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FINANCIAL INCLUSION AND INCLUSIVE GROWTH IN NIGERIA: THE ROLE OF INSTITUTIONAL QUALITY

INCLUSÃO FINANCEIRA E CRESCIMENTO INCLUSIVO NA NIGÉRIA: O PAPEL DA QUALIDADE INSTITUCIONAL

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Abstract
Over the last decade, Nigeria has been persistently described as the world's capital of poverty, with approximately half of its population reported to live below the poverty line according to the World Bank. This is a striking paradox given the nation's status as the largest economy in Africa and one of the fastest-growing economies globally in recent years. The overwhelming evidence suggests that Nigeria's economic growth has not been inclusive. This study therefore examined the moderating role of institutional quality in the relationship between financial inclusion and inclusive growth, employing time series data from 1990 to 2023. Estimated results from both the Autoregressive Distributed Lag (ARDL) model and the Quantile Generalized Method of Moments (QGMM)—used for robust inference—reveal that financial inclusion has a statistically significant positive impact on both aggregated inclusive growth (measured via principal component analysis) and disaggregated inclusive growth (including standards of living, life expectancy at birth, and GDP growth). The study also finds that institutional quality exerts a direct cautionary effect on inclusive growth and distorts the positive impact of financial inclusion. While this appears counterintuitive, the study attributes these cautionary effects to short-term disruptions

Resumo
Ao longo da última década, a Nigéria tem sido persistentemente descrita como a capital mundial da pobreza, com aproximadamente metade da sua população a viver abaixo do limiar da pobreza, de acordo com o Banco Mundial. Trata-se de um paradoxo impressionante, dado o estatuto do país como a maior economia de África e uma das economias com crescimento mais rápido a nível global nos últimos anos. As evidências esmagadoras sugerem que o crescimento econômico da Nigéria não tem sido inclusivo. Portanto, este estudo examinou o papel moderador da qualidade institucional na relação entre inclusão financeira e crescimento inclusivo, empregando dados de séries temporais de 1990 a 2023. Os resultados estimados tanto do modelo Autoregressive Distributed Lag (ARDL) quanto do Quantile Generalized Method of Moments (QGMM) — usado para inferência robusta — revelam que a inclusão financeira tem um impacto positivo estatisticamente significativo tanto no crescimento inclusivo agregado (medido por meio da análise de componentes principais) quanto no crescimento inclusivo desagregado (incluindo padrões de vida, expectativa de vida ao nascer e crescimento do PIB). O estudo também constata que a qualidade institucional exerce um efeito

that produce long-term ripple effects. It is recommended that institutional reforms be tailored to the peculiarities of the Nigerian economy and closely monitored to mitigate potential short-run disruptions that could undermine the long-term benefits of strong institutional quality.

Keywords: Inclusive Growth. Institutional Quality. Financial Inclusion. ARDL. Quantile GMM.

cauteloso direto sobre o crescimento inclusivo e distorce o impacto positivo da inclusão financeira. Embora isso pareça contraintuitivo, o estudo atribui esses efeitos cautelosos a perturbações de curto prazo que produzem efeitos em cascata de longo prazo. Recomenda-se que as reformas institucionais sejam adaptadas às peculiaridades da economia nigeriana e monitoradas de perto para mitigar possíveis perturbações de curto prazo que possam comprometer os benefícios de longo prazo de uma forte qualidade institucional.

Palavras-chave: *Crescimento inclusivo. Qualidade institucional. Inclusão financeira. ARDL. Quantile GMM.*

1 INTRODUCTION

Global attention has shifted from rapid expansion toward inclusive, long-term development, reflected in the UN's Sustainable Development Goals for 2030 (UNDP, 2015). Studies indicate that inclusive growth—economic growth intentionally broadening opportunities for poor and marginalized groups—reduces poverty and improves living standards in developing countries (David, Sakanko & Ladan, 2019; Singh & Chudasama, 2020; Bolarinwa & Collins, 2021; Aderounmu *et al*., 2021). Thus, inclusive growth is widely regarded as a pathway to sustainable development.

For conceptual clarity, inclusive growth ensures gainful employment and broader access to the benefits of development for neglected segments of society (Bernard & Edward, 2022). Its principal dimensions include poverty reduction, job creation and improved job quality, agricultural modernization, reduced regional disparities, environmental protection, and more equitable income distribution (Ratnawati, 2020). Because many sub-Saharan African countries remain trapped in cycles of deprivation, translating aggregate GDP gains into these distributional outcomes remains a persistent policy challenge.

Nigeria illustrates this disconnect between aggregate growth and household welfare. Despite being Africa's largest economy, Nigeria is often described as the world's poverty capital: estimates indicate over 89 million people live in severe poverty while unemployment and inequality rise (Aderounmu *et al*., 2021; Owolabi *et al*., 2024). This

paradox highlights the limits of growth that fails to reach broad segments of the population.

Financial inclusion—the access to and regular use of affordable, appropriate financial products and services by individuals and firms—is central to enabling inclusive growth (Owolabi *et al*., 2023; Olaoye *et al*., 2025). Access to formal savings, credit, insurance and payment services permits households to smooth consumption, manage shocks, invest in health and education, and scale microenterprises. Empirical evidence shows that such financial access reduces vulnerability to destitution induced by events like job loss, illness or crop failure (Sakanko, David & Onimisi, 2020; Adeleye *et al*., 2022).

In practice, expanded financial infrastructure has not eliminated exclusion. Despite proliferation of commercial banks, microfinance institutions, digital providers and fintech platforms, a substantial share of Nigerians remain unserved: the World Bank estimated 73.2 million adults—about 41.6 percent of the adult population—were financially excluded in 2019 (World Bank, 2019). Scholars identify limited access to capital and appropriate financial products as systemic drivers of persistent poverty in Africa (World Bank, 2016; World Bank, 2018; Akinlo & Aderounmu, 2023), and contend that mere increases in provider counts do not guarantee meaningful inclusion.

To address exclusion, Nigeria launched a National Financial Inclusion Strategy (NFIS) in 2012, introducing a cashless policy, payment service banks, an agent-banking framework, fintech regulation, consumer protection measures, credit-enhancement schemes and a national financial literacy agenda (Osakwe, 2020). Yet progress on inclusive-growth metrics—poverty reduction, inequality and unemployment—has been uneven, indicating that supply-side financial reforms alone are insufficient to deliver broad welfare improvements.

Institutional quality appears central to this impasse. Institutional quality—governance, rule of law, regulatory effectiveness and political stability—determines whether financial access translates into sustained welfare gains. Weak institutions deter investment, perpetuate corruption and erode public confidence, thereby undermining the capacity of financial and policy interventions to reach disadvantaged populations (Ewetan *et al*., 2020a; Ogbuabor *et al*., 2020; Wanjiru & Prime, 2020). Conversely, stronger

institutions enhance policy implementation, protect property rights and create the predictability necessary for financial systems to serve marginalized groups effectively.

Although prior research examines institutional quality and macroeconomic performance, and other studies document financial inclusion's potential to alleviate poverty, integrated empirical inquiry that jointly tests financial inclusion, institutional quality and inclusive growth is limited—particularly for Nigeria (Olanrewaju *et al*., 2019; Raji, 2021; Olaoye *et al*., 2025). This gap constrains policymakers who require coordinated evidence to sequence reforms effectively.

This study fills that gap by empirically assessing the impact of financial inclusion on inclusive growth in Nigeria and testing whether institutional quality moderates the relationship. By combining indicators of financial access and usage with governance measures and inclusive-growth outcomes, the research aims to inform policy sequencing and prioritization—identifying which dimensions of financial inclusion deliver the greatest social returns under differing institutional conditions. Empirical evidence from this study will provide policymakers with actionable recommendations on sequencing financial and governance reforms to ensure broad, sustainable improvements in living standards across Nigeria and inclusive prosperity.

2 LITERATURE

2.1 Empirical literature

This section links financial inclusion, institutional quality, and inclusive growth by examining how financial inclusion—mediated by institutional quality—affects inclusive growth. The literature converges on a definition of financial inclusion as the widening of formal financial services to households, firms, and organizations (Khan *et al*., 2022; Iddrisu *et al*., 2023; Ndungu, 2023; Zahra & Ajija, 2023; Olaoye, Bowale & Ewetan, 2025). Olaniyi (2017) frames it as delivering affordable banking services to low-income populations. Financial inclusion underpins sustainable development by facilitating secure savings, access to credit, risk diversification and payment services that ease livelihoods and support productive activity (Dahiya & Kumar, 2020).

Financial inclusion reduces poverty and income inequality and weakens the dominance of informal local moneylenders, thereby promoting broader prosperity (Iddrisu *et al*., 2023; Ndungu, 2023). Importantly, inclusion is a multi-stage process—progressing from access to active use and meaningful penetration of financial services—rather than a single, immediately attained goal (Beck, Demirgüç-Kunt & Martinez Peria, 2009). Consequently, the potential for a positive connection between financial inclusion and inclusive growth depends on how inclusive and functional the financial system actually is.

Empirical evidence largely supports the proposition that enhanced financial access benefits the poor and contributes to growth, inequality reduction, and poverty mitigation (Beck *et al*., 2009; Olaniyi, 2017). In Uganda, Bongomin *et al*. (2017) found that social capital and generational values in rural areas positively influence financial inclusion, highlighting the role of community networks in improving access. Olaniyi's (2017) Bayesian VAR analysis across Africa (2005–2014) reported a favorable—though in some measures not statistically significant—relationship between financial inclusion indicators (credit supply, broad money, literacy, internet users) and GDP per capita; other measures showed positive and significant effects.

At the country level, Abimbola, Olokoyo, and Farouk (2018) used multiple regression to show that account balances, deposit customers, and agricultural loan size significantly aided poverty alleviation in Nigeria (1992–2016), although high borrowing costs undermined poverty reduction. Using GMM dynamic panel techniques for Asian countries (2009–2018), Ratnawati (2020) found that different dimensions of financial inclusion—bank access, penetration and usage—partially influenced economic growth, poverty, income inequality and financial stability (bank Z-score and nonperforming loans).

A broad set of empirical studies supports a generally positive nexus between financial inclusion and inclusive outcomes (Naude, 2004; Jellema & Roland, 2011; Siddiqui & Ahmed, 2013; Nawaz *et al*., 2014; Slesman *et al*., 2015; Le, Kim & Lee, 2016; Epaphras & Kombe, 2017; Iheonu *et al*., 2017; Uruakpa *et al*., 2019; Olanrewaju *et al*., 2019; Utile *et al*., 2021; Nguyen & Ha, 2021; Raji, 2021; Jisike & Ifeanyi, 2021; Hussen, 2023). However, a minority of studies report negative or ambiguous effects (Khan, 2011;

Nkwede, 2015; Nwisienyi & Obi, 2020; Menyelim *et al*., 2021; Chiwira, 2021; Kazeem, 2021), often attributing such findings to methodological limitations (Ozili *et al*., 2023).

Overall, the literature indicates that financial inclusion can drive inclusive growth, but outcomes depend on the depth of financial penetration, the nature of financial services, and institutional quality that shapes access, usage, and the translation of financial access into sustainable welfare gains.

2.2 Theoretical framework

Given the foregoing literature, a strong theoretical link ties financial inclusion to inclusive growth: by lowering transaction costs and reducing information asymmetries, financial inclusion improves allocation of resources to productive sectors and agents (Babajide *et al*., 2020). Schumpeterian theory underscores this mechanism: economic development hinges on identifying and mobilizing factors of production—especially finance—to support innovation and scale new output. Entrepreneurs who innovate require timely access to capital to implement discoveries, and a well-functioning financial system channels resources to the most efficient users, thereby stimulating growth (Roskamp, 1991; Mehmood *et al*., 2019; King & Ross, 1993; Festrè & Nasica, 2009). Consequently, broader access to savings, credit and payment services can expand entrepreneurial activity, raise investment, and widen the economic base; financial literacy further enhances these effects by enabling better financial decisions.

Complementing this finance-driven view, New Institutional Economics situates institutional quality as a primary determinant of whether financial inclusion translates into inclusive outcomes (Hodgson, 1989; Chelli *et al*., 2014). Robust institutions—rule of law, effective regulation, and accountable governance—facilitate efficient resource allocation, protect vulnerable groups, and foster confidence in contracts and markets (Zallé, 2018). Well-managed institutions lower borrowing costs for governments and firms, freeing fiscal space for social and infrastructure investments that support broad-based welfare. In sum, financial inclusion can promote inclusive growth, but its capacity to do so depends critically on institutional quality: access to finance plus strong institutions creates the conditions for sustainable, equitable development.

2.3 Gaps in literature

The literature on the interaction between financial inclusion, institutional quality, and inclusive growth in Nigeria remains limited. To the researcher's knowledge, only a few studies—notably Olanrewaju *et al*. (2019) and Raji (2021) —have directly explored this trio, and existing analyses used data through 2019, leaving scope to extend the period to 2023. Prior studies also differ in outcome measurement: Olanrewaju *et al*. used real GDP per person employed (RGDPE), a labour-productivity indicator, while Raji employed the Human Development Index (HDI), which captures broader social outcomes but omits factors like environmental degradation (Lashmar, 2018). Such variation reflects choices driven by data availability and researcher judgment and creates comparability challenges. Consequently, there is a need to test alternative, complementary measures of financial inclusion, institutional quality, and inclusive growth. This study addresses that gap by assessing inclusive growth both as an aggregated index and through disaggregated components, aiming to produce more robust and policy-relevant inferences.

3 METHODOLOGY

This study used a longitudinal (ex-post facto) design, analysing annual data from 1996 to 2023. Although the 28-year span is relatively small, it furnishes a foundational sample for deriving policy insights on the nexus between financial inclusion and inclusive growth moderated by institutional quality. Moreover, the chosen analytical techniques are intended to mitigate methodological limitations associated with the sample's size and to strengthen empirical robustness further.

3.1 Variables and measurement

Dependent Variables: (1) GDP Per Capita; (2) Life Expectancy Rate; (3) GDP (Current); and (4) Financial Inclusion (The First Principal Component derived as a linear combination of Loans issued by rural commercial banks, deposits in rural commercial banks, loans issued to Small and Medium Scale Enterprises, Domestic credit to private sector (% of GDP), Domestic credit to private sector by banks (% of GDP), and Monetary

Sector credit to private sector (% GDP),

Independent Variables: (1) Institutional Quality (measured as the first Principal Component Derived as a Linear Combination of Regulatory Quality, Rule of Law, Voice and Accountability, Control of Corruption, and Government Effectiveness Estimates).

Control Variables: (1) Exchange Rate; (2) Government Spending; and (3) Economic Freedom (Expressed as a natural logarithm derived as a linear combination from 12 indicators; trade freedom, labour freedom, monetary freedom, judicial effectiveness, tax burden, government spending, financial freedom, government integrity, investment freedom, property rights, fiscal health)

It is important to note that other than all other variables were log transformed and standardized to ensure a common unit of measurement with the broad dependent variable - the Financial Inclusion Index.

3.2 Econometric models and analysis

The study employed multiple econometric techniques to examine links among financial inclusion, institutional quality, and inclusive growth. Each series' stationarity was assessed using Augmented Dickey–Fuller and Phillips–Perron tests, with specifications including intercept, no intercept, and trend. Potential cointegration was then evaluated via the two-step residual-based Engle–Granger approach. Depending on those results, the analysis proceeded to estimate an Autoregressive Distributed Lag (ARDL) model for long- and short-run dynamics and a Quantile Generalized Method of Moments (GMM) model to capture distributional heterogeneity.

3.3 Empirical Models

3.3.1 The autoregressive distributed lag model

The ARDL model is arguably one of the most widely used advanced econometric approaches in both time series and panel data analysis due to its ability to model series of mixed integration order. The ARDL model for this study is specified as follows:

$$\Delta\psi' = \delta_0 + \varphi_1\psi_{t-1} + \varphi_2 FI_{t-1} + \varphi_3 IQ_{t-1} + \varphi_4 IQ * FI_{t-1} + \varphi_5 LnEF_{t-1} + \varphi_6 LnGS_{t-1} + \varphi_7 LnEXC_{t-1} + \sum_{i=1}^{a} \phi_{1i}\Delta\psi_{t-1} + \sum_{i=0}^{a} \phi_{2i}\Delta FI_{t-1} + \sum_{i=0}^{a} \phi_{3i}\Delta IQ_{t-1} + \sum_{i=t}^{a} \phi_{4i}\Delta IQ * FI_{t-1} + \sum_{i=0}^{a} \phi_{5i}\Delta LnEF_{t-1} + \sum_{i=0}^{a} \phi_{6i}\Delta LnGOV_{t-1} + \sum_{i=0}^{a} \phi_{7i}\Delta LnEXC_{t-1} + \varepsilon_t \quad (1)$$

here:

ψ is the vector of the dependent variables (i.e., inclusive growth, GDP, standard of living, life expectancy rate) while,

δ is the drift concept in the model, and I indicate the specific lag lengths, which were determined optimally using the AIC approach.

φ_1 *to* $\varphi_7$indicates the parameters to be estimated.

While the study emphasis is to understand the impact of interest (i.e., long-run effects), by virtue of adopting the ARDL model, the study estimated both the short-run and long-run impacts. The long-run equation is thus;

$$\Psi_t + \sum_{i=1}^{p} \phi_{1i}\Psi_{t-1} + \sum_{j=0}^{a} \phi_{2i} FI_{t-1} + \sum_{k=0}^{b} \phi_{3i} IQ_{t-1} + \sum_{l=0}^{c} \phi_{4i} IQ * FI_{t-1} + \sum_{m=0}^{d} \phi_{5i} LnEF_{t-1} + \sum_{n=0}^{e} \phi_{6i} LnGOV_{t-1} + \sum_{q=0}^{f} \phi_{7i} LnEXC_{t-1} + \varepsilon_t \quad (2)$$

Accordingly, to understand the short-run relationship between variables of interest and inclusive growth indicators when long-run dynamics exist, the error correction model is given as thus:

$$\Delta\psi = \delta_0 + \sum_{i=1}^{a} \phi_{1i}\Delta LEXP_{t-1} + \sum_{i=0}^{a} \phi_{2i}\Delta FI_{t-1} + \sum_{i=0}^{a} \phi_{3i}\Delta IQ_{t-1} + \sum_{i=0}^{a} \phi_{4i}\Delta IQ * FI_{t-1} + \sum_{i=0}^{a} \phi_{5i}\Delta LnEF_{t-1} + \sum_{i=0}^{a} \phi_{6i}\Delta LnGOV_{t-1} + \sum_{i=0}^{a} \phi_{7i}\Delta LnEXC_{t-1} + \Phi ECT_{t-1} + \varepsilon_t \quad (3)$$

where:

ϕ_{1i} *to* ϕ_7 are the short-run coefficients,

δ is the intercept, Φ is the speed of adjustment,

and ECT is the error correction mechanism.

3.3.2 The quantile general method of moments

The study adopts the Quantile GMM as a robust complement to the ARDL model. Although commonly used in panel contexts, applying Quantile GMM to time series is increasingly accepted because it can model cointegrated relationships beyond average effects by estimating impacts across quantiles. This overcomes a key limitation of traditional time-series methods that focus solely on mean responses. Quantile GMM thus validates and extends ARDL findings, uncovering asymmetric effects and heterogeneous relationships between financial inclusion, institutional quality, and inclusive growth that average-based models may miss. By revealing distributional dynamics across different quantiles, the approach offers novel empirical insights into the trio's complex interactions. The general Quantile GMM is specified as follows:

$$Y_t = \vartheta + \propto' X_t + (\alpha + Z_t\gamma)\varepsilon_t \qquad (4)$$

While the conditional equation is expressed as;

$$QY(X_t) = \vartheta + \alpha Q_\varepsilon(\tau) + \propto' X_t + Z_t'\gamma Q_\varepsilon(\tau) \qquad (5)$$

Y is the vector of all the individual dependent variable (i.e., inclusive growth, GDP, standard of living, life expectancy rate); X_t is the vector of the regressors (i.e., financial inclusion, institutional quality, exchange rate, economic freedom, government spending, and the interaction term); Zt captures and explains the time-varying impacts of the regressors; a is the intercept; ϑ is the quantile-informed intercept; and $\propto \gamma$ are the vectors of the parameter estimates. ε_t is the error term that is standard across quantiles (i.e., fixed).

4 RESULTS

Table 1 provides detailed descriptive statistics for all the series. The sample comprises annual data from 1996 to 2023. However, due to data availability, the total number of observations ranges between 27 and 28 (see the table for additional insights).

4.1 Results

Table 1

Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
LEXP	28	50.435	2.581	45.833	54.462
GDP Per Cap	28	1773.314	709.718	480.669	3088.721
EXC	28	192.149	139.398	21.884	645.194
EF	28	54.029	3.322	47.4	58.7
GS	28	73.836	20.358	0	96.5
LRB	28	137.631	245.486	4.411	988.588
DRB	28	115.722	185.402	.02	670.331
LRSMES	28	3.357	4.81	.07	16.599
DCPS	27	11.172	3.314	6.174	19.626
DCPB	28	11.263	3.439	6.151	19.604
CPMS	27	11.172	3.314	6.174	19.626
RQ	28	-.924	.152	-1.293	-.682
ROL	28	-1.123	.189	-1.513	-.842
VA	28	-.694	.272	-1.554	-.32
COC	28	-1.174	.136	-1.502	-.901
GE	28	-1.037	.095	-1.213	-.848

Note: LEXP= life expectancy rate at birth; EXC= exchange rate; EF= economic freedom; GS= government expenditure; LRB=loan issued by rural banks; DRB=deposits received by rural banks; LRSMES=loan issued by rural banks to SMEs; DCPS=domestic credit provided to private sector; DCPB=domestic credit provided by banks; CPMS=creit provided by monetary sector; RQ=regulatory quality; ROL=rule of law; VA=voice and accountability; COC= control of corruption; GE=government effectiveness.

4.1.1 Unit root test and cointegration test

The unit-root tests in Table 2 shows that most series are non-stationary at levels (5%); however, after first differencing, every series becomes stationary at the 5% significance level for this sample.

Table 2

Unit Root Tests Results

	ADF			P-Perron		
Variables	**Constant**	**No-Constant**	**Trend**	**Constant**	**No-Constant**	**Trend**
	Statistic	Statistic	Statistic	Statistic	Statistic	
At Levels						
Inclusive Growth	-0.997	**-1.021**	-1.748	**-0.983**	**-1.021**	-1.496
Financial Inclusion	-2.368	-2.392**	-3.129	-2.135	-2.18	-2.393
Institutional Quality	-2.183	-2.226**	-3.729**	-1.74	-1.766	-2.097
GDP	-1.098	0.344	-2.141	-1.155	0.399	-1.99
GDP Per Capita	-1.48	-0.144	-2.196	-1.53	-0.116	-2.033
Economic Freedom	-1.673	0.143	-2.137	-2.66	0.546	-2.771
Life Expectancy	-2.22	-0.632	-2.903	-2.547	-0.784	-2.927
Exchange Rate	-2.048	0.124	-3.311	-1.591	1.991**	-2.574
At First Difference						
Inclusive Gowth	-2.78	-2.72***	-6.313***	-4.444***	-4.413***	-4.395***
Financial Inclusion	-4.1***	-4.073***	-4.103***	-3.74***	-3.75***	-3.693***
Institutional Quality	-3.608***	-3.593***	-2.785	-2.96**	-3.009***	-2.858
GDP	-3.138***	-3.19***	-3.063***	-4.855***	-4.931***	-4.746***
GDP Per Capita	-3.153***	-3.23***	-3.08***	-4.871***	-4.976***	-4.763***
Economic Fredom	-3.531***	-3.633***	-3.481***	-6.127***	-6.275***	-5.975***
Life Expectancy	-5.809***	-5.987***	-5.701***	-5.498***	-5.618***	-5.361***
Exchange Rate	-5.357***	-2.773***	-5.134***	-5.001***	-4.219***	-4.993***
Cointegration Test: Residual Based						
IG	-3.26***	-3.322***	-1.407	-2.99**	-3.051***	-3.348
GDP	-3.405***	-3.463***	-4.743***	-3.075***	-3.13***	-3.551
GDP Per Capita	-3.339***	-3.397***	-4.552***	-3.088**	-3.145***	-3.515
Life Expectancy	-2.999	-2.853***	-2.897	-3.057**	-3.14***	-3.106
Critical Values						
1%	-3.113	-2.66	-4.38	-3.74	-2.56	-4.371
5%	-3	-1.95	-3.6	-2.99	-1.95	-3.59
10%	-2.63	-1.6	-3.24	-2.62	-1.6	-3.23

To assess possible long-run relations among integrated series in the sample, the study applied the Engle–Granger two-step residual method; results confirm cointegration and justify estimation via an ARDL model.

4.1.2 The ARDL-ECM

Short run: ARDL-ECM estimates (Table 3) show none of the main variables significantly affect aggregated inclusive growth or its components (GDP, standard of living, life expectancy). Controls—especially exchange rate and government expenditure—have a negative, statistically significant effect.

Long run: institutional quality and financial inclusion (and their interaction) are significant. A one-SD rise in institutional quality lowers aggregated inclusive growth by

0.56 SD (mildly significant at 10%) and reduces GDP by 0.15%, standard of living by 0.14% (both significant at 10%); the life-expectancy effect (−0.019%) is not significant. A one-SD increase in financial inclusion raises inclusive growth by 0.52 SD (5% level) and boosts GDP and standard of living by 0.15% each (both significant at 5%); its effect on life expectancy is positive but insignificant.

Interaction: the institutional-quality × financial-inclusion term is negative and significant for aggregated inclusive growth and for GDP and standard of living (not for life expectancy). A one-SD increase in institutional quality reduces the positive effect of financial inclusion on aggregated inclusive growth by 0.24 SD (10%); it also lowers that positive effect on GDP by 0.077% and on standard of living by 0.074% (both significant at 5%), while the reduction for life expectancy (0.028%) is insignificant.

Adjustment: all error-correction terms are negative and significant (≥5%), with adjustment speeds of 66% (aggregated), 95% (GDP), 96% (standard of living), and 71% (life expectancy) per period.

Table 3

ARDL Estimates on Financial Inclusion

VARIABLES	(ECT) IG	(LR) IG	(SR) IG	(ECT) GDP	(LR) GDP	(SR) GDP	(ECT) SOL	(LR) SOL	(SR) SOL	(ECT) LEXP	(LR) LEXP	(SR) LEXP
Short-Run Estimates												
IQ	-0.659***	-0.563*	-0.120	-0.952***	-0.150*	-0.0269	-0.964***	-0.144*	-0.0272	-0.711**	-0.0921	-0.0478
	(0.180)	(0.307)	(0.175)	(0.141)	(0.0787)	(0.0653)	(0.138)	(0.0755)	(0.0634)	(0.319)	(0.238)	(0.122)
FI		0.523**	0.0732		0.148**	0.0392		0.143**	0.0400		-0.0109	0.105
		(0.204)	(0.131)		(0.0523)	(0.0480)		(0.0502)	(0.0467)		(0.199)	(0.0879)
IQ_FI		-0.240*	-0.0322		-0.0772**	-0.0213		-0.0744**	-0.0213		0.0280	-0.0303
		(0.131)	(0.0899)		(0.0336)	(0.0329)		(0.0323)	(0.0320)		(0.128)	(0.0680)
LnECO			1.037			0.978			0.965			1.379
			(3.907)			(1.431)			(1.389)			(2.657)
LnGOV			-1.943*			-0.822**			-0.818**			0.443
			(0.920)			(0.337)			(0.328)			(0.946)
LnEXC			-1.361***			-0.958***			-0.962***			0.479*
			(0.398)			(0.152)			(0.148)			(0.268)
Year			0.261***			0.148***			0.124***			-0.0509
			(0.0578)			(0.0187)			(0.0158)			(0.0346)
							(0.138)					
Constant		-777.4***			-281.3***			-246.0***			130.8	
		(121.0)			(30.45)			(29.20)			(95.30)	
Observations	26	26	26	26	26	26	26	26	26	25	25	25
R-squared	0.707	0.707	0.707	0.863	0.863	0.863	0.870	0.870	0.870	0.552	0.552	0.552
Diagnostic Test	P-Values	Statistics		P-Values	Statistics		P-Values	Statistics			P-Values	Statistics
Serial Correlation (BP)	0.1816	1.784		0.0483	3.901		0.0483	3.901			0.541	0.372
Heteroskedasticity	0.4076	26.00		0.4076	26.00		0.4076	26.00			25.00	0.405
Normality	0.1371[0.5394]	16.11[0.38]		0.930[0.171]	5.02[1.87]		0.9447[0.1608]	4.70[1.97]			0.204[0.070]	14.55[3.26]
CUSUM	0.4684	1.3581		0.542	1.627		0.546	1.3581			0.4468	1.358

Note: Robust standard errors in parentheses and *** p<0.01, ** p<0.05, * p<0.1

4.1.3 The GMM Quantile Regression

The Quantile GMM results in Table 4 reinforce the ARDL-ECM findings and add distributional detail.

Institutional quality shows no broad effect on aggregated inclusive growth except at the 50th and 75th quantiles, where it is negative and significant (−0.27 and −0.30 SD). For disaggregated outcomes, institutional quality significantly hurts economic growth only at the 75th quantile; a similar pattern holds for standard of living but not for life expectancy. In short, the adverse effect of institutional quality is concentrated at the median and upper quantiles.

Financial inclusion is positively and significantly related to aggregated and disaggregated inclusive growth across all quantiles: on average, a one-SD rise in financial inclusion raises inclusive growth by 0.30 SD. For GDP, a one-SD increase in financial inclusion raises growth by about 0.09% on average and this positive effect holds across all GDP quantiles. Standard of living also shows positive, significant effects across quantiles. Life expectancy, however, does not respond significantly to financial inclusion at any quantile.

Regarding moderation, the institutional-quality × financial-inclusion interaction tends to weaken the positive effect of financial inclusion. This moderating negative response is not significant on average but becomes significant at the 50th and 75th quantiles for aggregated inclusive growth, and similarly for GDP and standard of living. For life expectancy the moderating effect is negative and significant on average and across most quantiles (except the first), indicating the moderation is more damaging except where life expectancy is very low.

Table 4

Quantile GMM Estimates on Financial Inclusion

VARIABLES	(Location) IG	(Scale) IG	(0.25) IG	(0.50) IG	(0.75) IG	(Location) GDP	(Scale) GDP	(0.25) GDP	(0.50) GDP	(0.75) GDP
IQ	-0.214	-0.111	-0.0934	-0.272**	-0.299**	-0.0590	-0.0285	-0.0281	-0.0751	-0.0802*
	(0.159)	(0.0931)	(0.263)	(0.137)	(0.120)	(0.0532)	(0.0260)	(0.0755)	(0.0474)	(0.0452)
FI	0.302***	-0.0284	0.333*	0.287***	0.281***	0.0938***	-0.00654	0.101*	0.0901***	0.0889***
	(0.108)	(0.0761)	(0.184)	(0.0777)	(0.0650)	(0.0358)	(0.0210)	(0.0559)	(0.0274)	(0.0247)
IQ_FI	-0.0984	-0.0237	-0.0727	-0.111*	-0.116**	-0.0339	-0.00775	-0.0254	-0.0382*	-0.0396**
	(0.0789)	(0.0523)	(0.133)	(0.0575)	(0.0486)	(0.0261)	(0.0143)	(0.0399)	(0.0202)	(0.0185)
LnECO	2.691	1.501	1.055	3.474	3.831	0.632	0.402	0.195	0.859	0.932
	(3.500)	(1.779)	(5.282)	(3.003)	(2.737)	(1.190)	(0.488)	(1.568)	(1.073)	(1.036)
LnGOV	-2.965***	-0.444	-2.481*	-3.197***	-3.302***	-1.002***	-0.163	-0.825**	-1.094***	-1.124***
	(0.776)	(0.489)	(1.292)	(0.607)	(0.494)	(0.254)	(0.136)	(0.390)	(0.211)	(0.183)
LnEXC	-1.442***	-0.000851	-1.441***	-1.442***	-1.442***	-0.876***	0.0184	-0.896***	-0.866***	-0.862***
	(0.270)	(0.176)	(0.450)	(0.191)	(0.160)	(0.0888)	(0.0489)	(0.134)	(0.0687)	(0.0626)
Year	0.347***	0.0199	0.326***	0.358***	0.362***	0.151***	0.00298	0.148***	0.153***	0.153***
	(0.0382)	(0.0262)	(0.0679)	(0.0268)	(0.0201)	(0.0124)	(0.00714)	(0.0200)	(0.00896)	(0.00777)
Constant	-688.3***	-43.55	-640.8***	-711.0***	-721.4***	-271.1***	-6.847	-263.6***	-274.9***	-276.2***
	(77.86)	(52.65)	(138.5)	(55.43)	(41.60)	(25.30)	(14.31)	(40.53)	(18.47)	(16.10)
VARIABLES	(Location) SOL	(Scale) SOL	(0.25) SOL	(0.50) S OL	(0.75) SOL	(Location) LEXP	(Scale) LEXP	(0.25) LEXP	(0.50) LEXP	(0.75) LEXP
IQ	-0.0580	-0.0260	-0.0305	-0.0733	-0.0774*	-0.0730	-0.0815**	-0.00550	-0.0744	-0.144
	(0.0515)	(0.0248)	(0.0717)	(0.0455)	(0.0437)	(0.0780)	(0.0353)	(0.0881)	(0.0865)	(0.112)
FI	0.0915***	-0.00637	0.0982*	0.0877***	0.0867***	0.0481	0.0612**	-0.00262	0.0491	0.101
	(0.0348)	(0.0201)	(0.0536)	(0.0265)	(0.0244)	(0.0611)	(0.0247)	(0.0720)	(0.0670)	(0.0854)
IQ_FI	-0.0330	-0.00740	-0.0252	-0.0374*	-0.0386**	-0.0138	-0.0471***	0.0252	-0.0146	-0.0548
	(0.0253)	(0.0137)	(0.0382)	(0.0196)	(0.0180)	(0.0427)	(0.0167)	(0.0524)	(0.0476)	(0.0626)
LnECO	0.590	0.372	0.195	0.808	0.867	-0.655	-0.194	-0.495	-0.659	-0.824
	(1.160)	(0.465)	(1.525)	(1.046)	(1.012)	(1.236)	(0.635)	(1.333)	(1.240)	(1.432)
LnGOV	-0.985***	-0.162	-0.814**	-1.080***	-1.106***	0.458	0.276*	0.229	0.463	0.698*
	(0.248)	(0.131)	(0.373)	(0.206)	(0.178)	(0.288)	(0.166)	(0.429)	(0.311)	(0.372)
LnEXC	-0.876***	0.0196	-0.897***	-0.865***	-0.862***	0.487***	-0.119**	0.585***	0.485***	0.383**

Year	0.125***	0.00240	0.122***	0.126***	0.127***	-0.0599***	0.0125*	-0.0703***	-0.0597***	-0.0490**
	(0.0120)	(0.00678)	(0.0188)	(0.00855)	(0.00762)	(0.0173)	(0.00744)	(0.0195)	(0.0184)	(0.0219)
Constant	-237.1***	-5.587	-231.2***	-240.4***	-241.3***	119.2***	-24.73*	139.7***	118.8***	97.70**
	(24.49)	(13.60)	(38.11)	(17.63)	(15.76)	(32.92)	(15.01)	(37.94)	(35.10)	(41.17)

Note: Robust standard errors in parentheses and *** p<0.01, ** p<0.05, * p<0.1

5 DISCUSSION

Financial inclusion significantly promotes inclusive growth in Nigeria, supporting many prior studies (e.g., Olaniyi & Alenoghena 2017; Abor *et al*. 2018; Munir & Ullah 2018), which link measures like domestic credit, bank branches, and ATMs to better development outcomes. However, some studies (Timer & Raza 2022; Olaniyi & Alenoghena 2017; Okonkwo & Nwan 2021; Sil 2020) report positive but statistically insignificant effects, arguing access alone doesn't ensure effective use or equitable income distribution. Contradictory evidence from other developing countries also exists: Zia & Prasetyo (2018) find financial inclusion raised inequality in Indonesia; Enueshike & Okpebru (2020) and Nkwede (2015) report adverse effects on GDP in some contexts.

This study finds financial inclusion a key driver of inclusive growth in Nigeria, though its impact depends on contextual factors—institutional quality, macroeconomic stability, and financial development—highlighting the need for evidence-based, data-driven policy and sustained inclusion initiatives. Notably, institutional quality here appears to weaken inclusive growth, echoing some literature (Yildirim & Gokalp 2016; Noor *et al*. 2020) that links certain institutional factors to poorer macro performance. The moderating effects observed—institutional quality diminishing the benefits of financial inclusion—are relatively novel and contrast with studies showing institutional improvements can mitigate negative shocks (e.g., Ojeka *et al*. 2024), indicating further research is required.

5.1 Theoretical Implications

Financial inclusion's positive effect on inclusive growth aligns with asymmetric-information theory: information gaps and limited knowledge can exclude low-income agents from financial services, reducing their economic potential and hindering inclusive growth. Weak data on rural households, for example, prevents lenders from assessing creditworthiness, worsening inequality and unemployment.

The results also support the McKinnon–Shaw view that greater access to finance reduces poverty, so expanding bank access and financial services should promote inclusive growth. However, the findings caution against uncritically applying New

Institutional Economics or the Second-Best Theory of Institutional Quality: this study finds no strong evidence that institutional quality alone improves inclusive growth and suggests that fixing one distortion while others persist (insecurity, nepotism, weak social cohesion) may not help and could even worsen outcomes. In Nigeria's context, reforms must therefore address multiple distortions simultaneously.

For investors, greater financial inclusion signals a deeper, more bankable market and thus a better investment environment; economies with low inclusiveness risk limiting market size and investor confidence. For policymakers, the interactive effect between institutional quality and financial inclusion implies opportunities: coordinated policies that strengthen institutions while broadening access to finance can better deliver social benefits, reduce inequality, and sustain inclusive growth.

5.2 Conclusion

Nigeria's persistent poverty—despite sizable economic growth—stems largely from non-inclusive growth that fails to benefit much of the population. This study contributes to the literature by showing that financial inclusion is a critical channel for promoting inclusive growth in Nigeria. While many explanations exist, our empirical findings underscore that expanding access to financial services can help translate macroeconomic gains into broader social and economic improvements. Policymakers and stakeholders should therefore prioritize coordinated measures that widen financial access alongside efforts to address contextual distortions (e.g., insecurity, weak institutions) to make growth more inclusive and sustainable.

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All authors contributed equally to the development of this article.

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