as the vector error correction model was used to estimate the variables that were involved in the model. The findings of the estimation indicate that FDI and economic growth will eventually reach a state of equilibrium in the long run. Meanwhile, the findings of the causality test indicate that FDI and economic growth will significantly correlate with one another in both the short run and the long run in Nigeria. The extension of data from 1986-2022 in this study made the justification.

In addition, Adaramolo and Obisesan (2015) used ordinary least square, the ADF unit root test, and the Johansen cointegration test to determine the effect of FDI on economic growth in Nigerian stock market. They found that FDI had a positive and substantial effect on market capitalization. Foreign direct investment (FDI) has a positive relationship with Gross Fixed Capital Formation and the index of industrial production in the country. The previous research failed to make a realistic recommendations and vivid conclusions for the government to consider. It also extended the data to 2022.

Meanwhile, David et al (2021) examine the effect of foreign direct investment (FDI) on economic development of Nigerian economy. It also assesses the effect of exchange rate and the effect of interest rate on economic development of Nigeria economy. Ex-po facto research design was adopted in the study as the researcher employed secondary data that covered 31 years' period (1990-2021). Null hypothesis was analysed using simple linear regression. Results from the study showed that exchange rate has a significant effect, while interest has insignificant effect on economic development of Nigerian. In conclusion foreign direct investment has significant effect on economy development of Nigeria within the period under review. It was recommended that exchange rate in the country should be properly regulated to prevent high exchange rate, which could frustrate the flow of FDI in the country. The government should create an enabling environment that will encourage firms to borrow funds/capital financial institutions as a considerate interest rate. However, this research covers 1990-2021. Is not up to date, whereas this current research interest is significant at level and also extended the scope from 2021-2022 which also introduces a variable such as export earnings and trade openness.

More to that, Abubakar et al (2020). Foreign direct investment and trade openness with governance quality (1996-2020). The study shows that foreign direct investment interaction with governance quality failed to have a contagion effect on economic growth. Also, the trade-governance quality interaction demonstrates a deleterious effect on economic growth. Based on the signs and statistical significance, the study concludes that governance quality matters to the attraction of foreign direct investment and trade facilitation. Therefore, for Nigeria to attract significant capital inflows and trade flow, there is an urgent need to put in place necessary regulatory laws. This research failed to state the techniques for it analysis on the result there is no transmission between FDI and economic growth. Therefore, this current research has a contagion effect with the economic growth and makes used of the ARDL for the data analysis on it study.

## *2.2 Measurement of variables*

**Foreign direct investment (FDI):** It's measured with market value, income and expense items, FDI net inflows.

**Exchange rate (EXR):** it is a measurement of how much the currency of one country is worth in comparison to the currencies of other countries all over the world. This measured by the market forces of demand and supply.

**Trade openness (TO):** The measurement includes  $X/GDP$ ,  $M/GDP$ , or  $(X+M)/GDP$  they are usually described as trade intensity (TI)

**Export earnings (EXP):** Its import and export of goods taken to and from one country. In Nigeria is measured in naira.

**Economic growth (GDP)** this refers to increase in National income of economy within a financial period. It refers to a growth in either a country's real national production or its real national income. The real gross domestic product was employed as a stand-in for measuring economic growth in this investigation.

**Interest rates:** is the cost of debt for the borrower and the rate of return for the lender. Its measured as the ratio of the interest paid over total amount invested and the unit of measuring it is a basic point.

## *2.3 Method of Data Analysis*

However, this study makes used of ARDL as the main method of data analysis.

### 2.3.1 Standard ARDL Model

To achieve the objective of this study, the study employed the ARDL model to analyse the data. Therefore, the model for this study is denoted as:

$$\Delta \text{LnGDP} = \partial_0 + \partial_1 \text{LnGDP}_{t-1} + \partial_2 \text{LnFDI}_{t-1} + \partial_3 \text{LnTOP}_{t-1} + \partial_4 \text{LnEXP}_{t-1} + \partial_5 \text{LnEXR}_{t-1} + \sum_{m=0}^p \lambda \Delta \text{LnGDP}_{t-1} + \sum_{m=0}^q \phi \Delta \text{LnFDI}_{t-1} + \sum_{n=0}^q \psi \Delta \text{LnTOP}_{t-1} + \sum_{n=0}^q \Pi \Delta \text{LnEXR}_{t-1} + \theta \text{ECM}_{t-1} + \varepsilon_t \dots (3.6)$$

$\partial_1 - \partial_5$  are the long run multipliers (parameters),  $\partial_0$  is the intercept (the drift component);  $\lambda, \phi, \psi, \Pi$  are the short-run parameters,  $\theta$  is the coefficient of speed of adjustment while  $\text{ECM}_t$  is the error correction term  $\varepsilon_t$  is the stochastic error term.

Where:

The null hypothesis are as follows:

$$H_0: \partial_0 = \partial_1 = \partial_2 = \partial_3 = \partial_4 = \partial_5 = 0 \quad (\text{No long run relationship exist})$$

### 2.4 Model Specification

In the current investigation, it is presumed that an additional important variable, such as the interest rate, is responsible for determining whether or not domestic investment and foreign direct investment have an effect on economic growth. The research model that was decided to use for the investigation was a multiple regression model that included three variables that were supposed to explain the data. Therefore, it is assumed that the dependent variable is economic growth, as measured by gross domestic product (GDP), which is reliant on the amount of foreign direct investment (FDI), export earnings (EXP), and the interest rate (INTR). Below is an expression of the linear equation that describes the relationship between the dependent variable (GDP) and the independent variables (FDI, EXP; EXR; INTR): However, this research adopted the work of Hassan and Salim (2021) as:

$$\text{Ln GDP} = (\text{FDI, TOP, EXP, EXC, INTR}) \dots (3.1)$$

Where in GDP-log of gross domestic product

FDI- foreign direct investment

TOP -Trade openness

EXP-export earnings

EXR-Exchange rate

INTR- Interest rate

The linear specification of equation will become,

$$\text{Ln GDP} = \beta_0 + \beta_1 \text{FDI} + \beta_2 \text{TOP} + \beta_3 \text{EXP} + \beta_4 \text{EXC} + \beta_5 \text{INTR} + \mu \dots (3.2)$$

$\mu$  = the error term

$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4$  and  $\beta_5$  are the parameters to be estimated.

$\beta_1, \beta_2, \beta_3, \beta_4$  and  $\beta_5$  = Slopes and also the coefficients of the independent variables. From the above-specified model, Log GDPt is regarded as the dependent variable which is expressed as a linear function of Log FDI, Log TOP, Log EXP, log EXR and INTR which are the explanatory variables.

## 3. Result and Discussion of findings

### 3.1 Data presentation

This chapter begins with data presentation, summary of descriptive statistics, unit root test, optimal lag length selection and model estimation in order to examine the impact of foreign direct investment on economic growth in Nigeria. Similarly, the study conduct diagnostic tests such as normality test, autocorrelation, heteroscedasticity, Ramsey RESET test and stability to ensure the estimated model



made all the criteria of the analysis for policy recommendations. In addition, the data presentation has been presented in Appendix I on the real gross domestic product (RGDP), foreign direct investment (FDI), exchange rate (EXR), trade openness (TOP) and export earnings (EXE) for the research work.

### 3.2 Descriptive Statistics

The descriptive statistics is presented in Table 4.1. Below, it indicates the value of mean, median, standard deviation, maximum and minimum. It also shows the values of sample size for this study. The Table 1 revealed that the values of various central tendency and level dispersion for the study.

Table 1. Summary of Descriptive Statistics

Statistic	LOG(RGDP)	LOG(FDI)	LOG(TOP)	LOG(EXP01)	LOG(EXR)	LOG(INT)
Mean	10.48578	19.46193	4.522435	23.86735	4.147109	2.896803
Median	10.44864	19.59589	5.130886	24.08521	4.815249	2.872982
Maximum	11.18987	21.31388	6.353705	25.31890	6.058188	3.454738
Minimum	9.741426	15.43707	-0.132027	21.66181	0.703394	2.298493
Jarque-Bera	3.804722	9.848936	6.999123	2.617182	3.967972	2.429221
Probability	0.149216	0.007267	0.030211	0.270200	0.137520	0.296826
Observations	36	36	36	36	36	36

**Source:** Extracted from Researcher's computation, 2023.

Furthermore, the maximum values for each of the variables were ₦ 11.2, ₦21.3, ₦6.4, ₦ 25.3 ₦6.06 and ₦ 3.4 RGDP, FDI, TOP, EXP01, EXR and INTR respectively.

While, the minimum values of ₦3.8, ₦9.8, ₦ 6.9, ₦ 2.6, ₦ 3.9 and ₦ 2.3 for the real GDP, FDI, TOP, EXP01, EXR and INTR for the Nigerian economy which shows that lowest values of both independent and dependent variables.

However, one of the vital tools used for research is Jarque-Bera statistics and its p-values as: 3.8 (0.149216), 9.8 (0.007267), 6.9 (0.030211), 2.6 (0.270200), 3.9 (0.137520) and 2.4 (0.296826) which showed that the data were normally distributed variables except foreign direct investment and trade openness. This indicated that the *p-values* were statistically insignificant at 5% level. It means that the study strongly rejects the null hypothesis and concluded that the time series data involved are normally distributed.

### 3.3 Unit Root Test

The study adopted Augmented Dickey Fuller (ADF) to estimates the level of stationarity of the time series data. The outcomes of the stationarity test are presented in Table 2.

Table 2. Unit root Test Using Augmented Dickey Fuller (1982)

Variables	ADF Test Statistic Value	Mackinnon Value (5% Level)	Critical Prob.*	Order of Integration	Remark
Log (RGDP)	-3.785884	-2.951125	0.0069**	I(1)	Stationary
Log (FDI)	-7.887679	-2.951125	0.0000**	I(1)	Stationary
Log (TOP)	-3.682103	-2.948404	0.0088*	I(0)	Stationary
Log(EXPO1)	-6.118605	-2.951125	0.0000**	I(1)	Stationary

Log(EXR)	-5.931974	-2.951125	0.0000**	I(1)	Stationary
Log(INT)	-0.361803	-2.812637	0.0082*	I(0)	Stationary

**Note:** \* and \*\* represented the variable is significant @ 5% level of statistical significance in level and first differencing respectively.

**Source:** Researcher's Computation, 2023.

From Table 4.2, it shows that the ADF result indicated that economic growth i.e RGDP was not stationary at level but it becomes stationary after first differencing. Its value of -3.785884 and p-value of 0.0069 prove that RGDP was stationary at first difference meaning that the null hypothesis was rejected.

Similarly, FDI was stationary at first difference. That is, the variable was integrating of order one I(1) as seen in row two of the Table 4.2. Examining from ADF value of -7.887679 which is greater than the Critical value of -2.951125; it reveals that the null hypothesis is strongly rejected.

#### 4. Co-integration Test

Co-integration test was carried out in order to determine the long-run relationship between the dependent and independent variables when one or all of the variables is/are non-stationary at level which means they have stochastic trend. Essentially, it will be used to check if the explanatory variables can predict the explained variable both now (short-run) or in the future (long-run). The ARDL bound test co-integration framework will be used for this analysis.

##### 4.1 ARDL Long-run Result

Table 3. ARDL Long-run Result on Foreign Direct Investment and Nigerian economy for the period of 1986-2022

Variable	Coefficient	Std Error	t-Statistic	Prob.
FDI	0.085614	0.048412	1.768420	0.0015
TOP	-0.035265	0.118670	-1.982504	0.0607
EXPO1	0.084509	0.090398	0.934859	0.3605
EXR	0.034527	0.142487	3.049600	0.006**
INT	-0.052646	0.318301	-2.992909	0.0069**

**Note:** \*\* denoted significant @ 5% level of Statistical Significance

**Source:** Computed by Authour Using E-views Version 10, 2023.

In Table 3 the result indicated that the co-efficient of foreign direct investment (FDI) aligns with apriori expectation that is a positive relationship exists between foreign direct investment and real gross domestic product of the host economy. From Table 4.5, the coefficient FDI of 0.085614 units, it means if 1% unit increase in foreign direct investment (FDI) would lead to 0.085614 units or 8.5% increase in RGDP. In addition, it was statistically significant by its *t-value* of 1.768420 and *p-value* of 0.0015 respectively.

##### 4.2 ARDL Short-run Result

Table 4. Short-run Results on impact of foreign Direct and economic growth Nigeria

<b>Model</b>	<b>Dep. RGDP</b>			
<b>Variable</b>	<b>Coefficient</b>	<b>Std Error</b>	<b>t-Statistic</b>	<b>Prob.</b>
$\Delta(\text{FDI})$	0.000576	0.003065	-0.187973	0.8527
$\Delta(\text{FDI} - 1)$	0.097183	0.108787	1.812557	0.0527
$\Delta(\text{TOP})$	0.018051	0.041237	-1.871788	0.0576
$\Delta(\text{EXPO})$	0.041286	0.010613	3.889981	0.0008**
$\Delta(\text{EXR})$	-0.069780	0.017110	-4.078381	0.0005**
$\Delta(\text{INTR})$	0.092176	0.030659	3.006460	0.0067**
CointEq(-1)*	-0.624890	0.017951	-6.957184	0.0000**
$R^2 = 0.706162$	$R^2 = 0.640864$	F-stat = 5.378046	D-W = 2.566463	0.000000 **

**Source:** Researcher's Estimation, 2023.

\*\* denote significance @ 5% level of statistical significance

In Table 5, the results of error correction mechanism (ECM) which represents speed of adjustment in ARDL modelling indicated the convergent point. That is, the coefficient of the ECM shows the speed of adjustment to the deviation in the short run equilibrium on Foreign Direct Investment (FDI)

Furthermore, the coefficient of ECM which is (-0.624890) indicated that the model will adjust by 62% (percentage) of the equilibrium in the long run. At this point, -0.624890 implied that when there is a state of disequilibrium among RGDP, FDI, TOP, EXPO1, EXR and INTR in Nigeria. This phenomenon would be adjusted back to equilibrium in one (1) year and six (6) months based on the outcome of the estimation.

In the short run, the coefficient of determinant  $R^2 = 0.640864$  or 64 % approximately; it means that the (FDI) in the model can cause the variation in Real gross domestic product (RGDP) by 0.640864% and leaving only 36% out to other factors not captured in this study. This shows that the model is fit and good for policy recommendations for the Nigerian economy. Moreover, adjusted R squared corroborated the fitness and goodness of the model in applying on the examination of impact of foreign direct investment and economic growth in Nigeria. The adjusted R squared of this  $R^2 = 0.640864$  or 64% variation in real gross domestic product was actually caused by foreign direct investment, trade openness, export earnings and exchange rate in Nigeria.

Furthermore, the coefficients of various parameters in Table 4.6 relate to change in the short run among the foreign direct investment, trade openness, export earnings and exchange rate and output growth in Nigeria.

First and foremost, the coefficient of FDI is 0.097183 this means that a unit or 1 % change in the value of foreign direct investment would result to 0.097183 units or 9.7% increase in real gross domestic product in the economy. However, it was statistical insignificant in the model as it can be seen in *p-value* of 0.0842 and *t-value* of 1.812557

In addition, the previous value of foreign direct investment (FDI) of 0.000576, implied that the FDI contributed positively to the economic growth in Nigeria in the past. This shows that FDI in the previous year of 0.000576 indicated that a unit or 1 percentage (%) change in FDI resulted to 0.000576 units or 0.5% change in Nigeria GDP assuming all factors are held constant. It was statistically insignificant in the model judging from the *t-statistic* of -0.187973 and *p-value* of 0.8527 in the economy.

Finally, by F-statistic value of 5.378046 and its *p-value* of 0.0000, this means that foreign direct investment, trade openness, export earnings and exchange rate have jointly impacted the real gross

domestic product in the short-run, and they were statistically significant in this analysis.

Table 5. Result of the diagnostic tests

Jargue-Bera 11.60669	Normality test	Prob. 0.003017
F. Statistic 2.721174	Serial Correlation test	Prob. F(2,19) 0.0914
Obs* R-squared 7.570461		Prob chi square(2) 0.0227
F. Statistic 1.769464	Heteroscedasticity test	Prob. F(12,21) 0.1217
Obs* R-squared 17.09402		Prob chi square(12) 0.1461
T. Statistic 0.267842	Ramsey RESET Test result	Prob. 0.7916
F. Statistic 0.071739		Prob. 0.7916

**Source:** Extracted from Researcher's Computation Using E-View Version 10, 2023.

The last rows in Table 6 are the diagnostic tests including normality test, serial correlation test, Heteroscedasticity test and Ramsey RESET Test result. These tests were conducted to ensure the validity and robustness of the study model's estimation for policy formulation. Based on the outputs in the table above, the study residuals are normally distributed and are free from serial correlation, heteroscedasticity issues. Stability test were conducted on the model residuals. The stability test is an important test to check if the model estimated pass the test of stability. To verify stability of the coefficients. It is done using the cumulative sum of recursive residuals test (CUSUM) and cumulative sum of squares recursive residuals test (CUSUM Q). The output from evidence presented in Figure 2 and 3 respectively.

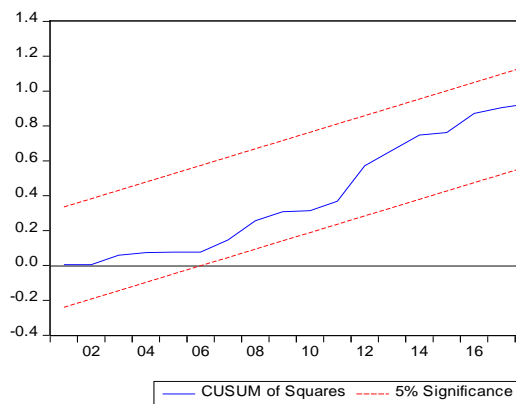


Figure 2. CUSUM Result

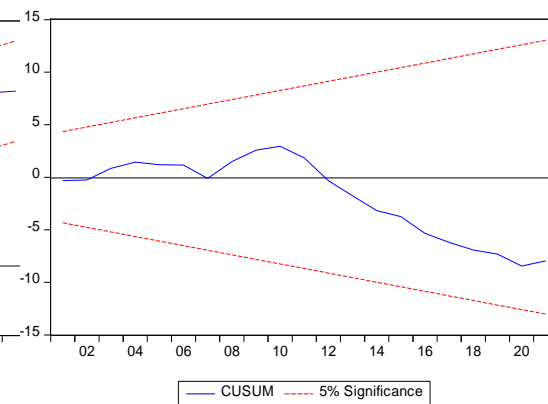


Figure 3. CUSUM (Q) Result

**Source:** Extracted from researcher's Estimation Using E-View Version 10, 2023.

The stability of the Model testing estimates which was investigated using the CUSUM and CUSUMQ tests given results that are shown in Figures 2 and 3. The plots of the CUSUM statistics are well within the critical bounds at 5% level of statistical significance.

Furthermore, the plots of the CUSUM of squares statistics are within the critical bounds at 5% level of significance. Figure 2 and 3 indicated that both the CUSUM and CUSUM (Q) fall within the bound to their normal shapes. These results confirmed that the model estimated was reliable and consistent. The tests find coefficients to be stable since the cumulative sum does not go outside the area between

the two critical bounds. Therefore, the specified model for this study was stable and consistent in line with economic theory. Hence, it can be applied for policy recommendations in public finance and public sector economics and international economics.

## 5. Conclusions and recommendations

This study submitted that foreign direct investment has positive and significant impact on economic growth in both the long-run and short-run analysis.

In conclusion, Nigeria can only reposition herself as a potent force in the global world by improving access to foreign direct investment (FDI), level of exports, trade openness, exchange rate, real gross domestic and inflation rate to cope with these challenges of sustainable economic growth in the country. It has to put policies in place to improve and attract foreign direct investment for inclusive economic growth in Nigeria.

This study on impact of foreign direct investment on economic growth in Nigeria has recommended the following policy options for the country. These recommendations were based on the objectives of this empirical analysis as:

The purpose of this work is to find the impact of foreign direct investment on economic growth in Nigeria. Since it is found that foreign direct investment has positive and significant impact on economic growth in Nigeria, it is the postulation of the work that government should provide an enabling environment could be in form of providing security, infrastructure and functioning democratic stability. Above, all the other objectives as so highlighted should be to attract foreign investment into the country.

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