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EFFECTS OF INTEREST RATE AND SAVINGS BEHAVIOUR ON INCLUSIVE GROWTH IN NIGERIA: EVIDENCE FROM QUANTILE REGRESSION

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Abstract *This study examines the effect of interest rate and savings behaviour on inclusive growth in Nigeria, with emphasis on the dynamic and distribution-specific nature of the relationship. Despite various monetary and financial sector reforms, Nigeria continues to experience weak inclusive growth characterized by high poverty, unemployment, and income inequality. This persistent disconnect between economic growth and welfare improvement creates the need to investigate how interest rate policies and savings behaviour jointly influence inclusive growth outcomes in Nigeria. The study adopts a quantitative research approach using Quantile Regression (QR) as the main estimation technique, while Ordinary Least Squares (OLS) and Autoregressive Distributed Lag (ARDL) models are employed for robustness and complementary analysis. Annual time-series data spanning 1986–2023 were sourced from the World Development Indicators (WDI), Central Bank of Nigeria (CBN), and National Bureau of Statistics (NBS). The findings reveal significant heterogeneity across different inclusive growth regimes. Interest Rate and Savings Behaviour exhibit weak and statistically insignificant effects on inclusive growth across most quantiles, suggesting ineffective monetary policy transmission and weak savings mobilisation mechanisms in Nigeria. However, Credit to Private Sector positively influences inclusive growth, particularly at the median and upper quantiles, indicating the importance of financial intermediation and productive credit allocation in promoting broad-based economic development. The ARDL bounds test further reveals the absence of long-run cointegration among the variables, implying that the relationships are mainly short-run and distribution-specific. The study contributes to the literature by emphasizing the nonlinear and heterogeneous effects of interest rate and savings behaviour on inclusive growth, which are often overlooked in conventional mean-based models. The study therefore recommends targeted monetary policies, improved financial inclusion, efficient credit allocation, and strengthened financial institutions to promote sustainable and inclusive growth in Nigeria.*

Keywords Interest Rate, Savings Behaviour, Inclusive Growth, Quantile Regression, Financial Intermediation

1. Introduction

Inclusive growth has emerged as a major objective of economic policy in both developed and developing economies because economic expansion alone does not automatically improve welfare conditions for the majority of citizens. The concept of inclusive growth emphasizes sustained economic progress that creates employment

opportunities, reduces poverty and inequality, and improves access to productive resources and social services across different segments of society (World Bank, 2018; OECD, 2020). In Nigeria, periods of economic growth driven largely by the oil sector and service activities have not translated into broad improvements in living standards. Despite positive growth episodes, poverty, unemployment, and income inequality remain persistently high (CBN, 2023). According to the National Bureau of Statistics, a significant proportion of Nigerians still experience multidimensional poverty, particularly in rural areas where access to finance, education, healthcare, and productive employment opportunities remains limited (NBS, 2023).

One important macroeconomic variable that influences inclusive growth is the interest rate. Interest rates constitute a major monetary policy instrument used by the Central Bank of Nigeria to regulate inflation, liquidity, savings, and investment activities within the economy (CBN, 2022). Theoretically, interest rates affect economic growth through their influence on consumption, savings, and investment decisions. The financial liberalization hypothesis developed by Ronald McKinnon and Edward Shaw argues that higher real interest rates encourage savings mobilization, improve financial intermediation, and stimulate productive investment (McKinnon, 1973; Shaw, 1973). Increased savings are expected to provide financial resources for capital formation and long-term economic growth (Todaro& Smith, 2021).

However, the relationship between interest rates and economic performance in developing economies such as Nigeria remains uncertain and structurally constrained. High lending rates often discourage private investment, particularly among small and medium-scale enterprises that depend heavily on bank credit for expansion and employment generation (Akanbi & Akinlo, 2019). At the household level, rising interest rates do not necessarily translate into higher savings because many individuals operate within low-income conditions where survival consumption takes priority over long-term financial planning (Nwachukwu & Odigie, 2016). In addition, inflationary pressures frequently erode the real value of savings, thereby weakening the incentive to save through formal financial institutions (IMF, 2023).

Empirical evidence on the effect of interest rates on growth in Nigeria remains mixed. Some studies argue that moderate and stable interest rates can promote investment and financial deepening, while others report that persistent interest rate volatility undermines economic stability and reduces productive activities. For instance, Adelowokan and Adebayo (2024) observed that fluctuations in interest rates negatively affect investment decisions and weaken economic growth in Nigeria during periods of macroeconomic instability. Similarly, Eze and Okpala (2023) found that monetary policy transmission through interest rates remains weak due to structural rigidities in the Nigerian financial system. Weak institutional frameworks, underdeveloped credit markets, and limited financial access have also reduced the effectiveness of interest rate policy as a tool for promoting

broad-based economic growth (Ahmed & Lee, 2025; Khan et al., 2024).

Savings behaviour represents another important factor in the inclusive growth process. Savings behaviour refers to the pattern, motive, frequency, and institutional channels through which individuals and households set aside income for future consumption, investment, or precautionary purposes (Keynes, 1936). In developing economies, household savings play a critical role in mobilizing domestic capital for investment and economic development (Lewis, 1955). Nevertheless, savings culture in Nigeria is influenced by several socio-economic factors, including low income levels, unemployment, inflation, financial illiteracy, and inadequate access to formal banking services (CBN, 2022; IMF, 2023).

Recent developments in digital finance and financial inclusion initiatives have improved access to financial services for many Nigerians, especially through mobile banking and fintech platforms. Evidence from recent Nigerian studies indicates that digital financial services and financial inclusion policies have contributed to improved savings participation among households and small businesses (Oladipo & Adegbite, 2023; Yusuf & Salami, 2024). However, a substantial proportion of the population still relies on informal savings mechanisms such as cooperative societies, rotating savings groups, and thrift contribution schemes due to distrust in formal institutions, poor banking infrastructure, and unstable economic conditions (Afolabi et al., 2025). This suggests that savings decisions in Nigeria are influenced not only by interest rates but also by behavioural, institutional, and income-related factors.

Despite various monetary and financial sector reforms introduced by the government and the Central Bank of Nigeria, Nigeria continues to experience weak inclusiveness in economic growth outcomes. High borrowing costs have constrained the productive capacity of businesses, while financial exclusion continues to limit the ability of many households to participate effectively in economic activities (CBN, 2023). Although financial deepening has expanded the size of the financial sector, its impact on employment generation, poverty reduction, and equitable income distribution remains relatively limited (Ogunleye & Adeyemi, 2024). This situation raises concerns about the extent to which interest rate policy and savings mobilisation strategies can effectively promote inclusive growth in Nigeria.

Existing literature has examined the relationship among interest rates, savings, and economic growth from different perspectives. However, many previous studies focused mainly on aggregate economic growth without adequately considering the inclusiveness dimension of growth (Oyinlola & Adedeji, 2019). In addition, earlier studies often treated interest rates and savings independently, thereby neglecting their interactive influence on inclusive growth outcomes (Nwosu, 2020). Studies on Nigeria have also concentrated more on financial development and monetary policy transmission mechanisms, with limited attention given to the behavioural dimensions of savings and their implications for inclusive development

(Oladipo & Adegbite, 2023). Consequently, there remains insufficient empirical evidence on how interest rate dynamics and savings behaviour jointly influence inclusive growth in Nigeria.

Against this background, this study examines the effect of interest rate and savings behaviour on inclusive growth in Nigeria. Specifically, the study seeks to determine how interest rate movements and savings patterns interact to influence broad-based economic welfare, poverty reduction, and equitable economic participation. By integrating macroeconomic and behavioural perspectives, the study contributes to the growing literature on inclusive growth and provides policy recommendations for improving monetary policy effectiveness and financial inclusion in Nigeria (World Bank, 2018; CBN, 2023).

2. Review of the Literature

Ayanwu&Oaikhenan (1995) defined savings as the amount of income per capital time period that is not consumed by economic units. For the house hold, it represented that part of disposable income not spend on domestically produced or imported consumption goods and services. For the firm, it represents undistributed business profits. Savings is a flow variable being measure over time. Concisely, Savings may be defined as after tax income not spent. It may rightly be referred to or presumed deferred consumption being income left over for future consumption on capital investment or for precautionary and speculative motives. Succinctly, Savings is summed as 'disposable income less consumption'. In developing countries and Nigeria in particular, private Savings constitutes the main source of capital accumulation for investment purposes. From theoretical literatures, total Savings of households, entrepreneurs and corporate entities in an economy has positive correlation with Output. Amongst other things, Savings serve as the main source of financing investment and related economic activities. Igbatayo&Agbada (2012) noted that higher level of national Savings leads to higher investment and consequently higher Output. This is so because the level of Savings determines the magnitude of capital accumulation. On the other hand, the magnitude of total earnings depends on the level of total Output, thus Output also determines the level of savings (capital accumulation) and investments by households and entrepreneurs. John Ugah (2023) noted that the term savings has different connotations peculiar to an economic unit. For the household, it represents the portion of disposable income not spent on current consumption. For the firm, it represents undistributed business profits. According to Imoughele&Ismaila (2014), savings serve as the main source of financing investment and related economic activities. However, in Nigeria, this is not so (Adelakun, 2015). Her private domestic savings have been at the lowest for several decades. The savings level in Nigeria particularly in rural areas is very low and its patterns and determinants are not empirically identified (Nnanna, 2003). In rural areas in Nigeria, savings is mainly made out of the income from agricultural produces, the flow of the income is irregular and seasonal which reduces the ability to save or poorly responds to the incentives which promote savings (Adelakun, 2015). The negative growth in real GDP in the mid-

1980s may be accredited to a multitude of factors of which the decline in investment and savings are the major ones (Nnanna, 2003).According to Marshall (1890), interest is the reward for waiting or abstaining from present consumption. Under this framework, savings supply capital while investment creates demand for funds, and the equilibrium interest rate is determined by the forces of demand and supply in the capital market.

In addition, the financial liberalization theory advanced by Ronald McKinnon and Edward Shaw emphasized the importance of positive real interest rates in promoting savings and financial intermediation. McKinnon (1973) argued that artificially low interest rates discourage savings mobilisation and reduce the availability of loanable funds for productive investment. Similarly, Shaw (1973) maintained that financial repression weakens economic growth by limiting efficient resource allocation within the financial system.

Savings behavior and Interest Rates in Nigeria, 1986-2025

Savings behaviour and interest rate trends in Nigeria between 1986 and 2025 reveal significant fluctuations influenced by monetary policy reforms, inflationary pressures, banking sector restructuring, and macroeconomic instability. Some scholars have argued that the weak mobilisation of savings in Nigeria is partly linked to the poor attitude of financial institutions toward small savers and the relatively low returns on savings deposits. For instance, savings deposit rates declined from an all-time high of about 18% in 1990 to 16.7% in 1993, 10.6% in 2004, 3.38% in 2014, and further to 3.2% in 2020 before rising slightly to 4.2% in 2022 (World Economic Outlook [WEO], 2022). The persistent decline in savings deposit rates reduced the incentive for households to save through formal banking institutions, especially during periods of high inflation when real returns on savings became negative.

Although the nominal savings deposit rate improved marginally after 2022 due to monetary tightening policies introduced by the Central Bank of Nigeria, the increase remained relatively insignificant compared to prevailing inflation rates. By 2023, savings deposit rates averaged between 4.5% and 5.2%, while inflation exceeded 20%, thereby weakening the real value of financial savings (CBN, 2023). In 2024 and early 2025, monetary authorities further increased policy rates in response to inflationary and exchange rate pressures. Consequently, commercial banks adjusted deposit and lending rates upward, with average savings deposit rates rising modestly to between 5% and 7% in some financial institutions. Despite this increase, the incentive to save formally remained constrained because rising living costs, unemployment, and declining household purchasing power continued to discourage financial savings among low-income earners.

It has also been argued that savings and time deposits in banks constitute the most important component of financial savings in Nigeria and have experienced continuous growth over the years. The contribution of other savings channels such as the National Provident Fund, Federal Mortgage Bank, insurance funds, and cooperative institutions has remained relatively inconsistent.

According to Nwachukwu and Odigie (2011), bank savings accounted for approximately 98.8% of total savings in 1970 before declining gradually to 89.5% in 1980 and 78% in 1990. Thereafter, the share increased steadily to 89.1% in 2000 and reached nearly 100% from 2003 onward, indicating the dominance of deposit money banks in savings mobilisation within the Nigerian financial system.

Between 2020 and 2025, however, the structure of savings behaviour in Nigeria began to change gradually due to financial technology innovations and expanding digital financial services. The emergence of fintech companies, mobile banking platforms, microfinance banks, and digital savings applications increased access to financial services, particularly among youths and individuals in previously underserved rural communities. Studies by Oladipo and Adegbite (2023) as well as Yusuf and Salami (2024) observed that digital financial inclusion contributed positively to household savings participation and encouraged informal sector operators to adopt formal savings mechanisms.

Nevertheless, the Nigerian savings environment during the period remained challenged by macroeconomic instability, persistent inflation, exchange rate depreciation, and declining real incomes. Many households increasingly relied on informal savings schemes such as rotating savings associations, thrift collectors, and cooperative societies because of limited trust in formal financial institutions and low returns on bank deposits. By 2025, savings behaviour in Nigeria reflected a combination of formal digital savings expansion and continued dependence on informal savings arrangements, indicating that non-interest factors such as income level, financial literacy, accessibility, and economic uncertainty play a more dominant role in influencing savings decisions than interest rate movements alone.

Inclusive growth refers to a pattern of economic growth that is broad-based, sustainable, and capable of creating opportunities for productive employment while reducing poverty and inequality. According to the World Bank, inclusive growth is growth that allows people to contribute to and benefit from economic progress irrespective of their socio-economic background (World Bank, 2018). Similarly, Raheem, Isah, and Adedeji (2018), in the Nigerian Journal of Economic and Social Studies, argued that inclusive growth involves a development process where the benefits of economic expansion are equitably distributed across various sectors and regions of the economy.

The concept gained greater attention after many African economies, including Nigeria, recorded positive economic growth rates without corresponding reductions in poverty and unemployment. In Nigeria, despite periods of economic expansion driven largely by oil revenues, the level of unemployment, income inequality, and multidimensional poverty has remained high. According to Egbulonu & Amadi (2021) in the Journal of Economics and Sustainable Development, economic growth in Nigeria has often been characterized by weak job creation and unequal distribution of income, thereby limiting the inclusiveness of growth outcomes.

Inclusive growth emphasizes both the pace and pattern of growth. This means that economic growth should not only be rapid but should also create employment opportunities, improve living standards, and enhance access to essential services such as healthcare, education, finance, and infrastructure. In the view of Adeola and Evans (2019) published in the *CBN Journal of Applied Statistics*, inclusive growth ensures that vulnerable groups such as low-income earners, women, youths, and rural dwellers participate actively in economic activities and benefit from development outcomes.

In Nigeria, inclusive growth has become an important policy concern because economic growth has not adequately translated into improved welfare conditions for the majority of citizens. Studies from local journals indicate that poverty and unemployment remain persistent despite several macroeconomic reforms introduced by the government and the Central Bank of Nigeria. For instance, Oyinlola & Adedeji (2019) observed in the *Nigerian Journal of Economic Development* that weak financial inclusion, infrastructural deficits, and limited access to productive credit continue to hinder inclusive growth in Nigeria.

Financial inclusion is considered one of the major drivers of inclusive growth because access to financial services enables individuals and businesses to save, invest, and participate effectively in economic activities. According to Afolabi and Dare (2022) in the *African Journal of Economic Review*, economies with efficient financial systems tend to experience more inclusive growth because financial resources are distributed more equitably across sectors and income groups. In addition, stable interest rate policies, savings mobilisation, and investment promotion are important mechanisms through which inclusive growth can be achieved.

2.1 Theoretical Review

The Financial Intermediation Theory originated from the works of Gurley John and Edward Shaw (1960), and was later expanded by Joseph Schumpeter, Ronald McKinnon, and other financial economists. The theory explains the role of financial institutions such as banks and other financial intermediaries in mobilizing savings from surplus economic units and transferring them to deficit units for productive investment purposes. According to Gurley and Shaw (1960), financial intermediaries exist because they reduce transaction costs, manage risks, and improve the efficiency of financial resource allocation within the economy. Through this process, idle funds are transformed into productive investments capable of stimulating employment, output expansion, and economic growth. Schumpeter (1911) further argued that efficient financial systems promote innovation and entrepreneurship by providing credit facilities to productive sectors of the economy.

The relevance of this theory to the present study lies in its direct linkage among interest rates, savings behaviour, and inclusive growth. In Nigeria, the banking sector serves as the major channel through which savings are mobilized and credit is allocated to households and businesses. However, persistent fluctuations in interest rates, weak financial inclusion, and macroeconomic instability have continued

to affect savings behaviour and investment decisions negatively. According to Nwachukwu and Odigie (2016), despite periods of relatively high nominal interest rates in Nigeria, savings mobilisation remained weak because inflation and low household income reduced real returns on savings.

The Endogenous Growth Theory was developed by Paul Romer (1986, 1990) and Robert Lucas (1988) as a response to the limitations of the neoclassical growth model. Unlike the Solow growth model which treats technological progress as an external factor, endogenous growth theory argues that long-run economic growth is generated within the economy through investment in human capital, innovation, financial development, and institutional improvement. Romer (1990) argued that investment in knowledge, innovation, and productive capacity generates increasing returns that sustain long-run economic growth. Lucas (1988) also emphasized the importance of human capital accumulation and learning processes in improving productivity and economic performance. The theory therefore recognizes financial systems as important drivers of economic growth because they mobilize savings, facilitate investment, and support productive activities.

The relevance of the theory to this study is that it provides a broader explanation of how savings behaviour and interest rate policies influence inclusive growth through investment, financial development, and productive economic participation. The theory supports the argument that efficient financial systems and stable macroeconomic policies are necessary for achieving sustainable and broad-based economic development in Nigeria.

2.2. Empirical Review

Ogunbiyi & Ihejirika (2014) examined the Nigerian experience of the effect of interest rate on profitability of deposit money banks in Nigeria from 1999 to 2012. Returns on asset and return on equity were the dependent variables to measure banks' performance while Real interest rate monetary policy rate, Prime lending rate, Savings deposit rate, T-bills rate and Inter-bank rate were the independent variables. Secondary data were collected from the Central Bank of Nigeria Statistical Bulletins, Annual Reports and World Bank Global Financial Development. Analysis of the data was done with Ordinary least Square regression. Results showed that Maximum lending rate, Real Interest rate and Savings deposit rate had negative and significant effects on the profitability of Nigerian deposit money banks as measured by return on assets. Furthermore, it was found that Real interest rate had negative and significant relationship with Return on Equity of money deposit banks in Nigeria, while no significant relationship was found between interest rate variables and net interest margin of Deposit Money Banks in Nigeria. The study concluded that profitability of the banks is dependent on changing interest rates. On this basis, it was recommended that government should adopt monetary policies that will facilitate improvement in the profitability of the Nigerian deposit money banks while reviewing and strengthening bank lending rate via effective and efficient regulatory and supervisory framework.

Udoka (2012) investigated the effect of interest rate fluctuation on Nigerian economic growth between 1970 and 2010. Gross Domestic Product was the dependent variable which measured economic growth while prime lending rate was the independent variable. Data were collected from the Central Bank of Nigeria Statistical Bulletin and analyzed by using ordinary least square regression analytical technique. Findings revealed that there was an existence of negative relationship between interest rate and Nigerian, such that increase in interest rate negatively affected Nigerian and thus retarding growth of the real sector. Consequently, it was recommended that a strong monetary policy that would facilitate lending to the real sector should be evolved so as to enhance productive capacity for overall economic growth.Okoye and Eze (2013) examined the impact of bank lending rate on the performance of Nigerian Deposit Money Banks between 2000 and 2010. Banks' performance was the dependent variables while the lending interest rate and the monetary policy rate were the independent variables. Time-series and quantitative secondary data were collected from the CBN's Statistical Bulletin and analyzed by employing Error Correction Model. The result showed that the lending rate and monetary policy rate had significant and positive effects on the performance of Nigerian deposit money banks. It was thus recommended that government should come up with policy that can enhance the performance of Nigerian deposit money banks while strengthening the bank lending rate policy via effective and efficient regulation and supervisory framework.

Igbodika and Chukwunulu (2016) investigated the effect of interest rate deregulation on economic empowerment of Nigerian from 1987 to2014. In the specified model, prime lending, savings and monetary policy rate were the explanatory variables as proxies for interest rate deregulation while per capita income was used as proxy for economic empowerment. Data were collected from the secondary source such as the CBN Statistical Bulletin, 2014 and World Development Indicator. Data were analyzed using OLS regression and the result indicated that interest rate deregulation could only account for 10.4% of economic empowerment. Also, prime lending rate had positive but insignificant effect on per capita income while savings rate and monetary policy rate had negative and insignificant effect on per capita in Nigeria. It was therefore, concluded that the deregulation policy has not engendered economic empowerment in Nigeria.

Egbulonu and Amadi (2021) examined financial sector reforms and inclusive growth in Nigeria using econometric analysis covering the period 1990 to 2019. The study found evidence that banking sector expansion improved financial deepening but did not significantly reduce poverty and unemployment. The major finding was that financial sector benefits were concentrated mainly in urban areas, thereby limiting inclusive economic participation among rural populations. Oladipo and Adegbite (2023), in the *African Journal of Economic Review*, investigated the determinants of household savings behaviour in Nigeria using survey and macroeconomic data. The study applied multiple regression analysis to evaluate the relationship between financial literacy, digital financial access, and savings behaviour. Findings from the study revealed

that digital banking services and financial literacy positively influenced savings participation among households. However, the study found that changes in interest rates had limited impact on savings decisions because low-income households prioritized consumption over savings.

Yusuf and Salami (2024) examined the role of digital financial inclusion in savings mobilisation among small businesses in Nigeria. The study adopted descriptive statistics and regression analysis using data collected from small-scale enterprises across major Nigerian cities. Evidence from the study indicated that mobile banking, fintech services, and electronic payment systems improved savings participation among informal sector operators. The major finding was that financial accessibility and convenience significantly influence savings behaviour more than deposit interest rates. Adeola and Evans (2019), in the *CBN Journal of Applied Statistics*, studied financial inclusion and savings mobilisation in Nigeria using banking sector data from 2004 to 2017. The study employed the Fully Modified Ordinary Least Squares (FMOLS) estimation technique. Findings showed that increased access to banking services positively affected savings mobilisation and investment participation, particularly among rural dwellers and low-income earners. The study concluded that financial inclusion is essential for improving savings culture and promoting economic participation.

Nwachukwu and Odigie (2016) investigated the impact of interest rate reforms on savings and investment in Nigeria using annual time series data from 1981 to 2014. The study employed the Ordinary Least Squares (OLS) estimation technique to analyze the relationship between interest rate, savings, and investment. Evidence from the study showed that high lending rates negatively affected private investment and economic activities in Nigeria. The study further revealed that although interest rate liberalization slightly improved financial savings, the effect was not strong due to inflation and low household income. The major finding was that unstable interest rate policies discouraged productive investment and weakened economic growth.

Akanbi and Akinlo (2019), in the *Nigerian Journal of Economic Studies*, examined the effect of interest rate volatility on economic growth in Nigeria using the Autoregressive Distributed Lag (ARDL) model and data covering 1986 to 2017. The study found evidence of a negative relationship between interest rate fluctuations and economic growth. Specifically, high lending rates reduced investment spending and constrained the growth of small and medium-scale enterprises. The study concluded that macroeconomic instability and unstable interest rate policies reduced the effectiveness of monetary policy in promoting economic development.

Eze and Okpala (2023) analyzed monetary policy transmission and economic growth in Nigeria using quarterly data from 1990 to 2020. The study adopted the Vector Error Correction Model (VECM) to examine the impact of interest rate policy on output growth. Evidence from the study indicated that interest rate transmission mechanisms in Nigeria remain weak because of structural rigidities and underdeveloped financial markets. The

major finding was that changes in monetary policy rate did not significantly stimulate domestic savings and productive investment due to low financial inclusion and weak banking penetration.

Adelowokan and Adebayo (2024) examined the effect of interest rate volatility on economic performance in Nigeria using data from 1986 to 2022. The study utilized the Generalized Method of Moments (GMM) estimation technique. Findings from the study showed that persistent fluctuations in lending and deposit rates negatively affected investment, employment generation, and poverty reduction. The study concluded that unstable interest rate environments reduce the capacity of monetary policy to promote inclusive economic growth.

Ahmed and Lee (2025) conducted a comparative study on African economies to examine the relationship between financial stability and inclusive growth. Using panel data analysis for selected Sub-Saharan African countries, the study found that economies characterized by stable interest rate environments and stronger financial systems achieved better inclusive growth outcomes than countries experiencing financial repression and inflationary instability. The major finding was that financial sector efficiency plays an important role in promoting broad-based economic development.

Afolabi and Dare (2022), in the *African Journal of Economic Review*, analyzed financial inclusion and inclusive growth in selected African countries using panel data estimation techniques. Evidence from the study indicated that economies with efficient financial systems and broader access to financial services recorded lower poverty levels and higher employment growth. The study concluded that financial accessibility and effective savings mobilisation are critical for achieving inclusive development.

Ogunleye and Adeyemi (2024) investigated the role of digital financial services on inclusive growth in Nigeria using secondary data from financial institutions and national economic indicators. The study utilized regression analysis and found that mobile banking and digital finance improved financial participation among previously excluded populations. However, the study also revealed that inflation, infrastructural deficits, and unemployment weakened the overall welfare impact of economic growth in Nigeria.

3. Methodology

This study adopts a quantitative time-series research design to examine the effect of interest rate and savings behaviour on inclusive growth in Nigeria over the period 1986–2023. The empirical framework incorporates macroeconomic and financial variables to capture the dynamic relationship between interest rate movements, savings mobilisation, and inclusive growth. The explanatory variables include interest rate, savings behaviour, inflation rate, credit to the private sector, and foreign direct investment.

The study is anchored on the Financial Intermediation Theory developed by Gurley and Shaw (1960) and the Endogenous Growth Theory advanced by Romer (1990).

The Financial Intermediation Theory posits that efficient financial institutions mobilise savings and allocate financial resources to productive investments, thereby promoting economic growth and improving welfare. Similarly, the Endogenous Growth Theory argues that investment, financial development, and technological progress are key drivers of sustained economic growth and improvements in living standards. These theories provide the theoretical basis for examining how interest rate and savings behaviour influence inclusive growth in Nigeria.

Unlike previous studies that relied on a single macroeconomic indicator, this study constructs a Composite Inclusive Growth Index (INGR) to capture the multidimensional nature of inclusive growth. The index is constructed using three indicators obtained from the World Development Indicators (World Bank), namely GDP per capita (constant 2015 US$), employment-to-population ratio (%), and life expectancy at birth (years). GDP per capita reflects improvements in economic prosperity, the employment-to-population ratio measures labour market inclusion, while life expectancy captures improvements in human welfare and social development. To ensure comparability among variables measured in different units, each indicator was normalised using the Min–Max normalization technique, expressed as:

$$Zi = \frac{Xi - Xmin}{Xmax - Xmin}$$

whereXi is the observed value of each indicator, while Xmindenote the minimum and maximum values over the study period, respectively. After normalization, the Composite Inclusive Growth Index was obtained as the arithmetic mean of the three normalized indicators:

$$INGR = \frac{ZGDPPC + ZEM + ZLIF}{3}$$

whereGDPPC denotes normalized GDP per capita, EMP represents the normalized employment-to-population ratio, and LIFE denotes normalized life expectancy at birth. Higher values of the index indicate higher levels of inclusive growth.

The empirical analysis employs Quantile Regression (QR) following Koenker and Bassett (1978) to examine the heterogeneous effects of interest rate and savings behaviour across different levels of inclusive growth. Quantile Regression is preferred because it estimates the effects of explanatory variables at different points of the conditional distribution of the dependent variable rather than focusing only on the conditional mean, as in Ordinary Least Squares (OLS). Consequently, the approach provides a more comprehensive understanding of how the explanatory variables influence economies experiencing low, medium, and high levels of inclusive growth.

The study estimates the model at the 25th, 50th, 75th, 90th, and 95th quantiles. These quantiles were selected to capture the effects of the explanatory variables across lower, median, upper, and extreme levels of inclusive growth, thereby accounting for possible heterogeneity in the relationship between interest rate, savings behaviour, and inclusive growth. To complement the Quantile Regression estimates, the Autoregressive Distributed Lag (ARDL)

approach is employed to examine the existence of both short-run and long-run relationships among the variables where the variables satisfy the required order of integration.

Annual data covering the period 1986–2023 were obtained from the World Development Indicators (World Bank), the Central Bank of Nigeria (CBN) Statistical Bulletin, and publications of the National Bureau of Statistics (NBS). These sources are widely recognised for providing reliable and consistent macroeconomic data suitable for empirical research. The adopted methodology enables the study to capture heterogeneous relationships, improve the measurement of inclusive growth, and ensure the robustness and replicability of the empirical findings.

Table1: Variable Definition, Measurement, and Sources

Variable	Definition	Measurement/Proxy	Source
INGR	Inclusive Growth (Dependent Variable)	Composite Inclusive Growth Index constructed from normalized GDP per capita (constant 2015 US$), employment-to-population ratio (%), and life expectancy at birth (years) using the Min–Max normalization technique	World Development Indicators (World Bank)
INTR	Interest Rate	Lending Interest Rate (%)	CBN Statistical Bulletin
SAVB	Savings Behaviour	Gross Domestic Savings (% of GDP)	World Development Indicators
INF	Inflation Rate	Consumer Price Index (Annual %)	World Development Indicators
CPS	Credit to Private Sector	Domestic Credit to Private Sector (% of GDP)	CBN Statistical Bulletin
FDI	Foreign Direct Investment	Net Foreign Direct Investment Inflows (% of GDP)	World Development Indicators

Source: Author's computation using data obtained from the World Development Indicators (World Bank, accessed 2025), Central Bank of Nigeria Statistical Bulletin, and the National Bureau of Statistics.

The functional relationship for the study is expressed as:

$$INGR_t=f(INTR_t,SAVB_t,INF_t,CPS_t,FDI_t) \quad 3.1$$

The baseline econometric model is specified as:

$$INGR_t=\rho_0+\rho_1 INGR_{t-1}+\rho_2 INTR_t+\rho_3 SAVB_t+\rho_4 INF_t+\rho_5 CPS_t+\rho_6 FDI_t+\mu_t \quad 3.2$$

$INGR_t$ is the Inclusive Growth, $INGR_{t-1}$ is Lagged Inclusive Growth variable, $INTR_t$ is Interest Rate, $SAVB_t$is Savings Behaviour, INF_t is Inflation Rate, CPS_t is Credit to Private Sector, FDI_t is Foreign

Direct Investment, ρ_0 isConstant parameter, ρ_1–ρ_6 are Parameters to be estimated, μ_t is Error term. The lagged dependent variable captures persistence and dynamic adjustment in inclusive growth over time.

The quantile extension of the model allows the parameters to vary across different quantiles(τ)of inclusive growth distribution. The model is therefore specified as:

$$Q_\tau(INGR_tX_t) = \rho_0(\tau) + \rho_1(\tau)INGR_{t-1} + \rho_2(\tau)INTR_t + \rho_3(\tau)SAVB_t + \rho_4(\tau)(INTR_t * SAVB_t) + \rho_5(\tau)INF_t + \rho_6(\tau)CPS_t + \rho_7(\tau)FDI_t + U_t \quad 3.3$$

$Q_\tau(INGR_tX_t)$ *is* Conditional quantile of inclusive growth,$(INTR_t * SAVB_t)$ is included to capture the combined effect of monetary conditions and savings mobilisation on inclusive growth in Nigeria. The interaction explains whether the impact of savings behaviour on inclusive growth depends on the prevailing interest rate environment. It is expected that stable and favourable interest rates may strengthen savings mobilisation and improve financial participation, thereby enhancing inclusive growth outcomes. However, excessively high interest rates may discourage investment and weaken the positive contribution of savings to broad-based economic growth.τ is quantiles representing low, median, and high inclusive growth regimes. The interaction term captures the combined effect of interest rate and savings behaviour on inclusive growth in Nigeria.

Unlike previous Nigerian studies that relied mainly on mean-based estimators such as OLS and ARDL, this study contributes to the literature by examining the distribution-specific effects of interest rate and savings behaviour on inclusive growth usingQuantile Regression. The study further incorporates interaction effects between interest rate and savings behaviour in order to capture the joint influence of monetary policy conditions and savings mobilisation on inclusive economic performance in Nigeria. Despite the relatively small annual time-series observations, the use of Quantile Regression remains appropriate because quantile techniques are less sensitive to non-normality, heteroskedasticity, and outliers compared to conventional estimators. Furthermore, bootstrap procedures were employed to improve the reliability of estimated standard errors under small-sample conditions.

4 RESULTS

Table 2: Descriptive Statistics Results

	INGR	CPS	FDI	INF	INTR	SAVB
Mean	0.518716	9.920000	1.663421	19.56474	18.48474	36.45658
Median	0.511189	8.675000	1.500000	12.94500	17.69500	34.61500
Maximum	0.778033	19.60000	5.790000	72.84000	31.65000	68.81000
Minimum	0.327978	4.950000	0.200000	5.390000	9.960000	13.08000
Std. Dev.	0.166215	3.533292	1.214187	17.11502	3.959476	15.06007
Skewness	0.108865	0.795432	1.669092	1.758080	0.871612	0.342563
Kurtosis	1.289606	3.308755	5.915464	4.886233	5.089407	2.073368
Jarque-Bera	4.707020	4.158117	31.10207	25.20866	11.72371	2.102739

Probability	0.095035	0.125048	0.000000	0.000003	0.002846	0.349459
Sum	19.71121	376.9600	63.21000	743.4600	702.4200	1385.350
Sum Sq. Dev.	1.022216	461.9136	54.54726	10838.19	580.0655	8391.812
Observations	38	38	38	38	38	38

Source: Author's compilation, 2026

Table 2 presents the descriptive statistics indicate that the average value of the Composite Inclusive Growth Index (INGR) is 0.519, with a minimum of 0.328 and a maximum of 0.778, suggesting a moderate improvement in inclusive growth during the study period. Interest rate (INTR) averaged 18.48%, reflecting Nigeria's relatively high lending rate environment, while gross domestic savings (SAVB) recorded an average of 36.46% of GDP, indicating a fairly high but fluctuating level of domestic savings. Inflation (INF) had a mean of 19.56%, revealing persistent inflationary pressures, whereas credit to the private sector (CPS) averaged 9.92% of GDP, suggesting limited financial intermediation. Foreign direct investment (FDI) averaged 1.66% of GDP, indicating relatively modest foreign capital inflows. The standard deviations show that inflation and savings behaviour exhibited the greatest variability over the sample period, while the Composite Inclusive Growth Index was relatively stable. The positive skewness values for all variables indicate that their distributions are skewed to the right. Furthermore, the Jarque–Bera statistics reveal that INGR, CPS, and SAVB are approximately normally distributed since their probability values exceed 0.05, whereas FDI, INF, and INTR deviate from normality due to the presence of extreme values. Overall, the descriptive statistics confirm sufficient variation in the variables, making them suitable for subsequent econometric analysis.

Table 3: Pairwise Correlation Matrix

Variables	**INGR**	**INTR**	**SAVB**	**INF**	**CPS**	**FDI**
INGR	1.000					
INTR	-0.426	1.000				
SAVB	-0.853	0.388	1.000			
INF	-0.409	0.415	0.362	1.000		
CPS	0.790	-0.366	-0.774	-0.349	1.000	
FDI	-0.194	0.419	0.293	0.448	-0.033	1.000

Source: *Author's Computation (2026) using EViews.*

The correlation results indicate weak to strong linear associations among the variables employed in the study. Inclusive Growth (INGR) exhibits a strong positive relationship with Credit to Private Sector (CPS) (r = 0.790), suggesting that increased

credit allocation to the private sector is associated with improvements in inclusive growth in Nigeria. Conversely, Inclusive Growth shows negative relationships with Interest Rate (INTR) (r = -0.426), Savings Behaviour (SAVB) (r = -0.853), Inflation Rate (INF) (r = -0.409), and Foreign Direct Investment (FDI) (r = -0.194), indicating that increases in these variables are associated with lower levels of inclusive growth during the study period. Similarly, the relationships among the explanatory variables are generally weak to moderate. Interest Rate is positively correlated with Savings Behaviour (r = 0.388), Inflation Rate (r = 0.415), and Foreign Direct Investment (r = 0.419), but negatively associated with Credit to Private Sector (r = -0.366). Savings Behaviour exhibits a relatively strong negative relationship with Credit to Private Sector (r = -0.774) and weak positive relationships with Inflation Rate (r = 0.362) and Foreign Direct Investment (r = 0.293). Inflation Rate is negatively correlated with Credit to Private Sector (r = -0.349) but positively related to Foreign Direct Investment (r = 0.448), while the relationship between Credit to Private Sector and Foreign Direct Investment is negligible (r = -0.033).

From a multicollinearity perspective, the highest correlation among the explanatory variables is observed between Savings Behaviour (SAVB) and Credit to Private Sector (CPS) (r = -0.774), which is below the conventional threshold of 0.80. This suggests the absence of serious multicollinearity among the independent variables. Furthermore, the strong correlation between Inclusive Growth and Savings Behaviour (r = -0.853) does not constitute a multicollinearityproblem because Inclusive Growth is the dependent variable. Overall, the correlation results indicate that the explanatory variables are sufficiently independent to permit reliable regression estimation. Given the varying strength and direction of the relationships, the use of Quantile Regression (QR) is appropriate because it enables the analysis of the heterogeneous effects of interest rate and savings behaviour across different levels of inclusive growth, rather than restricting inference to the conditional mean as in the conventional Ordinary Least Squares (OLS) approach.

Table 4: Unit Root Test Results (ADF Test)

Variable	ADF Statistic (Level)	Prob.	ADF Statistic (1st Difference)	Prob.	Order of Integration
INGR	-1.1290	0.7034	-3.2880	0.0154	I(1)
INTR	-3.2870	0.0155	-6.6743	0.0000	I(0)
SAVB	-1.4193	0.5730	-8.4856	0.0000	I(1)
INF	-3.5337	0.0072	-5.3506	0.0000	I(0)
CPS	-2.3780	0.1481	-5.7761	0.0000	I(1)
FDI	-4.2631	0.0005	-7.7633	0.0000	I(0)

Source: *Author's Computation* (2026)

The unit root test results indicate mixed orders of integration among the variables employed in the study. Interest Rate (INTR) (ADF = -3.287, p = 0.0155), Inflation Rate (INF) (ADF = -3.534, p = 0.0072), and Foreign Direct Investment (FDI) (ADF = -4.263, p = 0.0005) are stationary at levels, indicating that they are integrated of order zero, I(0). In contrast, Inclusive Growth (INGR) (ADF = -1.129, p = 0.7034), Savings Behaviour (SAVB) (ADF = -1.419, p = 0.5730), and Credit to the Private Sector (CPS) (ADF = -2.378, p = 0.1481) are non-stationary at their levels but become stationary after first differencing, with probability values below the 5% significance level. These variables are therefore integrated of order one, I(1). The findings reveal that the variables are integrated at a mixed order of I(0) and I(1), while none is integrated of order two, I(2). This satisfies the underlying requirement for the application of the Autoregressive Distributed Lag (ARDL) approach in examining the long-run relationship among the variables. Furthermore, the presence of variables with different orders of integration, coupled with the heterogeneous nature of the relationship between interest rate, savings behaviour, and inclusive growth, supports the use of Quantile Regression (QR). Unlike conventional Ordinary Least Squares (OLS), Quantile Regression estimates the effects of the explanatory variables across different points of the conditional distribution of inclusive growth, thereby providing a more comprehensive understanding of their impacts under low, median, and high inclusive growth regimes in Nigeria.

Table 5: Ordinary Least Squares (OLS) Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Probability
C	0.7104	0.1401	5.071	0.0000***
INTR	-0.0037	0.0042	-0.871	0.3900
SAVB	-0.0067	0.0016	-4.195	0.0002***
INF	-0.0009	0.0010	-0.940	0.3540
CPS	0.0122	0.0069	1.773	0.0860*
FDI	0.0096	0.0147	0.652	0.5190
R-squared	0.7820	Adjusted R-squared	0.7480	
F-statistic	23.0100	Prob(F-statistic)	0.0000	
Durbin-Watson Stat.	0.8200	Observations	38	

Source: Author's Computation.
Note: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

The Ordinary Least Squares (OLS) regression results indicate that the model provides a good fit to the data. The R-squared value of 0.782 implies that approximately 78.2% of the variations in inclusive growth are explained jointly by interest rate, savings behaviour, inflation rate, credit to the private sector, and foreign direct investment. The Adjusted R-squared of 0.748 further confirms the strong explanatory power of the model after adjusting for the number of explanatory variables. The F-statistic of 23.010 with a probability value of 0.0000 indicates that the

overall regression model is statistically significant at the 5% level, suggesting that the explanatory variables jointly influence inclusive growth in Nigeria. At the individual level, Interest Rate (INTR) has a negative but statistically insignificant effect on inclusive growth (β = −0.0037, *p* = 0.390), implying that changes in lending interest rates do not exert a significant average effect on inclusive growth over the study period. Savings Behaviour (SAVB) has a negative and statistically significant effect on inclusive growth (β = −0.0067, *p* = 0.0002), indicating that increases in gross domestic savings are associated with reductions in the composite inclusive growth index during the period under review.

Similarly, Inflation Rate (INF) exerts a negative but statistically insignificant effect on inclusive growth (β = −0.0009, *p* = 0.354). Credit to the Private Sector (CPS) has a positive effect (β = 0.0122) and is marginally significant at the 10% level (*p* = 0.086), suggesting that greater private sector credit tends to promote inclusive growth. Foreign Direct Investment (FDI) also has a positive but statistically insignificant coefficient (β = 0.0096, *p* = 0.519), indicating that its contribution to inclusive growth is positive but not strong enough to be statistically confirmed over the study period.Overall, the OLS results provide evidence of the average effects of the explanatory variables on inclusive growth. However, because OLS estimates only the conditional mean, it may conceal differences across low, medium, and high levels of inclusive growth. This provides the rationale for estimating the Quantile Regression model, which examines how the effects of interest rate and savings behaviour vary across different points of the inclusive growth distribution.

Table 6: Quantile Regression Estimates

Variable	Q25 Coef. (Prob.)	Q50 Coef. (Prob.)	Q75 Coef. (Prob.)	Q90 Coef.	Q95 Coef.
C	0.5995 (0.0042)***	0.6780 (0.0020)***	0.8554 (0.0011)***	0.6426	0.8333
INTR	-0.0035 (0.5801)	-0.0007 (0.9107)	-0.0032 (0.6266)	-0.0082	-0.0097
SAVB	-0.0063 (0.0059)***	-0.0071 (0.0041)***	-0.0066 (0.0124)**	-0.0031	-0.0049
INF	-0.0002 (0.9148)	-0.0008 (0.5970)	-0.0028 (0.0613)*	-0.0027	-0.0031
CPS	0.0163 (0.1499)	0.0102 (0.3120)	0.0047 (0.6354)	0.0266	0.0182
FDI	-0.0030 (0.9091)	0.0064 (0.7653)	0.0197 (0.4164)	0.0199	0.0257

Source: Author's Computation (2026)
Note: ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively. Due to the relatively small sample size (38 observations), reliable p-values could not be computed for the 90th and 95th quantiles.

The Quantile Regression results reveal heterogeneous effects of the explanatory variables across different inclusive growth regimes in Nigeria. At the lower quantile (Q0.25), Savings Behaviour (SAVB) exerts a negative and statistically significant effect on Inclusive Growth (β = -0.0063, *p*< 0.01), indicating that increases in savings behaviour did not translate into improvements in inclusive growth during

periods of relatively low inclusive growth. At the median quantile (Q0.50), Savings Behaviour remains negative and statistically significant (β = -0.0071, $p<$ 0.01), suggesting that higher savings mobilisation continued to exert an adverse influence on inclusive growth. Similarly, at the upper-middle quantile (Q0.75), the coefficient of Savings Behaviour remains negative and statistically significant (β = -0.0066, $p<$ 0.05), implying that the negative relationship persists even under relatively higher inclusive growth conditions. Across all estimated quantiles, Interest Rate (INTR) exhibits a negative but statistically insignificant effect on Inclusive Growth, suggesting that changes in lending interest rates do not significantly influence inclusive growth across different growth regimes. Likewise, Inflation Rate (INF) maintains a negative coefficient throughout the distribution and is only marginally significant at the 75th quantile, indicating that inflation tends to weaken inclusive growth, particularly at higher levels of the distribution. Credit to Private Sector (CPS) consistently displays a positive coefficient across all quantiles, implying that increased private sector credit supports inclusive growth, although its effect is not statistically significant at the conventional levels. Foreign Direct Investment (FDI) also exhibits mixed effects, changing from a slightly negative coefficient at the lower quantile to positive coefficients at the upper quantiles; however, these effects remain statistically insignificant.

The variation in the magnitude and significance of the coefficients across the estimated quantiles confirms the presence of heterogeneous relationships between the explanatory variables and inclusive growth. These findings justify the use of Quantile Regression (QR) over theconventional Ordinary Least Squares (OLS) estimator, as QR captures the differential impacts of interest rate, savings behaviour, inflation, credit to the private sector, and foreign direct investment across different levels of inclusive growth rather than focusing solely on the conditional mean. This provides a more comprehensive understanding of the determinants of inclusive growth in Nigeria.

Table 7: ARDL Bounds Test Results

Test Statistic	Value	10% I(0)	10% I(1)	5% I(0)	5% I(1)	Decision
F-statistic	2.184	2.626	3.849	3.173	4.549	No Cointegration
t-statistic	-2.631	-2.539	-3.648	-2.887	-4.051	No Cointegration

p-values: F = 0.173–0.421; t = 0.071–0.284
Source: Author's Computation (2026)

The ARDL Bounds Test results indicate that the computed F-statistic (2.184) is lower than the lower bound critical values at both the 10% (2.626) and 5% (3.173) significance levels, while the estimated t-statistic (-2.631) also fails to exceed the corresponding upper bound critical values. Consequently, the null hypothesis of no long-run relationship cannot be rejected. This indicates the absence of a stable long-run cointegrating relationship among Inclusive Growth (INGR), Interest Rate (INTR), Savings Behaviour (SAVB), Inflation Rate (INF), Credit to Private Sector (CPS), and Foreign Direct Investment (FDI) in Nigeria over the study

period. The findings suggest that the interactions among the variables are predominantly short-run rather than long-run in nature, implying that changes in the explanatory variables do not produce a stable long-run equilibrium effect on inclusive growth. The absence of cointegration also implies that the variables may exhibit heterogeneous responses across different levels of inclusive growth rather than a uniform long-run relationship. This therefore supports the application of Quantile Regression (QR), which captures the differential effects of the explanatory variables across various points of the conditional distribution of inclusive growth without requiring the existence of a long-run cointegrating relationship. Consequently, Quantile Regression provides a more robust framework for analysing the heterogeneous impacts of interest rate and savings behaviour on inclusive growth in Nigeria.

3.3 Diagnostic Test

Table 8: Breusch–Godfrey Serial Correlation Test

Test	Chi-square	df	p-value	Dec
BG LM (lag 1)	12.837	1	0.0003	Ser

Source: Author's Computation, 2026

The Breusch–Godfrey Serial Correlation LM test rejects the null hypothesis of no serial correlation ($\chi^2 = 12.837$, $p = 0.0003$). This indicates that the residuals of the estimated model exhibit first-order autocorrelation. Consequently, the classical regression assumption of independently distributed disturbances is violated, implying that the OLS standard errors may be inefficient. This finding suggests that robust estimation techniques, such as Quantile Regression with robust or bootstrap standard errors, are more appropriate for analysing the relationship between interest rate, savings behaviour, and inclusive growth in Nigeria.

Table 9: Breusch–Pagan / Cook–Weisberg Heteroskedasticity Test

Test	Chi-square	df	p-value	Decision
BP/CW Test	4.332	5	0.5027	Homoskedasticity

Source: Author's Computation, 2026

The Breusch–Pagan test fails to reject the null hypothesis of constant error variance ($\chi^2 = 4.332$, $p = 0.5027$). This indicates that the residuals are homoskedastic and the variance of the disturbance term remains constant across observations. Therefore, there is no evidence of heteroskedasticity in the estimated model, supporting the efficiency of the estimated coefficients.

Table 10: Quantile Regression Results ($\tau = 0.25$)

Variables	Coefficient	Std. Error	t-Statistic	p-value
Constant	0.5995	0.1942	3.0866	0.0042***
INTR	-0.0035	0.0062	-0.5589	0.5801
SAVB	-0.0063	0.0021	-2.9469	0.0059***

Variables	Coefficient	Std. Error	t-Statistic	p-value
INF	-0.0002	0.0017	-0.1078	0.9148
CPS	0.0163	0.0110	1.4754	0.1499
FDI	-0.0030	0.0259	-0.1151	0.9091

Statistic	Value
Observations	38
Quantile (τ)	0.25
Pseudo R^2	0.5381

Source: Author's Computation, 2026.

The Quantile Regression results at the 25th quantile (τ = 0.25) indicate that Savings Behaviour (SAVB) has a negative and statistically significant effect on Inclusive Growth (β = −0.0063, p = 0.0059), implying that increased savings behaviour is associated with lower inclusive growth during periods of relatively low economic performance. Interest Rate (INTR) also exhibits a negative but statistically insignificant effect (β = −0.0035, p = 0.5801). Similarly, Inflation Rate (INF) and Foreign Direct Investment (FDI) exert negative and statistically insignificant effects, while Credit to the Private Sector (CPS) has a positive but insignificant effect on inclusive growth. The model records a Pseudo R^2 of 0.5381, indicating that about 53.81% of the variation in the lower quantile of inclusive growth is explained by the explanatory variables.

Table 11: Quantile Regression Results (τ = 0.50)

Variables	Coefficient	Std. Error	t-Statistic	p-value
Constant	0.6780	0.201	3.366	0.002***
INTR	-0.0007	0.006	-0.113	0.911
SAVB	-0.0071	0.002	-3.096	0.004***
INF	-0.0008	0.001	-0.534	0.597
CPS	0.0102	0.010	1.027	0.312
FDI	0.0064	0.021	0.301	0.765

Statistic	Value
Observations	38

Variables	Coefficient	Std. Error	t-Statistic	p-value
Quantile (τ)	0.50			
Pseudo R^2	0.6072			

Source: Author's Computation, 2026.
Note: *** denotes statistical significance at the 1% level.

The Quantile Regression results at the median (τ = 0.50) indicate that Savings Behaviour (SAVB) exerts a negative and statistically significant effect on Inclusive Growth (β = -0.0071, *p* = 0.004), implying that increased savings behaviour is associated with a reduction in inclusive growth at the median level. Interest Rate (INTR) has a negative but statistically insignificant effect (β = -0.0007, *p* = 0.911), suggesting that lending interest rates do not significantly influence inclusive growth at the median quantile. Similarly, Inflation Rate (INF) exhibits a negative and statistically insignificant effect (β = -0.0008, *p* = 0.597). In contrast, Credit to the Private Sector (CPS) (β = 0.0102, *p* = 0.312) and Foreign Direct Investment (FDI) (β = 0.0064, *p* = 0.765) have positive but statistically insignificant effects on inclusive growth. The model records a Pseudo R^2 of 0.6072, indicating that approximately 60.72% of the variation in the conditional median of inclusive growth is explained by the explanatory variables included in the model.

Table 12: Quantile Regression Results (τ = 0.75)

Variables	Coefficient	Std. Error	t-Statistic	p-value
Constant	0.8554	0.2374	3.6027	0.0011***
INTR	-0.0032	0.0066	-0.4912	0.6266
SAVB	-0.0066	0.0025	-2.6485	0.0124**
INF	-0.0028	0.0014	-1.9392	0.0613*
CPS	0.0047	0.0098	0.4787	0.6354
FDI	0.0197	0.0240	0.8234	0.4164

Statistic	Value
Observations	38
Quantile (τ)	0.75
Pseudo R^2	0.5200

Source: Author's Computation, 2026.
Notes: ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

The Quantile Regression results at the 75th quantile (τ = 0.75) indicate that Savings Behaviour (SAVB) continues to exert a negative and statistically significant effect on Inclusive Growth (β = −0.0066, p = 0.0124), suggesting that increased savings behaviour remains associated with lower inclusive growth even under relatively high growth conditions. Interest Rate (INTR) has a negative but statistically insignificant effect (β = −0.0032, p = 0.6266). Inflation Rate (INF) exhibits a negative effect and is marginally significant at the 10% level (β = −0.0028, p = 0.0613), implying that rising inflation may weaken inclusive growth at higher growth levels. Meanwhile, Credit to the Private Sector (CPS) and Foreign Direct Investment (FDI) have positive but statistically insignificant effects. The model records a Pseudo R^2 of 0.5200, indicating that approximately 52.00% of the variation in the 75th conditional quantile of inclusive growth is explained by the explanatory variables.

Table 13: Quantile Regression Results (τ = 0.90)

Variables	Coefficient
Constant	0.6426
INTR	-0.0082
SAVB	-0.0031
INF	-0.0027
CPS	0.0266
FDI	0.0199
Statistic	Value
Observations	38
Quantile (τ)	0.90
Pseudo R^2	0.4581

Source: Author's Computation, 2026.

Note: Due to the relatively small sample size (38 observations), estimation at the 90th quantile resulted in a singular covariance matrix. Consequently, reliable standard errors, t-statistics, and p-values could not be computed. This is a common limitation when estimating extreme quantiles with small samples.

The Quantile Regression results at the 90th quantile (τ = 0.90) indicate that the effects of the explanatory variables differ under relatively high inclusive growth conditions. Interest Rate (INTR) has a negative coefficient (β = −0.0082), suggesting that higher lending interest rates are associated with lower inclusive growth at the upper end of the conditional distribution. Savings Behaviour (SAVB) also exhibits a negative coefficient (β = −0.0031), implying that increased savings mobilisation does not necessarily translate into improved inclusive growth during periods of relatively high economic performance. Similarly, Inflation Rate (INF) records a negative coefficient (β = −0.0027), indicating that inflation may adversely affect inclusive growth at higher growth levels. Conversely, Credit to the Private Sector (CPS) has a positive coefficient (β = 0.0266), suggesting that increased private sector credit contributes positively to inclusive growth in higher-growth regimes. Foreign Direct Investment (FDI) also exhibits a positive coefficient (β = 0.0199), implying that foreign capital inflows may support inclusive growth when

the economy experiences relatively strong growth. The model reports a Pseudo R^2 of 0.4581, indicating that approximately 45.81% of the variation in the 90th conditional quantile of inclusive growth is explained by the explanatory variables included in the model.

Because reliable standard errors and significance tests could not be obtained at this extreme quantile, the results should be interpreted primarily in terms of the direction and magnitude of the estimated coefficients. The findings nevertheless reinforce the evidence from the lower and median quantiles that the effects of interest rate, savings behaviour, and other macroeconomic variables vary across different levels of inclusive growth, highlighting the heterogeneous nature of these relationships in Nigeria.

5. Discussion of Findings

The findings of this study reveal that the effects of interest rate and savings behaviour on inclusive growth in Nigeria vary across different levels of inclusive growth, thereby justifying the use of Quantile Regression rather than relying solely on the average effects obtained from the Ordinary Least Squares (OLS) estimation. While the OLS results indicate that Interest Rate and Savings Behaviour exert weak average effects on inclusive growth, the quantile regression estimates reveal heterogeneous effects across different conditional distributions of inclusive growth. This confirms that the relationship among the variables is not uniform but varies across different growth regimes in Nigeria. Across the estimated quantiles ($\tau = 0.25$, $\tau = 0.50$, $\tau = 0.75$ and $\tau = 0.90$), Savings Behaviour consistently exhibits a negative relationship with inclusive growth, with statistically significant effects at the lower, median and upper-middle quantiles. This finding suggests that increases in savings mobilisation have not translated into improvements in inclusive growth. The result may reflect the low level of productive investment of domestic savings, persistent inflationary pressures, declining household purchasing power, and limited access to efficient financial services. This finding partly contradicts the predictions of the Financial Intermediation Theory of Gurley and Shaw (1960), which argues that increased savings mobilisation should stimulate investment and promote economic development through efficient financial intermediation.

Similarly, Interest Rate maintains a negative coefficient across all estimated quantiles, although the effect remains statistically insignificant throughout the analysis. This implies that changes in lending interest rates have not exerted a meaningful influence on inclusive growth in Nigeria during the study period. The result suggests weak monetary policy transmission, which may be attributed to structural rigidities within the Nigerian financial system, high borrowing costs, limited financial inclusion, and the inability of productive sectors to access affordable credit. The finding is broadly consistent with the Financial Liberalization Theory of McKinnon (1973) and Shaw (1973), which recognizes that the effectiveness of interest rate policies depends largely on the level of financial sector development and institutional efficiency. The results further indicate that Credit to the Private Sector (CPS) maintains a positive relationship with inclusive growth across all estimated quantiles, although the coefficients are statistically insignificant. This positive association suggests that increased credit allocation to productive private sector activities has the potential to enhance inclusive growth through higher investment, employment creation, and increased productive capacity. Likewise, Foreign Direct Investment (FDI) records predominantly positive coefficients at the median and upper quantiles, implying that

foreign capital inflows may contribute to inclusive growth during periods of relatively stronger economic performance, although the estimated effects remain statistically insignificant. Conversely, Inflation Rate (INF) exhibits negative coefficients across the estimated Quantiles, indicating that rising inflation tends to reduce inclusive growth by weakening purchasing power and increasing macroeconomic uncertainty.

The ARDL Bounds Test results indicate the absence of a long-run co-integrating relationship among inclusive growth, interest rate, savings behavior, inflation, credit to the private sector, and foreign direct investment. This suggests that the interactions among the variables are predominantly short-run rather than stable long-run relationships. Consequently, the heterogeneous results obtained from the Quantile Regression provide more meaningful evidence by demonstrating that the effects of the explanatory variables differ across various levels of inclusive growth instead of remaining constant over time. Overall, the findings suggest that policies aimed at promoting inclusive growth in Nigeria should extend beyond conventional interest rate adjustments to include measures that strengthen financial intermediation, improve the productive utilisation of domestic savings, expand access to affordable credit, maintain macroeconomic stability, and enhance financial inclusion. Such targeted reforms would improve the effectiveness of monetary policy and foster broad-based and sustainable inclusive growth across different segments of the economy.

6. Conclusion

This study examined the effect of interest rate and savings behaviour on inclusive growth in Nigeria using Ordinary Least Squares (OLS) and Quantile Regression techniques. The findings reveal that the effects of the explanatory variables vary across different levels of inclusive growth, confirming the presence of heterogeneous relationships. Savings behaviour consistently exhibits a negative effect on inclusive growth, while interest rate remains negative but statistically insignificant across the estimated quantiles. Credit to the private sector and foreign direct investment show positive contributions, although their effects are generally insignificant. The ARDL Bounds Test further indicates the absence of a long-run relationship among the variables, suggesting that their interactions are predominantly short-run. Overall, the study demonstrates that Quantile Regression provides deeper insights into inclusive growth dynamics than conventional mean-based estimation techniques.

7. Recommendations

The government and the Central Bank of Nigeria should strengthen financial inclusion by improving access to formal savings and affordable credit, particularly for households and small businesses. Efforts should also focus on enhancing the productive utilization of domestic savings, promoting efficient credit allocation to productive sectors, and maintaining a stable macroeconomic environment that supports sustainable and inclusive growth.

8. Policy Implications

The findings imply that achieving inclusive growth in Nigeria requires more than conventional interest rate adjustments. Policymakers should prioritize financial sector reforms that improve credit accessibility, financial inclusion, and efficient resource allocation. The insignificant effect of interest rate further suggests the need to strengthen monetary policy transmission mechanisms and institutional efficiency within the Nigerian

financial system.In addition, government policies should focus on creating an enabling economic environment capable of transforming domestic savings into productive investment and broad-based economic development.

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