FOREIGN DIRECT INVESTMENT AND ECONOMIC GROWTH IN NIGERIA: A Revisit.

Abstract

This study examined the impact of foreign direct investment (FDI) on economic growth in Nigeria from 1981 to 2022. Real gross domestic product growth rate (RGDPGR) was the proxy for economic growth while foreign direct investment (FDI), gross fixed capital formation (GFCF), per capita income (PCI) and exchange rate (EXR) were the explanatory variables. The study employed the autoregressive distributed lag (ARDL) technique to estimate the model, while the eclectic paradigm and endogenous growth theory served as the theoretical framework for the study. The results revealed that in the long run, foreign direct investment, per capita income and exchange rate were positive but statistically insignificant to economic growth in Nigeria, while gross fixed capital formation was insignificant. However, in the short, GFCF had significant negative impact on economic growth in the second lagged year showing that a unit increase in GFCF decreased RGDPGR by approximately 10.21% while per capita income impacted positively on the growth of the Nigerian economy. Consequently, the study recommended that as a signal of market size for the inflow of FDI and particularly as a signal of human capital development, the government should increase her investment in human capital development focusing on technical skills relevant in manufacturing and service sectors to engender growth in per capita income to attract FDI and economic growth in Nigeria.

Keywords: *Foreign Direct Investment, Economic Growth, Eclectic Paradigm, Endogenous Growth Theory, ARDL, Nigeria.*

1. Introduction

The concept of Foreign Direct Investment (FDI) is intricate and ever-changing, embodying the essence of globalisation and the interconnectedness of contemporary economies. FDI denotes investments made by individuals or entities from one country (referred to as the home country) into businesses or assets situated in another country (commonly termed the host country) (UNCTAD, 2020). The primary objective of such investments is usually to establish a lasting interest or wield a significant level of influence or control over the foreign business or assets. Foreign direct investment (FDI) manifests in diverse forms, encompassing initiatives such as green investments and real estate ventures by foreign entities. The consensus among scholars, business leaders, and the international community is that developing nations often require substantial foreign capital inflows to fuel their economic activities. Emerging economies, particularly those in the Western world, play a pivotal role in providing cross-border transfers of capital, technology, and skills necessary for the growth of these nations.

In the case of Nigeria, its major export commodity is crude oil, serving as the primary source of foreign exchange earnings due to limited production capacity preventing full integration into the global market. However, the scenario changed after the decrease in oil prices and the

1999 election of a new administration, prompting a shift from extractive industries to manufacturing and other profitable ventures. This transformation aimed at addressing the savings-investment imbalance and promoting export activities, recognizing the vital role foreign direct investment played in this process.

Over the years, policies incentivizing FDI inflows have been implemented, including the 1995 Foreign Exchange (Monitoring and Miscellaneous Provisions) Act, the Nigerian Investment Promotion Commission Act, and the privatization of various industries. Despite these efforts, data from the National Bureau of Statistics reveals a decline in FDI into Nigeria, from $2,277.04 million in 2014 to $981.75 million in 2017. The United Kingdom has been a prominent destination for capital investment in the nation. Foreign direct investment is anticipated to fuel economic growth in Nigeria by providing capital to productive companies, influenced by institutional and macroeconomic factors as highlighted by Jude and Levieuge (2013).

Several scholars, including Esew and Yaroson (2014), emphasized that the development index comprises market size, human capital, political risks, and the business climate. Recent uncertainties, particularly security issues such as insurgency, Boko Haram activities, banditry, and conflicts between farmers and herders, along with crude oil bunkering in various regions, have led to substantial divestments in FDI across multiple sectors. This is further intensified by the significantly low Foreign Direct Investment (FDI) inflow relative to the ratios of real gross domestic product (RGDP) and gross fixed capital formation (GFCF) in the nation. Table 1 illustrates the dismal FDI inflow in Nigeria relative to RGDP and GFCF ratios from 1981 to 2020.

Table 1. Ratio of Average FDI to RGDP and GFCF and Exchange Rate in Nigeria (1981 – 2020)

Period	FDI (₦Million)	GFCF (₦Billion)	EXR	RGDP (₦Billion)	FDI as % of RGDP	FDI as % of GFCF
1981 – 1985	5,662.50	111.56	0.73	17,408.694	0.033	5.10
1986 – 1990	10,396.42	169.99	5.20	18,812.662	0.055	6.12
1991 – 1995	57,929.9	627.78	30.48	21,898.444	0.265	9.23
1996 – 2000	143,008.54	1,928.91	90.64	23,753.386	0.602	7.41
2001 – 2005	216,125.82	3,978.97	129	32,969.024	0.656	5.43
2006 – 2010	603,720.76	8,168.23	138.8	47,012.886	1.284	7.39
2011 – 2015	1,004,314.40	11,872.24	163.8	63,367.300	1.585	8.46
2016 – 2020	1,175,319.40	26,700.02	316.2	69,526.900	1.690	4.40

Source: Central Bank of Nigeria (2022) Statistical Bulletin.

Table 1 displays FDI inflows in millions of Nigerian Naira, GFCF reported in billions of Nigerian Naira, along with the exchange rate (EXR), real gross domestic product (RGDP), and the ratios of FDI to RGDP and GFCF for an average of five-year periods spanning from 1981 to 2020. The period between 1981 and 1985, recognized as the austerity era due to the global crude oil price crash, saw FDI inflows at ₦5,662.50 million with an average exchange rate of 0.73 Naira to $1 US Dollar. Real GDP during this period stood at ₦17,408.694 billion, and FDI represented a mere 0.003% of RGDP. Conversely, GFCF was ₦111,560 billion, with FDI comprising 5.10%. According to UNCTAD (2021), gross fixed capital formation is regarded as a significant indicator of upcoming business activity, business confidence, and the patterns of economic growth. The ratio of GFCF to RGDP is crucial to FDI inflows in the economy.

Examining successive periods, the increase in FDI was associated with exchange rate depreciation. Consequently, the ratio of FDI to RGDP rose from 0.033 in the 1981–1985 period to approximately 1.7% in the 2016–2020 period, representing a 1.667% increase over 40 years. This suggests that Naira depreciation contributed to the surge in FDI into the Nigerian economy. GFCF exhibited fluctuation over the entire period, with FDI representing 5.10% of GFCF between 1981 and 1985, reaching a peak of 9.23% between 1991 and 1995, consistently falling to 5.43% between 2001 and 2005, rising again to 8.46% between 2011 and 2015, and hitting an all-period low of 4.40% between 2016 and 2020. The GFCF to RGDP ratio, derived from Table 1, was 0.64 between 1981 and 1985, 0.9 between 1986 and 1990, consistently rising to 38.40 between 2016 and 2020.

Despite decades of government policies aiming to attract FDI into Nigeria, the actual FDI inflows relative to the size of the economy have been dismal, while GFCF has consistently increased relative to RGDP. Notably, research by Otepola (2002), Oyeyide (2005), and Akinlo (2004) explored how FDI contributes to economic growth over time in Nigeria. However, given the persistent obstacles impeding the government's efforts to achieve sustainable growth and development through FDI inflows, this study addresses two research questions: (a) How does the inflow of FDI affect economic growth in Nigeria? and (b) Through what channels do FDI influence economic growth in Nigeria? To address these questions, the study pursued specific goals: (i) Investigating how inflows of FDI affect economic growth in Nigeria, and (ii) Evaluating the channels from where the influx of FDI affects economic growth in Nigeria. The subsequent sections of this work are organized as follows: Section 2 delves into the theoretical background and empirical literature, Section 3 details the content and methodology, Section 4 covers data analysis and results presentation, and Section 5 concludes with recommendations.

2. Literature Review

This section focuses on reviewing theories relevant to foreign direct investment and economic growth, providing the theoretical framework for the study, and exploring empirical literature.

2.1 Theoretical Literature

The study drew from the eclectic paradigm and the endogenous growth theory as its theoretical foundations.

2.1.1 Eclectic Paradigm Theory

The Eclectic Paradigm (O-L-I), developed by John Dunning in 1980, is a comprehensive framework that combines three key factors - Ownership (O), Location (L), and Internalization (I) advantages. This theory aims to explain why firms engage in Foreign Direct Investment (FDI) based on these three elements. These reasons are abbreviated as O-L-I framework which are explained below.

a). Ownership Advantage (O): This element refers to the specific advantages that a firm possesses, such as technology, brand recognition, or unique management skills. Firms engage in FDI when they have ownership advantages that give them a competitive edge in foreign markets. These advantages can be either firm-specific or industry-specific.

b). Location Advantage (L): The location advantage refers to the benefits offered by the foreign market or host country. Firms are motivated to invest in a particular location when it provides unique advantages, such as access to a large consumer base, lower production costs, or proximity to key suppliers. The host country's characteristics and resources play a crucial role in attracting FDI.

c). Internalization Advantage (I): Internalization advantages relate to the benefits of controlling certain activities within the firm rather than outsourcing or licensing them to other entities. Firms may engage in FDI to internalize specific functions or activities, such as research and development, manufacturing, or distribution, when it is more efficient to do so. Internalization helps the firm maintain control over critical resources and knowledge.

The Eclectic Paradigm suggests that FDI occurs when a firm possesses Ownership, Location, and Internalization advantages. When these advantages align with the opportunities offered by a specific host country, it becomes an attractive destination for FDI. Hence, the eclectic paradigm is used in this study as one of the theoretical bases.

2.1.2 The Endogenous Growth Theory

The Endogenous Growth Theory, notably developed by Paul Romer (1986), departs from the Neoclassical Growth Theory by emphasizing that economic growth is not solely driven by exogenous factors (such as capital accumulation) but is endogenously generated within the economic system. This theory focuses on knowledge, innovation, and human capital as central drivers of growth.

a). Human Capital: In the Endogenous Growth Theory, human capital (skills, education, and knowledge) is a critical factor in economic growth. FDI can promote human capital development in the host country through training programs, technology transfer, and knowledge spillovers. These investments in human capital contribute to increased productivity and economic growth.

b). Knowledge Creation: FDI often brings advanced technology, research and development activities, and innovation to the host country. This fosters knowledge creation and technological progress. The theory posits that knowledge is non-rivalrous, meaning one entity's use of knowledge does not diminish its availability to others. As a result, knowledge can be a source of continuous growth and innovation.

c). Increasing Returns to Scale: The Endogenous Growth Theory suggests that increasing returns to scale are possible when knowledge is involved in the production process. Unlike the Neoclassical theory, which assumes diminishing returns, the Endogenous Growth Theory

allows for continuous returns to scale. FDI can amplify these increasing returns by bringing advanced knowledge and technology to the host country

d). Technological Spillovers: FDI facilitates the flow of knowledge and technology from foreign firms to domestic firms in the host country. These technological spillovers lead to diffusion of innovation and can boost the host country's overall productivity and growth.

e). Innovation Policies: The theory underscores the role of innovation policies, including investment in research and development, patent protection, and education, as crucial drivers of endogenous growth. FDI can act as a catalyst in these areas, as foreign investors often engage in research and development activities and contribute to technological advancement.

In summary, the Endogenous Growth Theory emphasizes that FDI can significantly contribute to economic growth by fostering knowledge creation, innovation, human capital development, and increasing returns to scale. It underscores the idea that knowledge and technology are central drivers of sustained economic development. Thus, the theoretical framework for this study is the eclectic paradigm and the endogenous growth theory.

2.2 Empirical Literature

Numerous studies have been conducted in Nigeria and around the world to examine the relationship between foreign direct investment (FDI) and economic growth. This section examines the findings of several research studies to better understand the patterns in the literature about the impact of FDI on economic growth.

Yaqub, Adam, and Jimoh (2013) used Vector Auto-regression (VAR) to investigate the relationship between FDI and Nigeria's economic growth. The study revealed that FDI does not have a Granger-causal effect on economic growth, and statistically, FDI does not significantly determine real GDP in Nigeria. Instead, the primary driver of real GDP growth lies within its internal dynamics. This underscores a weak connection between real GDP and FDI in terms of policy, highlighting the necessity for infrastructure development-focused policies to maximize FDI benefits in Nigeria.

Akanegbu and Chizea (2017) used annual time series data and the ordinary least squares econometric technique to investigate the impact of foreign direct investment (FDI) on Nigeria's economic growth from 1991 to 2014. The findings revealed that FDI has a modestly beneficial effect on Nigeria's economic growth.

Alabi (2019) used data from 1986 to 2017 to analyze the impact of FDI on Nigerian economic growth. Using both descriptive and regression analysis, the study showed that foreign direct investment (FDI) had a positive and statistically significant impact on economic growth, but local investment had a positive but less significant effect. Akinwalere and Chang (2023) explored the factors influencing FDI in Nigeria, using UNCTAD data from 1970 to 2014. Their findings suggested that interest rates, GDP growth, external debt, and oil rents have a significant impact on long-term FDI. The study emphasized the need to diversify economic growth through investments in manufacturing and agriculture.

Olagbaju and Akinlo (2018) studied the effect of FDI on economic growth in Sub-Saharan Africa, focusing on the role of financial development as an absorptive capacity. The results suggested that FDI alone does not cause economic growth, but the development of the banking sector amplifies FDI's influence on regional economic growth. The study identified critical financial development thresholds for the anticipated FDI-economic growth effect.

Hyungsun and Ramirez (2017) investigated the relationship between income distribution and FDI in seven Southeast Asian nations from 1990 to 2013. The study found that FDI initially causes a short-term rise in income inequality but ultimately results in a decrease, supporting pro-globalization claims.

Giwa, George, Okodua, and Adeniran (2020) investigated the effect of foreign direct investment (FDI) inflows into Nigeria on the country's real GDP. Using a robust Generalised Method of Moments (GMM) estimate technique, the study discovered a positive and significant influence of labor quality on RGDP. However, capital intensity had a notable negative effect on Nigeria's RGDP. Sokang (2018) investigated the connection between FDI and economic growth in Cambodia, finding a favourable association using a correlation matrix and multiple regression analysis.

Emmanuel, Xiang, Mavis, and Bekoe (2020) looked into the relationship between Ghana's economic growth, foreign direct investment, and trade openness. The study found that trade openness had the biggest impact on GDP growth in Ghana, while FDI and inflation have either a positive or negative impact.

Ntamwiza and Masengesho (2022) investigated the effects of gross capital creation and FDI on economic growth in Rwanda. The study found a positive correlation between capital formation, FDI, and economic growth in Rwanda over the short and long terms.

While existing studies, such as Giwa et al. (2020), have contributed valuable insights, there is a potential literature gap in understanding the nuanced impact of FDI on economic growth in Nigeria. Further research is needed to delve deeper into the specific factors influencing this relationship, considering intricate dynamics, potential thresholds, and contextual variations.

3. Material and Methodology

This study employed an ex post facto research design, utilizing annual time series data from the Central Bank of Nigeria (CBN) Statistical Bulletin from 1981 to 2022. The study's dependent variable was the real GDP growth rate (RGDPGR), while its independent variables were foreign direct investment (FDI), gross fixed capital formation (GFCF), per capita income (PCI), and exchange rate (EXR).

3.1. Model Specification

Following the frameworks of Dunning's eclectic paradigm (1980) and Romer's endogenous growth theory (1986), the model specification involved determining the relationships between the explained and explanatory variables. The functional specification of the foreign direct investment model is expressed as:

$$y_t = f(X_t) \qquad 3.1$$

where:

Y_t = real gross domestic product growth rate as a proxy for economic growth at time t.

X_t = a vector of explanatory factors, such as foreign direct investment, that interact with one another throughout the economy to explain how FDI affects economic expansion. The endogenous growth theory, the eclectic paradigm, and the empirical reality of Nigeria all influenced the selection of these variables.

In the Eclectic Paradigm associated with the acronym O-L-I (Owners Advantage; Location Advantage and Internalization Advantage), the location advantage which focuses on the FDI recipient economy evaluates access to a large consumer base, lower production costs, or

proximity to key suppliers. The GFCF was used in this study as an index of lower production cost. This is because GFCF consists of new additions to infrastructural investments by the government which ultimately creates the enabling environment for foreign direct investment. Another explanatory variable in our vector of explanatory variables is per capita income (PCI). The PCI is used to measure access to a large consumer base under the location advantage as pointed out in the Eclectic Paradigm as well as human capital development in the Endogenous Growth Theory. Exchange rate (EXR) on the other hand was included in the vector as a control variable. Basically, the direction of exchange rate indicates how innovative and productive the economy is. Exchange rate depreciation (i.e, when more Naira is exchanged for one US Dollar) indicates low innovation, low production and low export, while exchange rate appreciation (i.e, when less Naira is exchanged for one US Dollar) indicating high innovation, high production and high export. Consequently, our new functional model is stated as:

$$y_t = f\,(fdi, gfcf, pci, exr) \qquad 3.2$$

The variables are expressed in different units of measurement. Economic growth (Y_t) was proxied by real GDP. Millions of Naira were used to measure foreign direct investment (fdi), billions of Naira were used to measure gross fixed capital formation, and US dollars were used to measure per capita income (i.e., the ratio of the total population to the national income). To avoid discrepancies in the data, the monetary measures such as *fdi, gfcf and pci* were logged. Thus, equation 3.2 becomes:

$$RGDPGR = f\,(LFDI, LGFCF, LPCI\ EXR) \qquad 3.3$$

Given the stationarity properties of the time series data, either integrated of order zero I(0) or order one I(1), the autoregressive distributed lag (ARDL) econometric regression technique was deemed appropriate for estimating the impact of the explanatory variables on the dependent variable. Consequently, the ARDL specification of the model is stated as:

$$RGDPGR_t = \alpha + \sum_{i=0}^{n} \beta_{1i}\Delta RGDPGR_{t-i} + \sum_{i=0}^{n} \beta_{2i}\Delta LFDI_{t-i} + \sum_{i=0}^{n} \beta_{3i}\Delta LGFCF_{t-i} + \sum_{i=0}^{n} \beta_{4i}\Delta PCI_{t-i} + \sum_{i=0}^{n} \beta_{5i}\Delta EXR_{t-I} + \beta_6 RGDPGR_{t-1} + \beta_7 LFDI_{t-1} + \beta_8 LGFCF_{t-1} + \beta_9 PCI_{t-1} + \beta_{10} EXR_{t-1} \quad \varepsilon_{1t} \qquad (3.4)$$

Where: Δ is the first difference operator, $\beta_{1i}, \ldots\ldots\ldots\ldots, \beta_{7i}$, indicate the short-run dynamics of the model, $\beta_8, \ldots\ldots\ldots\ldots \beta_{14}$, denote the long-run association and ε_{1t} is the random term in equation 3.4. The specific form of error correction mechanism (ECM) estimated for RGDPGR as a measure of economic growth in this study is expressed as:

$$RGDPGR_t = \beta_0 + \sum_{i=0}^{n} \beta_1 RGDPGR_{t-1} + \sum_{i=0}^{n} \beta_2 \Delta X_{t-1} + \beta_3 ECM_{t-1} + \varepsilon_{3t} \qquad (3.5)$$

Where: X_t is the vector of explanatory variables, ECM_{t-1} is the error correction term and it captures the speed of adjustment back to the long run after a short run shock and ε_{3t} is the stochastic error term.

3.2 Estimation Technique and Procedure

To determine the series' integration sequence, the study used the Augmented Dickey Fuller (ADF) unit root test. The autoregressive distributed lag (ARDL) regression technique was

then used to investigate how the explanatory factors influenced the dependent variable. A number of diagnostic tests were run, including the Ramsey RESET test for model specification, the Jarque-Bera residual normality test, the Breusch-Pagan-Godfrey heteroscedasticity test for residuals, and the Breusch-Godfrey serial correlation LM test.

4. Empirical Results and Discussion

4.1 Descriptive Statistics

Table 2 summarizes descriptive statistics for the five macroeconomic variables in this analysis and includes data for 42 years (1981 to 2022). The average real gross domestic product growth rate (RGDPGR) for the analyzed period is roughly 3.5%, according to the mean values. Foreign direct investment averaged 372,724.5 million Naira, while gross fixed capital formation averaged around 9,321.2 billion Naira. Per capita income averaged $1,375.1 billion Naira, and the average exchange rate stood at 124 Naira to $1 USD.

Table 2 also illustrates the maximum and minimum values for these series. Regarding volatility, as indicated by the standard deviations from their respective means, foreign direct investment (FDI) emerged as the most volatile at approximately 472,814.3 million Naira. In contrast, the real GDP growth rate exhibited the least volatility, with a standard deviation of approximately 4.5%.

Table 2: Summary of Descriptive Statistics

Variable	No of Obs.	Mean	Maximum	Minimum	Std. Dev
RGDPGR	42	3.495238	15.33000	-10.93000	4.698955
FDI	42	417,072.0	1,416,506.0	3,757.900	472,814.3
GFCF	42	9,321.180	65,227.13	87.14000	15,038.98
PCI	42	1,375.078	3,223.000	270.0000	885.5419
EXR	42	123.9350	428.0000	0.610000	117.7045

Source: Author's computation

4.2 Unit Root Test Result

The unit root test, employing the Augmented Dickey Fuller (ADF) method, relies on the assumption that a variable's series contains a unit root, signifying non-stationarity. The ADF test statistic was contrasted with the critical value at the 5% significance level. The results reveal the characteristics of the real gross domestic product growth rate (RGDPGR) were stationary at order zero I(0), whereas all the explanatory variables demonstrated stationarity at order one I(1), as detailed in Table 3.

Table 3: ADF Unit Root Test Result

Variable	ADF Statistics			Probability		I(d)
	5% Critical value	Levels	First Difference	Levels	First Difference	
RGDPGR	-2.935001	-3.972945	Ψ…….	0.0037	Ψ…….	I(0)
LFDI	-2.935001	-1.851990	-2.854056	0.3510	0.0599	I(1)
LGFCF	-2.936942	-0.035744	-4.204947	0.9494	0.0020	I(1)
LPCI	-2.936942	-0.966381	-4.505056	0.7560	0.0008	I(1)
EXR	-2.935001	2.183489	-4.881210	0.9999	0.0003	I(1)

Source: Author's computation

4.3 The ARDL Bound Test for Cointegration Result

This part looked at the long-term relationship between the variables using cointegration and the ARDL bound test. Using the Akaike Information Criteria (AIC) and the Vector Autoregression (VAR) lag length selection criteria, the ARDL bound test determined that (1,2,0,1,0) is the best lag length. Table 4 shows the findings of the bound test. Significantly, at the traditional 5% significance level, the F-statistic (6.981274) exceeded the upper critical bound value of 3.49 and, more importantly, the upper bound value of 4.37 at the 1% significance level. As a result, these findings supported a long-term relationship between the variables in the model.

Table 4. Bound Test for Cointegration Result

F-Statistics = 6.981274

K = 4

	Critical Bounds Value	
Significance	Lower Bounds I(0)	Upper Bounds I(1)
10%	2.2	3.09
5%	2.56	3.49
2.5%	2.88	3.87
1%	3.29	4.37

Source: Author's computation

4.4 Estimation and Discussion of Findings

In this subsection, we analyze the empirical outcomes derived from the ARDL regression, delving into the findings by first exploring the estimates of the long-run results and subsequently examining the short-run results.

4.4.1 The ARDL Long Run Results

Based on the chosen model (ARDL 1,0,3,4,0) determined through optimal lag selection criteria, the long-run elasticities were computed, and the results are showcased in Table 5. The probability values in the table indicate that none of the explanatory variables exhibited a statistically significant impact on economic growth, measured by the real gross domestic product growth rate (RGDPGR).

Regardless of statistical significance, it is important to assess the direction and amplitude of the associations. The logarithms of foreign direct investment (LFDI), per capita income (LPCI), and exchange rate (EXR) all showed a positive relationship with RGDPGR. In contrast, the logarithm of gross fixed capital formation (LGFCF) revealed a negative association with RGDPGR.

Table 5. ARDL Long Run Results Estimate

Dependent Variable: RGDPGR

Selected Model: ARDL(1,0,3,4,0)

Variable	Coefficients	Std. Error	t-Statistics	Probability
LFDI	0.261765	1.171255	0.223491	0.8250

LGFCF	-4.226806	2.743118	-1.540876	0.1359
LPCI	2.125775	1.461243	1.454772	0.1582
EXR	0.036167	0.025832	1.400066	0.1738
C	15.42878	9.543733	1.616640	0.1185

Source: Author's computation using Eviews 10

4.4.2 The ARDL Short Run Estimates and Error Correction Mechanism (ECM).

The outcomes of the error correction model (ECM) and the ARDL short-run estimation are presented in Table 6. Represented by CointEq(-1), the ECM model reveals a substantial value of -0.903293, statistically significant and negatively signed. This implies that 93% of the short-run disequilibrium tends to be rectified towards the long-run equilibrium. With an adjusted R-squared value of 0.715922, accounting for degrees of freedom, the explanatory variables elucidated almost 72% of the variation in the dependent variable.

Short-term estimations show a positive but statistically insignificant association between the log of gross fixed capital formation (LGFCF) and RGDPGR for both the reporting year and the one-year lag. However, it became negative and became statistically significant in the second lagged year, implying that a one percent increase in GFCF resulted in a 10.21% fall in RGDPGR. This finding contradicts the expected result that increasing GFCF improves RGDPGR.

Moreover, the logarithm of per capita income (LPCI) demonstrated a positive and statistically significant association with RGDPGR in the reporting year, as well as the second and third lagged years. Although the first lagged year showed a positive effect, it was statistically insignificant. In particular, an increase of one percent in PCI led to an increase in RGDPGR of almost 18.5 percent in the reporting year; in the second and third lagging years, the corresponding increases were 8.5 and 8.8 percent. This is consistent with the hypothesis that increasing RGDPGR is a result of rising per capita income. Table 6 also reveals that among various criteria, including Schwarz Information Criteria (5.112677) and Hannan-Quinn Criteria (4.890583), the Akaike Information Criteria (AIC) yielded the lowest value (4.767922), indicating its selection as the optimal lag for this study.

Table 6. ARDL Short Run Estimates Result

Dependent Variable: RGDPG

Selected Model: ARDL(1,0,3,4,0)

Variable	Coefficient	Std. Error	t-Statistics	Probability
D(LGFCF)	0.351157	2.761709	0.127152	0.8998
D(LGFCF(-1))	1.015764	2.860734	0.355071	0.7255
D(LGFCF(-2))	-10.20773	3.001440	-3.400946	0.0023
D(LPCI)	18.48236	2.488338	7.427592	0.0000
D(LPCI(-1))	4.637512	3.077388	1.506963	0.1444
D(LPCI(-2))	8.491791	2.484148	3.418392	0.0022
D(LPCI(-3))	8.811292	2.642239	3.334783	0.0027
CointEq(-1)*	-0.903293	0.127407	-7.089794	0.0000

Adjusted R^2	0.715922
Breusch-Godfrey Serial Correlation LM Test	0.211469 [0.8997]
Breusch-Pagan-Godfrey Heteroscedasticity Test	0.679411[0.7548]

Source: Author's computation using Eviews 10

4.5 Diagnostic Test Results

The model did not exhibit serial correlation or heteroscedasticity, according to the results of the Breusch-Godfrey Serial Correlation LM test and the Breusch-Pagan-Godfrey Heteroscedasticity test shown in Table 6. The fact that the respective probability for these tests were higher than 0.05, or the five percent significance level, leads one to this conclusion. Thus, we agree with the null hypothesis that there is no serial correlation and the model is homoscedastic.

Additionally, a P-value surpassing 0.05 was found in the Jarque-Bera test for residual normality, as shown in Figure 1, indicating that the errors had a normal distribution. As a result, we agree with the null hypothesis, according to which the errors have a normal distribution.

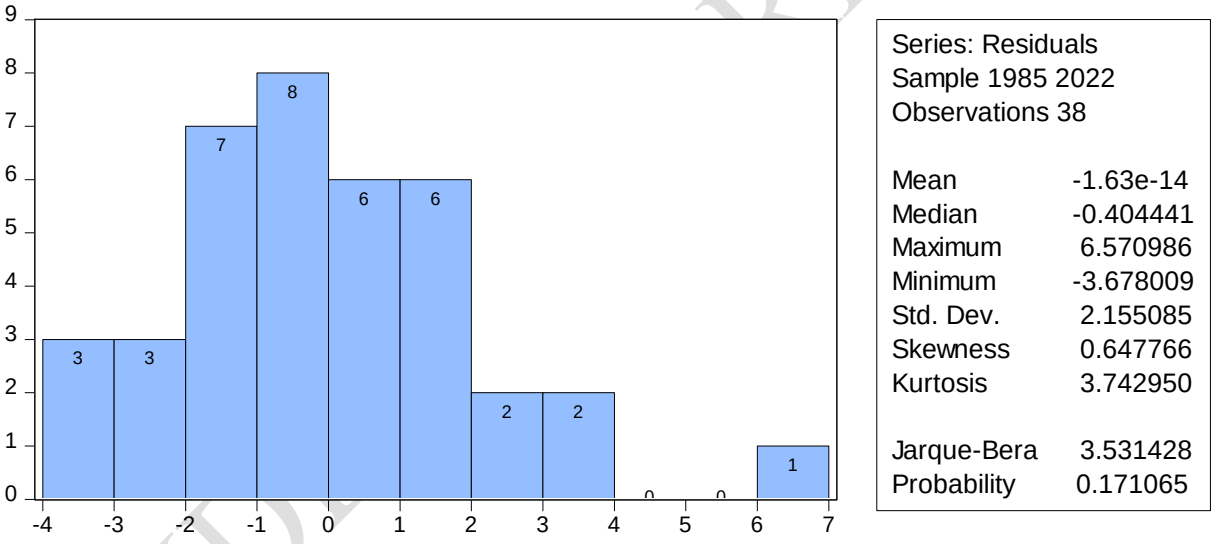

Figure 1. Residual Normality Test Result.

4.5.1 Model Stability Test Results

The results of the cumulative sum of squares test and the cumulative sum (CUSUM) test, which were used to assess the stability of the used model, are shown in Figures 2 and 4.3, respectively. The test results clearly show that the model's regression coefficients are stable. The CUSUM line's placement within the upper- and lower-5 percent essential lines makes this clear. As such, we agree with the null hypothesis, which states that the coefficients are stable.

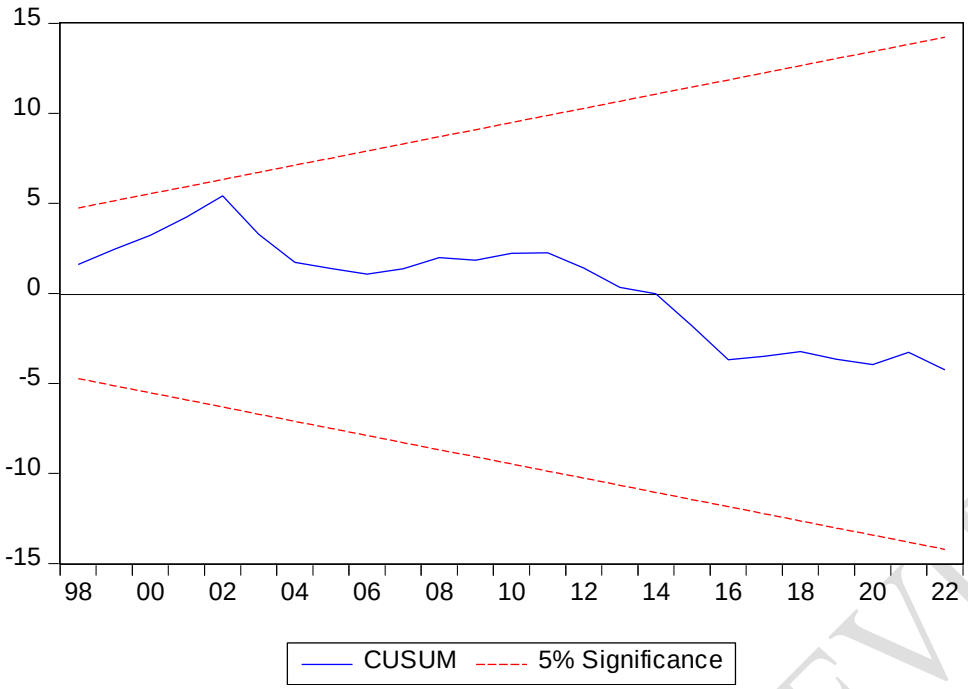

Figure 2. Model Stability Test Result: Cumulative Sum (CUSUM) test.

Similarly, the model showed no structural breaks given that the CUSUM of squares line lies between the upper and lower critical lines, this is shown in figure 2. As a result, the null hypothesis—which states that the model contains no structural breaks—is accepted.

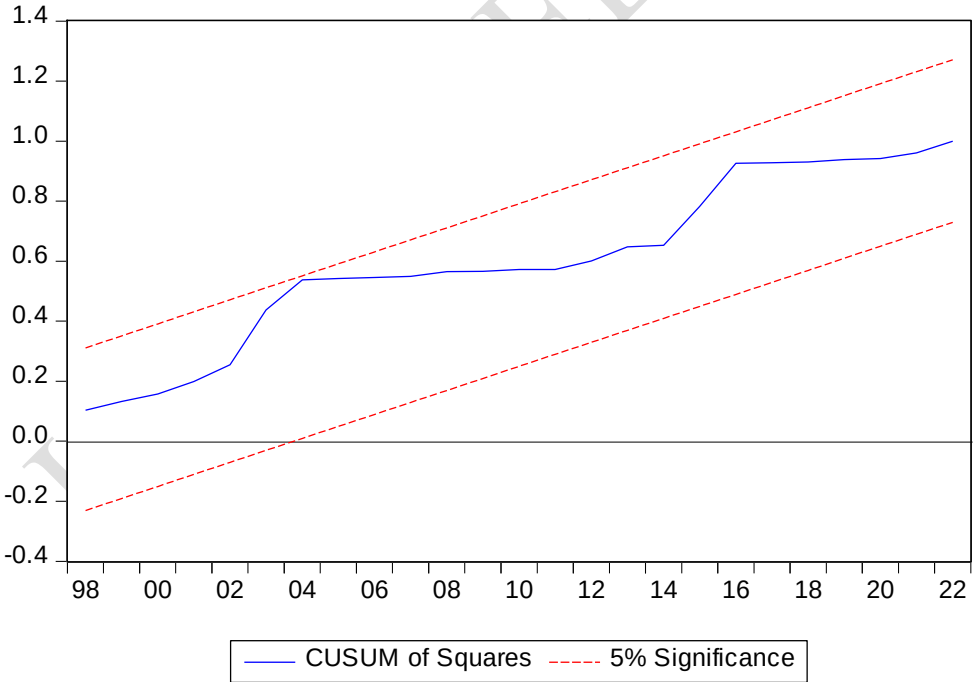

Figure 3. Model Stability Test Result. CUSUM of Squares Test

5. Conclusion

This study used yearly time series data from the Central Bank of Nigeria and the World Bank Data Bank to investigate the impact of foreign direct investment on Nigeria's economic growth from 1981 to 2022. The real GDP growth rate was estimated as a proxy for economic growth, with the exchange rate, gross fixed capital creation, per capita income, and foreign direct investment inflows serving as explanatory factors. The theoretical foundations of the study were rooted in the endogenous growth theory and the eclectic paradigm. A comprehensive analysis of empirical literature from both foreign and Nigerian studies yielded inconsistent results. While some Nigerian studies concluded that foreign direct investment (FDI) had no effect on economic growth, others suggested a positive impact. The study employed the autoregressive distributed lag analytical technique, incorporating per capita income alongside FDI and other variables to proxy market size and human capital development within the eclectic paradigm and endogenous growth theory framework. The findings indicated that, at the 5 percent significance level, neither FDI nor any of the explanatory variables were statistically significant in the short term. While FDI, PCI, and EXR coefficients were positive at varying magnitudes, the short-term results revealed a significant negative impact of log gross fixed capital formation (LGFCF) on RGDPGR in the second lagged year. In the short term, RGDPGR was greatly influenced by per capita income. As a result, the study suggests that foreign direct investment has no direct effect on Nigerian economic growth. However, the positive and considerable influence of per capita income on RGDPGR implies that FDI can help to grow human capital in the Nigerian economy by indicating market size to prospective foreign investors.

6. Recommendations

Based on the study's findings, the following policy recommendations are proposed:

(i) As GFCF serves as a meaningful indicator of future business activity, signaling FDI, the Nigerian government should diversify FDI inflows into sectors like services and agriculture, beyond the mining and manufacturing sectors, to maximize economic benefits.

(ii) Recognizing per capita income as a signal of market size and human capital development, the government should invest in technical skills relevant to manufacturing and service sectors to boost per capita income, attract FDI, and foster economic growth.

(iii) Considering the positive but insignificant impact of exchange rate (EXR) on RGDPGR in the long run, indicating that exchange rate depreciation led to a decrease in RGDPGR, the government should focus on developing the productive base of the economy to attract FDI and achieve sustainable economic growth over the long term.

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