FUDMA Journal of Accounting and Finance Research, 4(1). ISSN: 2992-4693 (Online); 2992-2704 (Print)

Can financial inclusion reduce income inequality? Evidence from Nigeria

Hafiz Ismail[1], Habiba Bello[2], Ahmad Danjuma[3]*, Sadiq Dalil Wakili[4]
[1,2,4]*Department of Economics Federal College of Education, Yola-Nigeria*
[3]*Department of Economics Adamawa State University, Mubi-Nigeria*
**Corresponding email : danjuma658@adsu.edu.ng*
https://doi.org/10.33003/fujafr-2026.v4i1.289.199-212

Abstract

Purpose: This study examines the effect of financial inclusion on income inequality in Nigeria. Specifically, it evaluates whether improvements in financial access, alongside selected macroeconomic variables, significantly influence the level of income inequality in the country.

Methodology: The study adopts an ex post facto research design using annual time-series data for Nigeria. The population of the study comprises all annual macroeconomic observations relevant to financial inclusion and income inequality in Nigeria within the study period. Based on data availability and consistency across sources, the study uses annual observations covering 1985–2020. Data were obtained from the World Development Indicators, Central Bank of Nigeria Statistical Bulletin, Federal Ministry of Education reports, and the Standardized World Income Inequality Database. The study employs Ordinary Least Squares and Newey-West regression techniques for estimation.

Results and conclusion: The findings show that financial inclusion exerts a reducing effect on income inequality in Nigeria. Economic growth also contributes to inequality reduction, while inflation and real interest rates tend to worsen inequality. Government spending shows a negative but weak effect on inequality, while primary school enrolment does not exert a statistically significant short-run effect. The study concludes that financial inclusion is an important instrument for promoting a more equitable income distribution in Nigeria.

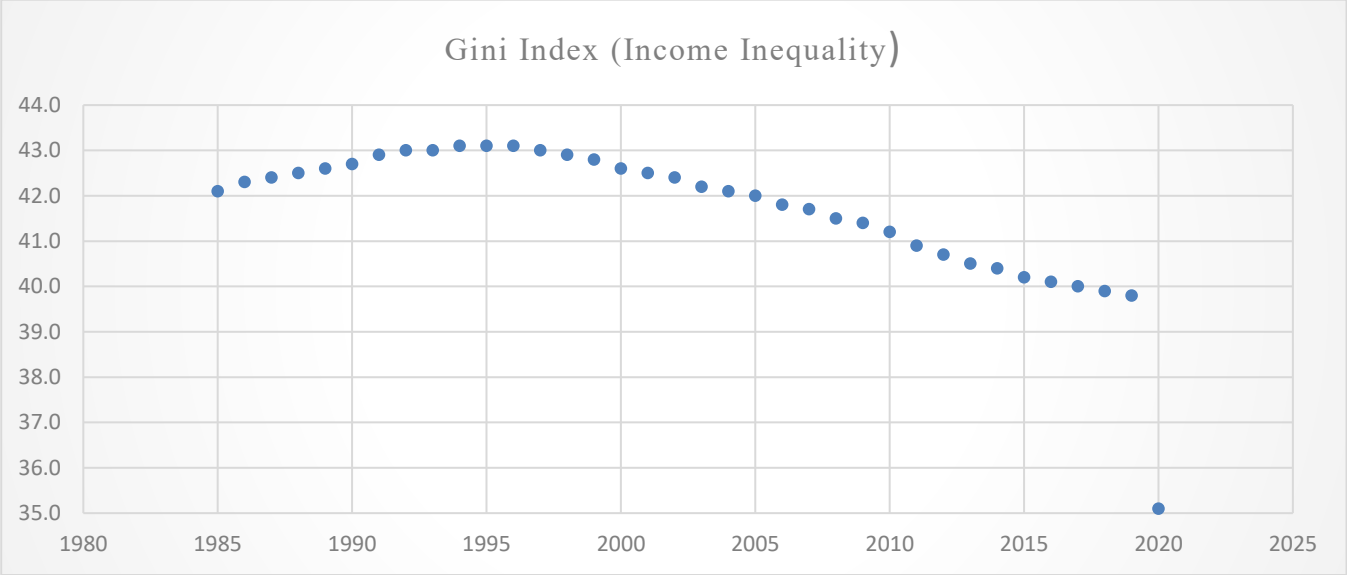
Implication of findings: The findings imply that policies aimed at expanding access to financial services, strengthening macroeconomic stability, and improving the efficiency of public spending are essential for reducing income inequality and promoting inclusive growth in Nigeria.

Keywords: Education, Financial inclusion, Income inequality, Macroeconomic variables.

1. Introduction

Income inequality remains a major development challenge in Nigeria despite successive economic reforms and repeated policy efforts aimed at inclusive growth. Recent evidence continues to show that poverty and inequality remain deeply embedded in the Nigerian economy, with strong spatial disparities between northern and southern zones and between rural and urban populations. The World Bank's 2025 Poverty and Equity Brief reports that inequality, measured by the Gini index, was estimated at 33.9 in 2022/23, compared with 35.1 in 2018/19, while poverty remained severe and geographically uneven. This suggests that changes in inequality do not necessarily imply broad-based welfare improvement. To provide a clearer picture of the pattern of income inequality in Nigeria over time, Figure 1 presents the trend in the Gini index during the study period (World Bank, 2025).

Fig 1: Trend of Income Inequality in Nigeria (1985 to 2020)



Source: Author's Computation from SWIID, 2026

Figure 1 shows that income inequality in Nigeria remained persistently high over the study period, although with some moderation in later years. This suggests that inequality has remained a structural feature of the Nigerian economy, thereby justifying further inquiry into the factors that may help reduce it.

One factor increasingly identified in the development literature as a possible instrument for reducing inequality is financial inclusion financial inclusion refers to a situation in which individuals and businesses have access to and use affordable financial products and services that meet their needs, including transactions, payments, savings, credit, and insurance (World Bank, 2025). In Nigeria, financial inclusion has received substantial policy attention through the National Financial Inclusion Strategy and its subsequent revisions, reflecting its growing importance for welfare, employment generation, and broader development outcomes (Central Bank of Nigeria, 2022).

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Recent national evidence indicates that Nigeria has made progress in expanding financial access, although significant exclusion persists. EFInA reports that formal financial service usage in Nigeria increased from 30 percent in 2016 to 57 percent in 2023, with major growth in the use of financial agents during the same period (EFInA, 2024). Nonetheless, these improvements in access have not automatically translated into proportionate reductions in welfare disparities, which raises an important empirical question about whether financial inclusion has significantly contributed to reducing income inequality in Nigeria.

Theoretically, financial inclusion can reduce income inequality by broadening access to savings, payments, credit, and other financial services, thereby enabling low-income households and small businesses to smooth consumption, invest in productive activities, and better manage risk. Recent empirical studies provide support for this position. Sawadogo and Semedo (2021), using data from sub-Saharan Africa, find that the effect of financial inclusion on inequality depends partly on institutional conditions, but that inclusion can reduce inequality under stronger governance environments. Empirical evidence from Nigeria suggests that access to microcredit significantly improves welfare outcomes and supports poverty reduction, particularly through enhanced entrepreneurial capacity (Shehu et al., 2025). This highlights the potential for financial inclusion as a mechanism for promoting more equitable income distribution. Similarly, Segning et al. (2024) show that financial inclusion contributes to reducing income inequality in sub-Saharan Africa, although the strength of the effect varies across socio-cultural settings. In the Nigerian context, Etudaiye-Muhtar (2024) finds that financial inclusion significantly reduces income inequality, while education and economic growth also help narrow the gap.

Beyond financial inclusion, inequality is also shaped by macroeconomic conditions. Inflation tends to erode real incomes and can worsen distributional outcomes, especially for low-income households. Recent studies continue to show that inflation can increase income inequality. Government spending may reduce inequality when it is well targeted, but its effects depend on composition and institutional efficiency. Education-related variables may improve long-run income distribution, although recent African evidence suggests the effect is not always linear or immediate.

Against this background, this study examines the effect of financial inclusion on income inequality in Nigeria, while controlling for selected macroeconomic variables. Specifically, the study investigates whether financial inclusion significantly reduces inequality and whether macroeconomic instability weakens that effect.

The study contributes to the existing literature by providing updated evidence on the financial inclusion-inequality nexus in Nigeria within a macroeconomic framework. It also offers policy-relevant insight into how financial inclusion, inflation control, and public spending efficiency can jointly shape inclusive growth outcomes.

This paper is organized into five sections. Following this introductory section, Section 2 presents the theoretical and empirical literature. Section 3 discusses the methodology, model specification, data sources, and estimation techniques. Section 4 presents and discusses the empirical results. Section 5 concludes the study and provides policy recommendations.

2. Literature review

Theoretical framework

From theoretical viewpoint, the study adopts a post-Keynesian theoretical framework to analyse the relationship between financial inclusion and income inequality in Nigeria. Post-Keynesian economics emphasizes the role of institutions, financial structures, and income distribution in shaping economic outcomes, particularly in developing economies characterized by structural imbalances and financial instability (Hein, 2012; Lavoie, 2014). Studies based on this theoretical framework argued that inequality is deeply rooted in market imperfections, credit constraints, and the unequal distribution of income and wealth (Stockhammer, 2015). Unlike classical theories that assume markets are self-adjusting, post-Keynesian theory focuses on demand-side factors, advocating for policy interventions to correct market failures and promote inclusive growth (Palley, 2016; Palley et. al, 2006). This approach is especially

relevant for Nigeria, where income inequality persists despite efforts to expand financial access and promote economic development.

Furthermore, in this framework, financial inclusion is viewed as a tool for addressing inequality by improving access to credit, reducing liquidity constraints, and enabling productive investments by lower-income groups (Demirgüç-Kunt & Klapper, 2013). By integrating marginalized populations into the formal financial system, financial inclusion can facilitate consumption smoothing, asset accumulation, and entrepreneurial activities, thereby fostering inclusive growth (Beck, Demirgüç-Kunt, & Levine, 2007).

Thus, this study builds first on Kalecki's perspective on income distribution, which highlights the power dynamics between capitalists and workers (Kalecki, 1943). It argues that economic systems often prioritize profit maximization over wage growth, contributing to income inequality. Financial inclusion, when supported by effective government intervention and redistributive policies, can help counteract these imbalances by improving access to productive resources for marginalized groups as opined by (Palley, 2016).

Secondly, it also draws some insights from Keynesian demand-driven growth theories, which stress the importance of aggregate demand in sustaining economic growth and reducing inequality (Keynes, 1936). Policies that promote financial inclusion, combined with government spending and inflation control, can stimulate demand, enhance income redistribution, and support long-term economic and financial stability (Hein, 2012; Ahmad, 2018).

This framework is directly relevant to Nigeria's economic context, where high inflation, limited financial access, and exchange rate volatility contribute to persistent income inequality. Additionally, the emphasis of the post-Keynesian on short-run dynamics aligns with the focus of this study as it examines the immediate policy responses and transitory effects of financial inclusion. Newey-West estimations were employed to capture the adjustments required to stabilize income distribution and highlights the need for policies that balance financial stability with inclusive economic growth.

Empirical literature review

Financial inclusion and income inequality

Empirical research widely recognizes financial inclusion as a tool for promoting inclusive economic growth and reducing income inequality. Beck et al., (2007), Turegano and Herrero (2018) and Tran and Lee (2021) both emphasize that expanding access to formal financial services enables credit availability, savings mobilization, and investment opportunities for low-income households, thereby reducing inequality. Similarly, Demirgüç-Kunt and Klapper (2013), Omar and Inaba (2020) also show that financial inclusion improves wealth distribution by fostering productive investments and reducing vulnerability to shocks. The Nigeria's experience is not quite different as (Ajide, 2015; Omojolaibi, 2017; Okowa, & Owede, 2022; Ajide, 2017) both show that financial inclusion improves income distribution, particularly among rural populations. Others such as (Björkegren et al. 2022; Cao et al., 2022) show that increased in access to mobile banking and microfinance services significantly lowers income gap.

Despite these, some other scholarly studies highlight potential limitations of financial inclusion on income inequality. For example, Park and Mercado (2021) argue that financial inclusion may exacerbate income inequality if credit access disproportionately favors higher-income groups with collateral and financial literacy, while leaving lower-income groups excluded. Similarly, Nwankwo and Nula (2021) also cautioned that financial inclusion programs often failed to address structural barriers, such as low

financial literacy and gender disparities, which limit their effectiveness. This aligns with post-Keynesian critiques of financialization, which emphasize the need for institutional interventions to correct market imperfections (Lavoie, 2014).

Recent developments in financial inclusion have increasingly emphasized the role of digital financial services in expanding access to financial systems. Digital banking platforms have been shown to improve savings behaviour and financial discipline among users, thereby enhancing financial resilience and long-term welfare outcomes. For instance, Gita and Oriavwote (2025) find that the adoption of digital banking tools significantly improves savings performance in Nigeria, suggesting that technology-driven financial inclusion can play an important role in improving household financial stability and reducing inequality.

Macroeconomic variables and income inequality

Beyond financial inclusion, macroeconomic conditions play a crucial role in shaping income distribution. Monetary policy dynamics, particularly those influencing interest rates and credit conditions, affect investment, employment, and income generation across different sectors of the economy. Evidence from Nigeria indicates that monetary policy significantly influences sectoral performance and economic outcomes (Yongosi & Oriavwote, 2025), thereby indirectly affecting income distribution. This reinforces the importance of incorporating macroeconomic variables when examining the relationship between financial inclusion and inequality.

Inflation is one of the major macroeconomic variables widely regarded as a driver of inequality due to its regressive effects. From global perspective, Easterly and Fischer (2001) argue that inflation erodes the purchasing power of low-income groups, exacerbating inequality. Albanesi (2007) finds that inflation disproportionately harms those with fixed incomes, widening the wealth gap. In Nigeria, Olayungbo and Ajuwon (2015) found that high inflation rates reduced real incomes and purchasing power, intensifying inequality. However, some studies highlight the short-term redistributive effects of inflation, particularly when governments use indexation policies to protect vulnerable groups.

Another important macroeconomic variable often linked to inequality reduction is economic growth. Barro (2000) suggests that growth reduces inequality through job creation and income expansion. However, the effect depends on whether growth is inclusive or concentrated among high-income groups. Empirical studies show that GDP growth reduces inequality but as argued by post-Keynesians, the impact might be uneven due to regional disparities and sectoral imbalances. Palley (2016), emphasizes the role of aggregate demand and government spending in ensuring that growth benefits are widely shared. Studies on real interest rates suggest that high borrowing costs worsen inequality by limiting credit access for low-income groups. For instance, Demirgüç-Kunt and Levine (2009) found that high interest rates disproportionately favor savers and creditors, worsening inequality.

Education and income inequality

Education is widely recognized as a tool for reducing inequality by enhancing human capital development. Galor and Zeira (1993) argue that education improves earnings potential and social mobility, narrowing income disparities. Similarly, Castelló and Doménech (2002) found that increased school enrolment reduces inequality, particularly in developing countries. In Nigeria, Oyekale and Adepoju (2012) show that higher primary school enrolment rates improve income distribution over time. However, Aminu (2019) argues that education's impact is limited in the short run due to quality constraints and labor market mismatches. Thus, education improves the quality of human capital, improves earnings and hence, closes income gap (Becker, 2009).

The study is further guided by the following research hypotheses:
H1: Financial inclusion has no significant effect on income inequality in Nigeria.
H2: Economic growth has no significant effect on income inequality in Nigeria.
H3: Government spending has no significant effect on income inequality in Nigeria.
H4: Inflation has no significant effect on income inequality in Nigeria.
H5: Real interest rate has no significant effect on income inequality in Nigeria.
H6: Primary school enrolment has no significant effect on income inequality in Nigeria.

3. Methodology

This study adopts an ex post facto research design. The design is appropriate because the study relies on already existing macroeconomic time-series data and does not involve manipulation of the study variables. The study is a macro-level analysis of the Nigerian economy and does not focus on any specific sector.

The population of the study comprises all annual observations on income inequality, financial inclusion, and related macroeconomic variables in Nigeria within the period for which relevant secondary data exist. Based on data availability, completeness, and consistency across sources, the study uses annual observations covering 1985 – 2022. The sample therefore consists of the annual observations for the selected variables within that period. Since the study depends on available macro-level annual data, the sample was selected using a purposive sampling technique, retaining only variables and years for which sufficiently consistent data were available from recognized national and international sources.

The study estimates the effect of financial inclusion on income inequality while controlling economic growth, government spending, inflation, real interest rate, and primary school enrolment. To ensure robustness in the presence of heteroskedasticity and autocorrelation, the study employs Ordinary Least Squares as the baseline estimator and Newey-West estimation for robust inference.

Model specification

Based on the theoretical framework established earlier, and in line with our objectives, the following econometric model was specified as follows:

$$GI_t = \beta_0 + \beta_1 FI_t + \beta_2 GDPPC_t + \beta_3 GS_t + \beta_4 INF_t + \beta_5 RIR_t + \beta_6 PRIEE_t + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where:
GI = Gini index (measure of income inequality)
FI = Financial inclusion (proxy by domestic credit to private sector as percentage of GDP and liquid liabilities, M3, estimated separately in two models)
GDPPC = GDP per capita (economic growth)
GS = Government spending (% of GDP)
INF = Inflation rate (consumer price index)
RIR = Real interest rate (%)
PRIEE = Primary school enrolment (%)
ε = Error term

Estimation technique

This study employs two estimation techniques: Ordinary Least Squares (OLS) and Newey-West regression to analyze the relationship between financial inclusion and income inequality in Nigeria. The OLS estimation serves as a baseline model to examine the relationship under the assumption of

homoscedasticity and no serial correlation. However, OLS estimates may be biased and inefficient when these assumptions are violated, particularly in time-series data where heteroskedasticity and autocorrelation are prevalent as noted by (Gujarati & Porter, 2009). The Newey-West heteroskedasticity and autocorrelation consistent (HAC) estimator provides robust standard errors to address issues of heteroskedasticity and serial correlation common in time-series data (Newey & West, 1987). This method is particularly suited for short-run analyses, where macroeconomic instability may introduce correlated errors that distort traditional OLS estimates (Baum et al., 2007).

Furthermore, the Newey-West estimator ensures that the coefficient estimates are efficient and unbiased, making the results reliable for policy formulation in Nigeria's volatile economic environment. This approach aligns with post-Keynesian insights, which emphasize the need for robust empirical tools to account for market imperfections and policy inefficiencies (Palley, 2016).

In addition, we employed Newey-west lag selection criterion to determine the optimal lag. Based on that, lag length of 3 is suggested and chosen to capture the short-run dynamics and serial correlation, reflecting Nigeria's economic volatility and policy transmission delays (Newey & West, 1987). This lag structure strengthens the model's ability to produce reliable inferences under short-run adjustments. Thus, both the OLS and the Newey-West estimates are presented here to compare the results and assess the consistency of relationships between variables. In addition, it also highlights improvements in statistical reliability when correcting for heteroskedasticity and autocorrelation and demonstrates the robustness of findings and enhanced policy credibility by providing multiple perspectives. Although, the OLS estimates establish a baseline relationship, the Newey-West model is preferred for final inferences due to its ability to handle time-series complexities and macroeconomic irregularities outlined above.

Data sources and measurement

The data used in this study consist of annual time-series spanning 36 years (1985–2020) retrieved from different source. The study limits time scope to 2022 due to data availability on income inequality. The macroeconomic and financial data were sourced from World Bank database and Central Bank of Nigeria (CBN. 2020) statistical bulletins. While Education enrolment is sourced from Federal Ministry of Education annual reports. Data on income inequality, Gini Index (GI), is sourced from the Standardized World Income Inequality database (SWIID) as well as World Bank Development Indicators. This database offers the benefit of standardizing the Gini coefficient while reducing dependence on questionable assumptions. It also leverages the most recent data available within the same country (Solt, 2020; World Bank, 2022).

The Gini coefficient serves as the dependent variable and measures the degree of income inequality. Financial inclusion is proxied by domestic credit to the private sector as a percentage of GDP and liquid liabilities (M3), reflecting the depth and availability of formal financial intermediation. Recent evidence indicates that financial inclusion can reduce income inequality by widening access to financial services, although the effect may vary across institutional settings and dimensions of inclusion (Inoue, 2024).

Economic growth, measured by GDP per capita growth, is expected to reduce inequality when growth is sufficiently broad-based and employment-generating, though the effect may differ across countries. Government spending, measured as final consumption expenditure of government as a percentage of GDP, captures the redistributive role of fiscal policy; however, recent evidence shows that its inequality

effect depends strongly on spending composition, targeting, and institutional effectiveness (Zerihun, 2025).

Inflation captures price instability and is expected to worsen inequality by eroding the real incomes of poorer households more severely than those of higher-income groups. Recent evidence continues to support a positive inflation-inequality relationship. Real interest rate reflects the cost of borrowing and can constrain access to credit for poorer households and small firms, thereby reinforcing inequality when borrowing costs remain high. Primary school enrolment is used as a proxy for human capital formation. Education is theoretically expected to reduce inequality over time through improved capabilities and labour-market opportunities, although recent African evidence suggests that the effect may be delayed, nonlinear, or dependent on the quality and distribution of educational spending (Ndou, 2024).

4. Results and discussion

Descriptive analysis

The summary statistics on table 1 reveal persistent income inequality in Nigeria, with the Gini index (Mean = 41.68) indicating moderate-to-high inequality and low variability, suggesting that disparities are structural and persistent. Financial inclusion (Mean = 12.41% of GDP) is relatively low with moderate variability given the global benchmark often exceeds 30% of GDP (World Bank, 2022). This suggests limited credit access and financial exclusion, which may hinder efforts to reduce inequality.

Table 1: Descriptive statistics

Variable	Observations	Mean	Std. Dev.	Min	Max
Income inequality	36	41.68	1.55	35.10	43.10
Financial Inclusion	36	12.41	5.83	5.81	22.75
Inflation	36	17.14	15.27	0.69	75.40
Economic growth	36	1.50	3.61	-4.50	12.28
Government spending	36	3512.20	4578.95	13.00	19808.4
Real interest rate	36	2.43	9.56	-31.45	18.18
Primary School Enrolment	36	34.50	2.81	29.48	42.35

Source: Authors computation, 2026.

Furthermore, the statistics show evidence of macroeconomic instability with inflation (Mean = 17.14%) and GDP per capita growth (Mean = 1.50%). This high volatility likely erodes purchasing power and limits the redistributive impact of growth. Real interest rates with a value of (2.43%) also fluctuate widely, creating credit constraints that further exclude lower-income groups. On the other hand, government spending (Mean = 3512.22) shows significant variation also, reflecting fiscal instability that may weaken its redistributive impact. Although primary school enrolment (Mean = 34.49%) **is** stable, the low level suggests slow human capital development, which could limit its role in reducing inequality. These trends emphasize the need for robust analysis to examine how financial inclusion and macroeconomic factors interaction inform policy reforms to foster inclusive growth and financial stability.

Table 2 presents the correlation matrix and reveals significant relationships among key variables. The strong negative correlations between the Gini Index and government spending suggest that increase in government spending may contribute to reducing income inequality. Additionally, financial inclusion is negatively correlated with income inequality, indicating that greater access to financial services can help reduce inequality. Inflation shows a positive correlation with income inequality, implying that rising

inflation may exacerbate income inequality. The negative relationship between real interest rates and income inequality suggests that monetary policy could play a role in mitigating inequality. However, primary school enrolment shows weaker correlations with other variables, highlighting its limited short-term impact on income inequality in this context.

Table 2: Correlation matrix

	GI	FI	GDPPC	GS	INF	RIR	PRIEER
Income inequality (GI)	1.000						
Financial Inclusion (FI)	-0.870	1.000					
Economic growth (GDPPC)	-0.002	-0.022	1.000				
Government spending (GS)	-0.950	0.843	-0.065	1.000			
Inflation (INF)	0.510	-0.469	-0.290	-0.415	1.000		
Real interest rate (RIR)	-0.440	0.466	0.339	0.369	-0.945	1.000	
Prim. Sch. Enroll. (PRIEER)	-0.271	-0.411	0.092	0.253	-0.087	0.085	1.000

Source: Authors computation, 2026.

Impact of financial inclusion and macroeconomic factors on income inequality

The results presented on table 3 are based on the OLS and Newey-West estimation approach. The Newey-West regression results highlight the factors influencing income inequality in Nigeria. This analysis, similar to the work of Beck, Demirgüç-Kunt and Levine (2007), incorporates heteroskedasticity and autocorrelation which are time series data phenomena that cannot be addressed by the OLS estimation technique. Thus, the estimates generated by the Newey-west are preferred here. The sign of most of the variables' coefficients fall within expectation both in the OLS and Newey-west regression as displayed in table 3. Our subsequent analysis delved into each variable included in the model and investigate their significance in the Nigerian context.

Firstly, using domestic credit to the private sector as the main proxy for financial inclusion, it has been established that financial inclusion and income inequality have a significant negative relationship. The result shows that Gini coefficient can be diminished by 0.0484 units with an increase in financial inclusion by one unit. Thus, access to credit allows individuals and small business owners to engage in investment opportunities that increase the earnings of low earning populations. Hence, financial inclusion provides the people with the means to manage investments, save and properly mitigate risks leading to enhanced income distribution. The result is robust against using the other measure of financial inclusion, that is liquid liabilities, M_3. This finding is similar to Demirgüç-Kunt and Klapper, (2013).

Secondly, with respect to other control variables included in the analysis, Government spending shows a negative coefficient, but the effect is not statistically robust in the preferred Newey-West estimates. The seemingly non-impact of government expenditure could be because of underutilization of such spending due to inefficiencies in resource allocation. In other words, government spending may not be adequately directed towards initiatives that are aimed at eradicating poverty or income inequalities, at the macro level, such as social welfare, health care or education due to some political sentiments. Moreover, the failure of accountability and transparency in public expenditure and the presence of graft may also obscure the intended redistribution goals.

Table 3: Regression result of the impact of macroeconomic factors and financial inclusion on income inequality in Nigeria

	OLS		Newey-West	
Variables	**Credit to Private Sector**	**Liquid Liabilities**	**Credit to Private Sector**	**Liquid Liabilities**
Financial Inclusion (credit to private sector)	-0.0484*** (0.0001)		-0.0484** (0.0221)	
Financial Inclusion (liquid liabilities)		-0.0667*** (0.0195)		-0.0667*** (0.0276)
Inflation Rate	0.0343*** (0.0083)	0.0338*** (0.0080)	0.0343*** (0.0062)	0.0338*** (0.0070)
Economic Growth	-0.0323** (0.0131)	-0.0309** (0.0125)	-0.0323*** (0.0103)	-0.0309** (0.0099)
Government Spending	-0.0001* (0.0001)	-0.0001 (0.0001)	-0.0001 (0.0001)	-0.0001 (0.0001)
Real Interest Rate	0.0463*** (0.0130)	0.0448*** (0.0123)	0.0463*** (0.0101)	0.0448*** (0.0110)
Primary School Enrolment	-0.0065 (0.0171)	-0.0040 (0.0158)	-0.0065 (0.0196)	-0.0040 (0.0120)
Constant	42.589*** (0.697)	42.910*** (0.7040)	42.589*** (0.7952)	42.910*** (0.5408)
Adjusted R-squared	0.952	0.965		
Prob. F-statistics	0.000	0.000	0.000	0.000
No. of lags used			3	3

**** 10 percent, ** 5 percent, *** 1 percent level of significant. Standard errors in parenthesis***
Source: Authors computation, 2026.

Thirdly, inflation has a significant and direct correlation with income disparity. This means that as inflation increases, income disparities also increase. The coefficient means that the income inequality could increase by 0.0343 for every 1 unit increase in inflation. This resonates with empirical work of Albanesi (2007) which asserts that inflation reduces the purchasing power of households particularly those with low or not growing income. The middle class or society with assets that appreciate during inflation is more economically secure. On the other hand, low-income families tend to spend on basics and are overexposed to price fluctuations. This trend further increases the level of income disparity.

Fourthly, the GDP per capita results display a negative and statistically significant relationship with income inequality, which means that there is a relationship between economic growths that is inversely-related to income inequality. Specifically, a 1-unit increase in GDP per capita decreases Gini index by 0.0323 units. This finding supports the theory, Barro (2000) that increased in income per capita translates into higher living standards, which closes the gap between income groups. However, the strength of this effect is conditional on how inclusive economic growth is. If growth disproportionately benefits higher-income groups, its inequality-reducing impact may be muted.

Fifthly, primary school enrolment as a measure for access to basic education is not statistically significant in the model. This finding corresponds with the result of Salis, (2021). The insignificance correlates with the idea in the Nigerian context that other factors are more prominent than education in reducing inequality. Although education is a long-term driver of income equality, its short-term effect in improving equality does not show up in all the four models. Perhaps the other factor should be the quality of the education. For example, when underinvestment is made in the education sector or it is of an inefficient type, then higher participation rates may not yield positive economic results to the disadvantaged groups.

Lastly, income inequality has been found to be positively and significantly related to the real interest rate similar to (Kim, Lin, & Suen, 2020). The coefficient shows that a unit increase in the real interest is associated with an increase in the Gini index of 0.0463 unit. Generally, real interest rates are beneficial to savers and lenders and prevailing conditions in an economy are disadvantageous to borrowers who are predominantly low-income earners. In Nigeria, high interest rates may provide a barrier to low-income earners and small business's access to reasonable credit.

5. Conclusion

This study examined the effect of financial inclusion on income inequality in Nigeria using annual time-series data and a macroeconomic framework that included economic growth, government spending, inflation, real interest rate, and primary school enrolment. The motivation for the study arose from the persistent nature of inequality in Nigeria despite policy efforts aimed at promoting inclusive growth and wider access to financial services.

The empirical findings showed that financial inclusion exerts an inequality-reducing effect in Nigeria, suggesting that wider access to financial services can contribute to a more equitable distribution of income. Economic growth also showed a beneficial effect on income distribution, while inflation and real interest rate tended to worsen inequality by placing greater pressure on low-income households and limiting access to productive credit. Government spending displayed a weak redistributive effect, implying that public expenditure may not have been sufficiently targeted or effective in addressing inequality. Primary school enrolment did not show a significant short-run effect on income inequality within the study period.

Based on these findings, the study concludes that financial inclusion remains an important policy instrument for reducing income inequality in Nigeria, but its effectiveness is stronger when supported by a stable macroeconomic environment and efficient public policy. This implies that expanding financial access alone is not enough; such efforts must be complemented by inflation control, inclusive growth strategies, and better-targeted public expenditure if meaningful and sustained reductions in inequality are to be achieved.

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

i. Government should deepen access to formal financial services, especially among rural households, low-income earners, women, and small businesses.
ii. Policymakers should promote inclusive economic growth by supporting productive sectors with high employment potential.
iii. Monetary authorities should sustain policies that reduce inflationary pressures, since rising prices disproportionately harm poorer households.

iv. Government expenditure should be better targeted and more efficiently implemented so that public spending delivers stronger redistributive outcomes.
v. The statistically weak effect of primary school enrolment suggests that quantity alone is not enough. Efforts should focus on improving quality and employability, especially by aligning curricula with job market demands.

In the first place, the study is limited to short run dynamics and thus cannot fully capture long-term effects of financial inclusion or structural education reforms. Secondly, it uses macro-level proxies (e.g., credit to private sector) which may not fully reflect individual or firm-level access to financial services.

Thus, to address these shortcomings, future studies should, first, consider including mobile money penetration and gender-based access. Secondly future studies should account for the long-term impacts of financial inclusion using vector error correction models (VECM) or ARDL frameworks and also incorporate institutional quality variables (e.g., regulatory capacity, governance) to better understand the stability-inclusion trade-off.

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