

Reexamining the Impact of Foreign Direct Investment on Economic Growth in Nigeria: An ARDL Approach

Ahmad Salihu Bello¹ & Aniekan O. Akpansung²

Department of Economics, Modibbo Adama University, Yola, Nigeria

¹salihunig@mau.edu.ng

²aniekanakpansung@mau.edu.ng

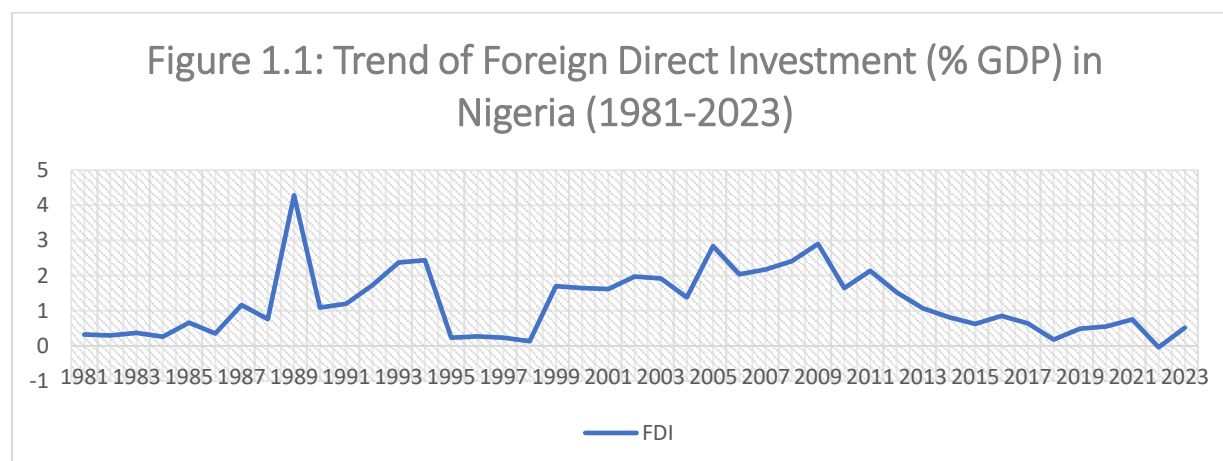
Abstract

It is commonly assumed that foreign direct investment (FDI) is growth-enhancing. Yet existing empirical evidence has left researchers and policymakers puzzled, as these studies do not appear to find a strong relationship between the two variables. This study reexamined both the long-run and short-run impacts of FDI on Nigeria's economic growth and the direction of causality between these variables, using extended time-series data from 1981 to 2023. Pesaran, Shin, and Smith's (2001) Autoregressive Distributive Lag (ARDL) bounds cointegration and Granger causality techniques were used. The study established a long-run cointegrating relationship among the variables and provided supporting evidence of an insignificant positive impact of FDI on economic growth in the long run, with a significantly positive impact in the short run. In addition, one-period-lagged FDI, trade openness, and credit to the private sector significantly and positively affected economic growth in the short run. Although the study found no causality between FDI and economic growth, it provided evidence of unidirectional causality running from the economic growth rate to the real exchange rate at the 1 percent level, and weak one-way causalities running from economic growth to FDI, from FDI to trade openness, and from private-sector credit to trade openness, at the 10 percent level of significance. The findings of the study highlight the need for stronger institutions and better governance not only to attract and retain investors but also to help Nigeria position itself more strategically in the global investment landscape. Among other suggestions, it is recommended that the government adopt reforms to attract more FDI and achieve meaningful outcomes for the country.

Keywords: Foreign direct Investment, Economic growth, Autoregressive Distributive Lag, Granger causality, Error correction model, Nigeria

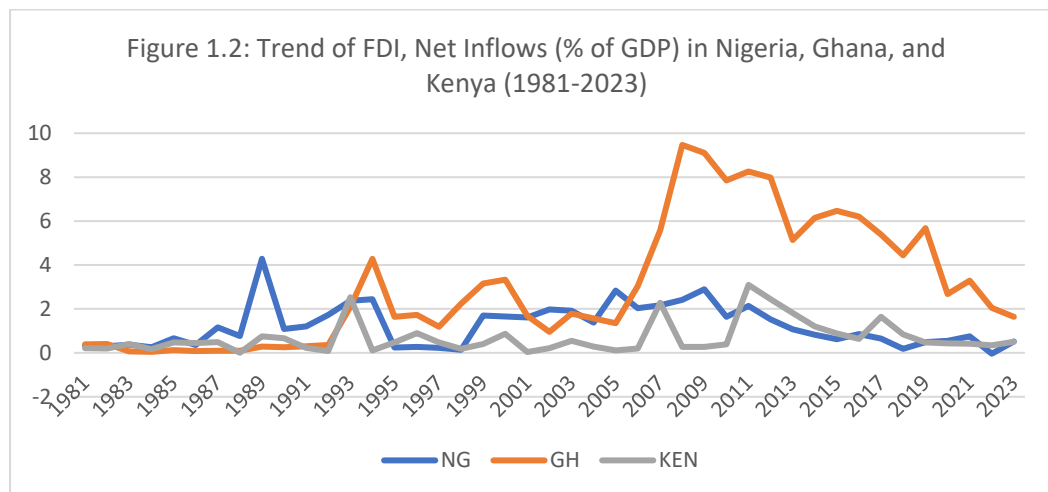
Introduction

Foreign Direct Investment (FDI) is widely regarded as a key driver of economic growth through capital accumulation, technology transfer, and productivity gains, particularly in developing economies. It contributes to economic growth, job creation, and technological advancement in the host country while also fostering international relationships (Podlevska & Podlevskyi, 2023). The Ownership, Location, and Internalization (OLI) framework emphasizes that favorable institutional and macroeconomic conditions are essential for attracting foreign investors. In Nigeria, despite its large market size and abundant resources, FDI inflows have remained volatile and relatively low, especially during the 1980s, due to political instability, military rule, and a weak investment climate. Although the 1986 Structural Adjustment Programme aimed to liberalize the economy, persistent institutional and policy challenges limited its effectiveness in translating FDI inflows into sustainable economic growth. Data from World Development Indicators (2023) show that Nigeria's FDI inflows as a share of GDP were very low and volatile during the 1980s, reflecting political instability, military rule, and a weak investment climate, and that the 1986 Structural Adjustment Programme failed to significantly improve investor confidence.



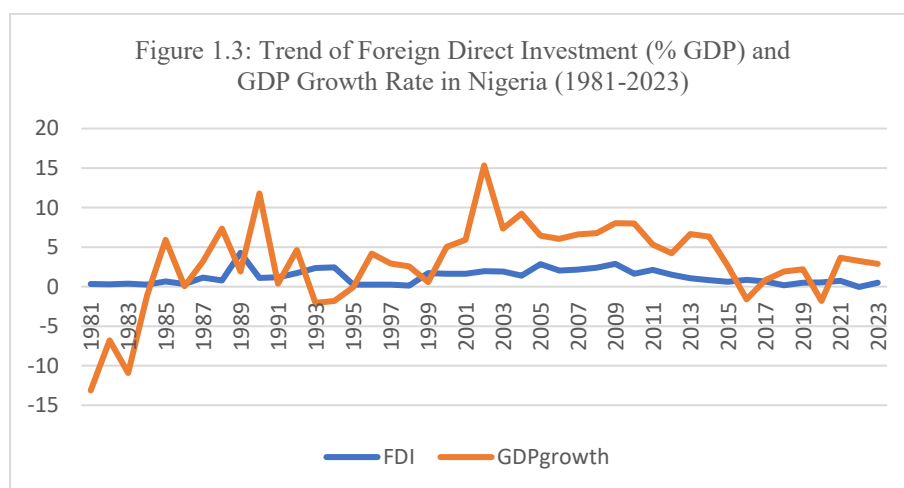
Source: Authors' Construct, data from WDI (2023)

According to Statista (2023), Nigeria's FDI inflows were low between 1972 and 1995 due to restrictive policies, averaging 0.79% of GDP. Peaks occurred in 1989 (4.28%) and during 2001–2010, driven by oil, privatization, and pro-market reforms. After 2010, inflows fell below 1%, reaching –0.04% in 2022, with a slight recovery to 0.51% in 2023. The FDI net inflow (% of GDP) for Nigeria and two other West African countries (Ghana and Kenya) from 1981 to 2023 is shown in Figure 1.2. In Ghana, FDI net inflow (% of GDP) shows a highly volatile but generally upward trend from 1981 to the mid-2000s, peaking at about 2.95% in 2008 before steadily declining to 1.64% in 2023. According to the World Bank collection of development indicators, compiled from officially recognized sources (<https://tradingeconomics.com/>), foreign direct investment, net inflows (% of GDP) in Ghana was reported at 2.13% in 2024. FDI inflows for all three countries weakened after 2020 due to COVID-19 and the global economic slowdown, with Ghana consistently recording higher inflows than Nigeria and Kenya, as depicted in Figure 1.2, especially from 2008 to 2023.



Source: Authors' Construct, data from WDI (2023)

The role of FDI in economic development, particularly in developing countries, has been debated for decades because of ideological differences and the evolving nature of cross-border investment. FDI is critical for emerging economies like Nigeria, providing capital, stimulating business activity, supporting infrastructure development, and reducing unemployment (Egharevba, 2017). Despite its importance, Nigeria struggles to attract sufficient FDI, limiting revenue generation and infrastructure expansion (Danladi & Akomolafe, 2013). FDI flows to developing countries, especially in Africa, remain uneven, highlighting persistent challenges in leveraging foreign investment for growth. Specifically, Figure 1.3 illustrates Nigeria's FDI (% of GDP) and GDP growth trends from 1981 to 2023.



Source: Authors' Construct, data from WDI (2023)

Nigeria's GDP growth has fluctuated significantly, peaking at 15.33% in 2002 and falling to –13.12% in 1981, while FDI inflows reached a high of 4.28% in 1989 and a low of –0.04% in 2022 (Figure 1.3). Recent declines in FDI have been influenced by COVID-19 disruptions and structural challenges, including policy

inconsistency, infrastructure deficits, forex challenges, and a difficult business environment (NESG, 2020), thereby limiting FDI's contribution to growth. FDI inflows contributed very little to GDP (1.22% on average) in Nigeria during the study period. While FDI can accelerate capital formation, productivity, and technology transfer, its effectiveness depends on governance quality, regulatory consistency, and domestic firms' absorptive capacity.

This study reexamined the impact of FDI on Nigeria's economic growth from 1981 to 2023, analyzing short- and long-run effects and the direction of causality. Findings aim to guide policymakers in developing investment-friendly strategies, enhancing private-sector development, and promoting trade-driven growth. Covering 44 years, the study captures key economic transitions, including the Structural Adjustment Programme, the democratic transition, oil-driven cycles, the 2008 global financial crisis, the COVID-19 pandemic, and recent reforms. Using annual data on FDI inflows, GDP growth, domestic capital formation, trade openness, private-sector credit, and the real exchange rate, the study employs time-series analysis using data from the World Bank and the Central Bank of Nigeria.

Meanwhile, the remaining parts of the study are organized as follows: Section 2 presents the theoretical literature and empirical review, while Section 3 describes the data and methodology. The empirical results are analyzed and discussed in Section 4, while Section 5 concludes the study with policy recommendations.

Theoretical literature

Theories of foreign direct investment

Theories of foreign direct investment (FDI) explain why firms invest abroad rather than export or license. Key frameworks include the eclectic paradigm, product life cycle theory, and internalization theory, which emphasize ownership advantages, market size, resource availability, and firm-specific capabilities as drivers of FDI. For brevity, this study explains only the Market Imperfections and Internationalization Theories of FDI. The Market Imperfections Theory explains FDI as a response to market imperfections, including information asymmetry, trade barriers, transaction costs, tax differentials, and uneven resource distribution. Firms invest directly abroad to overcome these inefficiencies, reduce risk, access market-specific information, and gain competitive advantages (Kumar & Pradhan, 2020). Hymer's microeconomic theory of international production further argues that FDI occurs when firm-specific advantages outweigh the additional costs of operating across borders, enabling multinational enterprises to compete profitably in foreign markets (Hymer, 1976).

The internalization theory, on the other hand, explains FDI as a strategy for firms to expand abroad to overcome market imperfections, particularly in intermediate-input and technology markets. Developed by Buckley and Casson (1976) and building on Coase (1937), the theory argues that firms internalize operations to reduce transaction costs, protect proprietary knowledge, and maintain quality control. Market failures arising from government interventions and pricing inefficiencies encourage both horizontal and vertical FDI, depending on whether imperfections occur in intermediate-input or output markets (Buckley & Casson, 2009).

Theories of economic growth

Classical economic theory, rooted in Adam Smith's *Wealth of Nations* (1776), holds that economic growth stems from the efficient use of labor, capital, natural resources, and entrepreneurship, with minimal government intervention and competitive markets guiding resource allocation through the "invisible hand" (Sharipov, 2015). Smith emphasized trade rather than hoarding precious metals as the source of national wealth, arguing that competition is central to sustained growth. The neoclassical growth model, developed by Solow and Swan, explains economic growth through capital accumulation, labor input, and exogenous technological progress, assuming diminishing returns to capital and constant returns to scale (Díaz-Bautista & González-Andrade, 2014). The model predicts convergence in growth rates across countries under free-market conditions and with similar access to technology. However, high population growth may slow per capita income growth by diluting the capital stock, implying that increased investment is necessary for capital deepening and sustained growth (Banton, 2020).

Evsey Domar's (1946) exogenous growth model is one of the earliest formal attempts to explain economic growth mathematically, emphasizing the roles of capital accumulation, labor, and productivity in achieving equilibrium between production capacity and national income. Set within a closed-economy framework, the model assumes balance between aggregate supply and demand, with growth driven by increases in labor input and productivity relative to the capital stock (Szirmai, 2015). In contrast to the Solow–Swan model, endogenous growth theories argue that sustained growth arises from internal factors such as human capital accumulation, innovation, and knowledge spillovers, which help explain persistent income differences across countries (Knight, 1993; Mankiw *et al.*, 1992; Opeyemi, 2020).

Empirical literature

Empirical evidence on the relationship between foreign direct investment (FDI) and economic growth remains inconclusive, with findings varying across countries, time periods, and methodologies. While early studies largely reported positive growth effects of FDI through capital accumulation and technology transfer, recent research emphasizes that these benefits are highly context-dependent. Host-country absorptive capacity—particularly institutional quality, human capital, and financial development—has emerged as a key determinant of whether FDI stimulates growth (Baiaashvili & Gattini, 2020; Chila & Rojas-Velásquez, 2024). Recent multi-country and panel studies yield mixed results. Le *et al.* (2024) found that FDI significantly promotes economic growth in middle-income countries, particularly when accompanied by improvements in total factor productivity. Similarly, Asafo-Agyei and Kodongo (2022) reported a nonlinear yet positive contribution of FDI to growth across Sub-Saharan Africa. In contrast, Demir and Lee (2022) showed that FDI does not uniformly enhance growth across all income groups, with stronger effects in emerging economies than in low-income countries.

Country-specific evidence, particularly for Nigeria, also remains divided. Ogwuma *et al.* (2025) documented a statistically significant negative impact of net FDI on Nigeria's economic growth, suggesting weak absorptive capacity and structural constraints. Likewise, Binuyo *et al.* (2022) found that FDI exerted a negative and insignificant effect on growth, attributing this outcome to exchange rate volatility. Conversely, recent Nigerian studies continue to report positive and significant effects of FDI when supported by complementary macroeconomic conditions and policy stability (Lawal & Olusegun, 2023). Recent literature suggests that FDI does not automatically generate economic growth. Rather, its impact depends critically on host-country characteristics, including institutional quality, macroeconomic stability, human capital development, and productive-sector diversification (Udeh *et al.*, 2025). This underscores the need for supportive domestic policies to maximize the growth-enhancing potential of foreign investment.

Empirical studies on the causal relationship between foreign direct investment (FDI) and economic growth also yield mixed results, with evidence of unidirectional, bidirectional, and non-directional linkages across regions and time periods (Sunde, 2017; Mahembe, 2014; Mahembe & Odhiambo, 2016). While many studies report a positive causal connection in the short or long run, or both, others find no significant relationship. For instance, Frimpong and Oteng-Abayie (2006) found no causal link between FDI and economic growth in Ghana, whereas Afolabi and Bakar (2016) and Sunde (2017) identified bidirectional causality in Nigeria and South Africa. Similarly, Srinivasan *et al.* (2011) and Pradhan *et al.* (2016) observed bidirectional linkages in Asian and European economies, while Onafowora and Owoye (2019) reported unidirectional causality in the Americas.

Country-specific studies continue to highlight the diversity of causal patterns. Hossain and Hossain (2023) found in China that economic growth drives FDI inflows rather than the other way around, suggesting that a policy focus on growth may indirectly attract foreign investment. In Namibia, Owusu (2020) documented bidirectional causality in both the short and long run, a finding corroborated across 25 African nations by Akadiri *et al.* (2019). Conversely, some African studies report unidirectional causality: Mahembe and Odhiambo (2016) for middle-income SADC countries ($GDP \rightarrow FDI$), and Sunde (2017) for South Africa ($FDI \rightarrow GDP$). Non-directionality has also been observed in certain contexts, including least developed African countries (Tekin, 2012), Tunisia (Belloumi, 2014), Haiti (Naguib, 2012; Chen-Chang Lo & Chi, 2013), and Singapore (Akalpler & Adil, 2017). Nupehewa *et al.* (2022), analyzing 117 countries from 2010–2020, found bidirectional causality globally and in Asia, unidirectional causality in the Americas, and no significant causality in Europe, Oceania, the Mediterranean, and Africa. Regional analyses also suggest that causality patterns vary by country income levels and market development. In the Caribbean, Onafowora and Owoye (2019) reported unidirectional causality from GDP to FDI in Barbados and the Dominican Republic, and from FDI to GDP in Jamaica and Trinidad and Tobago.

Methodology

The data required for the investigation include: Gross domestic product growth rate (dependent variable) and the following independent variables: index of trade openness, foreign direct investment, domestic investment, credit to the private sector, and real exchange rate. The stationarity of the data was assessed using the Augmented Dickey-Fuller and Phillips-Perron tests, and long-run relationships were examined using the ARDL bounds cointegration approach. Short- and long-run dynamics were estimated using the ARDL–ECM framework, and diagnostic tests were conducted to ensure model stability and robustness.

Model specification and estimation technique

This study adopts a time-series research design to examine the impact of foreign direct investment on economic growth in Nigeria. The paper uses annual data from 1981 to 2023, obtained from the World Bank Development Indicators (2023) and the Central Bank of Nigeria Statistical Bulletin (2023). The model specified

for this study is a modified version of Wondimu (2023) and Andrew *et al.* (2022). The modified model is expressed as

$$GDPGR = f(FDIG, INVG, OPEN, CPSG, RER) \quad (3.1)$$

The econometric form of the model is expressed as:

$$GDPGR_t = \alpha + \beta_1 FDIG_t + \beta_2 INVG_t + \beta_3 OPEN_t + \beta_4 CPSG_t + \beta_5 RER_t + \varepsilon_t \quad (3.2)$$

Where:

GDPGR = Gross domestic product growth rate, a proxy for economic growth;

FDIG = Foreign direct investment, net inflows (% of GDP);

INVG = Domestic investment/capital (% of GDP);

OPEN = Trade openness (% of GDP);

CPSG = Credit to private sector (% of GDP); and

RER = Log of Real exchange rate. ε_t is the error term, t represents time in years.

The basic estimating strategy adopted for this study follows the autoregressive distributed lag (ARDL) approach developed by Pesaran, Shin, and Smith (2001). The choice of the ARDL approach to cointegration has several advantages over conventional approaches developed by Engel and Granger (1987), Johansen (1988), and expanded by Johansen and Juselius (1990). First, the ARDL method does not require pre-testing for unit roots because it can be used when dealing with a mixture of $I(0)$ and $I(1)$ series. Second, the method accommodates variables with different optimal lag lengths. Third, unlike other cointegration methods that require specifying system equations, ARDL uses a single reduced-form equation. Therefore, the ARDL representation of the relationship between the variables in the model is given as:

$$\begin{aligned} \Delta GDPGR_t = & \alpha_0 + \beta_1 GDPGR_{t-1} + \beta_2 FDIG_{t-1} + \beta_3 OPEN_{t-1} + \beta_4 CPSG_{t-1} + \beta_5 RER_{t-1} \\ & + \sum_{i=1}^{k_1} \gamma_1 \Delta GDPGR_{t-i} + \sum_{i=0}^{k_2} \gamma_2 \Delta FDIG_{t-i} + \sum_{i=0}^{k_3} \gamma_3 \Delta OPEN_{t-i} \\ & + \sum_{i=0}^{k_4} \gamma_4 \Delta CPSG_{t-i} + \sum_{i=0}^{k_5} \gamma_5 \Delta RER_{t-i} + \mu_t \dots \dots \dots (3.3) \end{aligned}$$

Where, Δ is the first-difference operator, ε_t is the error term with zero mean and constant variance-covariance. The optimal lag lengths ($k_1, \dots, k_5$) were selected based Akaike information criterion (AIC). The parameters in the summation signs ($\gamma_1, \dots, \gamma_5$) are the short-run of coefficients of the ARDL model, while the long-run multipliers are represented by parameters.

The error correction version of the ARDL model is specified as follows:

$$\begin{aligned} \Delta GDPGR_t = & \delta_0 + \sum_{i=1}^{k_1} \gamma_1 \Delta GDPGR_{t-i} + \sum_{i=0}^{k_2} \gamma_2 \Delta FDIG_{t-i} + \sum_{i=0}^{k_3} \gamma_3 \Delta OPEN_{t-i} + \sum_{i=0}^{k_4} \gamma_4 \Delta CPSG_{t-i} \\ & + \sum_{i=0}^{k_5} \gamma_5 \Delta RER_{t-i} + \Phi ECT_{t-1} + \mu_t \quad (3.4) \end{aligned}$$

In equation (3.4), Φ is the speed of adjustment, and is expected to be negative, less than one, and significant. A joint significance test that implies no co-integration hypothesis ($H_0: \gamma_1 = \gamma_2 = \gamma_3 = \gamma_4 = \gamma_5 = 0$) was tested against the alternative hypothesis ($H_1: \gamma_1 \neq \gamma_2 \neq \gamma_3 \neq \gamma_4 \neq \gamma_5 \neq 0$).

Two sets of critical values are reported in Pesaran *et al.* (2001). The two sets correspond to the null hypothesis that all variables are $I(0)$ or that they are mutually cointegrated. The first assumes all variables are $I(0)$,

and the second assumes they are all I(1). If the computed F-statistic exceeds the upper critical bound, the null hypothesis is rejected. If the F-statistic falls between the bounds, the test is inconclusive. Lastly, if the F-statistic is below the lower critical bound, it implies no cointegration.

Results and discussions

Descriptive statistics analysis

The characteristics of the data used in the study are described in this section. These include the mean, minimum, maximum, standard deviation, kurtosis, and skewness.

Table 1. Summary of Descriptive Statistics

	GDPGR	FDIG	INVG	OPEN	CPSG	RER
Mean	3.043	1.221	35.058	29.141	11.912	4.789
Median	3.252	1.070	32.232	30.492	8.109	4.619
Maximum	15.329	4.282	89.386	55.021	22.755	6.286
Minimum	-13.128	-0.040	14.169	7.523	5.806	3.908
Std. Dev.	5.256	0.946	18.799	11.157	5.770	0.582
Skewness	-0.840	0.947	1.121	-0.062	0.575	1.039
Kurtosis	4.847	3.761	4.043	2.443	1.580	3.300

Note: GDPGR = Gross domestic product growth rate; FDIG = Foreign direct investment, net inflows (% GDP); INVG = Domestic capital (% GDP); OPEN = Trade openness/liberalisation (% GDP); CPSG = Credit to private sector (% GDP); RER = Logged Real exchange rate.

Source: Authors' computation using EViews 10.

During the study period (1981–2023), Nigeria recorded an average GDP growth rate of 3.04%, with a peak of 15.33% in 2002 and a sharp low of -13.12% in 1981. FDI inflows were relatively weak, averaging 1.22% of GDP, reaching a high of 4.28% in 1989 and falling to -0.04% in 2022—its worst decline in recent years. The 2022 decline reflects the lingering effects of COVID-19 disruptions and long-standing structural constraints, including policy inconsistency, foreign exchange instability, infrastructure deficits, and an unfriendly business environment (NESG, 2020). Overall, FDI contributed minimally to Nigeria's GDP during the period. Domestic investment averaged 35.05% of GDP, with a high of 89.39% in 1981 and a low of 14.17% in 2013. Trade openness averaged 29.14%, peaking at 55.02% in 1995 and dropping to 7.52% in 1986. Credit to the private sector remained low, averaging 11.9% of GDP, fluctuating between 5.8% in 1996 and 22.75% in 2009. The real exchange rate averaged ₦146.31 per US dollar, reaching an all-time high of ₦536.91 in 1984 and a low of ₦49.78 in 1992.

The descriptive statistics indicate that domestic capital was the most volatile variable, as reflected in its wide dispersion from the mean. GDP growth and trade openness were negatively skewed, suggesting a tendency toward sudden declines, whereas the other variables were positively skewed with long right tails. Kurtosis values above 3 for GDP growth, FDI, domestic capital, and the real exchange rate indicate highly peaked distributions, whereas trade openness and credit to the private sector had flatter distributions with kurtosis below 3.

Correlation analysis

Table 2 presents the correlation matrix for the variables. According to Gujarati (2003), correlation coefficients above 80% between two variables are likely to indicate multicollinearity. Thus, based on Table 4.2, no variables have correlation coefficients greater than 0.8, indicating no multicollinearity issues. Statistically, the closer the correlation coefficient is to -1 or +1, the stronger the relationship.

Table 2: Correlation matrix

	GDPGR	FDIG	INVG	OPEN	CPSG	RER
GDPGR	1.000					
FDIG	0.354	1.000				
INVG	-0.614	-0.205	1.000			
OPEN	0.435	0.276	-0.432	1.000		
CPSG	0.128	-0.056	-0.673	-0.075	1.000	
RER	-0.501	-0.606	0.479	-0.473	-0.156	1.000

Note: RER is logged

Source: Authors' computation using EViews 10.

The pairwise correlation results indicate that FDI inflows (FDIG), trade openness (OPEN), and credit to the private sector (CPSG) are positively but weakly correlated with GDP growth, consistent with theoretical

expectations. The real exchange rate (RER) also aligns with theory, showing a negative correlation with GDP growth, though the relationship is modest (-0.501). In contrast, domestic capital (INVG) shows a fairly strong negative correlation (-0.614) with GDP growth, which contradicts the expected positive association.

Unit root test results

In time series analysis, stationarity is crucial because the statistical properties of a variable must remain constant over time to avoid misleading regression results. Following Pesaran *et al.* (2001), the ARDL approach requires variables to be integrated at $I(0)$ or $I(1)$, but not $I(2)$. Using the Augmented Dickey–Fuller (ADF) and Phillips–Perron (PP) tests, the study found that GDP growth, foreign direct investment, and domestic capital were stationary at levels, whereas trade openness and credit to the private sector became stationary after first differencing. The real exchange rate was also stationary at first difference according to the PP test. These results confirm that all variables satisfy the integration conditions for ARDL estimation.

Table 3: Unit root test results

Variables	Test	ADF	PP	Status
GDPGR	At level	-3.244762** [0.0244]	-4.387741*** [0.0011]	I(0)
FDIG	At level	-3.821359*** [0.0055]	-3.777299*** [0.0062]	I(0)
INVG	At level	-3.199325** [0.0270]	-3.288263** [0.0218]	I(0)
OPEN	At level	-2.573764 [0.1063]	-2.355241 [0.1603]	-
OPEN	At first Difference	-8.672552*** [0.0000]	-9.833171*** [0.0000]	I(1)
CPSG	At level	-0.703057 [0.8350]	-0.290708 [0.9117]	-
CPSG	At first Difference	-5.866151*** [0.0000]	-5.845494*** [0.0000]	I(1)
LOG(RER)	At level	-3.036268** [0.0398]	-	I(0)
LOG(RER)	At first difference	-	-4.791983*** [0.0003]	I(1)

Note: *, **, *** are level of significance at 10%, 5% and 1%, respectively. P-values are reported in parentheses [].

Source: Authors' computation using EViews 10.

Empirical results

Optimal lag length and model selection criteria were determined before conducting the bounds cointegration test to reduce residual correlation. The results of the information criteria are presented in Table 4.

Table 4: Lag order selection criteria

Endogenous variables: GDPGR FDIG INVG OPEN CPSG LOG(RER)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-590.4944	NA	361319.6	29.82472	30.07805	29.91631
1	-481.3102	180.1539	9509.892	26.16551	27.93883*	26.80669*
2	-441.8714	53.24237*	9072.817*	25.99357*	29.28689	27.18433
3	-417.2464	25.85621	22768.88	26.56232	31.37563	28.30266

Note: * indicates lag order selected by the criterion; LR: sequential modified LR test statistic (each test at 5% level); FPE: Final prediction error; AIC: Akaike information criterion; SC: Schwarz information criterion; HQ: Hannan-Quinn information criterion.

Based on the results of the information criteria, a lag of 2 is the most appropriate. This is because it yields the lowest values of AIC (25.99357), LR (53.24237), and FPE (9072.817) among all models. The Akaike Information Criterion (AIC) and the Schwarz Information Criterion (SIC) are the most commonly used criteria to assess how well the models fit the given data. Thus, the specified ARDL model was estimated using a lag of 2 based on the Akaike Information Criterion. The selected model, ARDL(1, 2, 0, 2, 2, 0), was arrived at after evaluating 243 models and making 41 adjustments.

Co-integration analysis

The cointegration test is fundamental for assessing whether a long-run relationship exists among the study variables. The study used the Pesaran *et al.* (2001) bounds cointegration test under the null hypothesis of no cointegration. As shown in Table 5, the F-statistic of 4.029 exceeded both the upper and lower critical values at

the 5 percent level of significance, thus rejecting the null hypothesis. As a result, the cointegration test reveals a long-term relationship between the variables employed in the study. Based on these findings, it was necessary to evaluate the long-run and short-run relationships between the study variables.

Table 5: Bounds test result

Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	4.029	10%	2.08	3
k	5	5%	2.39	3.38
		1%	3.06	4.15

Source: Authors' computation using EViews 10.

Diagnostic tests

The results of the diagnostic tests are presented in Table 4.6. They include the Breusch-Godfrey Serial Correlation LM test, the Breusch-Pagan-Godfrey Heteroskedasticity test, the Jarque-Bera normality test, and the Ramsey RESET test.

Table 6: Diagnostics Test Results

<i>Breusch-Godfrey Serial Correlation LM Test:</i>			
F-statistic	0.103557	Prob. F(2,26)	0.9020
Obs*R-squared	0.324020	Prob. Chi-Square(2)	0.8504
<i>Heteroskedasticity Test: Breusch-Pagan-Godfrey</i>			
F-statistic	0.9889	Prob. F(2,28)	0.4828
Obs*R-squared	12.2045	Prob. Chi-Square(12)	0.4294
<i>Jarque Berra Normality Test</i>			
F-statistic	1.7729	NA	0.4121
<i>Ramsey RESET Test</i>			
F-statistic	0.5600	Df (1, 27)	0.4607

Source: Authors' computation, using EViews 10.

The diagnostic test results reported in Table 7 indicate that the model passed all analytical tests, with no evidence of serial correlation or autoregressive conditional heteroscedasticity. The respective p-values were greater than 0.05, so the null hypotheses were not rejected. The Jarque-Bera test statistic confirmed the normality of the variables, as the p-value (0.412) was greater than the 0.05 significance level. Therefore, the null hypothesis was rejected. This implies that the model's error term was normally distributed.

To ensure the stability of the model, the Cumulative Sum (CUSUM) and CUSUM of squares tests for the long-run relationship equation were conducted. It was observed that, since the cumulative sum and the cumulative squares of the residuals lie between the two critical lines, as shown in Figures 4.1 and 4.2, respectively, the parameters of the model are stable.

Figure 4.1: CUSUM Stability Test

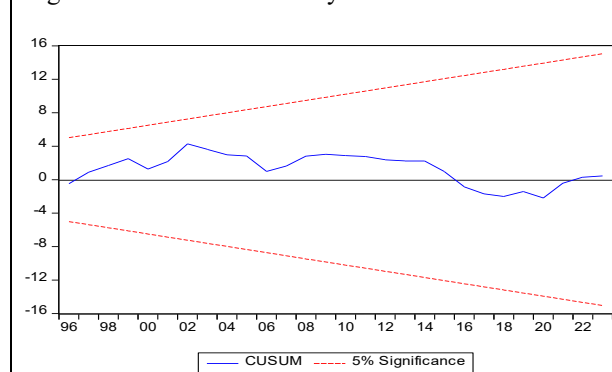
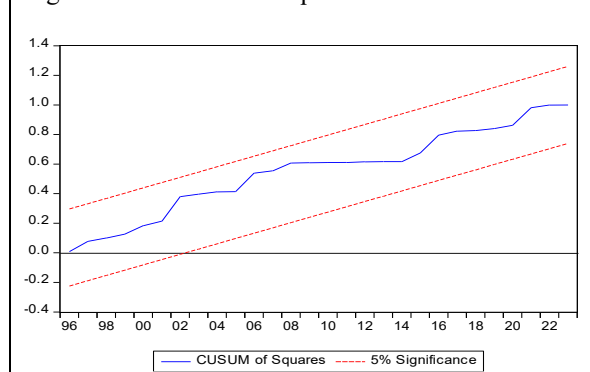


Figure 4.2: CUSUM of Squares Test



Source: Authors' compilation using EViews 10.

Long-run impact of foreign direct investment on economic growth

After establishing a long-run cointegration relationship and confirming that OLS assumptions were not violated (Table 4.6), the ARDL(1, 2, 0, 2, 2, 0) model was selected using the Akaike Information Criterion. The

long-run coefficients in Table 4.7 indicate that foreign direct investment has a positive, though statistically insignificant, effect on Nigeria's economic growth. A one-percentage-point increase in FDI is associated with a 0.41% increase in GDP growth. This positive long-run linkage aligns with earlier empirical findings by Blomström *et al.* (1994), Borensztein *et al.* (1998), Blomström and Kokko (2002), Roman and Padureanu (2012), Olokoyo (2014), and Sokang (2015), who similarly attributed growth-enhancing effects of FDI to adequate foreign capital inflows capable of stimulating productive capacity.

Table 8: Long run coefficients for ARDL(1, 2, 0, 2, 2, 0)

Dependent Variable: GDPGR

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDIG	0.411	1.530003	0.268831	0.7900
INVG	-0.378***	0.132999	-2.839656	0.0083
OPEN	-0.110	0.122363	-0.901207	0.3752
CPSG	-0.745**	0.325052	-2.290878	0.0297
LOG(RER)	0.857109	2.205451	0.388632	0.7005
C	23.42477	14.55364	1.609547	0.1187

Note: **, *** significant at 5% and 1%

The long-run results indicate that FDI has a positive but statistically insignificant effect on Nigeria's economic growth, aligning with Agunbiade (2024) but contrasting with studies reporting negative or insignificant effects in other developing regions. However, this finding contradicts Mathebula *et al.* (2024), who found a negative long-run relationship between FDI and economic growth in South Africa from 1985 to 2019. Domestic investment significantly reduced growth, suggesting inefficiencies and high financing costs. Trade openness and private sector credit also showed negative long-run effects, with only credit being statistically significant. The real exchange rate exhibited a positive but statistically insignificant association with economic growth.

Impact of FDI on economic growth in the short run

The short-run results show that contemporaneous FDI has a negative but statistically insignificant effect on economic growth, whereas its one-period lag has a positive and statistically significant impact. A 1% increase in lagged FDI raises Nigeria's economic growth by about 1.35%, indicating short-run spillover effects despite possible initial adjustment costs. In the short run, trade openness has an insignificant contemporaneous effect on economic growth but a positive and highly significant lagged effect, with a 1% increase raising growth by approximately 0.19%. Credit to the private sector shows mixed effects, as its immediate impact is negative while its lagged effect is positive and significant, indicating delayed growth benefits from financial deepening. The negative and significant error-correction term confirms rapid adjustment to long-run equilibrium, and diagnostic tests indicate a well-specified and stable model.

Table 8: Result of Short run Impact of FDI on Economic Growth

Dependent Variable: D(GDPGR)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(FDIG)	-0.074905	0.590010	-0.126955	0.8999
D(FDIG(-1))	1.352799**	0.577997	2.340494	0.0266
D(OPEN)	0.048724	0.068360	0.712752	0.4819
D(OPEN(-1))	0.189605***	0.068553	2.765803	0.0099
D(CPSG)	-0.528822**	0.227193	-2.327629	0.0274
D(CPSG(-1))	0.637778**	0.249151	2.559806	0.0162
CointEq(-1)*	-0.668815***	0.114280	-5.852406	0.0000

R-squared = 0.63 Adjusted R-squared = 0.57 D-W stat = 1.87

F-statistic = 3.54; Prob(F-statistic) = 0.003.

* p-value incompatible with t-Bounds distribution. ** and *** represent significance levels at 5% and 10%, respectively.

Source: Authors' computation using EViews 10.

Granger causality test result

The Granger causality test results in Table 4.9 show unidirectional causality running from the economic growth rate to the real exchange rate at the 1 percent level. They also indicate weak one-way causality running from GDPGR to FDIG, from FDIG to OPEN, and from CPSG to OPEN at the 10 percent level of significance.

Table 9: Pairwise Granger Causality Tests

Sample: 1981 2023

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
FDIG does not Granger-cause GDPGR	41	2.13018	0.1336
GDPGR does not Granger-cause FDIG		2.57793	0.0899
LOG(RER) does not Granger Cause GDPGR	41	0.10961	0.8965
GDPGR does not Granger-cause LOG(RER)		7.86565	0.0015
OPEN does not Granger-cause FDIG	41	1.05826	0.3576
FDIG does not Granger-cause OPEN		3.08779	0.0579
CPSG does not Granger-cause OPEN	41	2.85013	0.0709
OPEN does not Granger-cause CPSG		0.49340	0.6146

Source: Authors' computation using EViews 10.

Empirical evidence on the FDI–growth nexus remains mixed, with studies reporting unidirectional causality from GDP to FDI, from FDI to GDP, or bidirectional causality across different countries. Contrary to these findings, this study finds no causal relationship between FDI and economic growth in Nigeria, consistent with evidence of non-directional causality reported for several developed and developing economies, such as the study by Pandya and Sisombat (2017), in which FDI's role in an economic expansion is questionable in developed countries such as Australia. Golitsis and Avdiu (2018) and Nath (2009) also attest to the non-directional relationship between economic growth and FDI in Europe. This suggests that FDI does not automatically translate into measurable growth effects, possibly due to weak transmission mechanisms and limited spillover effects in the host economy.

Conclusion

The findings of this study provide supporting evidence on the insignificant positive impact of FDI on economic growth in the long run and a lagged significant positive impact in the short run. In addition, domestic investment and credit to the private sector had a significant negative impact in the long run. One-period-lagged FDI, trade openness, and credit to the private sector had a significant positive impact on economic growth in the short run. The study also provides evidence of no causal relationship between FDI and economic growth, but found a unidirectional causality running from economic growth rate to real exchange rate at a one percent level. The study contributes to the literature on the relationship between FDI and economic growth and highlights the importance of understanding the direction of causality between them. Overall, these findings have important implications for policymakers seeking to promote economic growth and attract FDI to Nigeria or any other developing country.

Policy recommendations

Based on the findings of the study, the following policy recommendations have been suggested in order to maximize the net benefit resulting from the inflows of foreign direct investment and enhance economic growth in Nigeria:

- i. i). The Nigerian government should implement more conducive policies to attract foreign direct investment into the country by providing subsidies and a stable political environment.
- ii. ii) The Government Agencies concerned (such as Ministries of Trade and External Affairs) should identify and minimize the challenges of foreign direct investment to attract more direct investments and ensure a positive and significant effect of foreign direct investment on the country's economic growth both in the short run and long run.
- iii. iii) There is a need to expand infrastructural facilities in the country so that there would be free movement of investors to the remote and marginalized areas to further expand investment activities that result in higher economic growth.
- iv. iv) Restrictive trade policies should be relaxed to help increase the degree of trade openness for enhanced mutually beneficial trade arrangements in the country. The more open the Nigerian economy, the higher the FDI inflows and the greater the eventual growth of the economy.

References

- Afolabi, A., & Bakar, N. (2016). The causal relationship between foreign direct investment and economic growth in Nigeria. *Journal of Economics and Development Studies*, 4(2), 45–59. https://jedsnet.com/journals/jeds/Vol_4_No_2_June_2016/5.pdf
- Agunbiade, O. M. (2024). Impact of foreign direct investment on economic growth in Nigeria: Evidence from the ARDL approach. *African Economic Review*, 12(1), 23–41. <https://www.africaneconomicreview.org/article/view/2024fdi>
- Akadiri, A. C., Gungor, H., Akadiri, S. S., & Bamidele-Sadiq, M. (2019). Is the causal relation between foreign direct investment, trade, and economic growth complementary or substitutive? The case of African countries. *Journal of Public Affairs*, 20(2), Article e2023. <https://doi.org/10.1002/pa.2023>
- Akalpler, E., & Adil, H. (2017). The impact of foreign direct investment on economic growth in Singapore between 1980 and 2014. *Eurasian Economic Review*, 7(3), 435–450. <https://doi.org/10.1007/s40822-017-0071-3>
- Alam, M. M., & Shah, M. (2013). Determinants of foreign direct investment in developing countries: A comparative analysis. *International Journal of Economics and Finance*, 5(12), 45–57. <https://doi.org/10.5539/ijef.v5n12p45>
- Amah, K. O., & Omodero, C. O. (2017). Relational analysis of the effect of federation accounts and federal government retained revenue on Nigerian economic growth (1981–2015). *Developing Country Studies*, 7(3), 104–108.
- Asafo-Agyei, F., & Kodongo, O. (2022). Foreign direct investment and economic growth in Sub-Saharan Africa: Nonlinear effects. *Economic Change and Restructuring*, 55, 321–344. <https://doi.org/10.1007/s10644-020-09307-2>
- Baiashvili, N., & Gattini, L. (2020). Impact of foreign direct investment on economic growth: The role of income levels. *Journal of International Business Studies*, 51(7), 1123–1142. <https://doi.org/10.1057/s41267-019-00269-0>
- Banton, R. (2020). Economic growth and capital accumulation in the Solow–Swan model. *Journal of Macroeconomics*, 62, Article 103118. <https://doi.org/10.1016/j.jmacro.2019.103118>
- Belloumi, M. (2014). The causal relationship between foreign direct investment and economic growth in Tunisia. *Journal of Economics and International Finance*, 6(3), 60–69. <https://doi.org/10.5897/JEIF2013.0542>
- Binuyo, B., Ayotunde, R., Adesuyi, O., & Ebere, C. (2021). Effect of foreign direct investment and exchange rate on GDP in Nigeria. *International Journal of Humanities, Arts and Social Sciences*, 8(2). <https://doi.org/10.20469/ijhss.8.20004-2>
- Blomström, M., & Kokko, A. (2002). *The economics of foreign direct investment incentives* (NBER Working Paper No. 8084). National Bureau of Economic Research. <https://doi.org/10.3386/w8084>
- Blomström, M., Lipsey, R. E., & Zejan, M. (1994). *What explains developing country growth?* (NBER Working Paper No. 4132). National Bureau of Economic Research. <https://doi.org/10.3386/w4132>
- Borensztein, E., De Gregorio, J., & Lee, J. W. (1998). How does 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)
- Buckley, P. J., & Casson, M. (1976). *The future of the multinational enterprise*. Macmillan.
- Buckley, P. J., & Casson, M. (2009). The internalisation theory of the multinational enterprise: A review of the progress of a research agenda after 30 years. *Journal of International Business Studies*, 40(9), 1563–1580. <https://doi.org/10.1057/jibs.2009.49>

- Chen-Chang, L. Y., Chi, T. L., & Joseph, D. J. (2013). Foreign direct investment inflows in Haiti: Its determinants and impact on economic growth. *Business Management Dynamics*, 2(9), 36–50.
- Chila, B. Q., & Rojas-Velásquez, L. (2024). Foreign direct investment and economic growth in the Pacific Alliance countries. *Revista Finanzas y Política Económica*, 16(2), 519–545.
- Coase, R. H. (1937). The nature of the firm. *Economica*, 4(16), 386–405. <https://doi.org/10.1111/j.1468-0335.1937.tb00002.x>
- Danladi, J., & Akomolafe, T. (2013). Foreign direct investment and economic growth in Nigeria. *African Journal of Economic Review*, 1(2), 56–72. <https://ajer.africa/index.php/ajer/article/view/13>
- Demir, F., & Lee, S. (2022). Foreign direct investment, capital accumulation, and growth: The rise of the Emerging South. *International Review of Economics & Finance*, 80, 779–794. <https://doi.org/10.1016/j.iref.2022.02.017>
- Dibia, N., & Onwuchekwa, J. (2019). Measuring economic growth in developing economies. *International Journal of Economics and Financial Issues*, 9(3), 150–160. <https://www.econjournals.com/index.php/ijefi/article/view/7856>
- Díaz-Bautista, A., & González-Andrade, J. (2014). Solow–Swan growth model and applications. *Economic Modelling*, 38, 112–123. <https://doi.org/10.1016/j.econmod.2014.01.009>
- Dunning, J. H. (1980). Toward an eclectic theory of international production: Some empirical tests. *Journal of International Business Studies*, 11(1), 9–31. <https://doi.org/10.1057/palgrave.jibs.8490593>
- Egharevba, O. A. (2017). Foreign direct investment and economic growth in Nigeria. *International Journal of Economics, Commerce and Management*, 5(3), 45–66. <https://ijecm.co.uk/wp-content/uploads/2017/03/533.pdf>
- Frimpong, J. M., & Oteng-Abayie, E. F. (2006). *Bivariate causality analysis between FDI inflows and economic growth in Ghana* (MPRA Paper No. 351). Munich Personal RePEc Archive.
- Golitsis, P., Avdiu, K., & Szamosi, L. T. (2018). Remittances and FDI effects on economic growth: A VECM and GIRFs analysis for Albania. *Journal of East-West Business*, 24(3), 188–211. <https://doi.org/10.1080/10669868.2018.1435432>
- Hossain, M. K., & Hossain, M. S. (2023). Causal interaction between foreign direct investment inflows and China's economic growth. *Sustainability*, 15, Article 7994. <https://doi.org/10.3390/su15107994>
- Hymer, S. H. (1976). *The international operations of national firms: A study of direct foreign investment*. MIT Press.
- Iyer, S., & Rambaldi, A. (2009). Causality between foreign direct investment and economic growth in Australia. *Applied Economics*, 41(5), 603–612. <https://doi.org/10.1080/00036840601007317>
- Kang, Y., & Jiang, F. (2012). Internalization theory and foreign direct investment. *Journal of World Business*, 47(4), 534–546. <https://doi.org/10.1016/j.jwb.2011.09.006>
- Knight, M. D. (1993). *Testing the neoclassical theory of economic growth: A panel data approach*. International Monetary Fund. <https://doi.org/10.5089/9781451973259.024.A002>
- Kromtit, M., Okafor, I., & Oduro, D. (2017). Understanding GDP: Nominal vs. real GDP. *Journal of Economic Perspectives*, 31(2), 70–82. <https://doi.org/10.1257/jep.31.2.70>

- Kumar, N., & Pradhan, J. P. (2020). The impact of foreign direct investment on economic growth: Evidence from developing countries. *Journal of Development Economics*, 146, 102117. <https://doi.org/10.1016/j.jdeveco.2020.102117>
- Lawal, A., & Olusegun, O. (2023). Impact of foreign direct investment on Nigeria's economic growth. *African Development Review*, 35(1), 67–85. <https://doi.org/10.1111/1467-8268.12605>
- Le, H. T. P., Pham, H., Do, N. T. T., & Duong, K. D. (2024). Foreign direct investment, total factor productivity, and economic growth: Evidence from middle-income countries. *Humanities and Social Sciences Communications*, 11, Article 1388. <https://doi.org/10.1057/s41599-024-03462-y>
- Mahembe, E. (2014). Foreign direct investment and economic growth: A theoretical framework. *Journal of Governance and Regulation*, 3(2), 63–70. https://doi.org/10.22495/jgr_v3_i2_p6
- Mahembe, E., & Odhiambo, N. M. (2016). Does foreign direct investment cause economic growth? A dynamic panel data analysis for SADC countries. *International Journal of Emerging Markets*, 11(3), 316–332.
- Malefane, P., & Camarero, M. (2020). Trade openness, foreign direct investment and economic growth in Africa. *Journal of African Economies*, 29(3), 267–286. <https://doi.org/10.1093/jae/ejz036>
- Mankiw, N. G., Romer, D., & Weil, D. N. (1992). A contribution to the empirics of economic growth. *Quarterly Journal of Economics*, 107(2), 407–437. <https://doi.org/10.2307/2118477>
- Mathebula, R. S., Dagume, M. A., & Khangale, A. R. (2024). The impact of foreign direct investment on economic growth: Evidence for South Africa. *Journal of Smart Economic Growth*, 9(1), 117–148.
- Mladen, N. (2015). Economic growth and its measurement: The role of GDP. *Economic Theory and Policy*, 28(3), 112–126. <https://doi.org/10.1111/etp.12145>
- Naguib, R. I. (2012). The effects of privatisation and foreign direct investment on economic growth in Argentina. *The Journal of International Trade & Economic Development*, 21(1), 51–82. <https://doi.org/10.1080/09638199.2012.643014>
- Nath, H. K. (2009). Trade, foreign direct investment, and growth: Evidence from transition economies. *Comparative Economic Studies*, 51(1), 20–50. <https://doi.org/10.1057/ces.2008.20>
- Nigerian Economic Summit Group. (2020). *Nigeria economic outlook 2020*. <https://nesgroup.org/reports/nigeria-economic-outlook-2020>
- Nupehewa, S., Liyanage, S., Polkotuwa, D., Thiyagarajah, M., Jayathilaka, R., & Lokeshwara, A. (2022). More than just investment: Causality analysis between foreign direct investment and economic growth. *PLoS ONE*, 17(11), Article e0276621.
- Ogwuma, M. M., Nwachukwu, C. P., Avoaja, P. C., & Nwabeke, E. C. (2025). Foreign direct investment and economic growth of an emerging economy: Implications for Nigeria (2009–2023). *African Journal of Accounting and Financial Research*, 8(1), 33–50.
- Olokoyo, F. O. (2014). Foreign direct investment and economic growth: A case of Nigeria. *Bharati Journal of Management Research*, 4, 1–20.
- Onafowora, O., & Owoye, O. (2019). Foreign direct investment and economic growth. *Journal of Economics and Business*, 103, 34–46. <https://doi.org/10.1016/j.jeconbus.2019.01.002>
- Opeyemi, A. F. (2020). Impact of foreign direct investment and inflation on economic growth of five randomly selected countries in Africa. *Journal of Economics and International Finance*, 12(2), 65–73. <https://doi.org/10.5897/JEIF2020.1031>

- Orji, N., Nwagu, M., Ogbuabor, J. E., & Onyinye, I. (2021). Foreign direct investment and economic growth nexus in Nigeria: An autoregressive distributed lag and ordinary least squares approach. *African Journal of Economic Review*, 9(2), 22–38.
- Owusu-Antwi, G. (2023). Financial development and economic growth in Sub-Saharan Africa: New evidence from a PMG-ARDL approach. *African Journal of Economic Policy*, 30(2), 121–144.
- Pandya, V., & Sisombat, S. (2017). Impacts of foreign direct investment on economic growth: Empirical evidence from the Australian economy. *International Journal of Economics and Finance*, 9(5). <https://doi.org/10.5539/ijef.v9n5p121>
- 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>
- Podlevska, O., & Podlevskyi, A. (2023). Development of the circular economy in modern conditions. *Economics – Innovative and Economics Research Journal*, 11(1), 97–112. <https://doi.org/10.2478/eoik-2023-0025>
- Pradhan, R. P., Arvin, M. B., Hall, J. H., & Nair, M. (2017). Trade openness, foreign direct investment, and finance-growth nexus in the Eurozone countries. *The Journal of International Trade & Economic Development*, 26(3), 336–360. <https://doi.org/10.1080/09638199.2016.1249392>
- Roman, M. D., & Pădureanu, A. (2012). Models of foreign direct investment influence on economic growth: Evidence from Romania. *International Journal of Trade, Economics and Finance*, 3(1), 25–29.
- Sharipov, R. (2015). Adam Smith's contribution to classical economics. *Journal of Economics and Management*, 4(1), 34–45.
- Smith, A. (1904). *An inquiry into the nature and causes of the wealth of nations* (E. Cannan, Ed.). Methuen & Co. (Original work published 1776)
- Sokang, K. (2018). The impact of foreign direct investment on economic growth in Cambodia: Empirical evidence. *International Journal of Innovation and Economic Development*, 4(5), 31–38.
- Srinivasan, P., Kalaivani, M., & Ibrahim, P. (2011). An empirical investigation of foreign direct investment and economic growth in SAARC nations. *Journal of Asia Business Studies*, 5(2), 232–248. <https://doi.org/10.1108/15587891111152366>
- Sunde, T. (2017). Foreign direct investment and economic growth in South Africa. *African Development Review*, 29(1), 44–56. <https://doi.org/10.1111/1467-8268.12246>
- Szirmai, A. (2015). *Socio-economic development*. Cambridge University Press. <https://doi.org/10.1017/CBO9781107054158>
- Tekin, R. B. (2012). Development aid, openness to trade and economic growth in least developed countries: Bootstrap panel Granger causality analysis. *Procedia – Social and Behavioral Sciences*, 62, 716–721. <https://doi.org/10.1016/j.sbspro.2012.09.121>
- Todaro, M. P., & Smith, S. C. (2003). *Economic development* (8th ed.). Addison Wesley.
- Udeh, E., Ibrahim, D., & Sesay, B. (2025). The relationship between foreign direct investment and economic growth: A review of the literature (1994–2023). *International Journal of Science and Management Studies*, 8(1), 57–65.
- Victor, C. (2019). Trade openness, foreign direct investment and economic growth in Nigeria. *Journal of African Business*, 20(2), 167–187. <https://doi.org/10.1080/15228916.2019.1582314>
- Wondimu, L. (2023). Foreign direct investment and economic growth in developing countries. *International Journal of Economics and Financial Issues*, 13(3), 45–63. <https://www.econjournals.com/index.php/ijefi/article/view/14603>