

FINANCIAL INCLUSION AND POVERTY IN NIGERIA

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Abstract

This study examined the effect of financial inclusion on poverty alleviation in Nigeria from 1982 to 2020. It highlights the importance of financial inclusion as a tool to combat poverty, emphasizing the significant impact of poor financial inclusion on the inability of the poor to access financial services, thereby exacerbating poverty levels. The study utilized data from the Central Bank of Nigeria (CBN, 2022) statistical bulletin and the World Development Indicators (World Bank, 2022). The study employed descriptive statistics, correlation analysis, unit root tests (Augmented Dickey Fuller and Phillips-perron tests), and the Auto Regressive Distributed Lag (ARDL) model to analyze the data and assess the relationship between financial inclusion and poverty. The findings revealed both short-term and long-term negative relationships between financial inclusion and poverty in Nigeria. Specifically, variables such as the number of commercial bank branches, loans by rural bank branches, and credits to the private sector were found to have a negative association with poverty. Conversely, lending rates were positively correlated with poverty levels. Additionally, while credits to the private sector and loans by rural bank branches were statistically insignificant, the number of commercial bank branches showed significance at a 5% level. Based on the findings, the study recommended several policy measures to enhance financial inclusion and alleviate poverty in Nigeria. These recommendations include expanding the Small and Medium Enterprises Development Fund (MSMEDF), reducing lending rates, and lowering the cost of delivering financial services to improve access to financial services for the poor.

Keywords: *Credits, Credits to private sector, Financial inclusion, lending rates, per capita income, poverty.*

1.0 Introduction

Financial inclusion has become increasingly recognized as a vital policy tool for policymakers seeking to foster a comprehensive approach to sustainable poverty alleviation. By enabling the full participation of the poor in the financial and economic ecosystem, financial inclusion aims to liberate them from destitution permanently. Poverty, whether absolute or relative, is commonly understood as the lack of sufficient

material goods or finance to meet basic needs such as food, housing, or clothing (Arikewuyo & Adegboyega, 2020).

The global focus on eradicating poverty and enhancing living standards has spurred the Nigerian government to introduce various programs aimed at revitalizing the economy, improving living standards, and reducing poverty. These initiatives include the Better Life Program of 1987, Structural Adjustment Program (SAP) of 1986, Family Economic Advancement Program of 1997, Poverty Alleviation Program of 1999, National Poverty Eradication Program (NAPEP), Operation Feed the Nation (OFN) of 2001, National Economic Empowerment and Development Strategies (NEEDS) of 2003, and the National Youth Investment Fund (NYIF).

Despite the implementation of these initiatives, Nigeria remains known as the world's poverty capital, where hunger, homelessness, and inequality persistently afflict a significant portion of the population. In the face of insecurity and administrative challenges, it is evident that these programs have fallen short of achieving their intended objectives.

To address financial exclusion, Murtala and Fasanya (2013) highlighted the importance of developing effective technologies, increasing access to loans for the private sector, and reducing lending rates as strategies to promote greater inclusion and poverty reduction. Compounding this issue is the fact that individuals in developing countries, such as Nigeria, are more frequently affected by financial exclusion (Maritala & Fasanya, 2013).

Recognizing this challenge, Onakoya (2015) argued for the need to incorporate the unbanked population into the financial system by reevaluating the intermediation role of both conventional and Islamic banking systems. Onakoya (2015) suggested that the conventional financial system faces constraints that disproportionately affect marginalized groups, including women, thereby hindering effective financial inclusion. As a result, a significant portion of the population is unable to access credit and other financial services necessary for their capacity development and integration into the financial ecosystem.

The inquiry into whether financial inclusion benefits the poor or exacerbates income inequality remains unresolved (Joan et al., 2022). What if policymakers aim to boost inclusion by the same degree in both rural and urban areas? What explains the persistence of millions of Nigerians in adverse material conditions despite the nation hosting Africa's largest financial inclusion program? This study endeavors to tackle these issues by scrutinizing the relationship between financial inclusion and poverty rates in Nigeria.

Empirical studies on financial inclusion and poverty reduction have yielded conflicting outcomes. For instance, Ajisafe *et al.* (2018) applied impulse response and decomposition from Vector Auto Regression (VAR) to examine this relationship, overlooking the possibility that equal increments in financial inclusion across rural and urban areas may not alleviate poverty but instead widen income disparities. Conversely, other researchers, such as Afolabi (2020), neglected to incorporate variables capturing rural exclusivity.

Thus, this study aims to explore the anticipated impact of financial inclusion indicators on poverty measures, aiming to reinforce empirical evidence and provide pertinent recommendations regarding the effectiveness of financial inclusion in the Nigerian government's poverty alleviation efforts.

2.0 Theoretical Framework

The study is grounded in the Keynesian theory, which posits that poverty is not solely a result of market imperfections but also stems from underdevelopment, a condition that can be rectified through government intervention in the economic and financial systems (Keynes, 1936). Consequently, governments have the ability to influence lending rates, regulate the volume of domestic credit, and control the availability and distribution of funds and access (Keynes, 1936).

2.1 Empirical Review

Empirical research has extensively explored the relationship between financial inclusion and poverty alleviation in Nigeria since the concept gained prominence in the early 2000s. Ajide (2015) investigated the impact of financial inclusion on rural poverty reduction in Nigeria using the Autoregressive Distributed Lag (ARDL) method. The study suggested that poverty levels, particularly in rural areas, would decrease as monetary authorities implement measures to promote inclusion in such areas. This finding aligns with the conclusions of Ogbeide and Igbini (2019), who employed the Ordinary Least Squares (OLS) method to analyze financial inclusion and poverty alleviation in Nigeria. Their study indicated that financial deepening leads to higher per capita income, reduced poverty levels, and improved living standards.

Joan and Uche (2022) conducted a study testing the impact of financial inclusion on poverty and welfare in Nigeria using a quasi-experimental approach based on the Bergson-Samuelson Welfare (BSSW) hypothesis. Their research revealed a negative relationship between financial inclusion and poverty, leading to the conclusion that financial inclusion is vital for poverty reduction and the attainment of Sustainable Development Goals (SDGs). This finding was also supported by Osagie (2020). Abdullah and Kazuo (2020) further contributed to the literature by conducting a panel data analysis to investigate how financial inclusion may alleviate poverty and income inequality in developing countries. Their study echoed the findings of Ayensu (2017), who previously examined the impact of financial inclusion on poverty reduction in selected Sub-Saharan countries using the Ordinary Least Squares (OLS) technique. Both studies highlighted a negative relationship between financial inclusion and poverty.

Furthermore, research indicates that poorly educated populations residing in rural areas, such as the Eastern Cape, Free State, and Limpopo provinces, are more likely to experience financial exclusion. Conversely, urban residents with greater access to financial services demonstrate a lower probability of experiencing poverty. This conclusion aligns with the findings of Nsiah et al. (2021), whose study emphasized that

financial inclusion serves as an effective means of reducing poverty in developing nations with relatively underdeveloped financial systems.

Saidu and Marafa (2020) highlighted the multiplier effect of financial inclusion on the economy, indicating that it could increase rural people's disposable income, thereby boosting savings and domestic investment, ultimately elevating standards of living. Similarly, studies such as Beck and Demirgüç-Kunt (2014) have demonstrated that higher levels of financial inclusion correlate with lower poverty rates in developed countries. However, contrasting findings exist; Christen et al. (2013) in the United States suggested that while financial inclusion improves access to financial services, it may not necessarily lead to poverty reduction. Instead, it may be more effective in promoting economic growth and stability.

In summary, the literature suggests that financial inclusion tends to have a positive impact on poverty reduction in developed countries. Nevertheless, its effectiveness in reducing poverty can vary depending on factors such as the level of economic development, the regulatory framework, and the types of financial services offered.

3.0 Methodology

The study spans from 1982 to 2020, covering a period of thirty-nine years and utilizes time series data sourced from the Central Bank of Nigeria statistical bulletin (CBN, 2022) and the World Development Indicators (WDI) published by the world bank (World Bank, 2022). The variables under examination include Per Capita Income (PCI) as a proxy for poverty, while financial inclusion is represented by the number of Commercial Bank Branches (CBB), Loans by Rural Branches of Commercial Banks (LRBB), Lending Rates (LRT), and Credit to the Private Sector (CPS). Model estimation was performed using the Autoregressive Distributed Lag technique (ARDL). Additionally, the study employs the Augmented Dickey-Fuller and Phillips-Perron tests to assess the stationarity of time series data, and the ARDL bounds co-integration test is employed to examine co-integration.

Model Specification

A model is deemed identifiable when it assumes a unique statistical form, allowing for distinct estimates of variable parameters to be derived from sample data. Drawing from previous empirical studies by Aribaba et al. (2020) and Soyemi et al. (2020), the econometric model formulated to assess the impact of financial inclusion on poverty in Nigeria features Per Capita Income (PCI) as the dependent variable and Commercial Bank Branches (CBB), Loans by Rural Bank Branches (LRBB), Lending Rates (LRT), and Credit to the Private Sector (CPS) as regressors. Thus, the model specification is as follows:

$$Pvt = f(\text{FinInclusion}) \tag{1}$$

Where Pvt = Poverty and FinInclusion = Financial Inclusion.

We rewrite the functional form above in terms of their proxies.

$$PCI = f(\text{CBB, LRBB, LRT, CPS}) \tag{2}$$

The econometric model is expressed in a log-linear form as:

$$\text{LINPCI}_t = \alpha + \beta_1 \text{LINCBB}_t + \beta_2 \text{LINLRBB}_t + \beta_3 \text{LINLRT}_t + \beta_4 \text{LINCPS}_t + \varepsilon_t \tag{3}$$

The Autoregressive Distributed Lag is specified as;

$$\Delta \text{LINPCI} = \alpha + \beta_1 \text{LINCBB}_{t-1} + \beta_2 \text{LINLRBB}_{t-1} + \beta_3 \text{LINLRT}_{t-1} + \beta_4 \text{LINCPS} \sum_{i=1}^p + \theta_1 \Delta \text{LINPCI}_{t-1} + \sum_{i=1}^p \theta_2 \Delta \text{LINCBB}_{t-1} + \sum_{i=1}^p \theta_3 \Delta \text{LINLRBB}_{t-1} - \sum_{i=1}^p \theta_4 \Delta \text{LINLRT}_{t-1} + \sum_{i=1}^p \theta_5 \Delta \text{LINCPS}_{t-1} + \lambda \text{ECT}_{t-1} + \varepsilon_t \quad (4)$$

Where;

LINPCI = Log of Per Capita Income.

LINCBB = Log of Number of Commercial Bank Branches.

LINRBB = Log of Loans by Rural Bank Branches of Commercial banks.

LINLRT = Log of Lending Rates of Deposit Money Banks.

CPS = Log of Credit to private sector expressed as percentage GDP.

LIN represents Logarithm.

α is the intercept of the model.

$\beta_1, \beta_2, \beta_3,$ and β_4 are the coefficients of the independent variables.

$\theta_1, \theta_2, \theta_3, \theta_4,$ and θ_5 are the coefficients of the lagged values of the dependent variable and the independent variables.

The unit root test is a fundamental tool in time series data analysis, widely utilized to mitigate the risk of spurious regression. In this study, both the Augmented Dickey-Fuller (ADF) and the Phillips-Perron (PP) tests were employed to assess and validate the unit root property of the series and ascertain the stationarity of the model, as stationary time series are crucial for accurate analysis. According to Engle and Granger (1987), a non-stationary series is considered integrated of order d if it can be transformed into a stationary series through differencing d times, denoted as $X_t \sim I(d)$. It was confirmed initially that the series were generated by a first-order autoregressive process.

AR (1), of the form:

$$Y_t = Y_{t-1} + \varepsilon_t \quad (5)$$

The above equation is extended to allow for Augmented Dickey Fuller (ADF) test of the term:

$$\Delta Y_t = \beta Y_{t-1} + \sum \beta_i \Delta \varepsilon_t \quad (6)$$

Where Y_t is a particular variable; β is parameter; ε_t is error terms assumed to be white noise.

4.0 Results and Discussions

This section provides the results of the analysis, comprising stationarity and co-integration tests, as well as the estimated log-linear model. Stationarity tests were performed to identify any potential occurrence of spurious regressions resulting from non-stationary variables.

Table 1: Augmented Dickey-Fuller and Phillips-Perron Unit Root Result

Variables	Augmented Dickey Fuller				Phillips-Perron			
	ADF	5% Critical Value	Included in the equation	Remarks	PP	5% Critical Value	Included in the equation	Remarks
LINPCI	-4.74	-4.22	Trend & Intercept	I(0)	-4.74	-4.22	Trend & Intercept	I(0)
LINCBB	-4.83	-4.25	Trend & Intercept	I(1)	-4.83	-4.25	Trend & Intercept	I(1)
LINLRBB	-3.71	-3.59	Trend & Intercept	I(0)	-3.71	-3.53	Trend & Intercept	I(0)
LRT	-5.12	-3.55	Trend & Intercept	I(0)	-10.38	-3.54	Trend & Intercept	I(1)
CPS	-5.63	-3.54	Trend & Intercept	I(1)	-7.20	-3.54	Trend & Intercept	I(1)

Source: Author computation using E-views 12 (2024)

From the data presented in Table 1, the Augmented Dickey-Fuller (ADF) test results indicate that the logarithm of per capita income, the logarithm of loans by rural bank branches, and lending rates were all stationary at levels, denoted as I(0). However, only the logarithm of commercial bank branches and credit to the private sector were stationary at first differences. Conversely, the Phillips-Perron test results revealed that the logarithm of per capita income and the logarithm of loans by rural bank branches were stationary at levels, while the other variables exhibited stationarity at first differences. This mixed order of integration renders the Johansen co-integration test inapplicable. Consequently, the model undergoes an ARDL Bounds test process to examine co-integration.

Table 2: ARDL Bounds Co-Integration Test Result

Test-statistics	Value	Critical Value	Lower-Bound	Upper Bound
F-statistics	5.61	10%	1.9	3.01
K		5%	2.26	3.48
		1%	3.07	4.44

Source: Authors' computation using E-views 12 (2024)

As the F-statistic of 5.61 exceeds the upper bounds at significance levels of 10%, 5%, and 1%, it indicates the presence of co-integration, signifying the existence of a long-run relationship among the variables. Consequently, we proceed to estimate both the long-run and short-run ARDL models.

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Table 3: Long- run Autoregressive Distributed Lag

Variable	Coefficient	Std. Error	t-statistic	Probabilities
LINCBB	0.090	0.081	11.12	0.000
LINLRBB	0.030	0.057	0.527	0.601
LRT	-0.043	0.025	-1.708	0.097
CPS	0.030	0.029	1.006	0.323
C	0.685	0.140	4.879	0.000

Source: Authors' computation using E-views 12 (2024)

Due to the mixed order of co-integration observed among the variables and the indication of both short-run and long-run relationships by the co-integration test, the ARDL model was estimated using the Akaike Information Criterion (AIC), with an optimal lag length of 1. The findings are presented in tables 3 and 4.

Table 3 displays the long-run coefficients of the model. The coefficient for the logarithm of Commercial Bank Branches (CBB) is 0.090, indicating a positive impact on Per Capita Income (PCI) in the long run. Specifically, a one percent increase in commercial bank branches corresponds to a nine percent increase in per capita income. This relationship was statistically significant at the 5% level. Similarly, the logarithm of Loans by Rural Bank Branches (LRBB) also exhibits a positive effect on Per Capita Income (PCI), with an elasticity of 0.03 in the long run. However, this relationship was found to be statistically insignificant.

Conversely, the coefficient for Lending Rates (LRT) in the long run is -0.04, signifying a negative impact. This implies that a unit increase in lending rates results in a four-unit decrease in per capita income. Lending Rates (LRT) were not statistically significant in relation to per capita income at the 5% level of significance. Additionally, Credit to the Private Sector (CPS) displays a positive effect on Per Capita Income, with an elasticity of 0.03. A one percent increase in credit to the private sector leads to approximately a three percent increase in per capita income. This relationship was statistically significant at the 5% significance level.

Finally, the intercept of the long-run regression model (C) has a numerical value of 0.68, representing the value of the dependent variable when the regressors are assumed to be zero. While it holds only a mechanical interpretation, it is statistically significant, as evidenced by a p-value of 0.00.

Table 4: Short-run Autoregressive Distributed Lag

Variable	Coefficient	Std. Error	t-statistic	Probabilities
D(CBB)	0.102	0.465	2.197	0.035
D(LRBB)	0.016	0.069	0.236	0.815
D(LRT)	-0.027	0.021	-1.268	0.215
D(CPS)	0.003	0.340	2.078	0.03
CointEq(-1)*	-0.776	-0.139	-5.597	0.000
R ² = 0.760		Adjusted R-squared= 0.712		

Source: Authors’ computation using E-views 12 (2024)

$$\text{LINPCI} = 0.685 + 0.102\text{LINCBB} + 0.016 - 0.027\text{LRT} + 0.003\text{CPS} + \varepsilon_i \dots \dots \dots (7)$$

The multiple regression model depicted in Table 4 explores the association between the dependent variable, Per Capita Income (PCI), and several predictor variables including Commercial Bank Branches (CBB), Loans by Rural Bank Branches (LRBB), Lending Rates (LRT), and Credit to the Private Sector (CPS) in the short run.

In the model, the coefficients for the logarithm of Commercial Bank Branches (CBB), Loans by Rural Bank Branches (LRBB), and Credit to the Private Sector (CPS) exhibit positive values, whereas Lending Rates (LRT) demonstrate a negative coefficient. Additionally, the error-correction term is negative and statistically significant, indicating that the explanatory variables maintain equilibrium over time.

The coefficient of determination (R²) stands at 0.76, implying that approximately 76% of the total systematic mean variation in income level is accounted for by the explanatory variables. The remaining 24% of variations are attributed to other factors not included in the model, captured by the error term.

POST ESTIMATION TESTS

After conducting post-estimation tests, the model's validity and robustness were assessed. The outcomes of these tests are outlined in Table 5.

Table 5: Post Estimation tests

	F-Statistic	Prob. Value
Diagnostic test		
Breusch-Godfrey serial correlation LM test	0.4965	0.6134
Heteroscedasticity Test: Breusch-Pagan Godfrey	1.4308	0.5173
Ramsey-Reset test	1.2857	0.2078
Normality Test: (Jarque-Bera)	2.8499	0.2405

Source: Authors' computation using E-views 12 (2024)

The Breusch-Godfrey test indicates no autocorrelation. The post estimation test also revealed that there was no issue of heteroscedasticity and that the model is linear. The normality test shows that the sample data was not statistically different from a normal distribution, implying that there exists normality in the model.

Discussions

This study explores the impact of financial inclusion on poverty in Nigeria from 1982 to 2020, utilizing secondary data sourced from prominent publications of the Central Bank of Nigeria statistical bulletin (CBN, 2022) and the World Development Indicators (WDI) published by the world bank (World Bank, 2022). Through the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests, it was revealed that some variables were stationary at levels, while others were stationary at first differences. Subsequently, the ARDL Bounds co-integration test was employed to ascertain the presence of long-run co-integration among the variables, affirming its existence.

With the confirmation of a long-run relationship between the explained and explanatory variables, the study proceeded to estimate the long-run coefficients. Log-linear regression analysis unveiled that the number of commercial bank branches, loans by rural bank branches, and credit to the private sector all exerted a positive effect on per capita income. Conversely, lending rates displayed a negative impact on per capita income, albeit not statistically significant at the 5% level.

Furthermore, post-estimation tests were conducted, encompassing serial correlation, heteroscedasticity, normality, linearity, causality, and stability tests. The Breusch-Godfrey test indicated no autocorrelation, while the normality test demonstrated that the

sample data did not significantly deviate from a normal distribution, implying normality in the model. Additionally, the post-estimation tests revealed no issues of heteroscedasticity.

Abimbola et al. (2015) examined financial inclusion as a catalyst for poverty reduction in Nigeria using Ordinary Least Squares (OLS) technique, finding a positive relationship between the number of commercial bank branches and per capita income. Similarly, Ajide (2015) utilized the Auto Regressive Distributed Lag (ARDL) approach, yielding comparable results suggesting a positive relationship between the number of commercial banks and poverty alleviation in Nigeria. These findings align with the conclusions drawn in this research regarding the positive impact of the number of commercial bank branches on per capita income.

Moreover, the findings of Aribaba et al. (2020) and Sakanko et al. (2020) corroborate this research, suggesting that commercial bank loans to rural communities increase per capita income and subsequently reduce poverty. However, the findings of Muritala and Fasanya (2013) diverged from the results of this research concerning lending rates.

5.0 Conclusion and Recommendations

In conclusion, the pivotal role of financial inclusion in elevating long-term income levels and facilitating sustainable poverty alleviation cannot be overstated. However, achieving this objective necessitates robust policy instruments and meticulously planned, actionable metrics. The findings of this study are consistent with existing literature, resonating with the works of Abimbola et al. (2018), Ajide (2015), Sakanko et al. (2020), and Aribaba et al. (2020). Moreover, these findings align with Keynesian principles, which underpin the theoretical framework of this study, offering significant policy implications for initiatives such as the CBN cashless policy, National Financial Inclusion Strategy (NFIS), and Agriculture Credit Guarantee Scheme Fund (ACGSF).

This study contributes valuable insights to the literature by emphasizing the efficacy of financial inclusion metrics, such as credit to the private sector and loans to rural areas, as potent tools for sustainable poverty alleviation. Given the dearth of financial infrastructure in many rural areas, including banks, ATMs, and POS terminals, financial institutions face challenges in extending loans to these underserved regions. Therefore, it is imperative for the Nigerian government to enhance initiatives like the Shared Agent Network Expansion Facility (SANEF) to broaden agent banking services in such areas, thereby expanding access to financial services.

This recommendation builds upon the assertions of Onakoya (2015), who highlighted the constraints within the conventional financial system that impede financial inclusion, particularly for marginalized segments of society. To address this, the government should consider instituting tax incentives for financial institutions that cater to the unbanked population, particularly in rural areas. Additionally, there is a prevalent perception among banks that the private sector in Nigeria is fraught with risk and unpredictability, stemming from weak institutional quality and credit reporting systems. Consequently, this perception deters credit extension to the private sector.

Moving forward, future studies should delve into the nuanced impacts of financial inclusion policies on vulnerable groups, such as women and enterprising youths. Furthermore, there is a need to identify effective strategies to promote financial inclusion and alleviate poverty among these demographic segments.

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