PressAcademia
www.pressacademia.org/journals/jbef
JBEF
ISSN 2146-7943
Journal of Business, Economics and Finance YEAR 2026 VOLUME 15 ISSUE 1

DYNAMIC NEXUS BETWEEN FINANCIAL DEEPENING AND INCLUSIVE GROWTH IN NIGERIA: ARDL APPROACH

DOI: 10.17261/Pressacademia.2026.2037
JBEF- V.15-ISS.1-2026(9)-p.100-110

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Date Received: March 3, 2026 **Date Accepted:** June 6, 2026

To cite this document
Adegboyega, R.R., (2026). Dynamic nexus between financial deepening and inclusive growth in Nigeria: ARDL approach. Journal of Business, Economics and Finance (JBEF), 15(1), 100-110.
Permanent link to this document: http://doi.org/10.17261/Pressacademia.2026.2037

ABSTRACT

Purpose- Within the context of financing-growth nexus, there is contentious argument that financial deepening is the consequence, not a cause of economic growth which tends to increase the demand of financial instruments that leads to the advancements in financial infrastructure. Consequently, to resolve this issue, there is need to examine the impact of financial deepening on inclusive growth in Nigeria.
Methodology- Using ARDL method of analysis on data collected from Central Bank of Nigeria and World Bank database from 1982 to 2024 the study determined the short and long run relationships between financial deepening and inclusive growth in Nigeria.
Findings-The results of the study show that credits to private sector (PSC_GDP), bank lending rate (LR) and rural bank loan to rural deposit ratio (RL_RD) have positive and significant impact on inclusive growth. While financial deepening (FD) has negative but significant impact on inclusive growth. As for the loan deposit ratio (LDR), it has a negative and insignificant impact.
Conclusion- The findings from this study provide new and valid evidence that addressed the controversy between the finance-growth nexus. Also, aligning the results with the theoretical expectations provide the basis for a sound financial system policy that emphasizes strong financial deepening in Nigeria, thereby, making the report a reliable basis for forecasting and policymaking. A limitation of this study is that the available data is restricted to 2023, which presents an opportunity for future research.

Keywords: Cash-based economy, financial deepening, financial intermediation, financial system, inclusive growth
JEL Codes: G00, G20, O40

1. INTRODUCTION

The existence of a well-functioning financial system is highly essential for its critical roles in capital formation and financial intermediation, which facilitate economic growth (Mordi, 2010 & Puatwoe and Piabuo, 2017). This is affirmed by Aslam and Saeed (2023) and Gatsi *et al.* (2020) that financial inclusion, a key component of financial deepening is widely identified as a catalyst for promoting inclusive growth within the BRICS nations.

Acemoglu and Autor (2011) and Aizenman *et al.* (2012) argument is that financial deepening is one of the obstacles hindering the achievement of inclusive growth in developing countries. While, a well-functioning financial structure enhances overall economic efficiency, by creating and transferring financial resources from traditional sectors to the more modern, growth inducing sectors of the economy (Rojan and Zingales, 2003; Akpokerere and Edafiaje, 2016 & Gültekin and Umutlu, 2023). This is corroborated by Sahay *et al.* (2015) that deep and liquid financial system with different types of financial instruments have a tendency to absorb more shocks than a shallow one.

The National Financial Inclusion Strategy Report (CBN, 2012) in Nigeria emphasized that the goal of inclusive growth can only be accomplished through a deepening financial system that makes financial services easily accessible with less stringent conditions attached in accessing loans for investments (Abdul and Adamu, 2016 & Nwolisa and Cyril, 2019). This inclusive growth must be broad-based, creating productive and sustainable economic opportunities for all (Bakker and Messerli, 2017 & Djokoto, 2022).

Based on this concept, the African Development Bank did place inclusive growth and the transition to green growth at the center of its new Ten-Year Strategy (2013-2022) (AfDB, 2012). The strategy underpins the Bank's emphasis on strengthening the robustness, sustainability and inclusiveness of growth on the continent in a time of rapid change in the financial system, with financial deepening as one of the strategies being used.

Obviously, in both developed and developing countries financial deepening offers a myriad of opportunities in terms of improvement in economic conditions through increased competitive efficiency within financial markets, which thereby expand the depth of financial structure that boost economic growth (Levine and Loayza, 2000 and Balago, 2014).

In Nigeria, these positive outcomes in other countries have not yielded the desired results due to the country highly cash-based economy and some structural challenges. Even with various economic reforms of government there was little confidence in the financial services sector (Okafor and Nwosu, 2018). Despite extensive reforms, Nigeria's financial system remains distorted and current practices contribute to a shallow systems that hinders inclusive growth (Appiah, Li and Frowne, 2020).

From the foregoing, previous studies have focused on the direction of causality between financial deepening and economic growth, which has remained a contentious and unresolved issue. So, the present study departs from these studies by examined the impact of financial deepening on inclusive growth in Nigeria.

The remaining of the paper is structured as follows: section two is literature review, section three presents methodology, section four contain results and findings while section five is conclusion and recommendations.

2. LITERATURE REVIEW

2.1. Theoretical Review

The central theory is based on the assumption of Schumpeter (1934), Goldsmith (1969) and King and Levine (1993) that finance is a vital element of economic growth, which has to be inclusive and encompasses effective participation of the poor. McKinnon (1973) and Shaw (1973) argument is that liberalization of the financial system enhance the rate of economic expansion. In their financial repression, it is assumed that some financial reforms policies were creating unnecessary distortions in the financial market and results in shallow financial market. According to Maxwell (1989) corollary, it is presumed that Mckinnon and Shaw (1973) postulation became the theoretical basis which many developing countries built their policy decisions and financial reforms around. The main motive is to improve capital mobilization and efficiency of financial deepening (intermediation), consequently influencing investment and thereby economic growth with pro-poor oriented (Bencivenga and Smith, 1991; King and Levine, 1993 and Chukwu and Agu, 2009). Schumpeter (1911) assumption is that well-functioning financial intermediaries, particularly banks promote economic development by providing credit to innovative entrepreneurs. These lend credence to the two main diverging theories: the supply leading hypothesis and demand leading hypothesis. Schumpeter (1911) argument for supply-leading hypothesis is that financial development causes economic growth, a view that was elaborated upon by Goldsmith (1969); Calderon and Liu (2003) and Balago (2014), who found evidence for this relationship in developing countries. Whereas, demand side hypothesis is aligned with the Keynesian view of financial deepening, which also in line with Gurley and Shaw (1967), Omotor (2007) and Ndlovu (2013) argument that causality runs from economic growth towards financial deepening. Patrick (1966) emphasized further that demand following approach is related with the demand side of the financial system. That is, economic growth creates additional and new demand for financial services, which causes development in financial system. Apergis, Filippidis and Economidou (2007) neutral hypothesis assertion is that there is no relationship between financial development and economic growth, which is peculiar to developing countries.

2.2. Conceptual Review

The World Bank (1989) and Onyemachi (2012) defined financial deepening as an effort aimed at developing the financial system that encourages an increased in financial assets in the financial markets, leading to the expansion of the real sector of the economy. Hammilton and Godwin (2013); Osinsanwo (2013) and Ngerebo and Lucky (2016) defined financial deepening as a channel of increasing the supply of financial assets in the economy.

Akhator and Marcus (2018); Kiprop (2013); Kolawole *et al*. (2019) and Efanga, et al. (2020) perceived financial deepening as the channel of increasing the provision of financial services with a wider choice of services for the development of the society.

Using relative pro-poor approach, Dollar and Kraay (2002) and Hosono (2022) explained that inclusive growth occurs when the income of poor people increases comparatively faster than the average income of the population. Ravallion and Chen (2003) defined inclusive growth from an absolute pro-poor growth perspective, as the growth that affords the poor individuals benefit unconditionally. Ali and Son (2007) described inclusive growth as the growth that enables equal access to opportunities created by both the rich and poor. UNDP (2017) refers to inclusive growth as equity with growth or shared prosperity from economic growth. Furthermore, Anand *et al.* (2013) explained that inclusive growth occurs when there is an increase in average income through growth or/and an increase in income equality. Mitra and Das (2018) described inclusive growth as broad-based equitable growth, pro-poor growth and financially and environmentally growth. OECD (2015, 2018) and Withers (2018) described inclusive growth as the growth that created equal opportunities for all with reduction in poverty and easy accessibility to social services. Inclusive growth as defined by Barnat et al. (2023) implies an equitable allocation of resources or providing equitable opportunities to all in accessing resources such that it benefits the society at large.

2.3. Empirical Evidences

This study deviated from previous studies by examined the impact of financial deepening on inclusive growth. Kamat and Kamat (2007) results show that the short run effect of financial development causing economic growth. Khan (2008) and Safdar (2014) results revealed that financial deepening impact positively on economic growth in Pakistan. Nzotta and Okereke (2009) study shows that financial deepening index is low in Nigeria and financial system has not sustained an effective intermediation. Pradhan (2010) and Giri and Mohapatra (2012) found that financial deepening promotes growth in India. Iyoboyi (2013) using ARDL technique found a bi-directional causal relationship between financial deepening and economic growth. Wycliffe, *et al.* (2013) found a positive relationship between financial deepening and economic growth in Kenya. Using ARDL method of analysis, Ghildiyal *et al.* (2015) findings revealed a long-run relationship between financial deepening and economic development in India. Agheli and Hadian (2017) findings show that shallowness of financial deepening has no impact on economic growth in the fifteen selected emerging and Middle Eastern countries investigated. Karimo and Ogbonna (2017) results showed that the growth-financial deepening nexus in Nigeria follows the supply-leading hypothesis. Gezer (2018) findings indicate that some countries can be clustered according to supply-leading and demand following approach but bi-directional causality exists for some countries. Igwebuike *et al.* (2019) results show that credit to private sector to GDP ratio has positive effect on economic growth in Nigeria. Nwosu *et al.* (2021) findings show a positive relationship between financial deepening and economic growth in Yemeni. Okafor and Ude (2022) using cointegration approach found that all financial deepening factors have positive impact on economic growth in Nigeria. Al-Shawesh and Kumar (2022) using ARDL method of analysis found that financial deepening impacted economic growth. Also, the results of Eniekezimene and Chiazor (2023) study using ARDL technique revealed that there is a positive impact ofmarket capitalization to GDP on economic growth in Nigeria. Okeke and Akunna (2023) findings confirmed that money supply to GDP and Market capitalization to GDP have positive effect on economic growth in Nigeria. Shan and Liu (2023) results affirmed that financial deepening significantly improves the level of digital economy development in China. Ekane *et al.* (2024) results revealed that financial deepening have negative effect on economic growth in Nigeria. Manasseh, Ngong *et al*. (2024) results show that bidirectional causality exists between financial deepening and economic growth in emerging economies in Africa. Finally, Amakiri and Bobai (2025) findings revealed that there is a positive relationship between financial deepening and economic growth and statistically significant in Nigeria.

This study deviated from the previous studies by examined the impact of financial deepening on inclusive growth, using these variables: BLR (bank lending rate), LDR (loan deposit ratio) and RL_RD (rural loan to rural deposit ratio) which were not examined by any of the previous studies. This study filled these gaps that formed part of our contributions to knowledge.

3. METHODOLOGY

The study made use of the data collected from Central Bank of Nigeria statistical bulletin and World Bank database between 1982 and 2024 using ARDL method of analysis. The variables of the study include: inclusive growth proxy by GDP growth rate (GDPGR), while independent variables are private sector credit to GDP ratio (PSC_GDP), financial deepening ratio (FD), prime lending rate (LR), loan deposit ratio (LDR) and rural loan to rural deposit ratio (RL_RD).

3.1. Model Specification

Based on our theoretical review in this study, we follow Schumpeterian finance endogenous growth model developed by Aghion *et al.* (2005) & Acemoglu *et al.* (2006) which is built around the aggregate production function given as:

$$x = \gamma * \delta * q \tag{1}$$

In equation (1) above, technological progress (x) is defined as a function of research and development (R&D) (q), while the two parameters define the probability that each unit spent on R&D yields a successful innovation (γ) and the extent to which each innovation raises the productivity parameter (δ), respectively. The economic determinants of the R&D are assumed to be taken as exogenous by the entrepreneur. Thus, these may include; the discounted value of expected returns, the real interest rate, capital per efficiency unit, and institution features of the economy.

$$q = q\{\gamma, \delta, r, comp, ppr, \varepsilon\} \tag{2}$$

From the equation (2) above; the R&D intensity (q) is assumed to be positively related to the discounted value of expected return as measured by γ and δ, negatively related to real interest rate (r), and positively related to capital per efficiency unit (k), while product market competition (comp.) and property right (ppr) are examples of institutional features within the economy. $\mathcal{E}$ depicts all other institutional features of the economy not cited in the equation. From equations 1 and 2, the "Schumpeter finance-growth relationship" can be derived as:

$$x = x\{k\} \tag{3}$$

This states that since the rate of technology (x) depends on q, which in turn, depends on k, x is a function of k, the capital efficiency per unit. A positive relationship also exists between the two variables. Thus, an increase in the saving

rate in the economy will increase the capital efficiency per unit, which in turn stimulates more R&D activities via innovation. This will bring about growth in the economy. Thus, in a steady state, *x* is similar to economic growth, *Yt* below.

3.2 Analytical Model of the study

Following a detailed review of previous studies and improving upon the theoretical postulate described in equation (3) above and also in line with the endogenous growth model of Bencivenga and Smith (1991) which assumes that financial deepening (intermediaries) are the channels of capital formation which promotes growth, therefore economic growth (*Yt*) is expressed as a function of financial intermediation, *FIt*, and a set of control variables, Z.. The adopted production function model in equation (3) above can be rewritten and specified in line with the major variables of the study as follows:

$$Yt = f\{FIt, Zt\} \tag{4}$$

Following the empirical specifications in Nwosu *et al.* (2021) and Al-Shawesh and Kumar (2022), the equation (4) above is expanded to accommodate other indicators of financial intermediation (*FIt*), as well as control variables (*Zt*) which are determinants of traditional growth. Thus, in line with our study, the model is stated as follows:

$$GDPGR = PSC\_GDP, FD, LDR, LR, RL\_RD \tag{5}$$

Therefore, following the adopted modified models of Nwosu *et al*. (2021) and Al-Shawesh and Kumar (2022) methods of analysis that used a time subscript (t) and first difference operator (Δ), we therefore model the relationship between financial intermediation and economic growth as follows:

$$lnΔGDPGR_t = f(lnΔPSC\_GDP_t, lnΔFD_t, lnΔLDR_t\, lnΔLR_t\, lnΔRL\_RD_t) \tag{6}$$

In order to empirically test the long-run relationship between financial intermediation and economic growth the transformation of equation (6) into a linear equation then becomes:

$$lnΔaGDPGR_t = \alpha + \psi\ lnΔPSC\_GDP_t + \gamma\ lnΔFD_t + \varphi\ lnΔLDR_t + \phi lnΔLR_t\ + \omega\ lnΔRL\_RD_t \tag{7}$$

where, *ln* is the natural logarithm of the variables, and the estimates of ψ, γ, φ, ϕ and ω represent elasticities. The error term ε_t is assumed to be white noise normally and identically distributed. The reasons for using ARDL technique are the following: it has advantage of not requiring a specific identification of the order of the underlying data because it allows a mixture of I(1) and I(0) variables as regressors, that is, the order of integration of appropriate variables may not necessarily be the same. Also, it circumvents the low power of unit root tests and the resulting degree of uncertainty regarding the order of integration of the underlying variables. Additionally, it is also suitable for small or finite sample size (Pesaran *et al*., 2001).

In order to conduct the bounds test, equation (7) is converted into an unrestricted error correction model (UECM) form:

$$\begin{aligned} ln\ \Delta GDPGR_t = {} & \alpha + \sum_{k=1}^{n} \delta_1 ln\Delta GDPGR_{t-k} + \sum_{k=0}^{n} \delta_2 ln\Delta PSC\_GDP_{t-k} \\ & + \sum_{k=0}^{n} \delta_3 ln\Delta FD_{t-k} + \sum_{k=0}^{n} \delta_4 ln\Delta LDR_{t-k} + \sum_{k=0}^{n} \delta_5 ln\Delta LR_{t-k} \\ & + \sum_{k=0}^{n} \delta_6 ln\ \Delta RL\_RD_{t-k} + \psi\ ln\ PSC\_GDP_{t-1} + \gamma\ ln\ FD_{t-1} \\ & + \varphi\ ln\ COBS\_M2_{t-1} + \phi lnLR_{t-1} + \omega\ ln\ SR_{t-1} + \varepsilon_t \end{aligned} \tag{8}$$

where, **α** is the drift component, **Δ** represents the first difference operator, and $\boldsymbol{\varepsilon_t}$ are white noise errors. In this setup, the short-run effects are inferred by the sign and significance of the estimates of $\boldsymbol{\delta_1, \delta_2, \delta_3, \delta_4}$ and $\boldsymbol{\delta_5}$ while the long-run effects are inferred by the sign and significance of the estimates of **ψ, γ,** $\boldsymbol{\varphi, \phi}$ and $\boldsymbol{\omega}$**.** Equation (8) indicates that economic growth tends to be influenced and explained by its past values. The structural lags are established by using minimum Akaike's information criteria (AIC). The Wald test (F-statistic) was also computed to differentiate the long-run relationship between the concerned variables.

Since all the variables in the model appear to be trended, a second ARDL-UECM including a trend term **(ξt)** is presented in the form:

$$\begin{aligned} ln\ \Delta GDPGR_t = {} & \alpha + \xi_t + \sum_{k=1}^{n} \delta_1 ln\Delta GDPGR_{t-k} + \sum_{k=0}^{n} \delta_2 ln\Delta PSC\_GDP_{t-k} \\ & + \sum_{k=0}^{n} \delta_3 ln\Delta FD_{t-k} + \sum_{k=0}^{n} \delta_4 ln\Delta\ LDR_{t-k} + \sum_{k=0}^{n} \delta_5 ln\Delta LR_{t-k} \\ & + \sum_{k=0}^{n} \delta_6 ln\ \Delta RD\_RL_{t-k} + \psi\ ln\ PSC\_GDP_{t-1} + \gamma\ ln\ FD_{t-1} \\ & + \varphi\ ln\ LDR_{t-1}\ \phi lnLR_{t-1} + \omega\ ln\ RL\_RD_{t-1} + \xi_t \end{aligned} \tag{9}$$

In this case, the null hypothesis of no cointegration, that is, no long run relationship (H_0 = ψ = **γ** = φ = ϕ = ω = 0) is tested against the alternative of long run relationship (H_1: ψ ≠ **γ** ≠ φ ≠ ϕ ≠ ω ≠ 0) using the familiar F-test with critical values tabulated by Pesaran *et al*, (2001). Accordingly, it is hypothesized that the estimates of ψ, **γ,** φ, ϕ and ω are positive and statistically significant, thus confirming the diversification-led growth hypothesis.

4. FINDINGS AND DISCUSSION

4.1. Descriptive Statistics

In the table 1 below, the values of mean and median which are within the maximum and minimum values of the series reflected high level of consistency of all the series. There is a positive trend in all the variables because they have positive mean values. The extra ordinary highest maximum value and high standard deviation of RL_RD call for concern, which implies that at a particular period of the study more rural loans were granted than rural deposits. It is a manifestation of shallow financial deepening of the rural areas in Nigeria, which has policy implication. Also, the increase in rural loans that did not reflect in the rural development shows that these loans were granted to business activities in the urban areas. The financial deepening is very shallow in Nigeria taking into consideration the least value of the maximum value of private sector credit to GDP (CPS_GDP) comparable to other variables' maximum values. The high standard deviation of lending rate (LR) is also high and it is an evident of high lending rate during the period of the study. The positive Kurtosis indicates too few cases at the tail of the distribution. Also, all variables had their entire kurtosis coefficient >0 which shows that they are leptokurtic. The Jarque-Bera confirms normal distributions across all datasets except GDP_GR and RL_RD. The Skewness coefficient indicates normal curves for all the variables with the values ranging between -3 and +3.

Table 1: Descriptive Statistics Results

	GDPGR	CPS_GDP	LR	FD	LDR	RL_RD
Mean	3.229442	9.548837	48.37835	15.90116	67.25387	97804.06
Median	3.300000	8.200000	46.80000	13.02000	66.90000	56.30000
Maximum	33.70000	19.60000	70.40000	27.56000	96.81702	3699600.
Minimum	-13.10000	4.900000	29.10000	8.460000	37.55947	21.30000
Std. Dev.	7.020395	3.687648	10.44313	5.684939	13.22592	563740.1
Skewness	1.398879	0.974035	0.249344	0.492069	-0.162645	6.278607
Kurtosis	10.17875	3.368656	2.434974	1.636003	2.685168	40.62001
Jarque-Bera	106.3566	7.042833	1.017566	5.068652	0.367172	2818.199
Probability	0.000000	0.029558	0.601227	0.079315	0.832280	0.000000
Observations	43	43	43	43	43	43

4.2. Correlation Matrix Tests

The results in table 2 below indicate that there is a weak negative correlation of LDR with GDPGR, which implies that loan deposit ratio affects inclusive growth in Nigeria negatively. This also obvious in the negative and weak correlation of LDR with FD, which indicates that the level of financial development is relatively low in Nigeria. In addition, FD has a positive but very weak correlation with GDPGR, which indicates that financial deepening has positive effect on inclusive growth in Nigeria. Furthermore, the negative and very weak correlation of CPS with LR shows that high lending rate discourages credit to private sector which supposed to improve financial development that can drive inclusive growth in Nigeria.

Table 2: Correlation Matrix Test Results

	GDPGR	CPS_GDP	BLR	FD	LDR	RL_RD
GDPGR	1.000000					
CPS_GP	0.141853	1.000000				
LR	0.050966	-0.037907	1.000000			
FD	0.028402	0.831942	0.210290	1.000000		
LDR	-0.120751	-0.009307	-0.108991	-0.282810	1.000000	
RL_RD	0.056175	0.098396	-0.048977	0.219306	-0.373161	1.000000

4.3. Unit Root Tests

The results in table 3 show that the variables under the study were integrated at either I(0) or I(1). Thus, as the order of integration varies, the study made use of ARDL approach to detecting long and short-run relationships.

Table 3: Unit Root Tests Results

Variables	ADF Test Statistic	Critical Value of ADF	Order of Integration	Remarks
GDPGR	-5.262351*	-3596616	I(0)	Level Stationary
PSC_GDP	-5.275397*	-3.610453	I(1)	Difference Stationary
LR	-3.022368**	-3.596616	I(0)	Level Stationary
FD	-5.634911*	-3.600987	I(1)	Difference Stationary
LDR	-4.917382*	-3.600987	1(0)	Level Stationary
RL_RD	-5.965745*	-3.596616	1(0)	Level Stationary

4.4. Bound Tests

The results in table 4 contain the Bound F-test for Co-integration along with the asymptotic critical values. The results show that F-statistics is greater than the lower critical bound value at 5% significance level and there is existence of cointegration among the variables. Therefore, there is a long run relationship among the variables in the presence of structural breaks stemming in the series for period 1981 to 2023 in Nigeria. This is also confirmed by the high COINTEQ coefficient in the error correction regression, which is highly significant (Table 6)

Table 4: ARDL Bounds Test Results/ Bounds Critical Values

Test Statistic	Value	K
F-statistic	4.355300	5

	Sample Size	10%	5%	1%
I(0)	35	2.331	2.804	3.900
I(1)	35	3.417	4.013	5.419
I(0)	40	2.306	2.734	3.657
I(1)	40	3.353	3.390	5.256
I(0)	Asymptotic	2.080	2.390	3.060
I(1)	Asymptotic	3.000	3.380	4.150

* I(0) and I(1) are respectively the stationary and non-stationary bounds

4.5. Long Run Estimate

The results in table 5 below show that financial deepening (FD) has negative impact on inclusive growth and significant. While loan deposit ratio (LDR) is insignificant and has negative impact on inclusive growth in Nigeria. All other variables are significant with positive impact on inclusive growth. This shows that the deposits mobilized were not properly channeled into productive investment (loans) in the economy. The current year value of private sector credit to GDP (CPS_GDP) and past one year value of lending rate (LR) contribute to inclusive growth in Nigeria. These findings occur due to moderate lending rate which stimulates borrowings. This past one year of LR tends to constitute a springboard for further deepening of financial system through policy consistence. The result supports the findings of Igwebuike *et al.* (2019) and Okafor and Ude (2022). The rural loan to rural deposit ratio (RL_RD) has a very low impact on inclusive growth but highly significant. This indicates low degree of rural financial system efficiency and shallow rural financial deepening on inclusive growth in Nigeria. This occurred due to low level of deposits mobilization in the rural areas, and assumption that rural people don't save. This has policy implication and formed part of our contribution to knowledge. Also, the past one year value of financial deepening (FD) is negative but significant. Thus, a unit increase in financial deepening reduces inclusive growth by 1.05. This finding corroborates the result of Agheli and Hadian (2017). This is also reflected in the past one year of inclusive growth which is negative and not in line with theoretical expectation. This decrease in growth discourages financial deepening and does not stimulate financial activities.

Table 5: Long Run Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GDPGR(-1)	-0.868430***	0.210436	-4.126814	0.0003
CPS_GDP	1.452809*	0.722041	2.012086	0.0547
LR(-1)	0.444366*	0.223069	1.992057	0.0570
FD(-1)	-1.052873**	0.477408	-2.205396	0.0365
LDR	-0.061598	0.057334	-1.074373	0.2925
RL_RD(-1)	5.88E-06***	1.98E-06	2.972633	0.0063

***1%significant level, **5%significancelevel,*10%significancelevel

4.6. Short Run Estimate

The results in table 6 below contain the short-term dynamics of the estimated parameter of the error correction term. All the variables under consideration are significant. Bank lending rate (LR) current year value is positive and consistent with long-run results. Also, the current year value of rural loan to rural deposit ratio (RL_RD) is very low but positive, which is consistent with long-run results. In addition, the current year value of financial deepening (FD) is negative but significant. Similar results were obtained by Agheli and Hadian (2017). The coefficient of the error term is negative and significant at 1 percent level.

The coefficient of 0.87 indicates that the concurrent speed of adjustment of financial deepening to long-run equilibrium after temporary disequilibrium and disconcertion is 87 percent.

Table 6: Short Run Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
D(BLR)	0.285537***	0.088061	3.242474	0.0028
D(BLR(-1))	-0.131743	0.176579	-0.746087	0.4611
D(BLR(-2))	-0.290366***	0.066233	-4.383985	0.0001
D(BLR(-3))	-0.352902**	0.161663	-2.182943	0.0365
D(FD)	-2.165664***	0.650353	-3.329984	0.0022
D(RL_RD)	2.81E-06***	6.98E-07	4.025776	0.0003
COINTEQ	-0.868430***	0.202968	-4.278660	0.0002

***1%significant level, **5%significancelevel,*10%significancelevelSource:

4.7. Post Estimation Diagnostic Tests

Deducing from the results in table 7 below, the null hypothesis of no coexistent serial correlation (with F-Statistic = 1.46 (0.25)) cannot be rejected, as the p-value of the test statistic is greater than 0.05. So, the model is free from auto-correlation and homoscedastic. The model is not normally distributed, which is the same with normality test under descriptive statistics and requires for caution. In addition, the Ramsey RESET specification test also showed that the model does not suffer from the problem of omitted variables and linearity assumption at 5% level of significance. Thus, there is no reasonable evidence to invalidate the model, considering the fact that the estimates are robust in the absence of serial correlation and homoscedastic. Therefore, the model can be used for structural and policy implication analysis.

Table 7: Serial Correlation LM, Homoscedasticity Jarque-Bera and Ramsey Tests Results

Test	F-Statistic	Prob. Value
Breusch-Godfrey Serial Correlation	0.935699	0.4062
Heteroskedasticity Test Breusch-Pagan-Godfrey	1.312194	0.2702
Jarque-Bera	15.53325	0.0004
Ramsey Stability Test	5.475455	0.0276

4.8. Granger Causality Tests

The results in table 8 below show that only LDR granger cause RL_RD. This indicates that total loan to deposit ratio is the major contributor to the rural loan deposit ratio in Nigeria. It shows that majority of the rural loans granted were funded by mobilized deposits outside rural areas. This is also confirmed by descriptive statistics that at a particular period of the study more rural loans were granted than rural deposits. There is no causality between FD and GDPGR. This requires caution because of its policy implications. This finding is corroborated by Agheli and Hadian (2017). Also, it is in line with Apergis and Levine (2007) neutral hypothesis, which asserts that there is no relationship between financial development and economic growth. It corroborates the evidence from the literature that financial deepening is very shallow in Nigeria (Ozekhome, 2020).

Table 8: Granger Causality Tests Results

	Obs.	F-Statistic	Prob.
FD does not Granger Cause GDPGR	41	0.24838	0.7814
GDPGR does not Granger Cause FD		0.17769	0.8379
LDR does not Granger Cause RL_RD	41	0.56112	0.0912

5. CONCLUSION AND RECOMMENDATIONS

5.1. Conclusion

The study critically examined the linkage between financial deepening and inclusive growth from the context of financing-growth nexus. The findings showed that private sector credits (PSC_GDP), bank lending rate (LR) and rural bank loan to rural deposit ratio (RL_RD) have positive and significant impact on inclusive growth. While financial deepening (FD) has negative but significant impact on inclusive growth. As for the loan deposit ratio (LDR), it has negative impact and insignificant. It can de deduced from the results that the real sector of the economic have been neglected and necessary to mobilize financial resources to finance the growth of the sector. Conclusively, it is evident that the findings from this study addressed the controversy between the finance-growth nexus as the relationship appears to produce new evidence and more valid results.

Precisely, the existence of neutral causality between financial deepening and inclusive growth requires for concern. This requires offering insights into the policies that can maximize deposits channelization and accumulation for the growth of private sector that can drive inclusive growth.

5.2. Recommendations

Extracting from the study discussions and outcomes, the following recommendations that are inclusive growth driven are made as follows: There is a need for the proper implementation of policies and strategies geared towards financial deepening in Nigeria, proper enhancement of credit delivery to the private sector, and augmentation of deposit mobilization and accumulation both in the urban and rural areas.

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