

Nigeria Financial System and Financial Inclusion

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Abstract: This study empirically investigates the relationship between Nigeria's financial system and financial inclusion, focusing on key components such as Bank Credit to Private Sector, Stock Market Turnover Ratio, Interest Rate Spread, Ratio of Liquid Assets to Short-term Liabilities, and Inflation Rate. Employing the Autoregressive Distributed Lag (ARDL) model and Error Correction Mechanism (ECM) on data sourced from the Central Bank of Nigeria Statistical Bulletin and World Development Indicators for the period 1995–2023, the study provides robust econometric evidence. The results reveal that bank credit to the private sector and stock market liquidity significantly promote financial inclusion, while higher interest rate spreads negatively impact it. Interestingly, the inflation rate shows a positive relationship with financial inclusion, reflecting adaptive financial behaviors in response to macroeconomic instability. The diagnostic tests confirm model stability, the absence of heteroskedasticity, and the presence of a valid long-run cointegration relationship among variables. Given these findings, policymakers are recommended to enhance credit accessibility, stimulate stock market activity, reduce interest rate spreads through efficient banking reforms, and leverage financial literacy and technological innovation to improve financial inclusion and also the expansion of complete financial literacy programmes remains essential because it allows citizens to grasp financial products better and handle economic volatility with effectiveness. Future research should consider institutional and demographic dimensions to inform more inclusive financial sector policies.

Keywords: Financial Inclusion, Nigeria Financial System, ARDL Model

I. Introduction

The financial inclusion movement has become central to achieving sustainable development and inclusive growth specifically within emerging markets. In Nigeria the financial system functions as a vital link which connects household and enterprise and governmental economic activities. The Nigerian population continues to experience financial exclusion despite major reforms which aimed at deepening financial penetration (Soyemi, et al., 2020). The current economic situation emphasizes the requirement to evaluate the Nigerian financial system's inclusivity because it holds promise to boost economic growth and decrease social disparities throughout the country.

The Nigerian financial system underwent substantial development since colonial times when foreign-owned commercial banks operated to serve primarily foreign populations and colonial businesses. The year 1958 brought transformation when the Central Bank of Nigeria (CBN) emerged as it introduced financial oversight and monetary control systems. The Nigerian financial system underwent development throughout the decades by adding commercial banks to its structure alongside microfinance banks insurance companies pension fund administrators and development finance institutions which now perform specific functions of resource mobilization and credit allocation and investment facilitation. Nigeria possesses a modern financial system that blends official financial institutions with non-regulated alternative financial systems. The Nigerian Stock Exchange (NGX) and money and capital markets are combined with other financial markets to provide investment opportunities and liquidity management. The CBN together with the SEC and NAICOM operate as regulatory bodies that maintain stability and oversee financial activities. The Nigerian financial system faces ongoing challenges despite recent reforms for financial inclusion and digital transformation and resilience because it continues to struggle with informality together with restricted SME credit access and inflation risks and exchange rate volatility effects.

The Nigerian financial system depends on bank operations alongside capital markets and insurance sectors and microfinance banks and developing fintech services. The combined sectors enable economic transactions while supporting investments throughout different business areas (Adeola & Evans, 2017). The existing literature proves that rural populations together with low-income families and small-scale businesses show limited access to formal financial services and their effective use which hinders economic development (Ozili, et al., 2022). Financial inclusion needs urgent enhancement because it supports economic participation for all groups of society while reducing social gaps in wealth distribution.

The financial sector of Nigeria has made significant progress since the Structural Adjustment Programme (SAP) era but actual financial service outreach and utilization still show substantial deficiencies (Kamalu et al., 2019). Financial inclusion rates remain below desired targets despite numerous regulatory efforts by the Central Bank of Nigeria (CBN) through their strategies to lower the financially excluded adult population to 20% by 2020 (Ibrahim & Olanfunmi, 2019). Recent statistics show that the established targets have not materialized thus creating doubts about the effectiveness of current policy execution (Chude & Chude, 2022).

The literature lacks sufficient empirical research which examines how different elements of Nigeria's financial system both help and restrict financial inclusion access (Obayori, 2020). Research shows that financial inclusion creates positive economic growth

links but fails to sufficiently explain how it drives sustainable economic development and financial stability (Olusegun, et al., 2021). Research about these connections needs deeper exploration in Nigeria's specific socioeconomic conditions to evaluate policy and institutional barriers.

Research currently shows how Nigerian financial inclusion together with economic diversification produces positive effects on financial stability (Akinrinola & Folorunso, 2022; Oyadeyi, 2024). The research shows a connexion that requires advanced analytical techniques to perform a thorough assessment (Atta & Ibrahim, 2024). Financial inclusion results depend heavily on institution quality and legal frameworks according to Abdulai and Issahaku (2024) thereby showing the necessity for complete governance and regulatory framework assessment in Nigeria.

The effectiveness of financial inclusion in Nigeria is constrained by four main local factors: extensive informal practises, inadequate infrastructure, limited digital literacy and inconsistent regulations (Okoh et al., 2024). Local cultural and religious elements including the rise of non-interest banking shape Nigerian financial policies and practises as described by Okoh et al. (2024). Effective financial inclusion promotion requires specific strategies to overcome these barriers that exist throughout different regions of the Nigerian demographic.

The research investigates Nigeria's financial system and financial inclusion through an analysis of Bank Credit to Private Sector (% of GDP), Stock Market Turnover Ratio, Interest Rate Spread, Ratio of Liquid Assets to Short-term Liabilities, Inflation Rate, and Gross Domestic Product (GDP) per capita on the Number of Commercial Bank Branches per 100,000 adults. This research evaluates the influence of Bank Credit to Private Sector (% of GDP), Stock Market Turnover Ratio, Interest Rate Spread, Ratio of Liquid Assets to Short-term Liabilities, Inflation Rate, and Gross Domestic Product (GDP) per capita on financial inclusion across Nigerian regions and demographic segments while examining emerging financial technologies and institutional and macroeconomic elements influencing financial inclusion success. This paper aims to contribute empirical evidence which helps policymakers alongside financial institutions and development partners create strategies to establish an inclusive financial system that accelerates economic growth while promoting equitable development in Nigeria.

Research Problem

Financial inclusion has gained significant attention in Nigeria's development agenda, yet a considerable portion of the adult population remains outside the formal financial system. Despite multiple reforms in the banking sector, capital market liberalization, and financial innovation initiatives, financial access remains limited, particularly among low-income groups and rural populations. This raises critical concerns about the efficiency of Nigeria's financial system in promoting inclusive financial participation. While policies such as the National Financial Inclusion Strategy (NFIS) aim to close the gap, empirical evidence evaluating the effectiveness of core financial system indicators on financial inclusion remains fragmented.

Moreover, limited empirical studies have simultaneously assessed how structural elements of the financial system—such as credit delivery, capital market activity, interest rate dynamics, liquidity, and inflation—interact to influence financial inclusion in Nigeria. There is a need for comprehensive empirical investigation to establish which financial variables significantly affect inclusion, and in what direction. Without this clarity, policy prescriptions may lack precision and effectiveness. This study seeks to fill this gap by offering evidence-based insights into how these financial indicators impact financial inclusion over time.

Research Objectives

1. To examine the effect of bank credit to the private sector on financial inclusion in Nigeria.
2. To evaluate the impact of stock market turnover on financial inclusion.
3. To investigate how interest rate spread affects financial inclusion.
4. To determine the relationship between the ratio of liquid assets to short-term liabilities and financial inclusion.

Scope and Significance of the Study

This study covers the period from 1995 to 2023, employing annual time-series data obtained from the Central Bank of Nigeria and the World Development Indicators. The focus is on evaluating how selected financial system indicators influence financial inclusion, using the number of commercial bank branches per 100,000 adults as a proxy. The significance of the study lies in its empirical contribution to understanding the structural drivers of financial inclusion in Nigeria. The findings are expected to inform policymakers, financial sector regulators, and stakeholders on how to realign financial sector reforms and strategies to promote broader access to financial services. It also offers a foundation for further academic research in emerging economies facing similar financial inclusion challenges.

II. Literature Review

Theoretical Review

Three relevant theories help understand financial system and financial inclusion relations: Financial Intermediation Theory joined with Diffusion of Innovation Theory and Institutional Theory. Each theory presents distinct perspectives regarding financial systems

and their operational methods and innovation approaches together with their institutional elements that influence financial inclusion positively or negatively.

Financial institutions such as banks operate as vital resource allocation vehicles to move funds between saving units and borrowing units based on the Financial Intermediation Theory developed by Gurley and Shaw (1960). The theory combines expense reduction and risk management while information control enhances financial accessibility to improve economic performance. Financial intermediation serves as a process that expands credit availability and provides savings and insurance products which leads to increased formal financial system integration of individuals and businesses (Levine, 1997; Demirgüç-Kunt & Levine, 2008). High-interest spreads combined with liquidity constraints create market imperfections which diminish the operational efficiency of intermediaries that affect financial inclusion. The efficiency of financial intermediation heavily depends on institutional frameworks which promote transparency as well as maintain accountability and facilitate competitive conditions throughout the financial system.

Rogers (1962) introduced the Diffusion of Innovation Theory which describes how new ideas and technologies move throughout cultures and societies along with their reasons for adoption and speed of adoption. Rogers establishes five fundamental aspects which determine how people accept new ideas including relative advantage, compatibility, complexity, trialability and observability. Financial inclusion strategies benefit from the Diffusion of Innovation Theory because mobile banking and digital wallets with online financial platforms serve as fundamental tools for expanding financial access. The innovative financial products enable affordable contactless banking services which simplify access to traditional financial products for underserved communities (Jack & Suri, 2014). These technological innovations face barriers to spread because of poor infrastructure along with digital skills gaps and cultural resistance against change. Knowledge about how technology acceptance works in Nigeria's unique social environment and infrastructure system helps boost financial inclusion.

The Institutional Theory presents a complete structural approach to study how regulatory frameworks together with norms rules along with cultural expectations and institutional regulations influence organizations' market performance and their behavioral choices (DiMaggio & Powell, 1983; North, 1990). Organizations within the financial sector base their actions on the regulatory and institutional frameworks they must follow according to institutional theorists. When institutions function effectively they improve financial inclusion through enforceable contracts and protected property rights under transparent regulatory settings with strong governance systems which decrease uncertainty together with transaction costs (Acemoglu & Johnson, 2005). Financial institutions operate less effectively when the institutional environment features corruption and poor governance and inconsistent regulatory policies. Nigeria needs to improve its institutional systems and regulatory structures to achieve lasting financial sector development along with inclusive growth.

Empirical Review

Numerous studies conducted in recent times have provided insights into financial inclusion and financial system in the Nigerian environment. The study conducted by Oyadeyi (2024) evaluated how banking innovation impacts financial inclusion and economic growth through the analysis of time-series data from 1980 to 2022 using vector error correction models (VECM). The research established that banking innovation within the industry enhanced financial inclusion which created favourable economic growth outcomes for Nigeria. Atta and Ibrahim (2024) performed an analysis which examined financial inclusion impacts on Nigerian economic development through panel data regression across 2000-2021. The study demonstrated that inclusive financial services generate positive developmental effects across all Nigerian geographical areas.

Abdulai and Issahaku (2024) researched the interplay between financial development and legal institutions on financial inclusion across Nigeria and all Sub-Saharan African countries. The researchers applied GMM analysis on data spanning from 2000 to 2022 to show that established institutional frameworks create powerful financial inclusion outcomes because such systems establish robust legal and regulatory structures. Through a combination of quantitative regression models and qualitative interviews Okoh et al. (2024) analysed how non-interest banking practises impact financial inclusion in Nigerian states. Non-interest banking opened up financial opportunities to religiously restricted users and their research confirmed higher overall inclusion numbers.

Akinrinola and Folorunso (2022) evaluated the connection between financial inclusion and economic growth in Nigeria during 40 years (1980-2020) through their application of autoregressive distributed lag (ARDL) bounds testing. The study reveals that financial inclusion indicators sustain long-term connection with economic growth because expanded financial inclusion drives sustained economic development. Also, Chude and Chude (2022) conducted an ordinary least squares (OLS) regression analysis on financial inclusion impacts toward Nigerian economic growth using annual data between 1990 and 2020. Financial inclusion functions as a strong economic growth driver according to the research which supports the implementation of particular policies for better service accessibility.

Ozili, et al., (2022) performed a thorough analysis of previously published literature to determine financial inclusion's effects on economic growth. The authors adopted systematic review methodology to combine results from different studies which revealed essential gaps in research that guided future empirical investigations on digital financial inclusion. The research conducted by Olusegun, et al (2021) analysed using secondary data from 2005 to 2019 whether financial inclusion enhances stability in Nigeria through quantitative methods. The authors performed cointegration tests and Granger causality analysis to show that better financial inclusion creates more stability in the entire financial system.

Soetan et al. (2021) studied consumer financial service experiences and their impact on financial inclusion using a cross-sectional survey approach that included diverse Nigerian demographic populations. SEM analysis demonstrated that positive consumer financial experiences boost financial inclusion rates according to the research findings of these authors. Soyemi, et al, (2020) conducted a regression analysis to study the connection between financial inclusion and sustainable development in Nigeria using data from 1990 to 2018. The research findings demonstrated that improved financial inclusion leads to better sustainable development results which justifies the implementation of expansion policies for financial service access to fulfil development objectives. Existing studies provide mixed evidence on the drivers of financial inclusion in Nigeria. For instance, Oyadeyi (2024) and Atta & Ibrahim (2024) highlight the positive role of banking innovation and inclusive financial services in promoting economic growth, while Chude & Chude (2022) stress the constraining effects of high interest rate spreads. Akinrinola & Folorunso (2022) confirm long-run growth effects of financial inclusion, but Olusegun et al. (2021) caution that institutional weaknesses can undermine financial stability.

Divergence also exists regarding inflation: Soyemi et al. (2020) argue that macroeconomic instability undermines financial participation, whereas this study and others find that inflation may encourage adaptive behaviors, such as increased savings and mobile wallet usage, as households seek protection against price volatility.

Furthermore, while Abdulai & Issahaku (2024) emphasize the importance of legal institutions, Okoh et al. (2024) demonstrate that cultural and religious factors, including non-interest banking, play equally important roles. These findings collectively highlight the need for multidimensional approaches—incorporating digital finance, regional differences, and household strategies—to fully capture the dynamics of financial inclusion in Nigeria.

III. Methodology

This study adopts an ex post facto research design. The choice of this design is appropriate since the investigation relies on historical secondary data, making it impossible to manipulate independent variables. The ex post facto design helps in establishing associations and analyzing relationships between the identified independent and dependent variables based on historical data. The data used for this research is exclusively secondary in nature. The sources include publications from the Central Bank of Nigeria (CBN) Statistical Bulletin and the World Development Indicators (WDI). The period covered spans from 1995 to 2023, thus providing a comprehensive temporal framework to evaluate trends and relationships robustly. Following the methodological framework adopted by Akinrinola and Folorunso (2022), the empirical model adapted for this study is specified as follows:

$$FI_t = \beta_0 + \beta_1 BCPS_t + \beta_2 SMTR_t + \beta_3 IRS_t + \beta_4 RLASTL_t + \beta_5 INF_t + \varepsilon_t$$

Where: FI = Financial Inclusion (Number of Commercial Bank Branches per 100,000 adults) BCPS = Bank Credit to Private Sector (% of GDP) SMTR = Stock Market Turnover Ratio IRS = Interest Rate Spread RLASTL = Ratio of Liquid Assets to Short-term Liabilities INF = Inflation Rate ε = Error term

Table 1: Variable Measurement, Description, and Expected Signs

Variable	Measurement	Description	Expected Sign
Financial Inclusion (FI)	Number per 100,000 adults	Proxy for accessibility to formal financial services	Dependent variable
Bank Credit to Private Sector (BCPS)	% of GDP	Represents financial intermediation depth	Positive (+)
Stock Market Turnover Ratio (SMTR)	Ratio (%)	Indicates liquidity and activity in stock market	Positive (+)
Interest Rate Spread (IRS)	Percentage (%)	Measure of banking sector efficiency and costs	Negative (-)
Ratio of Liquid Assets to Short-term Liabilities (RLASTL)	Ratio (%)	Reflects liquidity and stability of financial institutions	Positive (+)
Inflation Rate (INF)	Percentage (%)	General increase in prices influencing purchasing power	Negative (-)

Source: Researchers Compilations

This study employs multiple econometric techniques for data analysis. Descriptive statistics are used initially to summarize data and establish preliminary insights. Subsequently, unit root tests (Augmented Dickey-Fuller and Phillips-Perron tests) will determine the stationarity of the data series to ensure reliability of results. The study adopts the Autoregressive Distributed Lag (ARDL) model for empirical analysis, given its suitability for variables exhibiting different integration orders (I(0) or I(1)) and effectiveness in analyzing long-run relationships and short-run dynamics. Also, Post-estimation diagnostics will include tests for heteroscedasticity (Breusch-Pagan and White's tests) and stability diagnostics using the CUSUM test to ensure model reliability and robustness. These

methodological approaches collectively provide rigorous analytical frameworks essential for deriving accurate and valid empirical conclusions.

Empirical Result

Table 2: Summary of Descriptive Statistics

	FI	BCPS	SMTR	IRS	RLASTL	INF
Mean	3.840	10.867	8.405	7.685	27.583	14.916
Median	4.373	10.510	7.180	7.448	20.427	12.381
Maximum	6.492	19.604	34.785	11.064	69.053	72.836
Minimum	1.018	6.151	1.075	3.268	5.834	5.388
Std. Dev.	1.945	3.321	6.629	1.646	17.850	12.374
Skewness	-0.340	0.879	2.431	-0.102	1.124	3.857
Kurtosis	1.642	3.546	10.265	3.669	3.051	18.550
Jarque-Bera	2.692	3.950	89.161	0.571	5.900	351.556
Probability	0.260	0.139	0.000	0.752	0.052	0.000
Observations	28	28	28	28	28	28

Source: Researchers' Computations

Table 2 provides the summary of descriptive statistics for the variables used in this study, including Financial Inclusion (FI), Bank Credit to Private Sector (BCPS), Stock Market Turnover Ratio (SMTR), Interest Rate Spread (IRS), Ratio of Liquid Assets to Short-term Liabilities (RLASTL), and Inflation Rate (INF). The analysis covers a total of 28 observations, offering a comprehensive overview of data distribution characteristics over the studied period.

The mean value of Financial Inclusion (FI), measured by the number of commercial bank branches per 100,000 adults, was 3.84, with a median slightly higher at 4.37. The maximum and minimum values recorded for FI were 6.49 and 1.02 respectively, indicating substantial variation in access to formal financial services across the years studied. The standard deviation of 1.95 reflects moderate variability around the mean. FI exhibited slight negative skewness (-0.34) and a kurtosis value of 1.64, suggesting a relatively flat distribution compared to a normal distribution. The Jarque-Bera statistic (2.69, $p=0.26$) indicates that the distribution of FI does not significantly deviate from normality.

Bank Credit to Private Sector (BCPS), expressed as a percentage of GDP, reported an average of 10.87, closely matching the median value of 10.51. The variable ranged widely between 6.15% and 19.60%, with a standard deviation of 3.32 indicating significant variability. BCPS data were positively skewed (0.88), and a kurtosis value of 3.55 suggests moderate peakedness compared to a normal distribution. However, the Jarque-Bera test (3.95, $p=0.14$) confirms no significant deviation from normality.

Stock Market Turnover Ratio (SMTR) averaged 8.41% and had a median value of 7.18%. The data ranged significantly from 1.08% to 34.79%, with a notably high standard deviation of 6.63, indicating considerable volatility within the stock market activity. SMTR was strongly positively skewed (2.43), and exhibited high kurtosis (10.27), indicating the presence of extreme values and substantial deviation from normality, as confirmed by the significant Jarque-Bera statistic (89.16, $p=0.00$).

Interest Rate Spread (IRS) had a mean of 7.69% and a median of 7.45%, with values ranging from 3.27% to 11.06%. The relatively low standard deviation (1.65) suggests minor fluctuations over time. IRS exhibited minimal negative skewness (-0.10) and a kurtosis value of 3.67, indicative of moderate peakedness. The Jarque-Bera statistic (0.57, $p=0.75$) indicates normality in IRS distribution.

The Ratio of Liquid Assets to Short-term Liabilities (RLASTL) recorded an average of 27.58%, with a median of 20.43%. Values spanned widely from 5.83% to 69.05%, reflecting significant liquidity variability. The high standard deviation (17.85) further emphasizes substantial fluctuations. Positive skewness (1.12) and moderate kurtosis (3.05) were observed, suggesting a mild presence of extreme values. However, the Jarque-Bera statistic (5.90, $p=0.05$) marginally suggests normality.

Finally, Inflation Rate (INF) had a mean value of 14.92%, median of 12.38%, and fluctuated significantly from 5.39% to 72.84%. A substantial standard deviation (12.37) indicates high variability. The distribution exhibited very high positive skewness (3.86) and kurtosis (18.55), highlighting pronounced peaks and heavy tails. This deviation from normality is confirmed by the highly significant Jarque-Bera statistic (351.56, $p=0.00$).

Table 3: Augmented Dickey-Fuller Unit root Stationarity Test

Variable	Test at Levels			Test at 1 st difference			Inference
	ADF statistic	t-statistic	Prob.*	ADF statistic	t-statistic	Prob.*	
FI	-0.389724	-2.911730	0.9037	-7.765179	-2.912631	0.0000	I(1)
BCPS	-2.613384	-2.912631	0.0961	-12.63630	-2.912631	0.0000	I(1)
SMTR	-0.303180	-2.911730	0.7358	-7.151477	-2.912631	0.0000	I(1)
IRS	-1.245107	-2.915522	0.6485	-4.922747	-2.915522	0.0002	I(1)
RLASTL	-2.995178	-2.811730	0.0711	-7.584468	-2.912631	0.0000	I(1)
INF	-4.179950	-2.951125	0.0025	-	-	-	I(0)

Source: Researchers' Computations

Table 3 presents the results of the Augmented Dickey-Fuller (ADF) unit root test, utilized to examine the stationarity of the variables included in the study. At level, the test results indicate that only the Inflation Rate (INF) variable was stationary, with an ADF statistic of -4.179950 and a significant p-value of 0.0025, confirming integration at order zero (I(0)). However, all other variables including Financial Inclusion (FI), Bank Credit to Private Sector (BCPS), Stock Market Turnover Ratio (SMTR), Interest Rate Spread (IRS), and Ratio of Liquid Assets to Short-term Liabilities (RLASTL) were non-stationary at levels, as evidenced by their non-significant p-values exceeding the conventional 0.05 threshold. Upon first differencing, all previously non-stationary variables became stationary, showing significant ADF statistics at a 1% significance level. Specifically, FI, BCPS, SMTR, IRS, and RLASTL exhibit stationarity after first differencing, thus classified as integrated at order one (I(1)). Given the mixed integration orders, with INF being I(0) and other variables I(1), the Autoregressive Distributed Lag (ARDL) modeling approach with Error Correction Mechanism (ECM) is justified and appropriate. The ARDL-ECM method effectively addresses variables integrated of different orders and simultaneously captures both short-run dynamics and long-run equilibrium relationships, making it a robust analytical tool for this research.

Table 4: Bounds Test Cointegration

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	4.619202	10%	2.08	3
K	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15

Source: Researchers' Computations

Table 4 presents the results from the Bounds Test for cointegration analysis, which assesses the existence of a long-run equilibrium relationship among the variables used in the study. The computed F-statistic of 4.619202 exceeds the upper bound critical values at both the 5% (3.38) and 10% (3.00) significance levels, thus rejecting the null hypothesis of no levels relationship. Consequently, this indicates a statistically significant cointegrating relationship among Financial Inclusion (FI), Bank Credit to Private Sector (BCPS), Stock Market Turnover Ratio (SMTR), Interest Rate Spread (IRS), Ratio of Liquid Assets to Short-term Liabilities (RLASTL), and Inflation Rate (INF). The confirmation of cointegration from the bounds test justifies the appropriateness of employing the ARDL Error Correction Model (ECM).

Table 5: ARDL Error Correction Regression

Dependent Variable: D(FI)				
ECM Regression				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.062	1.530	-0.041	0.968
D(FI(-1))	-0.403	0.168	-2.398	0.028

BCPS	0.193	0.088	2.201	0.036
SMTR(-1)	0.158	0.069	2.285	0.035
D(SMTR)	0.074	0.021	3.517	0.003
IRS	-0.279	0.130	-2.148	0.044
RLASTL	0.014	0.013	1.031	0.317
INF	0.094	0.042	2.213	0.036
CointEq(-1)*	-0.219	0.044	-4.981	0.000
R-squared	0.526	Mean dependent var		0.125
Adjusted R-squared	0.485	S.D. dependent var		0.757
Log likelihood	-19.428	Hannan-Quinn criter.		1.767
Durbin-Watson stat	2.513			

Source: Researchers' Computations

Table 5 presents the ARDL Error Correction Model (ECM) regression results, with changes in Financial Inclusion (FI) as the dependent variable. The error correction term (CointEq(-1)) is negative (-0.219) and statistically significant ($p < 0.001$), confirming the presence of a stable long-run relationship among the variables. Specifically, about 21.9% of disequilibrium from the previous period is corrected in the current period, indicating moderate speed towards long-run equilibrium.

In the short-run dynamics, Bank Credit to Private Sector (BCPS) positively influences financial inclusion significantly ($\beta = 0.193$, $p = 0.036$), suggesting increased financial sector depth promotes greater financial access. Similarly, Stock Market Turnover Ratio (SMTR), both in current period changes ($\beta = 0.074$, $p = 0.003$) and lagged terms ($\beta = 0.158$, $p = 0.035$), positively affects financial inclusion, highlighting the role of active capital markets in enhancing financial accessibility. Conversely, Interest Rate Spread (IRS) negatively impacts financial inclusion ($\beta = -0.279$, $p = 0.044$), indicating that higher banking costs constrain access to financial services. Inflation Rate (INF) surprisingly has a positive impact on financial inclusion ($\beta = 0.094$, $p = 0.036$), potentially reflecting adaptive financial behavior under inflationary pressures. The Ratio of Liquid Assets to Short-term Liabilities (RLASTL), however, is statistically insignificant ($\beta = 0.014$, $p = 0.317$), suggesting limited short-term influence on financial inclusion.

The regression demonstrates satisfactory explanatory power, with an adjusted R-squared of 0.485, indicating that approximately 48.5% of the variation in financial inclusion is explained by the independent variables. Additionally, the Durbin-Watson statistic (2.513) indicates no serious autocorrelation concerns, thus supporting the reliability and robustness of the regression outcomes.

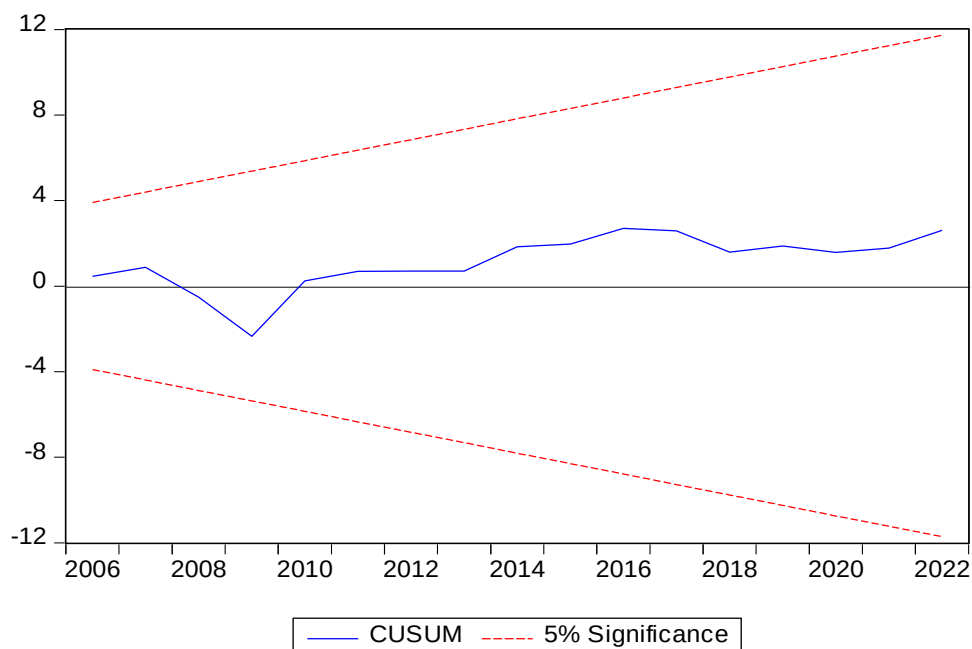
Table 6: Heteroskedasticity Test: Breusch-Pagan-Godfrey

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	2.308	Prob. F(8,17)	0.170
Obs*R-squared	13.537	Prob. Chi-Square(8)	0.295
Scaled explained SS	16.037	Prob. Chi-Square(8)	0.142

Source: Researchers' Computations

Table 6 presents the Breusch-Pagan-Godfrey test results for heteroskedasticity. The F-statistic value is 2.308, with an associated probability value (p-value) of 0.170. Additionally, the Obs*R-squared statistic is 13.537, with a corresponding Chi-square probability of 0.295. Both probability values exceed the conventional significance level of 0.05, indicating that there is no significant evidence of heteroskedasticity in the model. Thus, the regression model meets the critical assumption of homoscedasticity, suggesting that the variance of the residuals remains constant across observations. These findings support the robustness and reliability of the regression estimates, affirming the validity of subsequent inference from the model.

Stability-CUSUM Test



The CUSUM (Cumulative Sum) stability test depicted in the graph assesses the parameter stability of the regression model over the period from 2006 to 2022. The CUSUM line (blue line) remains consistently within the 5% significance boundaries (indicated by the red dashed lines) throughout the entire period. This indicates that the estimated coefficients and parameters of the model remain stable over the sampled period. In other words, there is no evidence of structural instability or parameter shifts during the studied years. This supports the robustness and reliability of the regression model results, confirming that the relationships established in this study are stable and suitable for making policy recommendations and drawing reliable conclusions.

IV. Discussion of Findings

The research presents an empirical evidence about financial inclusion factors in Nigeria by assessing Bank Credit to Private Sector (BCPS) and Stock Market Turnover Ratio (SMTR) and Interest Rate Spread (IRS) and Ratio of Liquid Assets to Short-term Liabilities (RLASTL) and Inflation Rate (INF). The results from the ARDL Error Correction Model demonstrate that these variables and financial inclusion share meaningful short-term and long-term relationships through robust statistical validation from unit root and cointegration and diagnostic tests.

The research findings show bank credit to the private sector acts as a major positive factor for financial inclusion which supports previous studies conducted by Oyadeyi (2024) and Atta and Ibrahim (2024) who established that better financial intermediation and banking innovations lead to higher access to financial services. The Financial Intermediation Theory gains support through this finding because effective banking intermediation mechanisms lower costs while improving market access (Levine 1997, Gurley & Shaw 1960).

Financial inclusion shows a positive relationship with Stock Market Turnover Ratio according to the study which demonstrates the essential role of active capital markets for expanding financial service access. Akinrinola and Folorunso (2022) supported this finding by showing that capital market activities lead to greater economic growth through their role in expanding financial inclusion. The energetic stock market operating in Nigeria generates liquidity and investment opportunities and risk diversification benefits that push forward the growth of the inclusive financial sector.

Financial inclusion experiences negative effects from Interest Rate Spread because higher lending rates compared to deposit rates create financial service barriers regarding accessibility and affordability. The research of Chude and Chude (2022) confirms that elevated interest rate spreads create obstacles to financial inclusion initiatives. Higher spreads indicate inefficiencies and increased banking system costs that reduce availability of affordable credit and consequently discourage financial inclusion among lower-income groups and SMEs.

Interestingly, the Inflation Rate exhibited a significant positive association with financial inclusion, contrary to conventional expectations. This unexpected positive relationship might reflect adaptive financial behaviors, where higher inflation drives more individuals to seek formal financial mechanisms as a hedge against inflationary pressures. This aligns with Soyemi, et al (2020), who demonstrated a nuanced relationship between macroeconomic instability, including inflation, and financial service adoption.

However, the Ratio of Liquid Assets to Short-term Liabilities did not significantly influence financial inclusion within the short-run model. This contrasts with some existing literature emphasizing liquidity's role in maintaining financial stability, indirectly

supporting financial inclusion (Olusegun, Evbuomwan, & Belonwu, 2021). The insignificant finding in this study could indicate that short-term liquidity, while crucial for bank stability, might not directly translate into immediate increases in financial inclusion without complementary policy frameworks.

The Error Correction Term (ECT) was negative and statistically significant, indicating a reliable long-run equilibrium relationship among the studied variables. Approximately 22% of the short-run disequilibrium adjusts back to equilibrium each year, suggesting a moderate speed of adjustment toward long-term equilibrium, underscoring the sustained effectiveness of targeted financial inclusion strategies and policies over time.

V. Conclusion and Recommendations

The research findings establish bank credit to the private sector and capital market development together with efficient banking practises as fundamental drivers for financial inclusion in Nigeria. Bank credit demonstrates a positive and significant impact that proves financial intermediation needs to be strong to expand financial service accessibility. Stock market turnover shows a positive connexion which proves that capital markets' liquidity and trading activity serve as key factors for expanding financial resource availability. Interest rate spreads produce negative effects that reveal major impediments from banking inefficiencies including expensive transaction costs and high lending rates which limit wider financial participation. Financial inclusion receives a positive boost from inflation because people turn to formal financial institutions to protect themselves from inflationary effects according to research findings.

The research results point toward multiple policy recommendations. The government needs to take direct action toward better bank credit services for private businesses including small and medium enterprises (SMEs) and minority groups. The expansion of credit policies and improved loan guarantee schemes and strategic bank incentives will drive credit reach expansion. Financial inclusion expands through intentional support of stock market liquidity by implementing regulatory reforms together with education initiatives and participant incentives. The regulatory authorities should establish straightforward market entry procedures and minimise transaction expenses while supporting financial product development which will draw participants from different demographic segments.

The reduction of interest rate spreads needs to become a top policy goal. Regulatory bodies need to improve banking sector efficiency through transparent pricing methods and enhanced oversight and competitive measures that strengthen banking sector competition. The reduction of banking transaction fees together with lending rates will boost banking service utilisation rates mainly among individuals who lack access to financial resources. The expansion of complete financial literacy programmes remains essential because it allows citizens to grasp financial products better and handle economic volatility with effectiveness. Education systems should implement financial literacy programmes which require broad public awareness efforts to support their implementation.

Future research needs to investigate new institutional and technological determinants of financial inclusion which surpass traditional financial metrics. Research should examine population variations and geographic differences together with social economic factors which affect financial behaviour so appropriate localised financial inclusion approaches can be developed. The development of policies based on extensive empirical research will ultimately create sustainable financial inclusion which drives wider economic growth throughout Nigeria.

Within the next 2–3 years, the CBN and commercial banks should expand SME-targeted credit schemes, supported by loan guarantees and fintech-driven microcredit.

The SEC should promote liquidity and trading participation through simplified market entry, lower transaction costs, and investor education programs, targeting a 15% increase in stock market participation within five years.

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