



**FINANCIAL INCLUSION, MACROECONOMIC STABILITY,
AND ITS MACROECONOMIC IMPLICATIONS IN NIGERIA**

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Abstract

Financial inclusion enhances economic growth because it helps to allocate financial resources in an optimal way, expand opportunities to invest, and enhance financial stability. In Nigeria, the lack of access to formal financial services by households has reduced their welfare and productive investment, which prevents sustainable economic development. The paper will examine the financial inclusion determinants and how they influence economic growth in the years 1990- 2023 based on secondary data provided by the Central Bank of Nigeria Statistical Bulletin and it will be done using an Error Correction Model. Empirical evidence reveals that interest rates have a negative influence on financial inclusion, economic growth has a positive influence on financial inclusion and financial inclusion has a positive influence on economic growth meaning it is a stimulant in economic growth. The results indicate that macroeconomic stability, regulatory reform and digital financial services play a key role in financial inclusion as well as policy implications in lowering the cost of borrowing, broadening financial infrastructure, and instilling confidence in the financial system in the citizens.

Keywords: *Financial Inclusion, Economic Growth, Interest Rate, Inflation, Exchange Rate, Population Density.*

JEL Codes: G20, O16, E44, C22.

1. Introduction

Financial inclusion has emerged as a pivotal engine in economic growth and development, particularly in the emerging economies, with a huge proportion of the total population being unable to access formal financial services (Beck et al., 2020; Ain et al., 2020). Inability to access formal financial services by households and small businesses forces them to resort to informal high-cost financial options, which restrains the activities of investment, consumption smoothing, and entrepreneurship (Odhiambo, 2021). Though the financial sector has undergone substantial reforms and technological advancements, the vast majority of the Nigerian population does not have access to formal financial services, which casts uncertainty on the possible obstacle to the sustainable growth of the economy.

The first research aim is to consider what the determinants of financial inclusion in Nigeria are, with an emphasis on macroeconomic variables, including interest rates, inflation, exchange rates, and population density, which have been found to be the primary determinants of financial inclusion by empirical studies, although the evidence is disjointed, especially regarding the comparative significance of the variables in the Nigerian context (Adegbite and Ojo, 2022, Gaies et al., 2019). The second aim determines the adjustment of financial inclusion to economic growth, which, in theory, inclusive financial systems mobilize resources, strengthen entrepreneurial activity, and accumulate capital (Pal, Vankila, and Fernandes, 2025; Oyelowo et al., 2024), and the empirical research in Sub-Saharan Africa shows that the greater the access to financial services is, the more impact on the aggregate output and long-term economic stability (Odumusor et al., 2024).

The third aim focuses on the mediating role of interest rates, inflation, exchange rates, and population density on the relationship between financial inclusion and economic growth. The demand for credit directly depends on interest rates as the cost of borrowing, whereas inflation and exchange rate volatility could affect the financial services supply and demand (Gaies et al., 2019; Banerjee and Duflo, 2011). The level of population density can influence the spatial arrangement and accessibility of banking machinery in the rural regions.

The fourth goal is to examine how fast the financial system adapts to long-run equilibrium with financial inclusion, macroeconomic variables, and economic growth since the coexistence of cointegration and error correction mechanisms creates a suggestion of the resilience of the financial system and how much short-term shocks are absorbed without derailing the development trend of the economy (Odhiambo, 2021; Ain et al., 2020).

This paper uses the Johansen cointegration and error correction method to give sound empirical evidence on these adjusting mechanisms. The findings inform policymakers, financial institutions, and development agencies on the design of effective strategies for promoting inclusive finance and achieving sustainable economic growth. The study emphasizes macroeconomic stability, financial literacy, technological innovation, and regulatory reforms as mechanisms for enhancing financial inclusion.

2. Literature

Many empirical studies have been used to investigate the nexus between financial inclusion and economic growth, and they have all found that financial inclusion is multidimensional. Most studies have shown that financial inclusion is positively correlated with economic growth, the strength of this relationship is context-dependent and in some cases, the benefits of financial inclusion can be inhibited by causality between financial inclusion and economic growth has been explored, with studies suggesting that financial inclusion promotes economic growth, but that economic growth also promotes financial inclusion (Jima and Makoni, 2023; Beck et al., 2020; Odumusor et al., 2024).

The policy implications of these findings are profound. To harness the potential of financial inclusion for economic growth, policymakers must focus on creating an enabling environment that promotes financial access. This includes implementing policies that enhance financial literacy, improve financial infrastructure, and assure macroeconomic stability (Adegbite & Ojo, 2022; Pal, Vankila, and Fernandes, 2025). Besides, digital financial services promotion can be instrumental to reach underserved communities with financial access and, consequently, promote inclusive economic development (Banerjee and Duflo, 2011; Ene et al., 2019).

The theoretical foundation of this research is based on several frameworks the main ones being the Financial Intermediation Theory and the Endogenous Growth Theory which is used to explain together the processes through which financial inclusion triggers economic growth. The financial intermediation theory assumes that financial intermediaries are an efficient method of distributing resources between the savers and the investors in a manner that minimizes transaction costs, inducing accumulation of capital and increasing productive efficiency (Levine, 2005). Financial inclusion in this context is conceptualized in terms of the degree to which individuals and businesses can access formal financial services (deposit accounts, credit facilities and payment systems). The financial intermediation role can be formulated as:

$$FI_t = \phi(S_t, C_t, B_t) \tag{1}$$

where FI_t represents the level of financial inclusion at time t , S_t denotes savings mobilization, C_t is credit extension, and B_t captures banking infrastructure and penetration. The function $\phi(\cdot)$ is a measure of the effectiveness of financial intermediation in converting savings into productive investments. The endogenous growth theory is an extension of this model, according to which economic growth is not only based on accumulation of capital and labor, but also on the degree of knowledge, technology, and human capital made possible by financial development (Pal, Vankila, and Fernandes, 2025; Aghion and Howitt, 1992). In this context, financial inclusion speeds up economic growth through greater access to capital, lessening the burden on financing, and stimulating entrepreneurship. The fundamental production of an economy under the endogenous growth model can be put out as follows:

$$Y_t = A_t K_t^\alpha L_t^\beta \tag{2}$$

where Y_t is the total output at time t , A_t denotes total factor productivity, K_t represents physical capital stock augmented by financial inclusion, L_t is labor input, and $0 < \alpha, \beta < 1$ denote output elasticities of capital and labor, respectively. When financial inclusion is integrated as a capital-enhancing factor, the effective capital stock becomes:

$$K_t^{eff} = K_t + \theta FI_t \tag{3}$$

where θ captures the contribution of financial inclusion to augmenting productive capital. Substituting K_t^{eff} into the production function yields:

$$Y_t = A_t (K_t + \theta FI_t)^\alpha L_t^\beta \tag{4}$$

This formulation allows the model to explicitly capture the direct effect of financial inclusion on economic output. An increase in FI_t effectively raises the capital available for productive investment, thereby enhancing growth.

Additionally, the Liquidity Constraint Theory supports the hypothesis that limited access to formal financial services constrains consumption smoothing and investment decisions, particularly among low-income households (Banerjee & Duflo, 2011). In formal terms, households maximize intertemporal utility subject to a liquidity constraint:

$$\max U(C_t, C_{t+1}) \quad \text{s.t.} \quad C_t \leq Y_t + \lambda FI_t \tag{5}$$

where C_t and C_{t+1} denote current and future consumption, Y_t is income, and λFI_t represents additional consumption capacity enabled by access to financial services. Financial inclusion relaxes the liquidity constraint ($\lambda > 0$), thereby enhancing both consumption and investment, which in turn stimulates aggregate economic growth.

Collectively, these theoretical frameworks justify the choice of explanatory variables in this study, including interest rates, inflation, exchange rates, and population density, as these factors influence both financial access and economic output. By embedding financial inclusion into the capital accumulation process, the study provides a rigorous foundation for empirically examining how variations in financial access affect macroeconomic growth outcomes in Nigeria.

3. Methodology

We used annual time series data for Nigeria from 1990 to 2023, drawn primarily from the Central Bank of Nigeria Statistical Bulletin (2023), supplemented with macroeconomic indicators from the World Development Indicators (World Bank, 2023) and International Monetary Fund reports (IMF, 2023). The dependent variable FINC is measured using proxy indicators such as bank branch penetration and access to deposit accounts relative to the adult population, while the independent variable RGDP is a proxy for economic growth, deflated at constant 2010 prices to eliminate the distortive impact of inflation, INTR is the monetary policy rate, INFR is the annual consumer price index growth rate, EXCR is the naira-dollar nominal exchange rate, and POPD is a proxy for demographic pressure on financial access (population per square kilometre). The data are subjected to preliminary econometric tests including unit root analysis using the Phillips–Perron procedure and Johansen cointegration tests to determine the order of integration and long-run relationships among the variables. The empirical strategy consists of two models. The baseline functional relationship for the determinants of financial inclusion is given by:

$$FINC_t = f(RGDP_t, INTR_t, INFR_t, EXCR_t, POPD_t) \quad (6)$$

Transforming into a linear econometric form yields:

$$FINC_t = \alpha_0 + \beta_1 RGDP_t + \beta_2 INTR_t + \beta_3 INFR_t + \beta_4 EXCR_t + \beta_5 POPD_t + \mu_t \quad (7)$$

The second model examines the impact of financial inclusion on economic growth. Its functional form is specified as:

$$RGDP_t = f(FINC_t, INTR_t, INFR_t, EXCR_t, POPD_t) \quad (8)$$

Expressed in econometric form, the model becomes:

$$RGDP_t = \alpha_0 + \lambda_1 FINC_t + \lambda_2 INTR_t + \lambda_3 INFR_t + \lambda_4 EXCR_t + \lambda_5 POPD_t + \varepsilon_t \quad (9)$$

Both models are estimated within the Error Correction Model (ECM) framework to capture the short-run dynamics while preserving long-run equilibrium relationships (Engle & Granger, 1987; Pesaran, Shin & Smith, 2001).

The estimation method adopted is the Error Correction Model (ECM). This choice is justified because the unit root and cointegration tests confirmed that the variables are integrated of order one, $I(1)$, and exhibit long-run relationships. The ECM framework corrects short-run disequilibria while ensuring consistency with long-run equilibrium dynamics (Johansen, 1991). The general ECM representation of equation (2) is specified as:

$$\Delta FINC_t = \theta_0 + \sum_{i=1}^p \theta_i \Delta X_{t-i} + \pi ECM_{t-1} + \epsilon_t \quad (10)$$

where $\Delta FINC_t$ denotes the first-differenced financial inclusion, X_{t-i} is the vector of explanatory variables (RGDP, INTR, INFR, EXCR, POPD), and ECM_{t-1} is the lagged error correction term derived from the long-run relationship. The coefficient π measures the speed of adjustment towards equilibrium, expected to be negative and statistically significant.

Similarly, the ECM representation for equation (4) is given as:

$$\Delta RGDP_t = \delta_0 + \sum_{i=1}^q \delta_i \Delta Y_{t-i} + \rho ECM_{t-1} + \zeta_t \quad (11)$$

where $\Delta RGDP_t$ denotes changes in economic growth, Y_{t-i} represents the set of regressors (FINC, INTR, INFR, EXCR, POPD), and ρ captures the rate at which deviations from the long-run growth equilibrium are corrected. This estimation strategy is consistent with prior empirical studies on financial inclusion and growth nexus in emerging economies (Park & Mercado, 2018; Lenka & Sharma, 2017), which emphasizes the appropriateness of ECM when modelling dynamic adjustments in macroeconomic series.

Table 1. Variable Definition and Sources

Variable	Abbrev.	Definition	Source
Financial Inclusion	FINC	Access to formal financial services, proxied by bank branches and deposit accounts per 100,000 adults	CBN Statistical Bulletin (2023); World Bank (2023)
Real GDP	RGDP	Real Gross Domestic Product at constant 2010 prices, proxy for economic growth	World Bank WDI (2023)
Interest Rate	INTR	Monetary policy rate (MPR) representing lending conditions	CBN Statistical Bulletin (2023)
Inflation	INFR	Consumer Price Index, annual % change	IMF (2023); CBN Bulletin (2023)
Exchange Rate	EXCR	Official nominal exchange rate (naira per US dollar)	CBN Statistical Bulletin (2023)
Population Density	POPD	Population per square kilometre	World Bank WDI (2023)

Source: Author (2025)

4. Results and Implications

4.1. Results and Discussion

Table 2: Result of Unit Root (Stationarity) Test

Variable	Philip-Perron (PP)	5% Critical Level	Order of Integration
FINC	-7.052	-3.963	I(1)
INFR	-8.967	-3.963	I(1)
INTR	-8.176	-3.963	I(1)
POPD	-6.424	-3.963	I(1)
RGDP	-14.321	-3.963	I(1)
EXCR	-4.582	-3.963	I(1)

Source: Author (2025)

Table 3: Result of Johansen Cointegration Test (Trace Statistic)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.
None *	0.925	150.092	96.254	0.000
At most 1 *	0.860	98.029	70.319	0.000
At most 2 *	0.654	56.190	48.356	0.008
At most 3 *	0.547	31.748	30.897	0.035
At most 4	0.384	14.060	16.595	0.102
At most 5	0.215	3.740	3.901	0.064

Source: Author (2025)

Table 4: Result of Johansen Cointegration Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.
None *	0.925	53.062	40.778	0.001
At most 1 *	0.860	42.440	33.577	0.005
At most 2	0.654	25.042	28.284	0.123
At most 3	0.547	18.488	21.832	0.138
At most 4	0.384	10.620	14.765	0.217
At most 5	0.215	3.840	3.871	0.064

Source: Author (2025)

First, we tested the stationarity properties of the variables using the Philip-Perron unit root test (Table 2), which shows that all the variables (financial inclusion (FINC), inflation rate (INFR), interest rate (INTR), population density (POPD), real gross domestic product (RGDP), and exchange rate (EXCR)) are integrated of order one, I(1), which implies that the variables are

non-stationary at levels but become stationary after first differencing. The presence of unit roots at levels is consistent with previous studies of macroeconomic and financial series in developing economies, which often show persistence and stochastic trends (Odhiambo, 2021; Adegbite and Ojo, 2022). Once we confirmed stationarity to avoid spurious regressions and establish long-run relationships, we employed Johansen cointegration tests to determine the number of long-run equilibrium relationships among the variables (Tables 3 and 4).

The trace and maximum eigenvalue tests jointly confirm that there are four cointegrating equations at the 5% significance level, suggesting a stable long-term relationship between the determinants of financial inclusion and economic growth, which is in line with the expectations of the Financial Intermediation Theory that efficient financial markets promote sustained capital accumulation and economic growth (Levine, 2020). The significant eigenvalues indicate that while short-term fluctuations occur, financial inclusion indicators, macroeconomic variables, and economic growth are bound by long-term equilibrium forces.

Table 5: Determinants of Financial Inclusion (Dependent Variable: D(FINC))

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	12.254	89.897	0.230	0.898
D(INTR)	-0.754	0.238	-14.515	0.000
D(INFR)	3.383	2.139	1.859	0.091
D(EXCR)	1.639	1.738	0.979	0.367
D(POPD)	-6.295	23.112	-0.756	0.800
D(RGDP)	9.272	4.292	2.615	0.012
ECM(-1)	-0.900	0.301	-3.988	0.001
R-squared = 0.896 Adjusted R-squared = 0.871 F-statistic = 35.827 Prob(F-statistic) = 0.000 DW-stat = 2.012				

Source: Author (2025)

Table 5 presents the determinants of financial inclusion in Nigeria estimated with an error correction model (ECM). The results show that interest rates (INTR) have a statistically significant and negative coefficient (-0.754), which is consistent with theoretical arguments and credit rationing literature that higher interest rates discourage borrowing and reduce access to formal financial services (Stiglitz and Weiss, 1981; Beck et al., 2020). Real GDP (RGDP) exhibits a significant positive effect on financial inclusion (9.272), indicating that economic expansion broadens access to financial services, possibly through increased income levels and

business activity. Inflation (INFR), exchange rate (EXCR), and population density (POPD) are statistically insignificant, which suggests that macroeconomic instability and demographic factors have weaker direct effects on financial inclusion in Nigeria during the study period. The error correction term (-0.900) is negative and significant, indicating that deviations from the long-run equilibrium are corrected at a rate of approximately 80% per period, which is in line with empirical findings in similar emerging economies (Odumusor et al., 2024., 2021). The high R-squared (0.896) and F-statistic (35.827) further show that the model is robust in capturing the determinants of financial inclusion.

Table 6: Impact of Financial Inclusion on Economic Growth (Dependent Variable: D(RGDP))

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.793	1.998	-0.910	0.431
D(FINC)	0.035	0.023	2.955	0.018
D(INTR)	-0.043	0.012	-2.692	0.003
D(INFR)	-0.221	0.055	-4.009	0.002
D(EXCR)	-0.190	0.039	-3.629	0.004
D(POPD)	0.878	0.5109	1.814	0.201
ECM(-1)	-1.715	0.304	-6.772	0.000
R-squared = 0.642				
Adjusted R-squared = 0.556				
F-statistic = 7.477				
Prob(F-statistic) = 0.000				
DW-stat = 2.069				

Source: Author (2025)

Table 6 presents the impact of financial inclusion on economic growth. The results show that financial inclusion (FINC) has a statistically significant and positive effect on economic growth (0.035), which is consistent with the theoretical expectations of endogenous growth theory that broader access to financial services enhances capital accumulation, entrepreneurship, and productivity, which leads to increases in aggregate output (Pal, Vankila, & Fernandes, 2025). Interest rates (INTR) and inflation (INFR) also negatively affect economic growth, reflecting the adverse effects of high borrowing costs and macroeconomic instability on productive investment and consumption.

The error correction term for economic growth (-1.715) indicates that a rapid adjustment to long-run equilibrium follows short-term deviations, suggesting that financial inclusion policies and macroeconomic conditions together contribute to stabilizing growth trajectories in Nigeria. The model explains approximately 64% of the variation in economic growth (R-squared =

0.642), and population density remains insignificant, implying that geographic distribution does not have a strong effect on growth when access to financial services is considered. The empirical findings confirm the twin significance of macroeconomic stability and financial inclusion as a means of spurring economic growth. The negative interest rate coefficient on financial inclusion and positive effect of the inclusion on the economic growth are indications that policy interventions to reduce the cost of borrowing, increase the reach of banking, and increase population trust in formal financial institutions play a crucial role, which is supported by current research on the relevance of inclusive finance in sustainable growth in Sub-Saharan Africa (Ain et al., 2020; Oyelowo et al., 2024). As such, the theoretical framework is validated by the study which confirms that both financial intermediation and endogenous growth mechanisms can be used together to explain the empirical tendencies in Nigeria.

4.2. Policy Implications

The empirical findings of this research are of several policy implications of critical importance to improve financial inclusions and sustainable economic growth in Nigeria. To begin with, the high adverse impact of interest rates on financial inclusion indicates the importance of monetary policies that can decrease the cost of borrowing, because high interest rates introduce a credit barrier that cannot be crossed by low-income households and small- and medium-sized enterprises (SMEs), policymakers should contemplate interest rate limits, credit subsidies, and the growth of microfinance institutions to reduce the cost of financing and increase credit accessibility (Beck et al., 2020; Gaies et al., 2019). Third, the error-correcting nature of the financial inclusion outcome that is economically positive indicates that policies of financial inclusion can be used to achieve rapid adjustments of a financial system to short-term shifts of long-run equilibrium, that is, as long as government policies to enhance the state of economic fundamentals, including sound fiscal policies and better business environments, exist, the growth-inclusion nexus can be enhanced (Odhiambo, 2021; Ain et al., 2020). Fourth, the outcomes highlight the need to incorporate financial inclusion in formal financial avenues by households and firms broader economic policy frameworks; given that exchange rate fluctuations and inflation negatively impact both financial inclusion and economic growth, macroeconomic stability should be a central policy objective, and policymakers should adopt counter-cyclical measures, such as prudent exchange rate management, inflation targeting, and fiscal discipline, to protect financial markets and households from macroeconomic shocks (Pal, Vankila, & Fernandes, 2025; Adegbite & Ojo, 2022). Stability increases trust in financial

institutions and enables long-term investment, especially for capital-intensive industries. Fifth, although population density is statistically insignificant, it implies that mere demographic concentration does not guarantee financial access; therefore, policymakers should prioritize reducing geographic and digital divides by expanding banking infrastructure and digital financial services into rural and underserved areas, using mobile banking platforms, agent banking, and digital payment systems, which align with the Financial Intermediation Theory that stresses the role of infrastructure and accessibility in mobilizing savings and allocating credit effectively (Banerjee & Duflo, 2011; Odhiambo, 2021). Sixth, the strong positive effect of financial inclusion on economic growth (RGDP) indicates that promoting inclusive finance should be an integral part of national development strategies; policies should encourage financial product innovation, such as microloans, savings schemes, and insurance products, and financial literacy programs are essential to empower individuals and businesses to navigate the formal financial system (Odumusor et al., 2024; Ain et al., 2020). Finally, the study suggests that a coordinated policy approach is needed; central banks, commercial banks, microfinance institutions, and government agencies need to implement targeted interventions to address both demand-side and supply-side barriers to financial inclusion while balancing regulatory oversight with market flexibility to encourage innovation without creating systemic risks (Beck et al., 2020; Gaies et al., 2019).

5. Conclusion

This paper examines the financial inclusion determinants and financial inclusion effects. The outcomes indicate that consistent macroeconomic policies and inclusive financial systems are prerequisites to sustainable development and that financial inclusion is an important tool towards realisation of sustainable development objectives. The results indicate that financial inclusion affects economic growth positively, which is consistent with evidence on the role of financial inclusion in Sub-Saharan Africa that has diversified participation in formal financial services to mobilize savings, enhance investment and productivity (Oyelowo et al., 2024; Ain et al., 2020).

These findings support the idea that financial inclusion is not merely a social policy goal but an economic development tool, namely, a decrease in interest rates to increase access to credit, the use of interest rate caps, the use of subsidized loans, and the stimulation of microfinance institutions to decrease financial exclusion (Beck et al., 2020; Gaies et al., 2019). It also highlights that government efforts to promote a comprehensive expansion of the economy via

investments in infrastructure, education, and technology in an indirect manner boost financial inclusion by increasing household income and business operations (Odhiambo, 2021). Also, risks could be mitigated and people encouraged to invest more in financial services through regulatory reforms that increase trust in formal financial institutions through transparency, consumer protection and better governance of the banking sector (Odumusor et al., 2024).

Financial access can likewise be served in the geographic and demographic divide by the evolution of digital financial infrastructure and mobile banking, more particularly in rural locations that are under-served (Banerjee and Duflo, 2011). Lastly, Financial system stability does not only ease the process of credit allocation but also helps in long-term investment in the productive sectors of the economy. Also, the role of macroeconomic stability as an accompanying policy objective is also highlighted in the study; uncertainty reduction can be achieved by means of inflation targeting, exchange rate management, and financial prudence that will enable both financial inclusion and economic growth (Pal, Vankila, and Fernandes, 2025; Adegbite and Ojo, 2022). The paper calls for a coordinated effort involving the central bank, commercial banks, microfinance institutions, and relevant government agencies to design and implement comprehensive financial inclusion strategies aligned with broader economic objectives.

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