Open Access

AFRICAN JOURNAL OF ECONOMIC TRANSFORMATION AND DEVELOPMENT
African Academic Imprint Press

Email: ajetdpress@gmail.com
Website: www.aaimp.ng

Vol. 2, Issue 1, October 2026, pp. 47–66
Submitted August 2026, Published Oct. 2026
Print ISSN: 3156-5123, E-ISSN:3156-5352

FINANCIAL DEVELOPMENT, INSTITUTIONAL QUALITY, AND ECONOMIC GROWTH IN NIGERIA: COMPLEMENTARITY OR SUBSTITUTION?

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ABSTRACT

This study examines the relationship between financial development, institutional quality, and economic growth in Nigeria from 2000 to 2024, focusing on whether financial development and institutional quality act as complements or substitutes. Using the Autoregressive Distributed Lag (ARDL) technique, the study investigates short-run and long-run dynamics. Financial development is measured by domestic credit to the private sector, institutional quality by control of corruption, and economic growth by GDP growth rate. The bounds test reveals no cointegration in the baseline model but confirms a long-run relationship when institutional quality and its interaction with financial development are included. Short-run results indicate that financial development has no significant effect on economic growth. However, the extended model shows a positive, significant long-run effect of financial development, while institutional quality has a negative effect. The interaction term is positive and significant, indicating that institutional quality strengthens the growth effect of financial development. Marginal-effects analysis further shows that the effect of financial development becomes progressively less negative as institutional quality improves, declining in magnitude from −3.5932 at low institutional quality to −1.4924 at high institutional quality, although remaining negative throughout the observed range. The study concludes that institutional quality positively moderates the financial development–growth relationship in Nigeria. It recommends strengthening institutional frameworks, particularly corruption control, to improve financial sector effectiveness and promote sustainable economic growth and development.

Keywords: *Financial development, Institutional quality, Economic growth, ARDL, Nigeria, Private sector, Control of corruption*

JEL Classification: O16, O43, O47, C2

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Citation: Imahe, G., & Ihimekpen, E. E. (2026). Financial development, institutional quality and economic growth in Nigeria: Complementarity or substitution? *African Journal of Economic Transformation and Development, 2*(1), 47–66.

1. INTRODUCTION

Financial development is widely regarded as an important determinant of economic growth, particularly in developing economies where efficient financial intermediation, capital accumulation, and productive investment are essential for sustainable development. It encompasses improvements in the depth, accessibility, efficiency, and stability of financial institutions and markets, enhancing their capacity to mobilize savings, allocate capital, manage risks, and facilitate economic transactions. Through these functions, financial development promotes investment, productivity, innovation, and long-term economic growth (Makhammadjonovna & Omadjonovna, 2025). The theoretical foundation of the finance–growth relationship draws on Schumpeter (1911), McKinnon (1973), and Shaw (1973), who emphasized the role of financial intermediation in stimulating economic activity.

Two major theoretical perspectives explain the finance–growth relationship: the supply-leading and demand-following hypotheses. The supply-leading hypothesis holds that financial development stimulates economic growth by mobilizing savings, improving access to credit, and facilitating productive investment (Magaji et al., 2021). Conversely, the demand-following hypothesis suggests that financial development responds to economic expansion as rising income and investment increase demand for financial services (Said & Hammam, 2024). Endogenous growth theory extends these perspectives by emphasizing financial development's contribution to sustained growth through efficient capital allocation, technological innovation, human capital accumulation, and knowledge diffusion (Yang et al., 2023). These arguments suggest that financial development influences economic growth, although its effectiveness may depend on prevailing economic and institutional conditions.

Attention has therefore increasingly focused on institutional quality as a critical factor shaping the effectiveness of financial development. Institutional quality reflects the strength of governance arrangements, particularly the rule of law, control of corruption, regulatory quality, government effectiveness, and property rights protection (Ozekhome, 2022). Strong institutions facilitate financial development by enforcing contracts, protecting investors, and promoting transparency and accountability (Akinsola & Taofeek, 2025). Conversely, weak institutions encourage corruption, regulatory inefficiencies, and resource misallocation, limiting financial development's contribution to economic growth. Thus, the growth effects of financial development may depend on the institutional environment within which financial institutions operate.

The interaction between financial development and institutional quality has generated debate over whether both factors complement or substitute for one another in promoting economic growth. The complementarity hypothesis suggests that strong institutions enhance the growth effects of financial development by improving financial intermediation, reducing transaction costs, and promoting efficient resource allocation (Iheanacho et al., 2023). In contrast, the substitution hypothesis argues that financial development may compensate for institutional weaknesses by providing alternative mechanisms for mobilizing and allocating financial resources (Ntow-Gyamfi et al., 2020). However, empirical evidence remains inconclusive, particularly in developing economies with weak institutions and imperfect financial markets.

In Nigeria, successive financial sector reforms, including financial liberalization, banking consolidation, regulatory restructuring, and the expansion of digital financial services, have sought to strengthen financial intermediation and promote economic growth. Although these reforms have improved financial sector development and access to financial services, challenges such as limited credit availability, financial exclusion, high intermediation costs, and regulatory inefficiencies persist (Chibueze et al., 2025). Institutional weaknesses, particularly corruption, inadequate regulatory

enforcement, and governance deficiencies, further constrain the allocation of financial resources to productive investment. These challenges raise concerns about whether financial sector expansion alone can stimulate economic growth without corresponding improvements in institutional quality.

Despite these reforms, Nigeria's economic growth has remained unstable, with persistent unemployment, poverty, low productive investment, and vulnerability to economic shocks. This raises questions about how much financial development has translated into sustained economic performance. Although financial development is expected to promote growth, weak institutional arrangements may encourage inefficient credit allocation, rent-seeking behaviour, and financial market distortions (Abaidoo & Agyapong, 2022). Consequently, improvements in financial depth and access may not generate the anticipated growth benefits where institutional structures remain weak.

Existing empirical studies on the finance–growth nexus have produced mixed findings regarding the direction, magnitude, and significance of the relationship between financial development and economic growth. These inconsistencies may reflect differences in methodology, data coverage, variable measurement, and institutional conditions. Moreover, relatively little attention has been given to the interaction between financial development and institutional quality in Nigeria, particularly whether the two factors complement or substitute for one another. Examining this interaction alongside marginal effects is important for understanding how the growth effect of financial development varies across different levels of institutional quality.

Against this background, this study examines the relationship between financial development, institutional quality, and economic growth in Nigeria from 2000 to 2024, emphasizing institutional quality's moderating role. Specifically, it examines the effect of financial development on economic growth and tests whether institutional quality complements or substitutes for it. Using the Autoregressive Distributed Lag (ARDL) approach, the study examines short-run and long-run relationships while incorporating an interaction term between financial development and institutional quality. Marginal-effects analysis further assesses how the growth effect of financial development varies across institutional-quality levels.

Despite the growing literature, empirical evidence on institutional quality's moderating role remains mixed. While some studies (Asante et al., 2023; Xu & Wubishet, 2024) find evidence of complementarity, others (Aluko & Ibrahim, 2020; Olaniyi & Oladeji, 2021) suggest substitution or weakening effects. Some studies report that the relationship varies across institutional dimensions (Nketia & Kong, 2021), while others find no significant interaction (Akinlo & Olayiwola, 2023). Similarly, Bayraktar et al. (2023), Adu-Darko (2024), and Pradhan et al. (2023) report positive growth effects of financial development and institutional quality, although their magnitude varies across countries and model specifications. Much of this evidence relies on regional panel data, which may obscure country-specific dynamics. Although country-specific evidence exists (Olaniyi & Adedokun, 2022), limited attention has been given to Nigeria. Recent Nigerian evidence, such as Mkuma et al. (2025), has largely examined the finance–growth relationship without explicitly considering institutional quality as a moderating factor. This study addresses this gap by examining complementarity and substitution within a unified time-series framework for Nigeria.

The study contributes to the literature by providing country-specific evidence on the conditional relationship between financial development and economic growth, accounting for the moderating role of institutional quality. By combining interaction and marginal-effects analyses, it provides insights into how institutional quality influences the growth effects of financial development. The findings offer policy implications for strengthening institutional frameworks, improving financial intermediation, and enhancing the contribution of financial development to economic growth in Nigeria.

Research Questions

The study seeks to address the following research questions:

a) What is the effect of financial development on economic growth in Nigeria?

b) Does institutional quality complement or substitute for financial development in influencing economic growth in Nigeria?

Objectives of the Study

The broad objective of this study is to examine the relationship between financial development, institutional quality, and economic growth in Nigeria, with particular emphasis on the moderating role of institutional quality.

The specific objectives are to:

a) Examine the effect of financial development on economic growth in Nigeria.

b) Determine whether institutional quality complements or substitutes for financial development in influencing economic growth in Nigeria.

2. LITERATURE REVIEW

2.1 Conceptual Literature

Financial Development

Financial development refers to the expansion and improved efficiency, depth, and accessibility of financial institutions and markets within an economy. It captures how well financial systems mobilize savings and allocate resources to productive investments through mechanisms such as banking systems and capital markets (Amoah et al., 2020). The concept gained prominence through Schumpeter's (1911) early work, which emphasized finance's role in facilitating innovation, and was later formalized by McKinnon (1973) and Shaw (1973), who highlighted financial liberalization and intermediation as key drivers of economic growth.

In empirical studies, financial development is commonly measured using indicators such as money supply, stock market capitalization, and credit to the private sector. This study uses domestic credit to the private sector as a proxy because it directly reflects how financial institutions channel funds into productive activities. This measure is particularly relevant for Nigeria, where the financial system is largely bank-dominated, and credit provision remains the primary channel of intermediation. Nevertheless, the effectiveness of financial development depends on the broader institutional environment, as weak regulation and limited access to credit can constrain its growth-enhancing impact (Ofoeda et al., 2024).

Institutional Quality

Institutional quality refers to the effectiveness of governance structures and the extent to which legal, political, and regulatory systems support economic activities. It encompasses dimensions such as rule of law, control of corruption, regulatory quality, and government effectiveness. The concept is rooted in institutional economics, particularly North's (1990) view of institutions as the “rules of the game” that shape economic interactions. Strong institutions reduce uncertainty, enforce contracts, and protect property rights, thereby fostering investment and economic growth.

In financial systems, institutional quality plays a critical role in determining how efficiently financial resources are allocated. Effective governance promotes transparency and accountability, thereby enhancing investor confidence and financial stability

(Akinsola & Taofeek, 2025). Conversely, weak institutional frameworks characterized by corruption and poor regulatory enforcement can distort resource allocation and reduce the effectiveness of financial policies. Empirical evidence suggests that variations in institutional quality largely explain differences in economic performance across countries (Barra & Falcone, 2024; Singh & Pradhan, 2022).

This study proxied institutional quality using control of corruption, as it directly captures the extent to which public power is exercised for private gain. This measure is particularly relevant in Nigeria, where corruption significantly affects financial intermediation and policy implementation. High corruption levels weaken institutional performance by diverting resources and increasing inefficiencies, while improvements in corruption control enhance the effectiveness of financial development (Song et al., 2021).

Economic Growth

Economic growth refers to a sustained increase in a country's real output over time, typically measured by real gross domestic product (Coscieme et al., 2020). It reflects improvements in productivity, capital accumulation, and efficient resource use. Growth is generally viewed as a process through which economies expand their productive capacity and improve overall economic performance (Surya et al., 2021).

In this study, economic growth is proxied by the GDP growth rate, which captures changes in economic activity over time. This measure is appropriate because it reflects both short-run fluctuations and long-run trends in economic performance. It is also widely used in empirical literature, making it a reliable and comparable indicator across countries and periods.

Foreign Direct Investment (FDI)

Foreign Direct Investment (FDI) refers to cross-border investment in which an investor acquires a lasting interest and significant control in a foreign enterprise. According to the IMF (2010) and UNCTAD (2023), this typically involves ownership of at least 10 percent of voting power. FDI plays a vital role in economic development by facilitating the transfer of capital, technology, and managerial expertise, while also enhancing access to international markets (Seyoum, 2024).

FDI can take various forms, including horizontal, vertical, and conglomerate investments, depending on the nature of business expansion. However, its impact on economic growth depends on a country's absorptive capacity, including the level of financial development and institutional quality.

Real Interest Rate

The real interest rate is the nominal interest rate adjusted for inflation and reflects the true cost of borrowing and the real return on investment (Borio et al., 2022). It plays a crucial role in influencing savings behavior, investment decisions, and overall economic activity. Higher real interest rates tend to discourage borrowing and investment, while lower rates stimulate economic expansion (Alafif, 2023).

In developing economies, fluctuations in real interest rates can create uncertainty and affect how financial resources are allocated. As such, the real interest rate is an important indicator of macroeconomic stability and helps explain variations in economic performance.

2.2 Theoretical Literature

The finance–growth relationship is explained by the supply-leading and demand-following hypotheses. The supply-leading hypothesis, associated with Schumpeter (1911), posits that financial development drives economic growth by mobilizing savings, allocating resources efficiently, and promoting innovation. In this view, financial institutions play a central role in supporting investment and technological progress. In contrast, the demand-following hypothesis, as proposed by Robinson (1952), argues that financial development emerges in response to economic expansion, as increased economic

activity generates demand for financial services. Empirical evidence suggests that both mechanisms may coexist, depending on the level of development.

Institutional theory further explains how governance structures influence economic performance. North (1990) argues that institutions reduce uncertainty, enforce contracts, and shape incentives, thereby improving economic outcomes. Similarly, Acemoglu et al. (2005) emphasize that differences in institutional quality account for variations in long-run development. Strong institutions promote efficiency, transparency, and investment, while weak institutions hinder growth through inefficiencies and poor resource allocation.

Endogenous growth theory, developed by Lucas (1988) and Romer (1990), provides an integrated framework linking financial development, institutions, and growth. The theory posits that economic growth is driven by internal factors such as innovation, human capital accumulation, and knowledge creation. Financial systems facilitate this process by channelling resources into productive activities, while institutional quality determines how effectively they are used. Thus, the theory underscores the joint role of financial development and institutional factors in sustaining long-run economic growth.

2.3 Empirical Review

Bayraktar et al. (2023) examined how institutional quality shapes the relationship between financial development and economic growth in emerging markets and middle-income economies. The study employed the Dumitrescu–Hurlin panel causality test and System Generalized Method of Moments (System-GMM) estimation, with six institutional quality indicators and seven financial development indicators. The results showed that financial development positively affects economic growth when institutional quality is included in the model, but its effect becomes statistically insignificant when institutional quality is excluded. The Dumitrescu–Hurlin test also established a causal relationship between all financial development indicators and economic growth.

Nketia and Kong (2021) assessed the interaction between financial development, institutional quality, and economic growth in Africa. The study used 30 interaction terms involving financial development and institutional quality indicators and employed the Augmented Mean Group (AMG) estimation technique. The results showed that gross domestic savings-to-GDP and broad money-to-GDP generally had positive effects on economic growth when interacted with institutional quality indicators. The interaction between private-sector credit and voice and accountability, as well as political stability, produced particularly strong growth effects. However, interactions involving government effectiveness, regulatory quality, and control of corruption generally weakened economic growth.

Adu-Darko (2024) examined the role of institutional quality and financial development in economic growth in 28 Sub-Saharan African countries over the period 1984–2019. The study employed panel cointegration techniques that account for cross-sectional dependence and structural breaks, using the Cobb-Douglas production function to examine the linear relationship and the Constant Elasticity of Substitution (CES) production function to assess the non-linear relationship. The findings showed that institutional quality, financial development, and capital have significant positive long-run relationships with economic growth when structural breaks and cross-sectional dependence are considered. Under the Cobb-Douglas specification, financial development strengthened by institutional quality had a positive and significant effect on economic growth, while under the CES specification, only financial development had a significant positive effect.

Pradhan et al. (2023) examined the relationship between institutional quality, financial development, and sustainable economic growth in 79 lower-income countries from 2005 to 2022. The study used the Vector Error Correction Model (VECM) and Granger causality tests. The findings showed that institutional quality, financial development, and economic growth reinforce one another in the short run. In the long run, institutional quality and financial development both positively influence economic growth, with institutional quality having a stronger effect than financial development.

Akinlo and Olayiwola (2023) examined the relationship between institutional quality, financial development, and economic growth in 22 low-income Sub-Saharan African countries from 2001 to 2020. The study employed the System Generalized Method of Moments (System-GMM) estimation technique. The findings showed that financial development negatively affects economic growth, while institutional quality positively affects it. The interaction between institutional quality and financial development was found to have no significant positive effect on economic growth in the sampled low-income countries.

Lo and Cissokho (2023) examined the relationship between financial development, institutional quality, and manufacturing industrial growth using panel data covering more than 100 countries worldwide, with particular attention to Sub-Saharan Africa. The study employed a dynamic panel model and quantile regression as a robustness technique. The findings showed that poor institutional quality in SSA constrains the contribution of financial development to manufacturing industrial growth compared with developed countries. The study also found a nonlinear relationship between per capita GDP and industrialization and established that natural resource abundance negatively affects manufacturing industrial value added in SSA, supporting the Dutch disease hypothesis.

Olaniyan et al. (2022) examined the relationship between remittances, financial sector development, institutional quality, and economic growth in 15 ECOWAS countries from 2000–2017. The study employed the Two-Stage Least Squares Instrumental Variable (2SLS-IV) estimator. The findings showed that remittances had a negative and significant effect on economic growth, while the interaction between remittances and financial sector development had a positive effect on growth, supporting the complementarity hypothesis. Institutional quality also had a positive and significant effect on economic growth, while the interaction between remittances and institutional quality supported the substitutability hypothesis, indicating that remittances can partly compensate for weak institutions in ECOWAS countries.

Aluko and Ibrahim (2020) examined the relationship between financial development and economic growth in Sub-Saharan Africa, with particular attention to the role of institutional quality. Using a sample-splitting panel data approach, the study used institutional thresholds proxied by the International Country Risk Guide and the World Governance Indicators. The findings showed that financial development does not significantly enhance growth below a certain institutional threshold when measured using the International Country Risk Guide but becomes significant above that level. However, when institutional quality was proxied using the World Governance Indicators, financial development significantly promoted growth irrespective of institutional levels. Interestingly, the study found that financial development's growth effect was stronger in countries with weaker institutional structures, suggesting that finance may substitute for institutional deficiencies.

Similarly, Olaniyi and Oladeji (2021) examined how institutional quality shapes the finance–growth relationship in West Africa using panel data and the dynamic Generalized Method of Moments (GMM) technique. Their results indicated that financial development independently promotes growth, but the interaction between financial development and institutional quality exerts a negative

effect. This suggests that institutional conditions may weaken the effectiveness of financial systems in the region. The study also identified a threshold of institutional quality below which most West African countries operate, limiting the positive contribution of financial development.

In contrast, Asante, Takyi, and Mensah (2023) provided evidence supporting a complementary relationship between financial development and institutional quality in Sub-Saharan Africa. Using panel data for 29 countries and the System-GMM approach, the study found that financial development positively influences economic performance. More importantly, indicators such as rule of law, political stability, and regulatory quality were found to strengthen this relationship. This implies that stronger institutional environments enhance the efficiency and impact of financial systems on growth outcomes.

A country-specific perspective was provided by Olaniyi and Adedokun (2022), who examined South Africa using time series data and the ARDL approach. Their findings showed that institutional quality weakens the short-run growth impact of financial development, but in the long run, both variables jointly contribute to economic expansion. The study also identified a threshold level of institutional quality, beyond which financial development's positive impact becomes more pronounced. This highlights the importance of long-run institutional improvements in sustaining economic growth.

Xu and Wubishet (2024) extended the analysis to East Africa, employing panel data for 18 countries and a dynamic GMM framework. The results indicated that financial development positively affects economic growth, and this effect is further amplified in countries with stronger institutional frameworks. By incorporating multiple governance indicators such as political stability, rule of law, and corruption control, the study showed that strong institutional environments catalyze the benefits of financial sector development.

In the Nigerian context, Mkuma, Henry, and Oje (2025) examined the causal relationship between financial development and economic growth using various financial indicators and time-series techniques. The study found mixed evidence of causality, with results varying by proxy. While some indicators supported a supply-leading hypothesis, others indicated demand-following or bidirectional relationships. However, the study did not incorporate institutional quality, thereby limiting its ability to explain the broader structural factors influencing the finance–growth nexus.

3. METHODOLOGY

Theoretical Framework

This study is anchored in the institution–finance–growth framework, drawing on the complementarity hypothesis advanced by Demetriades and Law (2006) and Law and Azman-Saini (2012), along with the substitution perspective of Ahlin and Pang (2008). The framework emphasizes that financial development's contribution to economic growth depends on institutional quality. Under the complementarity hypothesis, strong institutions enhance financial development's growth effects by improving contract enforcement, reducing information asymmetry, and promoting efficient resource allocation. Consequently, improvements in institutional quality are expected to strengthen financial development's contribution to economic growth.

Conversely, the substitution hypothesis suggests that financial development may compensate for institutional weaknesses by providing alternative mechanisms for screening borrowers, enforcing contracts, managing risks, and allocating resources (Ahlin & Pang, 2008). Under this

perspective, financial development may contribute more strongly to economic growth where institutional quality is relatively weak, implying a substitutive relationship. These competing hypotheses are particularly relevant to Nigeria, where financial sector reforms and expansion have occurred alongside persistent institutional challenges. The effectiveness of financial development may therefore depend not only on financial deepening but also on the institutional environment within which financial institutions operate.

Empirically, the complementarity or substitution relationship is examined through the interaction between financial development and institutional quality. A positive, statistically significant interaction coefficient indicates that improvements in institutional quality increase the marginal effect of financial development on economic growth, consistent with complementarity. Conversely, a negative and statistically significant coefficient indicates that institutional improvements reduce this marginal effect, potentially supporting substitution. However, the interaction coefficient alone does not establish the direction or magnitude of the overall growth effect of financial development. Accordingly, marginal-effects analysis is employed to examine how the effect of financial development varies across different levels of institutional quality. This approach provides a basis for assessing how financial development and institutional quality influence economic growth in Nigeria.

Model Specification

This study adopts and modifies the model of Fagbemi and Ajibike (2018) to examine the relationship between financial development, institutional quality, and economic growth in Nigeria. The original model specifies financial development as a function of institutional quality, economic performance, and trade openness.

The functional form of the model is expressed as:

$$FD_t = f(INT_t, GDP_t, OPE_t) \quad (3.1)$$

This is specified in econometric form as:

$$FD_t = \beta_0 + \beta_1 INT_t + \beta_2 GDP_t + \beta_3 OPE_t + \varepsilon_t \quad (3.2)$$

Where FD_t is financial development, INT_t is institutional quality, GDP_t is economic growth, OPE_t is trade openness, and t −represents the time period.

This study modifies Fagbemi and Ajibike's (2018) model to examine the relationship between financial development, institutional quality, and economic growth in Nigeria. Consistent with the study's objectives, the model is specified in two forms: the baseline model and the interactive model. Foreign direct investment is expressed in logarithmic form to account for its scale and distributional characteristics, while DCP and RIT are retained in percentage form and COC is retained in index form to preserve their established measurement scales and facilitate direct interpretation of their coefficients.

The baseline model captures the direct effect of financial development and control variables on economic growth and is specified as:

$$GDP_t = \alpha_0 + \beta_1 DCP_t + \beta_2 LNFDI_t + \beta_3 RIT_t + \varepsilon_t \quad (3.3)$$

To account for the role of institutional quality and its interaction with financial development, the model is extended to include an interaction term as follows:

$$GDP_t = \alpha_0 + \beta_1 DCP_t + \beta_2 COC_t + \beta_3 (DCPCOC_t) + \beta_4 LNFDI_t + \beta_5 RIT_t + \varepsilon_t \quad (3.4)$$

Where:
GDP_t= Economic growth (proxied by GDP growth rate)

DCP_t= Financial development (proxied by domestic credit to the private sector)

COC_t= Institutional quality (proxied by control of corruption)

$DCPCOC_t$= Interaction term capturing complementarity or substitution effect

$LNFDI_t$= Log of foreign direct investment

RIT_t= Real interest rate

α_0= Intercept

$\beta_1 - \beta_5$= Parameters to be estimated

ε_t= Error term

t= Time period

The interaction term in Model 2 is introduced to assess whether the effect of financial development on economic growth depends on the level of institutional quality, thereby testing the complementarity or substitution relationship between the two variables in Nigeria. The study uses the GDP growth rate as the measure of economic growth, as it focuses on changes in economic growth rather than the level of output.

Apriori Expectations

Model 1: $\beta_1 \; and \; \beta_2 > 0, \; \beta_3 < 0$

Model 2: $\beta_1 \, , \beta_2 \; and \;\; \beta_4 > 0, \;\; \beta_3 \gtrless 0, \; \beta_5 < 0$

Model 1: Financial development is expected to positively affect economic growth, reflecting its role in mobilizing savings, facilitating investment, and promoting efficient resource allocation.

Model 2: Financial development and institutional quality are expected to positively influence economic growth, while the interaction coefficient may be positive or negative, indicating complementarity or substitution, respectively.

Sources of Data

This study uses secondary data from the World Development Indicators (WDI) database published by the World Bank, as well as the Worldwide Governance Indicators (WGI). The dataset covers 2000 to 2024 and includes annual observations of GDP growth rate (as a proxy for economic growth), domestic credit to the private sector (as a proxy for financial development), control of corruption (as a proxy for institutional quality), foreign direct investment inflows, and the real interest rate.

Method of Data Analysis

This study uses the Autoregressive Distributed Lag (ARDL) technique to examine short- and long-run relationships among the variables. The ARDL approach, developed by Pesaran et al. (2001), suits time series data with mixed orders of integration and performs well in small samples. Pre-estimation tests include descriptive statistics, correlation analysis, and the Augmented Dickey–Fuller (ADF) unit root test to determine

stationarity. The ARDL bounds test is used to establish the existence of a long-run relationship, after which long-run and short-run estimates are obtained. The Error Correction Model (ECM) captures the speed of adjustment to equilibrium. Furthermore, diagnostic and stability tests are performed to ensure the model's reliability.

ARDL Model Specification

The long-run and short-run ARDL models are specified as follows:

Model 1 (Baseline Model):

$$\Delta GDP_t = \alpha_0 + \alpha_1 GDP_{t-1} + \alpha_2 DCP_{t-1} + \alpha_3 LNFDI_{t-1} + \alpha_4 RIT_{t-1} + \sum_{i=1}^{p} \theta_{1i}\, \Delta GDP_{t-i} + \sum_{i=0}^{q} \theta_{2i}\, \Delta DCP_{t-i} + \sum_{i=0}^{r} \theta_{3i}\, \Delta LNFDI_{t-i} + \sum_{i=0}^{s} \theta_{4i}\, \Delta RIT_{t-i} + \varepsilon_t \qquad (3.5)$$

Model 2 (Interactive Model):

$$\Delta GDP_t = \alpha_0 + \alpha_1 GDP_{t-1} + \alpha_2 DCP_{t-1} + \alpha_3 COC_{t-1} + \alpha_4 DCPCOC_{t-1} + \alpha_5 LNFDI_{t-1} + \alpha_6 RIT_{t-1} + \sum_{i=1}^{p} \theta_{1i}\, \Delta GDP_{t-i} + \sum_{i=0}^{q} \theta_{2i}\, \Delta DCP_{t-i} + \sum_{i=0}^{r} \theta_{3i}\, \Delta COC_{t-i} + \sum_{i=0}^{m} \theta_{4i}\, \Delta DCPCOC_{t-i} + \sum_{i=0}^{n} \theta_{5i}\, \Delta LNFDI_{t-i} + \sum_{i=0}^{k} \theta_{6i}\, \Delta RIT_{t-i} + \lambda ECT_{t-1} + \varepsilon_t \qquad (3.6)$$

4.0 RESULTS AND DISCUSSION OF THE FINDINGS

4.1 Results

Descriptive Statistics

Table 4.1 presents descriptive statistics that provide insights into the distribution and behavior of the variables. The mean values fall within the minimum-maximum range, indicating a reasonable spread. Economic growth (GDP) averaged 4.79%, with values ranging from −6.37% to 15.33%, reflecting periods of expansion and contraction. Financial development (DCP) averaged 11.30%, suggesting moderate credit provision, while institutional quality (COC) averaged −1.16, indicating weak corruption control. Foreign direct investment (FDI) averaged $3.74 billion and showed considerable fluctuation, while the real interest rate (RIT) averaged 4.00% and showed wide variation, indicating volatility.

Standard deviation results show that FDI and RIT are highly volatile, whereas COC remains relatively stable. Skewness indicates that GDP and COC are negatively skewed, while DCP and FDI are positively skewed, with RIT highly negatively skewed. Kurtosis values suggest that most variables are leptokurtic, except FDI. The Jarque–Bera test shows that GDP, COC, and FDI are normally distributed, while DCP and RIT are not.

Table 1: Descriptive Statistics Results

	GDP	DCP	COC	FDI	RIT
Mean	4.787881	11.30187	-1.162053	3.74E+09	4.000576
Median	5.307920	10.60470	-1.118570	3.10E+09	5.685580

Maximum	15.32920	19.62560	-0.900950	8.80E+09	18.18000
Minimum	-6.368900	7.923223	-1.502070	-1.90E+08	-25.77650
Std. Dev.	4.056655	3.122124	0.141199	2.60E+09	8.370169
Skewness	-0.281579	1.156678	-0.731442	0.560616	-1.639017
Kurtosis	4.937780	3.908558	3.013236	2.200472	7.605919
Jarque-Bera	4.241811	6.434476	2.229381	1.975421	33.29167
Probability	0.119923	0.040066	0.328017	0.372428	0.000000
Sum	119.6970	282.5469	-29.05133	9.36E+10	100.0144
Sum Sq. Dev.	394.9547	233.9438	0.478492	1.62E+20	1681.434
Observations	25	25	25	25	25

Source: Author's computation (2026) based on data from WDI and WGI using EViews 12.

Correlation Matrix

Table 2 shows moderate relationships among the variables, suggesting no serious multicollinearity. The highest correlation is between DCP and COC (0.608), while the lowest is between RIT and COC (−0.002). GDP shows a moderate negative relationship with COC (−0.498) and weak positive correlations with other variables. Since all correlations are below 0.80, multicollinearity is not a concern.

Table 2: Correlation Matrix Output

	GDP	DCP	LNFDI	RIT	COC
GDP	1.000000	0.025907	0.166452	0.128479	-0.497734
DCP	0.025907	1.000000	0.533931	0.569298	0.608196
LNFDI	0.166452	0.533931	1.000000	0.202516	0.357366
RIT	0.128479	0.569298	0.202516	1.000000	-0.002302
COC	-0.497734	0.608196	0.357366	-0.002302	1.000000

Source: Author's computation (2026) using EViews 12.

Unit Root Test

Table 3 presents the results of the Augmented Dickey–Fuller (ADF) unit root test. The results show that GDP, DCP, RIT, and COC are stationary at level because their p-values are less than 0.05. This implies that these variables are integrated of order zero, I(0). However, LNFDI is not stationary at level, as its probability value is greater than 0.05, but it becomes stationary after first differencing. This indicates that LNFDI is integrated of order one, I(1). Overall, the variables exhibit a mixture of I(0) and I(1) orders of integration

Table 3: ADF Unit Root Test Output

Variables	Level ADF Statistic	Prob. Value	First Difference ADF Statistic	Prob. Value	Order of Integration
GDP	-4.0232	0.0219	-5.8719	0.0001	*I*(0)
DCP	-3.1152	0.0394	-3.6398	0.0133	*I*(0)
LNFDI	-1.7135	0.4116	-5.0177	0.0000	*I*(1)
RIT	-4.3589	0.0024	-8.9431	0.0000	*I*(0)
COC	-4.2141	0.0166	-4.7425	0.0008	*I*(0)

Source: Author's computation (2026) using EViews 12.

Lag Length Criteria

Tables 4a and 4 b present the lag length criteria for Model 1 and Model 2, respectively. Table 4.4a shows that for Model 1, most of the information criteria, including FPE, AIC, and HQ, select lag 2, while SC selects lag 1.

Following the majority rule, lag 2 is the optimal lag length for Model 1. Similarly, Table 4.4b indicates that all the criteria (LR, FPE, AIC, SC, and HQ) select lag 2 as the optimal lag for Model 2.

Given the aforementioned results, lag 2 is adopted for both models, as it is supported by the majority of the selection criteria, ensuring a robust model specification.

Table 4a: Lag Length Criteria (Model 1)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-219.3766	NA	3205.956	19.42405	19.62153	19.47372
1	-188.0777	48.98961 *	871.6657	18.09371	19.08110 *	18.34204
2	-168.6304	23.67501	748.9835 *	17.79395 *	19.57124	18.24093 *

Source: Author's computation (2026) using EViews 12.

Table 4b: Lag Length Criteria (Model 2)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-190.6205	NA	2.334289	17.87459	18.17215	17.94469
1	-140.3269	68.58226	0.729935	16.57517	18.65807	17.06584
2	-69.03413	58.33042*	0.074074*	13.36674*	17.23498*	14.27798*

Source: Author's computation (2026) using EViews 12.

ARDL Bound Test

In Table 5, the ARDL bounds test results are presented for both models. For Model 1, the F-statistic (1.2277) is lower than the lower bound critical value of 2.79 at the 5% significance level. This indicates that the null hypothesis of no cointegration cannot be rejected, implying the absence of a long-run relationship among the variables in Model 1.

In contrast, for Model 2, the F-statistic (6.5355) exceeds the upper bound critical value of 3.38. This leads to rejecting the null hypothesis, indicating a long-run relationship among the variables.

Table 5: ARDL Bound Test Output

	Value	Signif.	I(0)	I(1)
F-statistic (Model 1)	1.227670	5%	2.79	3.67
F-statistic (Model 2)	6.535465	5%	2.39	3.38

Source: Author's computation (2026) using EViews 12.

ARDL Short-Run and Long-Run Results

Based on the bounds test results, Model 1 does not exhibit cointegration, indicating no long-run relationship among the variables. As a result, only the short-run ARDL estimates are presented for Model 1 in Table 6a. In contrast, Model 2 shows evidence of cointegration, implying a long-run relationship; thus, Table 4.6 b reports both long-run and ECM results. Table 4.6a presents the short-run results for Model 1. The lagged dependent variable, GDP(-1), is positive and statistically significant at the 1% level, indicating persistence in economic growth. Financial development (DCP) has a negative but insignificant effect, while foreign direct investment (LNFDI) is positive but also insignificant, suggesting limited short-run influence on growth.

The real interest rate (RIT) exhibits mixed effects. Its current value is positive but insignificant, whereas RIT(-1) is positive and significant, and RIT(-2) is negative and significant, indicating lagged and varying effects on growth. The model is statistically significant, with about 64% of variations in GDP explained, and the Durbin–Watson statistic indicates no autocorrelation.

Table 6a: ARDL Short-Run Estimates (Model 1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GDP(-1)	0.612455	0.195337	3.135367	0.0068
DCP	-0.392349	0.324192	-1.210238	0.2449
LNFDI	0.822196	1.256474	0.654368	0.5228
RIT	0.075609	0.102067	0.740785	0.4703
RIT(-1)	0.253511	0.083484	3.036634	0.0083
RIT(-2)	-0.192723	0.087101	-2.212648	0.0428
C	-12.38340	25.64643	-0.482851	0.6362
R-squared	0.641908	Durbin-Watson stat		2.142664
Adjusted R-squared	0.508672			
F-statistic	4.481456			
Prob(F-statistic)	0.008561			

Source: Author's computation (2026) using EViews 12.

Table 6b presents the ARDL long-run and error correction (ECM) results for Model 2. The error correction term, CointEq(-1), is negative and highly significant (−0.4888, $p < 0.01$), confirming a long-run relationship among the variables. This suggests that approximately 49% of any short-run deviation from equilibrium is corrected within a year, indicating a moderate speed of adjustment.

In the long run, financial development (DCP) has a positive and significant coefficient ($\beta = 6.1018$, $p < 0.05$), while institutional quality (COC) has a negative and significant coefficient ($\beta = -60.8306$, $p < 0.05$). The interaction term between financial development and institutional quality (DCPCOC) is positive and statistically significant ($\beta = 7.4391$, $p < 0.01$), indicating that improvements in institutional quality increase the marginal effect of financial development on economic growth. To further assess this relationship, we evaluated the marginal effect of DCP at different levels of institutional quality using the mean and standard deviation of COC reported in Table 4.1. The mean COC is −1.162053, and its standard deviation is 0.141199. Accordingly, low institutional quality is one standard deviation below the mean (−1.303252), while high institutional quality is one standard deviation above the mean (−1.020854). Using the marginal-effect equation, $\partial GDP/\partial DCP = 6.101802 + 7.439074(COC)$, the estimated effect of DCP is −3.5932 at low institutional quality, −2.5428 at the mean level, and −1.4924 at high institutional quality. Thus, although the marginal effect of financial development remains negative across these levels, its adverse effect becomes progressively weaker as institutional quality improves. This provides evidence of a positive moderating role of institutional quality and suggests a relationship consistent with the complementarity hypothesis, although the marginal effect of financial development does not become positive within the observed range of institutional quality.

Foreign direct investment (LNFDI) is positive but insignificant, while the real interest rate (RIT) is positive and marginally significant at the 10% level, suggesting a limited long-run influence. In the short run, the interaction term also exhibits significant but contrasting effects, with the contemporaneous change in DCPCOC being positive and significant ($\beta = 2.5160$, $p < 0.05$), while its first lag is negative and significant ($\beta = -3.7944$, $p < 0.01$), indicating that the moderating effect of institutional quality varies across short-run periods. The model

shows a strong fit ($R^2 \approx 0.95$), and the Durbin–Watson statistic (2.17) indicates no autocorrelation, confirming the reliability of the results.

Table 6b: ARDL Long-Run and Error Correction Model (ECM) Results (Model 2)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-91.12205	57.19553	-1.593167	0.1552
GDP(-1)*	-0.488847	0.168649	-2.898606	0.0230
DCP(-1)	6.101802	2.220924	2.747416	0.0286
COC(-1)	-60.83056	24.57366	-2.475437	0.0425
DCPCOC(-1)	7.439074	2.075091	3.584939	0.0089
LNFDI(-1)	2.182150	1.781994	1.224555	0.2603
RIT(-1)	0.496067	0.222517	2.229344	0.0610
D(DCP)	1.731152	0.728458	2.376462	0.0491
D(DCP(-1))	-3.177031	0.791436	-4.014264	0.0051
D(COC)	-37.47815	8.138532	-4.605026	0.0025
D(COC(-1))	36.96523	8.607575	4.294500	0.0036
D(DCPCOC)	2.516024	0.754121	3.336368	0.0125
D(DCPCOC(-1))	-3.794425	0.750519	-5.055736	0.0015
D(LNFDI)	1.707833	0.609670	2.801243	0.0265
D(LNFDI(-1))	-3.465731	0.746310	-4.643820	0.0024
D(RIT)	0.243736	0.052626	4.631502	0.0024
CointEq(-1)*	-0.488847	0.053035	-9.217432	0.0000
R-squared	0.948864	Durbin-Watson stat		2.166463
Adjusted R-squared	0.913463			
S.E. of regression	1.190641			
Sum squared resid	18.42915			

Source: Author's computation (2026) using EViews 12.

Post-Diagnostic Test

Table 7 presents the post-diagnostic test results for both Model I and Model II. The results show that all the diagnostic tests have probability values greater than 0.05, indicating that the null hypotheses cannot be rejected. This implies that both models are free from serial correlation, exhibit homoskedasticity, and have normally distributed residuals.

In addition, the Ramsey RESET test confirms that the functional form of the models is correctly specified. Overall, the results suggest that the estimated models satisfy the basic econometric assumptions and are therefore reliable and suitable for inference.

Table 7: Post-Diagnostic Test

Diagnostic Test	Model I (Stat.)	Model I (Prob.)	Model II (Stat.)	Model II (Prob.)	Decision (5%)	Remark
Serial Correlation (BG LM, F-stat)	0.0663	0.9363	0.2987	0.7541	Fail to reject H_o	No serial correlation
Heteroskedasticity (BPG, F-stat)	0.7414	0.6777	1.0247	0.5171	Fail to reject H_o	Homoskedastic
Normality (Jarque–Bera)	0.2309	0.8910	1.6968	0.4281	Fail to reject H_o	Residuals normally distributed

Functional Form (RESET, F-stat)	0.0669	0.8007	0.1989	0.6712	Fail to reject H_o	**Correct specification**

Source: Author's computation (2026) using EViews 12.

CUSUM and CUSUMSQ Stability

The stability tests for both models are presented in Figures 4.1 and 4.2. The CUSUM and CUSUMSQ plots for Model 1 (Figure 4.1) lie within the critical bounds, indicating parameter stability over the sample period. Similarly, the results for Model 2 (Figures 4.2) also fall within the acceptable boundaries. This suggests that there are no structural breaks in the estimated models. Hence, both models are stable and reliable for policy inference.

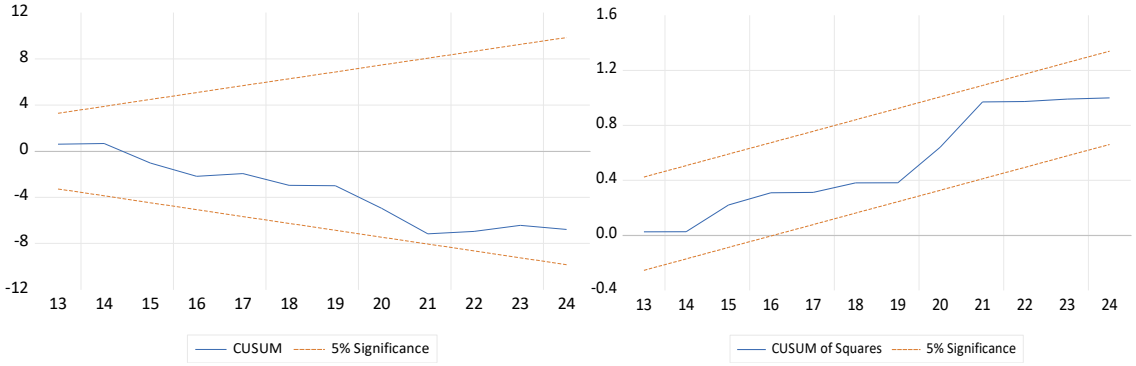


Figure 1; Plot of CUSUM and CUSUMSQ (Model 1)

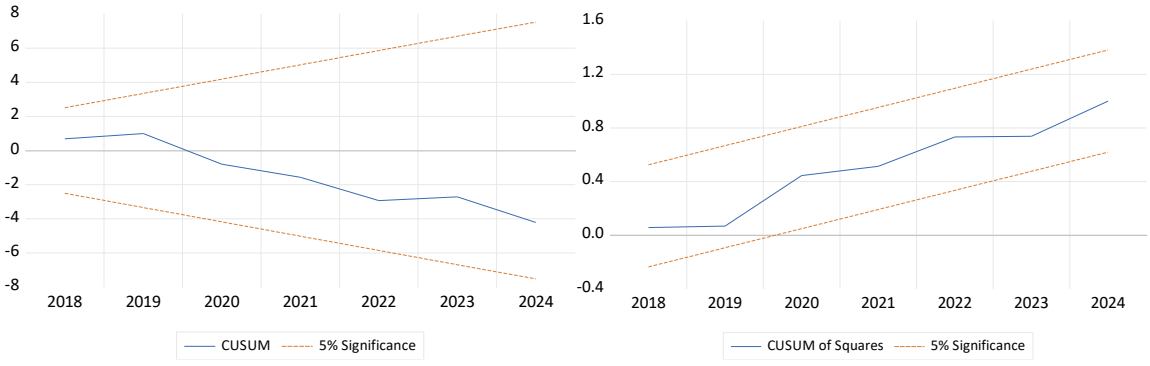


Figure 2; Plot of CUSUM and CUSUMSQ (Model 2)

4.2 Discussion of Findings

The baseline model findings show that financial development does not significantly affect economic growth in the short run. This does not align with a priori expectations, which predict a positive relationship between financial development and growth. However, it suggests that without supportive institutional structures, financial development alone may not effectively translate into improved economic performance. This result aligns with Aluko and Ibrahim (2020), who found that the growth-enhancing effect of financial development in

Sub-Saharan Africa depends on the institutional environment, particularly when institutional quality is measured using the International Country Risk Guide. This aligns with Lo and Cissokho (2023), who reported that poor institutional quality constrains the contribution of financial development to manufacturing industrial growth in Sub-Saharan Africa. In the extended model, financial development has a positive and significant long-run effect on economic growth. This aligns with a priori expectations and supports the view that credit to the private sector enhances investment and productivity. This finding aligns with Asante et al. (2023), Bayraktar et al. (2023), and Pradhan et al. (2023), who report positive growth effects associated with financial development, particularly when institutional conditions are incorporated into the analysis.

However, the negative effect of institutional quality contradicts expectations, suggesting that weak governance structures may hinder growth. This result differs from Pradhan et al. (2023), who found a positive long-run effect of institutional quality on economic growth, and from Akinlo and Olayiwola (2023), who similarly reported a positive contribution of institutional quality in low-income Sub-Saharan African countries. Importantly, the interaction term between financial development and institutional quality is positive and significant, supporting the complementarity hypothesis. The marginal-effects analysis further shows that the effect of financial development becomes progressively less negative as institutional quality improves. Although the marginal effect remains negative across the observed range, the pattern suggests that improvements in institutional quality mitigate financial development's adverse effect on economic growth. This finding is broadly consistent with Asante et al. (2023), who found that rule of law, political stability, and regulatory quality strengthen the effect of financial development on economic growth, and with Adu-Darko (2024), who reported a positive interaction between financial development and institutional quality under the Cobb-Douglas specification. It also aligns with Xu and Wubishet (2024), who found that stronger institutional frameworks amplify financial development's growth effect in East Africa. However, the result differs from Akinlo and Olayiwola (2023), who found no significant positive effect from the interaction between financial development and institutional quality, and from Olaniyi and Oladeji (2021), who reported a negative interaction effect in West Africa.

5. CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

This study examined the relationship between financial development, institutional quality, and economic growth in Nigeria from 2000–2024, focusing on whether financial development and institutional quality complement or substitute for each other. Using the Autoregressive Distributed Lag (ARDL) approach, the study examined the short- and long-run relationships among the variables. The baseline model showed that financial development has no significant short-run effect on economic growth, suggesting that financial sector expansion alone may be insufficient to stimulate economic growth. However, the extended model established a long-run relationship after including institutional quality and its interaction with financial development. Financial development exerted a positive and significant long-run effect on economic growth, while institutional quality exhibited a negative effect. The interaction coefficient was positive and significant, indicating that improvements in institutional quality strengthen the marginal effect of financial development on economic growth.

The study contributes to the literature by providing empirical evidence on the moderating role of institutional quality in Nigeria's finance–growth relationship. Unlike studies that examine these variables independently, this study incorporates their interaction to determine whether they function as complements or substitutes. By combining interaction and marginal-effects analyses, the study also provides additional insights into how the

growth effect of financial development varies across levels of institutional quality. The marginal-effects results indicate that improvements in institutional quality reduce the negative marginal effect of financial development, although the effect remains negative across the observed institutional-quality range.

The study therefore concludes that financial development and institutional quality are complementary in Nigeria, as improvements in institutional quality strengthen the marginal growth effect of financial development. However, this complementary effect does not necessarily translate into a positive marginal effect at existing levels of institutional quality. These findings underscore the importance of strengthening institutional frameworks to improve the effectiveness of financial development in promoting sustainable economic growth.

5.2 Recommendations

Based on the findings, the following policy recommendations are proposed:

a) Strengthen institutional quality: Government should intensify efforts to improve governance, particularly in the area of corruption control, to ensure that financial resources are efficiently utilized.
b) Enhance financial sector development: Policies aimed at increasing access to credit for the private sector should be promoted to stimulate investment and economic growth.
c) Promote synergy between finance and institutions: Policymakers should design reforms that simultaneously improve financial development and institutional quality, rather than addressing them in isolation.

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