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FINANCIAL INTERMEDIATION MODELLING FOR ECONOMIC DEVELOPMENT IN NIGERIA: INSIGHT FROM ARDL

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ABSTRACT

Purpose- The shallowness of Nigeria's financial system hinders the financial intermediation process. Thereby impeding economic development. This observation provides the rationale for an examination of the impact of financial intermediation on economic development in Nigeria.

Methodology- The study utilized data spanning from 1981 to 2023, sourced from the Central Bank of Nigeria (CBN) statistical bulletin and World Bank Data base, and employed the Autoregressive Distributed Lag (ARDL) method of analysis.

Findings- The overall results show that both the short and long-run relationships exist between financial intermediation and economic development in Nigeria. The coefficient of ECM of -3.855712 which is 1% significance level, indicating a strong relationship between financial intermediation and economic development. Also, this very high speed of adjustment indicates that 385.57% adjustment back each year to long-run equilibrium after a shock in the short-run.

Conclusion- The study concluded that for proper development of financial system that can promote effective financial intermediation, it is necessary to encourage higher levels of savings and investment, which will, in turn, enhance the efficiency of capital accumulation. Among its recommendations, the study highlighted the need to improve and extend credit facilities to the private sector of the economy.

Keywords: Economic development, financial deepening, financial intermediation, financial repression, investment, savings
JEL Codes: G30, G31

1. INTRODUCTION

Globally, financial intermediation is recognized as a key driver to economic growth by facilitating capital accumulation through efficiency channeling savings to productive investments, thereby fostering business development and accelerating economic progress. This is supported by extensive research, including from World Bank, which demonstrates a strong correlation between a well-functioning financial system and a country's rate of development (World Bank, 2019).

Typically, financial intermediation in developing countries is characterized by dualism: formal and informal financial intermediation (Collins, Morduch, Rutherford and Ruthven, 2009). Formal financial intermediation, through institutions like banks, increases the capacity to leverage domestic financial resources, strengthen its investment climate, and improve asset management (Aryeetey and Gockel 1991; Aziakpono, 2005; Beck, Demirgüç-Kunt and Martinez Peria 2008 & Unvan andYakubu, 2020).

According to Sundaresan (2008), providing access to basic financial services like credit, savings, and insurance is likely to develop entrepreneurial skills and opportunities for the poor who are currently outside these financial markets. This, is turn, would help address the low levels of financial intermediation in the informal economy (UN Report 2009).

Informal financial intermediaries are highly relevant, especially for mobilizing resources through family and friends, as well as informal savings clubs. Furthermore, due to the informal nature of the African economies, the use of cash for economic activities cannot be understated. This reflects the significant importance of financial intermediation in the economic growth process.

The well-established literature by Levine (2005) and Pasali (2013) suggests that under normal circumstances, the degree of financial intermediation is not only positively correlated with growth and employment, but also causally impacts growth. The main mechanisms for doing so are lower transaction costs and better distribution of capital and risk across the economy.

Broader access to bank deposits can positively affect financial stability by strengthening financial intermediation process. McKinnon (1973) and Shaw (1973) argued that removing controls of financial markets is crucial to allowing the real interest rate to properly allocate funds for investments, which mobilizes savings and accelerates economic growth. They proposed that a higher deposit rate encourages savings, and when these savings are invested, the resulting decline in real cost of capital promotes growth.

Building on the analysis, Sulaiman and Aluko (2015) observed that financial resources promote economic growth through efficient financial intermediation. However, this relationship is not universal. Some research indicates that the positive growth effect from financial intermediation is diminished in economies with weak institutional frameworks, such as poor financial regulation, or in extremely high-inflation environments (Rousseau and Wachtel 2002 Demetriades and Law, 2006). Studies also find that while a positive long-run relationship exists, financial liberation and development can be associated with short-run financial fragility and crises (Loayza and Ranciere 2006, Cecchetti and Kharroubi 2012 & Muhoza, 2019).

According to research by the World Bank (Han and Melecky 2013), while broader financial inclusion can potentially lead to increased financial stability, determining the exact causal relationship between two remains complex. However, it seems reasonable to suggest that wider access to bank deposits could strengthen the funding base of banks, making them more resilient during financial crises (Demirgüç-Kunt, and Levine, 2007 & Jahan and McDonald 2011).

In Nigeria, the financial system, particularly during the decades following independence, experienced a period of financial repression. This was characterized by government policies such as mandatory credit ceilings, directed credit allocation, high reserve requirements, and artificially low interest rates, which were often negative in real terms (Mc. Kinmon, 1973 and Shaw, 1973).

Additionally, banking sector seems to be making no effort to address deficiencies that worsen the domestic savings and investments. This is significant because, given the sector's dominant role in Nigeria's financial market, it was expected to boost these areas. Adebiyi (2004) observed further that financial market's underdevelopment has led to a large informal financial sector, which makes savings less responsive to real interest rates in Nigeria.

Some challenges affecting the efficiency of financial intermediation in development countries, particularly Nigeria, were examined by King and Levine (1992), Oyejide (1994) and Yaron et al (1998). These challenges include inadequate mobilization of surplus funds for deficit units, high interest rate spread, with a low savings rate of 5% and a high lending rate of 26% or more. This discourage savings, diverts funds into unproductive investments, and inhibits economic growth by creating an impediment to investment.

In the light of these challenges, it is necessary to examine the impact of financial intermediation on economic growth in Nigeria. The rest of this paper consists of the following sections: a literature review in section two, methodology in section three, section four covers findings; and section five contains conclusion and recommendations.

2. LITERATURE REVIEW

2.1. Theoretical Review

This study theory is based on Schumpeter's (1911) finance-growth theory, which considers finance a vital element of economic growth. The theory proposes that a scarcity of financial resources hinders the real sector from engaging in productive activities that foster economic growth. This can be overcome by a dynamic financial system with efficient financial intermediaries that will stimulate economic growth. This postulation was supported by McKinnon (1973) work, which posits that financial intermediation promotes growth in developing countries through financial development (Akpokodje, 1998). Similarly, Levine (2005) and Pasali (2013) suggest a positive correlation between financial intermediation and growth. Therefore, in a well-functioning system, financial intermediaries are not simply neutral channels; by shifting money from savers to borrowers, they facilitate economic growth. They improve economic development by ensuring that borrowed funds are allocated to the productive investments (Goldsmith, 1969). This is emphasized further by McKinnon (1973) and Shaw (1973) that financial liberalization, achieved through higher interest rates, promotes increased household savings and more efficient financial intermediation, ultimately leading to faster economic growth. Remarkably, in their financial repression hypothesis, they argued further that government controls on the financial system significantly discourages savings, distorts the flow of credits, and consequently undermines the impetus for economic growth by preventing efficient ollocation of capital, ultimately hindering economic development Rother (1999) assertion is that amongst the variables that influence financial intermediation interest rate (interest rate spread) and deposits rates have significant impact. These, further induce investment and economic growth. Levine (2005) and Pasali (2013) insight is that financial intermediation and growth are positively correlated through the strategy of lowering transaction costs and improving the allocation of capital and risk across the economy (Ouma, Odongo, Were, 2017). Research by Demetriades and Law (2006) suggests that in economies with weak institutional frameworks, such as unregulated markets, financial intermediation may not drive positive economic outcomes. Additionally, Rousseau and Wachtel (2002) found that high inflation (above specific thresholds) significantly impairs financial

deepening and limits its contribution to economic growth. In their work on endogenous growth theory, Bencivenga and Smith (1991); Greenwood and Jovanovic, (1990) and King and Levine (1993) all highlighted financial intermediaries channel capital formation and provide the services that reduce investment risks and facilitate diversification. In his own view, Schumpeter (1911) stressed the importance of financial services in promoting economic growth, particularly the role of financial institutions in creating credit to fund the productive investments of entrepreneurs. This process of innovation and credit provision was seen as driver of future growth and highlights the importance of financial intermediation in facilitating high levels of economic growth (Kamal, 2013 and Babajide, Adegboye, and Omankhanlen, 2015). Robinson (1952) argued further, that as the economy grows, the demand for financial services also grows, which positively affects financial development, suggesting that the causality starts from economic growth to financial development. That is, a well-developed financial sector increases access to financial services and offers a full range of financial products and services to different economic sectors (Chavula, Tefera, Kedir and Awe, 2017). This makes financial development a crucial component in promoting financial inclusion for sustainable economic development. Hence, this informs Patrick (1966) two hypothesized theories that were based on financial development and economic growth causality. The first is demand pull (finance-led growth), which explains that financial development is driven by economic growth; that is, the expansion of the financial system occurs as result of growth. This is consistent with Coccorese (2008), and Odhiambo (2011) empirical studies that economic growth granger cause financial development. The second aspect is Schumpeter's (1911) supply-leading hypothesis, which posits that financial sector development is a key driver of economic growth. This is affirmed by empirical studies of Kar, Nazlioglu and Agir (2011), and Bangake and Eggoh (2011) that financial development granger cause economic growth. The Lewis (1955) two way causal relationship hypothesis argues that financial development and economic growth are interconnected. This is in contrast with the neutral hypothesis which asserts no significant relationship between financial development and economic growth (Apergis and Levine, 2007). Essentially, the Lewis model suggests a feedback loop where both factors influence each other, driving overall economic progress. Additionally, the concept of resource transfer from less-productive sectors to more growth-oriented is implied within this framework.

2.2. Conceptual Review

Financial intermediation emerges and evolves due to the presence of market imperfections, that is, the absence of perfect information and perfect competition. These frictions create transaction costs associated with information acquisition, the exchange of goods and services and the enforcement of contracts (Levine, 1997). In overcoming or reducing such market frictions the financial sector provides specific financial services, thereby reducing the associated transaction costs (Levine, 1997). Ultimately, the emergence and development of financial intermediation ought to contribute to more beneficial economic outcomes vis-`a-vis a world with-out financial markets (Saint-Paul, 1992; Levine, 1997).

According to Acha (2011) and Gurr (2021) financial intermediation facilitates easy channeling of funds from surplus unit of the economy to deficit unit through financial institutions. In the same vein, Dare and Ogunyemi (2019) perceived financial intermediation as the medium by which deposits liabilities of banks and non-banks institutions are transformed into assets such as loans and overdraft. Olomola (1977) described the financial intermediation as the catalyst for and driver of economic growth. In this process, financial intermediation accept deposits and lend them for economically productive purposes, which ultimately leads to economic growth (Andrew and Osuji, 2013 & Manasseh, 2021).

Consequently, economic growth is defined by Antwi, Mills & Zhao (2013) as the constant rate at which the productive capacity of the country and its economy is increasing overtime to bring about rise in the levels of national income. Bakang (2014) described economic growth as the provision of input that leads to greater output, which ultimately improve quality of human life. Kolawole, Ijaiya, Sanni and Aina. (2019) & Kimberly (2019) defined economic growth as an increase in the production of goods and services over a specific period of time.

Adegboyega (2018) submits that economic growth should ideally ensure that economic and financial progress permeating through all cross-sections of the society, resulting in balanced, democratically sustainable and optimal growth.

For the purpose of this study, economic growth is conceptualized as the process of sustainable growth that can generate economic activities through easy channeling of funds from surplus unit to deficit unit of the economy (Adegboyega, Forthcoming).

2.3. Empirical Review

There is no universal consensus on direction of causality between financial intermediation and economic growth in most of the studies reviewed. In their studies, Acha (2011a), Shittu (2012), Agbada and Osuji, (2013), Efayena (2014), Nguyen (2017) and Markjackson, Timinipre, Nelson and Okoyanstudies (2017) results reveal that financial intermediation contributes to economic growth in Nigeria. Ayadi, Arbak, Ben-Naceur and De Groen (2013) study established that credit to the private sector and bank deposits are negatively associated with growth, which confirms deficiencies in credit allocation in the northern and southern Mediterranean countries and suggests weak financial regulation and supervision. Iwedi and Igbanibo (2015) study found that credit to the private sector has negative and insignificant impact on GDP in the short run, while bank deposit

liabilities have a positive relationship with GDP and also insignificant. Ünal and Hakan empirical evidence suggests that in low and middle-income countries banking development has a positive impact on economic growth but the impact is negative in high-income countries. Furthermore, Iwedi, Okey-Nwala, Kenn-Ndubuisi and Adamgbo (2016) study result shows that indicators of financial intermediation development exhibit positive and negative impact on economic growth and also insignificant. In their own study, Andabai and Tonye, (2014) and Adediran, Ekejiuba, Matthew and Adegboye (2017) found that financial intermediation has a long-run relationship with economic growth in Nigeria. Agbélénko and Kibet (2015) found that well-functioning financial sector improved economic growth in West African region. As for Ibe (2017) study it reveals that financial intermediation has no positive but significant impact on human development in sub Saharan Africa. Muhoza (2019) study results indicate that financial intermediation has a positive and significant effect on economic performance of the East African Community countries in the long run. In the same vein, Yakubu, Abokor and Balay (2020) study using ARDL technique finds that financial intermediation significantly influences economic growth in both short and long run. The effect is positive only in the short run and in line with supply-leading hypothesis. From another perspective, Yang and Chang (2020) study results show an asymmetric relationship between financial intermediary development and economic growth. Yeboah (2020) study reveals a negative long-run relationship between financial intermediation and economic growth in Ghana. Futhermore, Alimi and Adeoye (2020) study results reveal that financial intermediation has positive and significant impact on economic growth. In their own view, Manasseh (2021) study show that bank deposits, bank credit and bank liquidity reserve have positive and significant effect on economic growth in Nigeria. In another perspective, Toby and Dibiah (2022) findings indicate that financial intermediation components: bank deposit, commercial bank loans to rural customers, commercial bank deposits from rural customers and gross national savings have no effect on economic growth in Nigeria. Valery, Roland and Messomo (2022) findings indicate that through credit and money supply channels deposits rate has positive impact on financial intermediation but through the intermediation margin channel it has negative effect in Cameroon. Konstantakopoulou (2023) study established that financial intermediaries improve fund allocation and concluded that financial intermediation is significant for economic growth. Olufemi, et al. (2024) results revealed that private credit, market capitalization and total volume of shares traded have positive and significant impact on economic growth in Nigeria. While broad money supply and lending rate are also significant but have negative effect on economic growth in Nigeria.

The literature on the causal relationship between financial intermediation and economic growth presents mixed and inconclusive findings, with some studies showing a positive effect, others negative or no effect, and some a bidirectional causality. The study's contribution is unique combination of the variables used, particularly the ratio of currency outside the banking sector to the narrow money supply (COBS_M2), to address a specific context, such as explaining the impact of financial intermediation on economic growth. This approach represents a valid contribution by offering a new perspective or methodology, but it does not represent the first time these variables have been considered in the broader literature.

3. METHODOLOGY

The study investigates the impact of financial intermediation on economic growth in Nigeria using ARDL method of analysis on data between 1981 and 2023 collected from Central Bank of Nigeria statistical bulletin and World Bank database. The variables of the study are: economic growth proxy by growth rate (GDPGR), while financial intermediation (FI) is proxy by private sector credit to GDP ratio (PSC_GDP), financial deepening ratio (FD), currency outside the banking sector to the narrow money supply (COBS_M2), prime lending rate (LR), and savings rate (SR).

3.1. Model Specification

Following the theoretical review in this study, we utilize aspects of the Schumpeterian endogenous growth literature, including the models developed by Aghion, Howitt, and Mayer-Foulkes (2005) and Acemoglu, Aghion, and Zilibotti (2006). This approach emphasizes innovation and creative destruction as drivers of growth, rather than solely on an aggregate production function given as:

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

Where 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:

$$x = x\{k\} \quad (3)$$

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. 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) & King and Levine (1993) which assumes that financial 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:

$$Yt = f\{FIt, Zt\} \quad (4)$$

Following the empirical specifications in Yeboah (2020) & Alimi and Adeoye (2020), the equation (4) above is expanded to accommodate the 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:

$$GDPGR = PSC\_GDP, FD, COBS\_M2, LR, SR \quad (5)$$

Therefore, following the adopted modified models of Yeboah (2020) & Alimi and Adeoye (2020) 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:

$$\ln\Delta GDPGR_t = f(ln\Delta PSC\_GDP_t, ln\Delta FD_t, ln\Delta COBS\_M2_t\, ln\Delta LR_t\, ln\Delta SR_t) \quad (6)$$

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:

$$ln\Delta aGDPGR_t = \alpha + \psi\ ln\Delta PSC\_GDP_t + \gamma\ ln\Delta FD_t + \varphi\ ln\Delta COBS\_M2_t + \phi ln\Delta LR_t + \mathcal{Q}\ ln\Delta SR_t \quad (7)$$

where, *ln* is the natural logarithm of the variables, and the estimates of ψ, $\boldsymbol{\gamma}$, φ, ϕ and $\mathcal{Q}$ 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 followings: 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, Shin and Smith, 2001).

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

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

where, $\boldsymbol{\alpha}$ is the drift component, $\boldsymbol{\Delta}$ 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 $\boldsymbol{\psi, \gamma, \varphi, \phi}$ and $\mathcal{Q}$**.** 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:

$$\begin{aligned} ln\ \Delta GDPGR_t = {} & \alpha + \xi_t + \sum_{k=1}^{n} \delta_1 ln\Delta GDPGR_{t-k} + \sum_{k=0}^{n} \delta_2 ln\Delta PSC\_GDP_{t-k} + \sum_{k=0}^{n} \delta_3 ln\Delta FD_{t-k} \\ & + \sum_{k=0}^{n} \delta_4 ln\Delta\ COBS\_M2_{t-k} + \sum_{k=0}^{n} \delta_5 ln\Delta LR_{t-k} + \sum_{k=0}^{n} \delta_6 ln\ \Delta SR_{t-k} \end{aligned}$$

$$+ \psi \ ln\ PSC\_GDP_{t-1} + \gamma \ ln\ FD_{t-1} + \varphi \ ln\ COSB\_M2_{t-1} \phi lnLR_{\ t-1}$$

$$+ \mathcal{Q} \ ln\ SR_{t-1} + \xi_t \quad (9)$$

In this case, the null hypothesis of no cointegration, that is, no long run relationship ($H_0 = \psi = \boldsymbol{\gamma} = \varphi = \phi = \mathcal{Q} = 0$) is tested against the alternative of long run relationship ($H_1: \psi \neq \boldsymbol{\gamma} \neq \varphi \neq \phi \neq \mathcal{Q} \neq 0$) using the familiar F-test with critical values tabulated by Pesaran, Shin, and Smith (2001). Accordingly, it is hypothesized that the estimates of ψ, $\boldsymbol{\gamma}$, φ, ϕ and $\mathcal{Q}$ are positive and statistically significant, thus confirming the diversification-led growth hypothesis.

4.0 FINDINGS AND DISCUSSIONS

4.1. Descriptive Statistics

Table 1 below show that all the series are in high level of consistency as all the mean and median values are within the max and min values of the series. Also, all the variables have positive mean values, which indicate that the growth rate of GDPGR (3.23%), PSC_GDP (9.55%), COSB_M2 (17.84%), FD (15.90%), LR (17.12%) and SR (6.87%) are evident of positive trend. The highest mean value of COB_M2 calls for concern, which indicates informal nature of Nigerian economy and highly cash-based economy. This corroborated the widely held view that financial exclusion rate in Nigeria is high. The policy implication of this is to facilitate financial intermediation process with adequate financial infrastructure which has the potential to reduce the use of cash for economic activities. In addition, the significant variation in the trends of variables over the sample period is shown by a large difference between maximum and minimum values of the series. This large difference shows that all these variables exhibit a greater impact on economic growth in Nigeria during the period of the study. The Skewness coefficient indicates normal curves for all the variables with the values ranging between -3 and +3. Only three variables: COSB_M2, FD and LR are normally distributed because their probability values are higher than the Jacque Bera chi-square at the 5% level of significance but GDPGR, PSC_GDP and SR are not normally distributed. 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 standard deviations reveal that gross domestic product growth rate (GDPGR, 7.02) has highest fluctuation and in contrast, the private sector credit to GDP ratio (PSC_GDP, 3.69) has lowest fluctuation. Also, the low standard deviation of all the data shows that the deviations of the actual data from their mean values are small.

Table 1: Descriptive Statistics Results

	GDPGR	PSC_GDP	COSB_M2	FD	LR	SR
Mean	3.229442	9.548837	17.83721	15.90116	17.11651	6.872326
Median	3.300000	8.200000	20.00000	13.02000	17.26000	4.800000
Maximum	33.70000	19.60000	33.90000	27.56000	29.80000	18.80000
Minimum	-13.10000	4.900000	4.400000	8.460000	7.750000	1.410000
Std. Dev.	7.020395	3.687648	9.097541	5.684939	4.617081	4.940382
Skewness	1.398879	0.974035	0.049054	0.492069	0.346094	0.966204
Kurtosis	10.17875	3.368656	1.650378	1.636003	3.496922	2.587318
Jarque-Bera	106.3566	7.042833	3.280732	5.068652	1.300852	6.995573
Probability	0.000000	0.029558	0.193909	0.079315	0.521823	0.030264
Observations	43	43	43	43	43	43

4.2. Correlation Matrix Tests

In the table 2 below the negative correlation of COSB_M2, LR and SR to FD shows that financial deepening is shallow, which indicates low level of financial intermediation in Nigeria. In contrast, there is a positive and strong correlation between PSC_GDP and FD, which is an indication that private sector credit contributed to financial deepening that drives financial intermediation, which promotes growth in Nigeria. Also, the positive but weak correlation of PSC_GDP to GDPGR is consisted with theoretical expectation. In addition, the negative but very weak correlation of COB_M2 and SR to GDPGR shows both currency outside the banking industry and savings rate have negative impact on economic growth in Nigeria during the period of the study. The high prevalence of cash transactions in Nigeria provides evidence of its cash-based economy, while low savings rate is a significant factor that discourages the savings habit. Theses supported the widely held view that there is high rate of financial exclusion and a low level of savings in Nigeria. Overall there is absence of multi-collinearity between the data set.

Table 2: Correlation Matrix Test Results

	GDPGR	PSC_GDP	COSB_M2	FD	LR	SR
GDPGR	1.000000					
PSC_GDP	0.141853	1.000000				
COSB_M2	-0.086543	-0.744840	1.000000			
FD	0.028402	0.831942	-0.894233	1.000000		
LR	0.331640	-0.118743	0.306001	-0.193115	1.000000	
SR	-0.143705	-0.645963	0.626071	-0.605197	0.402515	1.000000

4.3 Unit Root Tests

The results in table 3 below indicate that the variables under the study were integrated at either I(0) or I(1). Thus, as the variables were integrated not in the same order, the findings justified the use of ARDL approach to detecting the short and long-run relationship.

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
COSB_M2	-3.940425*	-3.600987	I(1)	Difference Stationary
FD	-5.634911*	-3.600987	I(1)	Difference Stationary
LR	-6.123285*	-3.605593	I(1)	Difference Stationary
SR	-6.343814*	-3.600987	1(I)	Difference Stationary

4.4. Bound Tests

The results in the table 4 below show the Bound F-test for Co-integration along with the asymptotic critical values. The results indicate 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 below)

Table 4: ARDL Bounds Test Results

Test Statistic	Value	K
F-statistic	3.277828	5

Bounds Critical Values	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	2.206	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

In the table 5 below, all the variables under consideration are significant except currency outside the banking industry (COSB_M2) which also exerted negative impact on economic growth (GDPGR) in Nigeria. This shows the informal nature of the Nigerian economy in terms of use of cash for economic activities. It also indicates that the informal financial intermediaries are thriving in resource mobilization through family and friends, and informal savings clubs. This is consistent with general evidence in the literature by Adebiyi (2004) that the underdeveloped of financial markets paved way for a large size of informal financial intermediation in Nigeria. Also, in the last two and three year the growth rate had reduced to 0.75% and 1.15% respectively, which might have been caused by the Central Bank of Nigeria (CBN) high imposition control on the financial system since the present government came into power over two years ago. This is what Mckinnon (1973) and Shaw (1973) referred to as financial repression hypothesis: that is, imposition of control on financial system interrupts and destroys instinct to economic growth. In the current year the private and sector credit (PSC_GDP) is positively related to economic growth (GDPGR). This indicates that a 1% increase in private sector credit increases growth rate by 3.51%. This is conforms

to the findings of Manasseh (2021) and Olufemi, et al. (2024) which revealed that private sector credit have positive and significant impact on economic growth in Nigeria. Financial deepening (FD) current and the past two years have negative impact on economic growth. The negative sign contradicts the theoretical expectation. This indicates that a 1% increase in financial deepening reduced economic growth by 5.30% in the current period and 4.03% in the past two year. This shows that there is a shallow financial system, which is evidence that financial intermediation in Nigeria is low. The lending rate (LR) of one past year have positive impact on economic growth (GDPGR). This implies that a 1% increase in lending rate increases economic growth rate by 1.49%, which indicates that the lending rate is moderate and encouraged large number of borrowers for investment purposes. This is also corroborated by positive effect of private sector credit on economic growth which serves as sinew to engine of growth. The savings rate have positive impact on economic growth in the past three year but negative impact in the past two and four year. The negative effect of savings rate might have been caused by the low savings rate which is the typical of Nigerian financial markets. This might have discourage savings and reduced mobilization of funds from households to investors, that is, lack of financial intermediation. The policy implication of this, is for the government to embark on mechanism that will encourage savings and improve financial intermediation process. Overall, there is a long run relationship between financial intermediation and economic growth in Nigeria.

Table 5: Long Run Results

Variable	Coefficient	Std. Error	Prob.*
GDPGR(-2)	-0.746702**	0.302961	0.0359
GDPGR(-3)	-1.152116**	0.401463	0.0185
COSB_M2(-2)	-1.352344	1.480754	0.3849
PSC_GDP	3.509631**	1.087681	0.0104
FD	-5.300891***	1.067755	0.0008
FD(-2)	-4.026788 **	1.397550	0.0181
LR(-1)	1.493626**	0.526718	0.0195
SR(-2)	-2.809453**	1.224646	0.0475
SR(-3)	2.227266**	0.766397	0.0174
SR(-4)	-2.583052**	1.135293	0.0489
R-squared 0.861123		Prob(F-statistic) 0.000806	

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

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. The growth rate of 2.25% in the economy in the past one year indicates that there was an improvement in the economy during period of the study. Also, private sector credit (PSC_GDP) have a positive impact in the current period and last three year. This is consistent with the long run results. In contrast to the long run results, the currency outside the banking industry (COSB_M2) positively impacted on economic growth, which is also a contradiction to theoretical expectation. Despite this, the provision of affordable financial services, most especially in the rural areas is still inadequate. Financial deepening (FD) have positive impact on economic growth in the current year but negative impact in the last one and three year. This indicates that there is a little progress in financial intermediation in Nigeria because financial deepening supposed to be driving financial intermediation. In contrast to the results of long-run estimate, lending rate (LR) impacted economic growth negatively in the past one and three year. This might have been caused by high lending rate, which tends to discourage borrowings. Savings rate has positive impact on economic growth in the current year but negative impact in the past one and three year. The positive impact conforms to McKinnon (1973) and Shaw (1973) argument that saving rises with an increase in the deposit rate, and investing the increased savings with a decline in the real cost of borrowing promotes growth. The coefficient of ECM of -3.855712 is significant at 1percent level. This is a very high speed of adjustment and indicates that 385.57 percent adjustment back each year to long-run equilibrium after a shock in the short-run.

Table 6: Short Run Results

Variable	Coefficient	Std. Error	Prob.*
D(GDPGR(-1))	2.257540**	0.666040	0.0040
D(PSC_GDP)	3.509631***	0.758837	0.0003
D(PSC_GDP(-3))	2.158840**	0.748535	0.0114
D(COSB_M2(-1))	4.681586**	1.235933	0.0018
D(COSB_M2(-2))	3.329242**	0.995458	0.0044
D(COSB_M2(-3))	2.672558**	0.953697	0.0134
D(FD)	-5.300891***	0.773269	0.0000
D(FD(-1))	4.203933***	0.856641	0.0002

D(FD(-3))	-1.515898**	0.607340	0.0247
D(LR(-1))	-2.123273**	0.606677	0.0032
D(LR(-3))	-1.372110**	0.469750	0.0105
D(SR)	-1.387059**	0.479350	0.0111
D(SR(-1))	3.165239**	0.934196	0.0041
D(SR(-3))	2.583052***	0.541427	0.0002
COINTEQ	-3.845712***	0.813180	0.0003
R-squared	0.913141	Prob(F-statistic)	0.000183

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

The overall results show that both the short and long-run relationship exist between financial intermediation and economic growth in Nigeria. This is also confirmed by the goodness of fit of the estimated equation, which is very high and the F-statistical probability is also significant at 1 per cent.

4.7. Post Estimation Diagnostic Tests

The post estimation diagnostic tests were carried out to determine if the variables used are jointly significant in explaining the effect of financial intermediation on economic growth in Nigeria. The results in table 7 below affirmed that the model is free from auto-correlation, homoscedastic and that the variables are normally distributed. The Ramsey RESET specification test also showed that the model does not suffer from the problem of omitted variables and linearity assumption at 10% level of significance. So the model is stable for policy implication.

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

Test	F-Statistic	t-Statistic	Obs.*R-Square	Prob. Value
Breusch-Godfrey				
Serial Correlation				
LM Test	0668852	-	6,257174	0.5422
Heteroskedasticity Test				
Breusch-Pagan-Godfrey	0.540576	-	24.77605	0.8987
Jarque-Bera	0.832716	-	39	0.6594
Ramsey Stability Test	3.803595	1.950281	-	0.0870

4.8. Granger Causality Tests

The results in table 8 show that there is unidirectional causality between COSB_M2 and the following variables: PSC_GDP, FD and LR. These indicate that the currency outside the banking industry affected the private sector credit, financial deepening and lending rate during the period of the study. This is manifested by the negative correlation of COSB_M2, FD and LR. This indicates that excess money outside banking industry causes shallow of financial market and high lending rate, which discouraged borrowings. Similarly, there is one way causality between SR and COSB_M2, which also displayed by the negative correlation between COSB_M2 and SR. Also, there is a unidirectional causality between SR and PSC_GDP. This indicates that low savings rate in Nigeria discourages savings habit and this is obvious by the negative correlation of SR and PSC_GDP. In addition, FD granger cause LR. This indicates that shallow financial market as a result of scarce funds increases lending rate. This is apparent by the negative correlation between FD and LR. More so, LR granger cause SR. This is inconsistence with the theoretical expectation because high savings rate reduces financial intermediation margin and discourages lending. Non granger causality of all these components with economic growth, most especially FD requires concern. The policy implication is that all the findings must be thoroughly addressed.

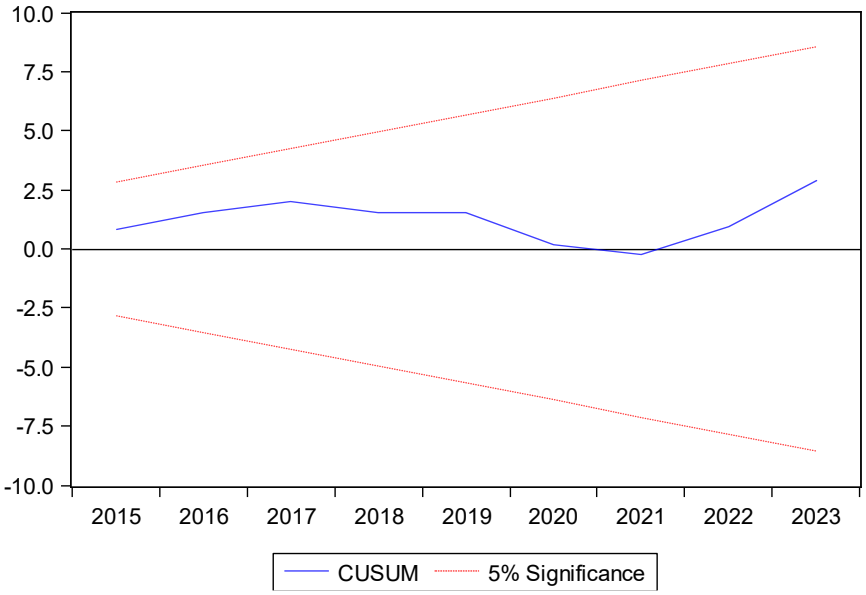
Table 8: Granger Causality Tests Results

Null Hypothesis	Obs	F-Statistic	Prob.
COSB_M2 does not Granger Cause PSC_GDP	41	5.33815	0.0093
SR does not Granger Cause PSC_GDP	41	3.32897	0.0471
COSB_M2 does not Granger Cause FD	41	5.42107	0.0087
COSB_M2 does not Granger Cause LR	41	3.26777	0.0496
SR does not Granger Cause COSB_M2	41	12.2044	0 0000
FD does not Granger Cause LR	41	3.75782	0.0329
LR does not Granger Cause SR	41	6.00983	0.0056

4.9. CUSUM Tests

The CUSUM plot in Figure 1 below showed that the curve for the model is within 5%, therefore the obtained model is considered stable and the results are reliable.

Figure 1: CUSUM



5. CONCLUSION AND RECOMMENDATIONS

5.1. Conclusion

The study examined the impact of financial intermediation on economic growth in Nigeria. The overall results show that both the short and long-run relationships exist between financial intermediation and economic growth in Nigeria. While efforts to enhance financial intermediation have been made, financial deepening does not granger cause economic growth. Also, in the short run, the currency outside the banking industry (COSB_M2) positively impacted on economic growth. All these raise concerns. The positive impact of private sector credit (PSC_GDP) on economic growth confirms the influence of real sector as the engine of economic growth. This demands for more credits to be channeled into the real sector of the economy with proper monitoring of lending rate, which has to be moderate. In conclusion there is a need for proper development of financial system that can promote effective financial intermediation, which can encourage higher level of savings and investment and enhance the efficiency of capital accumulation. Our findings have some important implications for the current debate on financial intermediation strategies with particular reference to developing countries

5.2. Recommendations

In line with the study discussions and outcomes the followings recommends are made:

- Improvement and extension of credit facilities to the private sector of the economy.
- Moderate lending rate that will encourage producers to borrow more for the expansion of their production capacity.
- Reasonable savings rate that will promote savings habit.
- Reduction in the high volumes of funds outside the banking industry.

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