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Research Article

Assessment of Financial Intermediation and Economic Growth in Nigeria (1980 -2015)

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Abstract: This paper is on the assessment of financial intermediation and economic growth in Nigeria from 1980 to 2015. Specifically, this study evaluated the impact of financial intermediation and direction of causality between financial intermediation and economic growth in Nigeria from 1980 to 2015. To achieve the objectives, the study employed the unit root test, the Auto Regressive Distributed Lag Model (ARDL) and the Granger Causality test technique. The results of the unit root test showed that the variables are integrated at I~ (0) and I~ (1). The result of the Auto Regressive Distributed Lag Model (ARDL) analysis shows that financial intermediation is a positive and a significant determinant of economic growth in Nigeria. This partly explains why the private sector is indeed a good driver of economic growth. This paper recommends that the government should implement policies that will aid easy access to credit from financial institutions by the people in the society for investment purposes.
Keywords: financial intermediation, economic growth, unit root test, ARDL cointegration, bounds test, granger causality.

INTRODUCTION

In a developing economy such as the Nigerian economy, financial intermediation plays a crucial role in economic development. This is because financial service providers like banks pull funds from the public as deposits and transform them into loanable funds [1]. This implies that the banking system promotes economic growth through the process of intermediation by efficiently allocating funds mobilized from the surplus economic units to deficits units. This function therefore suggests that financial intermediation could serve as a catalyst for economic growth and development [2]. For financial intermediation to aid development, there must be an efficient financial system. This means that financial intermediation mitigates the costs associated with information acquisition and the conduct of financial transactions through the level of lending rate and credit to private sector in accelerating development in an economy. According to Williamson [3], the importance of financial intermediation derives from the special role it plays in making agreeable arrangements that link borrowers and lenders more efficiently than if these agents had to trade directly with each other. Thus, financial intermediation is a necessity for economic growth in Nigeria since it encourages investment, without which economic growth and development will not be, attained [4].

The concept of financial intermediation can be directly viewed at macro-level and the micro-level. At the macro-level, some argued that financial intermediation facilitate the efficiency of the financial system [5, 6]. Others also argued that it is passive in nature and serves as a conduit through which monetary policy is effected [7]. At the micro-level, studies have shown that financial intermediation induces the restructuring and liquidation of distressed enterprise [8], as well as wipe off the ineffectiveness associated with the absence of inter-temporal smoothing [9].

The contentious issues in the study of financial intermediation and economic growth especially in time series studies is the direction of causality. According to Patrick [10] finance can bring about economic growth through what he terms the "supply-leading" hypothesis; and also economic growth can induce financial development in which he termed the "demand

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following" hypothesis. Since the formulation of these hypotheses, empirical conclusions drawn on the direction of causality between financial development and economic growth have remained inconclusive. Some studies showed that financial intermediation drives economic growth [11] and others have contrary views that economic growth fuses financial intermediation. However, there are studies, which have different views that a bi-directional causality exists between financial intermediation and economic growth [12].

Evidence from cross-sectional studies, particularly the study by King and Levine [13], indicates that financial development does not only have a positive impact on economic growth but also serves as a good *"predictor of long-run growth over the next 10 to 30 years".* Therefore, it is quite evident that carrying out an exclusive investigation of the relationship between financial development and economic growth for a country like Nigeria instead of cross sectional countries provides better advantage because findings from such a study easily reflect the prevailing economic conditions and institutional structures [14]. It is from the above evidence, that this study will examine empirically the impact of financial intermediation on economic growth in Nigeria, by using Nigeria data which would provide a clearer view that may help policy makers in taking decisions for this country.

Statement of Problem

In Nigeria, despite the reform that has taken place in the financial sector the economic growth has been declining and fluctuating Without being strong enough to significantly reduce the prevailing level of poverty which is one of the goals of the Sustainable Development Goals (SDGs). The aftermaths of these are high level of unemployment, especially youth unemployment which is connected with the high level of social vices, violence and terrorism which the country is witnessing as well as high level of poverty. Also the failure of the financial sector to finance long term investment required in the real sector of the economy has also been the bane of the nation economic growth.

Inflation is another macroeconomic challenge that influences economic growth. It discourages investment and savings, and sometimes lead to shortages of goods as consumers begin to hoard out of anxiety that price may increase in future. A high rate of inflation worsens the efficiency of financial sector through financial market frictions and slows down the economic performance.

The way in which deposit money banks restrict the expansion of credit to investors also constitutes problems in the activities of financial intermediation, thus leading to financial instability. An unstable financial sector environment hinders long-term planning for sustainable growth and development.

It is against this backdrop that the need to investigate the nexus between financial intermediation and economic growth in Nigeria from 1980, through the financial reforms years to 2015 becomes essential.

OBJECTIVES OF THE STUDY

- To ascertain the impact of financial intermediation on economic growth in Nigeria.
- To evaluate the direction of causality between financial intermediation and economic growth in Nigeria.

Review of Related Literature

The theoretical and empirical literature showing the link between financial intermediation and economic growth are succinctly reviewed.

THEORETICAL LITERATURE

The relationship between financial intermediation and economic growth has been associated with the following theories namely: the Stiglitz and Weiss theoretical model of [15], financial repression hypothesis, capital formation theory and endogenous growth model.

i. Theoretical Model of Stiglitz and Weiss [15]

These authors (Stiglitz and Weiss) developed a model of bank credit rationing, where some borrowers receive loans and others do not. They believe that the interest rate directly affects the quality of loans because of an adverse selection effect and moral hazard effect. They posited that the Banking industry in making loans is concerned about the interest rate they receive on a given bank credit and the riskiness of the credit. They stated that for a given loan rate, lenders earn a lower expected return on loans to borrowers with riskier projects than to good quality borrowers. The interest rate, a bank charges can affect the riskiness of the loans by neither sorting prospective borrowers (the adverse selection effect) and by affecting the actions of borrowers (the moral hazard effect).

Finally, they opined that the inherent dismal effect of adverse selection problem and moral hazard can be averted. Banks thus have an incentive in some circumstances to ration credit rather than to risk demand for loanable fund. In summary, banks are "special" where they provide credit to borrowers on terms which those borrowers would not otherwise be able to obtain. Because of the existence of economies of scale in loan market, borrowers may have difficulties obtaining funding from non-bank sources and so are more reliant on bank lending. Adverse shocks to the information structure (information asymmetry) or to banks' ability to lend, may all impact on firm's and individuals' access to credit and hence to investment and output.

ii. The Financial Repression Hypothesis

Ronald Mckinnon [16] and Edward Shaw [17] are the intercessors of this hypothesis. The hypothesis therefore states that, the act of imposing control on the financial system discourages saving, distorts the flow of credit, and hence intercept and destroy impulse to economic growth. Financial repression thus arises when government policies distort the efficient functioning of the domestic financial markets by keeping returns of financial assets low and shifting the allocation of credit from the market to government, thereby repressing the economy [18]. The crucial role of financial sector is its ability to channel savings from household to investors (that is financial intermediation). Mckinnon [16] pointed to the interventionist policies of Government of developing countries as a reason for the inability of developing countries to attain real growth. These interventions according to him, take the form of ceiling on deposits and high reserve requirements on deposits which reduces the attractiveness of holding claims on the domestic financial system. The repercussions of financial repression, however, are low saving, misallocation of available loanable funds and fragmentation of the economy of the fewer developing countries [19]. In Shaw's analysis, when financial intermediation is constrained by financial repression, investors resort to informal credit market. Shaw maintains that financial liberalization will lead to a better integration of formal and informal credit markets, which could channel funds more efficiently between savers and investors. The cost of financial intermediation may decrease due to economics of scale in lending, lower information costs and reduction in risk through diversification.

Hence, the Mckinnon-Shaw hypothesis suggests that a high real interest rate could increase savings and banks credit. Focusing on the role of deposit as a source for financial institutions, Shaw argued that high deposit rates in less developed countries (LDC's) may stimulate investment spending by allowing the supply of credit to expand in line with the financing needs of the productive sectors of the economy. More so, the McKinnon- Shaw hypothesis holds that financial repression distorts the domestic financial markets through a variety of measures. These measures damage the economy of many LDC's by reducing savings and encouraging investment in unproductive activities. It is then recommended that positive real rates of interest should be established on loans and deposits by eliminating interest rates and credit ceiling, stopping selective allocation of credit and lowering reserve requirements. The true scarcity price of capital could then be seen by savers and investors, leading to improved locative efficiency and higher output growth. The McKinnon – Shaw hypothesis suggests that the level of financial intermediation should be closely related to the prevailing level of interest rate, the reason being that the level of real interest rates, when held below their normal competitive levels, indicates the extent of financial intermediation thereby increasing the supply of credit to the private sector. This in turn, stimulates investment and economic growth [20].

iii. The Capital Formation Theory

Capital formation theories are attributed and associated with classical writers like Adam Smith [21] and Duddy ,Tri & Sri [22]. According to these theories, capital formation could be achieved if the society does not apply the whole of its current productive activity to the needs and desires of immediate consumption but direct a part of it to the making of capital goods that can so greatly increase the efficiency of productive efforts. Classical economics view economic growth as being largely influenced by the ability of the people to save more and invest more in an economy. Saving, according to this theory can be formed through less expenditure and more production. Capital formation is thus an important determinacy of economic growth. More so, the classical/neoclassical theories of economic growth posit that economic growth can only take place with increase in productivity. Saving and capital accumulation play a significant role in ensuring tremendous increase in productivity. Financial intermediation, thus, brings about economic growth through improvement in saving mobilization and subsequent investment of such savings to accelerate economic growth.

Classical economists have also stressed the combination of productivity and thrift as the two principal determinants of interest rates. Neoclassical economists, however, while recognizing the importance of production and thrift, emphasize the desire for a certain pattern of consumption and savings over time. Thus, borrowing to increase current consumption was also seen as a determinant of the demand for loanable funds, and therefore increase the level of interest rate [23].

The link between saving and investment, via financial intermediation is important because it holds the positive correlation between savings and growth. If capital accumulation is indeed the engine of growth, understanding the interaction between savings and investment is crucial for assessing the validity of the traditional belief that increasing savings is the surest way to promote growth [24]. Therefore, the best medium for understanding this interrelationship is financial intermediation.

iv. Endogenous Growth Theory

This growth theory encompasses a diverse body of theoretical and empirical work that emerged in the 1980s. It emphasized that economic growth was an endogenous outcome of an economic system not the result of forces that impinged from outside. Its main idea was that the proximate causes of economic growth were the effort to economize the accumulation of

knowledge and the accumulation of capital. The theory suits the real world perfectly well and has important policy implications. This is because it traces the rate of growth of output per capita to two main sources; savings and efficiency. The theory introduced human capital into the model and predicted that savings rate affected growth rate as well as final income levels. It also predicted that capital accumulation could encourage long-term growth while economic policies speed of growth, even in the long term.

Recent theoretical work has incorporated the role of financial factors in models of this endogenous growth in an attempt to analyse formally the interactions between financial markets and long-run economic growth. Greenwood and Jovanovic [25] present a model in which both financial intermediation and growth are endogenous. They showed that there is a positive two-way causal relationship between economic growth and financial development. On one hand, the process of growth stimulates higher participation in financial markets thereby facilitating the creation and expansion of financial institution. On the other hand, financial institutions, by collecting and analysing information undertaken more efficiently and hence stimulate investment and growth.

Empirical Literature on Financial Intermediation and Economic Growth

Levine, Loayza, and Beck [26] changed the direction of the argument on the relationship between financial intermediation and economic growth. This study aims at establishing the impact of the endogenous component of financial intermediation on economic growth. A more robust methodology which consists of two models and two estimation techniques was employed. The first model which refers economic growth as function of finance indicators and a vector of economic growth determinants was estimated using the pure cross-sectional estimation technique. The second model is a dynamic panel model and is analyzed using the Generalized Methods of Moments (GMM). Both tests agree to the strong positive impact of the endogenous components of financial intermediation on economic growth. They however, stated that countries with high priority for creditors' protection, strong will to enforce contracts, and unambiguous accounting standards have the potential for a developed financial intermediation.

Hao [27] sought to establish the relationship between financial intermediation and economic growth using a country-specific data from China. The study focused on the post – 1978 reform period, using provincial data covering twenty eight provinces over the period of 1985-1999. The study which employed the use of a linear model expresses economic growth as a function of lagged economic growth, financial development indicator (banks savings, and loan-budget ratio) as well as a set of traditional growth determinants (population growth, education, and infrastructural development). The study uses the one-step parameter estimate for the generalized method of moment (GMM) estimation and find out that financial intermediation has a causal effect and positive impact on growth, the channels of household's savings mobilization and the substitution of loans for state budget appropriations. Thus, the study reveals that bank, as an indicator of financial development is significant but negatively related to growth. This was attributed to inefficiency in loan distribution and self-financing ability of the provincial governments.

Acha [28] examined the role banks play in economic growth. It used bank deposits and bank credit to the private sector as measures for bank intermediation and real gross domestic product (RGDP) to proxy economic growth. The Regression of RGDP as dependent variable against bank deposit and credit confirmed that banks through their intermediation function contribute to economic growth in Nigeria.

Acha [29] reported that banks through their financial intermediation activities (savings mobilization and lending) cause economic growth. This is the theme on which this particular study was based. Data on gross domestic product (GDP), credit to private sector (CPS) and total bank deposit (DPS) were gotten from Central Bank of Nigeria (CBN) statistical bulletin and used to compute savings ratio (SR) and credit ratio (CPR). A time frame of 1980-2008 was adopted. The hypotheses that no causal relationship exist between savings mobilization and credit on one hand and economic growth on the other were tested. The Granger Causality Test was used to test these hypotheses. It could not establish any significant causal relationship between banks' savings/credit and economic growth. The absence of such a relationship was concluded to be due to the economies developmental stage characterized by infrastructural decay and the inefficient utilization of mobilized deposits.

Christopher and Unyime [30] investigated the impact of financial intermediation on economic growth in Nigeria from 1970- 2013. The Auto-Regressive Distributed Lag Models and Non-Granger Causality (Toda Yamamoto Granger Causality) test were employed. It was concluded that credit to private sector and financial savings have positive impacts on economic growth in both short runs and long-run. The causality test reveals a bi-directional relationship between inflation and economic growth while a unidirectional causality moves from financial savings to economic growth. It was recommended among others that financial institutions, either promoted by government or the private sector, should offer more credits to the private sector with bearable interest rates.

Odedokun [31], in his study, emphasized that even though financial intermediation raises economic

growth, the growth-promoting effects are more pronounced in the low-income countries. Using a cross-country data analysis of 71 less developed countries (LDCs) for the period 1960 to 1980, the study expanded the neo-classical one-sector aggregate production function with financial development as an input. Two models were deduced with economic growth as the dependent variable, while the independent variables include; labor force growth, investment-GDP ratio, real export growth, and financial depth. The models were estimated using the ordinary least squares (OLS) technique, as well as the Generalized Least Squares (GLS) technique. Besides the strong positive relationship that manifested between financial intermediation and economic growth, the study made known that the impact of financial intermediation is at par with export growth and capital formation. However, its impact on economic growth is superior to labor force growth.

Shittu [32] investigated the impact of financial intermediation on economic growth in Nigeria. Time series data from 1970 to 2010 were used and were gathered from the CBN publications. For the analysis, the unit root test and co- integration test were done accordingly and the error correction model was analyzed using the Engle-Granger technique. The result of the study shows that financial intermediation has a significant impact on economic growth in Nigeria.

Ebhodaghe [33] noted that financial intermediation provides a varied menu of financial assets, particularly suited to the needs/desires of the surplus units and encourages investment by providing a variety of available sources of funds for deficit units.

McCaig and Stengos [34] brought forth more instrumental variables with a view to set a more robust empirical relationship between financial intermediation and economic growth. The study uses a cross country analysis of 71 countries for the period 1960 to 1995. A linear regression model, which refers economic growth as a function of financial intermediation and a set of conditioning variables, was estimated using the Generalized Method of Moments (GMM). While the instrumental variable introduced included; religious composition, years of independence, latitude, settler mortality, and ethnic fractionalization, three conditioning variable were used. These involves; simple sets (initial GDP and level of education), the policy set (simple set, government size, inflation, black market premium, and ethnic diversity), and the full set (simple set, policy set, number of revolution/ coup, number of assassination per 1000 inhabitants, and trade openness). This study also agrees to the argument that a positive relationship exist between financial intermediation and economic growth. However, it stresses that this will be true if financial intermediation is measured by liquid liabilities and private credit as a ratio of GDP, while it will be weaker if it is measured using the Commercial-Central Bank ratio.

King and Levine [35] carried out a pooled cross-country time-series survey of eighty countries for the period 1960 -1989 with a view to find out the relationship between financial development and economic growth. Four variables were developed and used as measures for financial development. These include; financial depth, relative importance of specific financial institution, proportion of credit allocated to the private sector, and the ratio of claims on the non-financial private sector. On the other hand, the average long-run real per capital GDP, the rate of physical capital accumulation, the ratio of domestic investment to GDP, and residual measure of improvement in the efficiency of physical capital allocation were used as a measures for economic growth. Using the cross-country regression and some other statistical test, this study found out that the four indicators of financial development were positively and statistically related to growth, and other indicators of economic growth.

Odhiambo [36] seeks to investigate the dynamic causal relationship between financial depth and economic growth in Kenya. The study focuses between the periods of 1969 to 2005, and includes savings as an intermitting variable. To achieve this task, this study adopted two econometric techniques. The dynamic tri variant granger causality test and the error correction model (ECM Modeling). This study draws to a conclusion that one-way direction causality, from economic growth to finance exist in Kenya. In other words, finance plays a minor role in the attainment of economic growth in Kenya.

Olomola [37] had examined the empirical relationship between financial deepening and real private sector investment in Nigeria for the period 1960-96 using OLS technique. On finding a positive and significant relationship between the two variables used, he draws to a conclusion that improved financial intermediation would help bridge the gap between domestic savings and investment in Nigeria. Similar conclusions have been reached by Obadan and Odusola [38].

Ajakaiye and Odusola [39] had also examined the empirical determinants of financial savings in Nigeria, using OLS technique for the period 1980-1993. Their results show a positive relationship between savings and real deposit rate during the period of financial regulation and a negative one for the deregulation era. Savings were inversely related to exchange rate in conformity with theory. Income growth and foreign savings coefficients, contrary to expectations, were positive and significant as well.

Essien and Onwioduoikit [40] also examined the effects of financial liberalization on savings

mobilization in Nigeria for 1987- 1993 using quarterly data and error correction model. They found out that there was no long run equilibrium relation between saving and its determinants.

Adam [41] investigated the empirical relation between financial intermediation and economic growth in Nigeria for the period 1970-1998. By adding some vital variables (per capita income, population per bank branch, private sector credit etc.), and employing the two-stage-least-squares technique for analysis, he found out that GDP growth is positively related to private sector credit, public sector credit and investment. Private sector credit has a higher magnitude on growth because production of private goods and services rests with the private sector. The results also show that there exist a positive link between real deposit rate and deposit ratio, and its positive link is that real deposit interest rate is the actual rate for measuring deposit mobilization. His results support the view that financial liberalization promotes the efficiency of the financial intermediation process.

METHODOLOGY

This section will establish the method that is considered suitable for the purpose of achieving the set objectives of this study.

Model Specification

The fundamental theories of growth are quite explicit on the roles of capital, labour, and technological progress. However, the Schumpeterian growth models were more explicit on the relationship between finance and growth. Carlin and Soskice [42] gave a brief explanation of these models as follows;

$$x = \gamma * \delta * q \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (1)$$

Where technological progress (*x)* is defined as a function of research and development (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.

$$q = q\{\gamma, \delta, r, comp, ppr, \varepsilon\} \quad \ldots\ldots\ldots\ldots \quad (2)$$

From the equation 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. Ɛ depicts all other institutional features of the economy not cited in the equation. From equation 1 and 2, the "Schumpeter relationship" can be derived as;

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

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.

Following a detailed review of previous studies and improving upon the theoretical postulate described in equation three (3) above, economic growth Y_t is expressed as a function of financial intermediation, F_t, and a set of control variable, Z_t. as amplified in the works of d King & Levine [35] and Shittu [32]. This is expressed as below;

$$Y_t = f\{F_t, Z_t\} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (4)$$

The equation above will be expanded to accommodate the indicator of financial intermediation such as ratio of private sector credit to GDP, as well as set of growth determinant, such as money supply, savings and lending rate. Thus,

$$Y_t = \beta 0 + \beta_i F_t + \delta_j Z_t + Ui_t \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (5)$$

Where;

Y_t = endogeneous variable
F_t = is the financial intermediation indicator
Z_t = is the set of growth determinants.
β_0 - δ = the parameters
i = 1, 2,3……..I
j= 1, 2, 3…….J
t= time dimension, U = the residual term.

However, to examine the impact of financial intermediation on economic growth in Nigeria, the study used the following multivariate model below:

$$GDPGR = F(CPSY, M2Y, LR, SAV) \quad \ldots\ldots\ldots \quad (6)$$
$$(+) \quad (+) \quad (-) \quad (+)$$

Where:

GDPGR= real growth rate of gross domestic product (proxy for economic growth)
CPSY= credit to private sector ratio to GDP (proxy for financial intermediation)
M2Y = money supply (proxy by broad money supply as ratio to nominal GDP)
IR= interest rate (proxy by prime lending rate)
SAV= savings (proxy by ratio of savings to GDP)

For econometrics analysis, the functional equation above is been transformed into a linear function as;

$$GDPGR = \beta_0 + \beta_1 CPSY_t + \beta_2 M2Y_t + \beta_3 LR_t + \beta_4 SAV_t + U_t \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (7)$$

It is expected that credit given to the private sector will accelerate investment which will in turn increase the growth of the economy.

RESULTS AND DISCUSSION OF FINDINGS

This section presents and analyses the empirical results of this paper.

Unit Root Tests

We begin this analysis by examining the time properties of the data. This is done in order to avoid spurious regression. The orders of integration of the variables are examined using the Augmented Dickey-Fuller (ADF) and the Phillip-Perron (PP) test statistics. The result of this test is presented in Table-1.

Table-1: Unit Root Test

Variable	Augmented Dickey Fuller (ADF) Test		Phillip Peron (PP) Test		Order of Integration
	Levels	First Difference	Levels	First Difference	
GDPGR	-5.345363		-5.546849		I~ (0)
CPSY	-2.880874	-5.072177	-2.528138	-7.231341	I~ (1)
M2Y	-3.317008	-5.250069	-2.549504	-7.914584	I~ (1)
LR	-3.107012	-6.069631	-2.948496	-9.801782	I~ (1)
SAV	-4.541715		-4.506472		I~ (0)

*Notes: The ADF and PPT critical value at 5% level is -3.*548490*. All the series had intercepts with trends respectively. The critical values are based on Mckinnon criterion.*

The result shows that the two tests are consistent, suggesting that economic growth (GDPGR) and savings (SAV) are stationary at level which implies that it is integrated of order zero I~ (0), while all other variables: broad money supply to GDP (M2Y), credit to private sector to GDP (CPSY) and lending rate (LR) possess unit roots and became stationary only after we transformed them to their first differences, meaning they are integrated of order one I~ (1). However, the variables under the study are integrated at either I(0) or I(1). Thus, in the absent of I(2), the findings satisfies our choice of carrying out the Autoregressive Distributed Lag (ARDL - Bounds) testing approach to co-integration proposed by Pesaran *et al.*, [43].

Empirical Result

In order to precede with the ARDL bounds testing approach, the optimal lag length needs to be determined [43]. The appropriateness of lag order avoids the spuriousness of ARDL bounds testing approach to co-integration results. The results reported in Table-2 imply that the optimal lag order is 4 **(**four) based on the minimum value of AIC.

Table-2: VAR model optimal lag lengths check.

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-474.1054	NA	6953840.	29.94409	30.17311*	30.02000
1	-437.8183	58.96657*	3512034.*	29.23864	30.61277	29.69413*
2	-412.5603	33.15110	3909900.	29.22252	31.74175	30.05757
3	-394.8871	17.67325	8746093.	29.68044	33.34478	30.89507
4	-349.4044	31.26936	5445885.	28.40027*	33.20972	29.99447

Note: * Indicates lag order selected by the criterion; LR: sequential modified LR test statistic (each test at 5% level); FPE: Final Prediction Error; AIC: Akaike Information Criterion; SC: Schwarz Information Criterion; HQ: Hannan-Quinn Information Criterion.

F-Bound Test Co-integration

The ARDL bounds test is based on the assumption that the variables are I(0) or I(1) as shown above in the unit root table. The results of the ARDL bounds testing approach are presented in Table-3 indicating that the computed F-statistics for real GDPGR, Credit to private sector, Money supply, Lending rate and Savings was (7.16). The f- bound test statistics of (7.16) exceeds upper critical bound (4.01) at 5% level of significance. This statistic supports the fact that co-integrating relationship exists and confirms the stable long-run relationship between the variables. This implies that the null hypothesis of no co-integration among the variables is rejected.

Table-3: ARDL Bounds Test for the Existence of Co-integration

Model	F Statistics	5% Critical value		Decision
Equation 1	**7.16**	**I(0)**	**I(1)**	**Co- integration**
		2.86	**4.01**	

Diagnostic Tests

The Diagnostic tests for serial correlation, Heteroskedasticity and normality were conducted, and the results are presented in Table-4. The result for serial correlation shows that errors in the equation are not serially correlated. The test for Heteroskedasticity indicated that there were equal spreads in variance in the equations of the model with a probability value of 0.6257. The normality test of the equation in the model shows that the equation allows the normal distribution. The Jarque – Bera statistics of 0.808267 with the probability values of 0.667555 shows that the variables in the model are normally distributed.

Table-4: Summary of Diagnostic Tests

Test	R^2 Statistics	Probability Value
Breusch-Godfrey LM test for Serial correlation	3.751593	0.1532
White Heteroskedasticity	11.75836	0.6257
Normality Test	0.808267	0.667555

ARDL Long-run Co-integration

Having found a long run relationship, the study applied the ARDL method to estimate the long run coefficients for the model. Table-6 reports the estimated regression coefficients for the long-run relationship where economic growth is the dependent variable.

Table-5: ARDL Long-run Co-integration

Variables	Coefficient	Std. error	T- Statistic	Probability	A priori Signs
LOG(CPSY)	11.179444	2.948000	3.792212	0.0015	(+)
LR	-0.136135	0.149823	-0.908640	0.0362	(-)
LOG(SAV)	0.161222	1.067141	0.151078	0.0417	(+)
LOG(M2Y)	-3.378144	3.492746	-0.967189	0.3470	(+)
C	-17.261810	11.799730	-1.462899	0.1617	
	R-squared = 0.746756 Adj R-Squared = 0.538201 F-Statistics = 3.58 F-Prob = 0.007212				

The long run ARDL model results reported in Table 6 clearly show that the credit to private sector (CPSY) as a measure of financial intermediation has a positive long run impact on economic growth in Nigeria with a coefficient of 11.179444; it conforms to the a priori expectation and was statistically significant at 1% level. This means that an increase in credit to the private sector leads to an increase in economic growth in the Nigeria. This shows that credits (loan) given to the private sectors are normally used productively. Even when they are used for consumption purposes, they still indirectly influence economic growth. This partly explains why the private sector is indeed a good driver of economic growth. This result is in support of the findings of Christopher and Unyime [30].

Lending rate was negatively related to economic growth with a coefficient of -0.136135. It therefore implies that in the long run, a 1% increase in interest rate decreases the growth of the economy by 0.13%. High lending rate is known to discourage investors from borrowing funds for investment purposes in the economy and at such, has affected growth negatively. The relationship between lending rate and economic growth was significant at 5% level of significance. This result agrees to the findings of Mohanty, Deepak, Chakraborty and Gangadharan [44] who highlighted the presence of inverse relationship between growth and lending rate in India.

The relationship between savings and economic growth was positively related with a coefficient of 0.161222 in the long run. This conforms to the a priori sign and was statistically significant 5%. This implies that a rise in savings in the economy would affect growth positively. It thus imply that savings creates capital formation which further leads to technical innovation and progress which helps with the economies of large- scale production and increase specialization, which help to accelerate the productivity of labor, which further results to an increase in economic growth. This agrees with the findings of Nicholas and Odhiambo [45].

However, money supply is negatively related to economic growth with a coefficient of -3.378144. It contradicts the a priori expectation and was not statistically significant. This means that an increase in money supply leads to a decrease in economic growth by 3.37% in Nigeria. Explanation for this could be that the money supplied is not fully spent on goods and services that will boost the growth of the economy but rather used to pay off foreign debt.

Short run ARDL Co-integration

The ECM results are presented in Table-6 below. The results of the analysis showed that the lag of the dependent variable real GDP growth rate (GDPGR) is also included in model to capture the feedback effect of previous growth performance on current level of economic growth. Our empirical evidence reveals that

the one – year lagged coefficient of economic growth showed positive effect on economic growth in current period. This implies that improved growth policies and growth performance in previous periods will enhance economic growth in current period in Nigeria. This confirms one of the theoretical predictions of business cycle that growth or recession has endogenous tendencies to intensify it-self.

Table-6: Short-run ARDL Co-integration

	Dependent Variable GDPGR			
Variables	Coefficient	Std. error	T- Statistic	Probability
D(GDPGR(-1)	0.125753	0.173080	0.726559	0.4774
DLOG(CPSY)	8.949879	3.535760	2.531246	0.1215
DLOG(CPSY(-1))	8.641036	2.990877	2.889132	0.0102
D(LR)	-0.079444	0.116646	-0.681070	0.0480
D(LR(-1))	0.196277	0.148771	1.319325	0.5050
D(LR(-2))	0.282851	0.132727	2.131070	0.2046
DLOG(SAV)	0.140948	0.943880	0.149328	0.8831
DLOG(M2Y)	-9.476596	4.067363	-2.329912	0.0324
DLOG(M2Y(-1))	7.207786	4.252346	1.695014	0.1083
DLOG(M2Y(-2))	1.996328	3.135904	0.636604	0.5329
DLOG(M2Y(-3))	-5.630549	2.523112	-2.231589	0.0394
CointEq(-1)	-0.874247	0.173080	-5.051105	0.0001

The results of the short run analysis indicated that there is hypothetical lag relationship between credit to private sector and growth, empirical result from this study showed that only the first period lag (-1) of variable is positively related to growth and it is statistically significant. This possibly maybe due to the fact that many investments to which credits (loans) are ploughed have long gestation period, after which potential businessmen would have incentive to borrow and invest. The coefficient of lending rate is -0.079444. This coefficient is statistically significant at 5% level. This means that an increase in lending rate leads to a decrease in economic growth in the short run. Similarly, the third period lag (-3) of money supply is negatively related to economic growth with a coefficient of -5.630549. This contradict the a priori expectation but statistically significant by 5%. This means that an increase in money supply leads to a decrease in economic growth by 5.63% in Nigeria. However, the coefficient of savings is 0.140948. The coefficient conforms to the a priori but was not statistically significant. This means that an increase in savings will lead to an increase in economic growth by 0.14% in Nigeria in the short run. Finally, the error correction (ECM(-1)) coefficient estimated at (-0.874247) is highly significant at 1% level and has the correct sign indicating a high speed of convergence to equilibrium. The results show that any change in the short-run towards long-run is corrected by 87% each year that is, Nearly 87%of any disequilibrium between economic growth(GDPGR) and other variables is corrected within one year.

Stability Test

It is ideal to investigate the stability of ARDL model. For this purpose, we have checked the stability of the model parameters using both cumulative sum of recursive residuals (CUSUM) and the cumulative sum of squares of recursive residuals (CUSUMSQ) test procedures. CUSUM and (CUSUMSQ) are plotted against the break points. The plot of the CUSUM and (CUSUMSQ) are obtained from a recursive estimation of the model.

The graph (Figure 1 & 2) below depicts the results for CUSUM and (CUSUMSQ) test. The results indicate stability in the coefficients of the model, because the plots of the CUSUM statistic fall inside the critical bounds of 5% confidence interval of parameter stability.

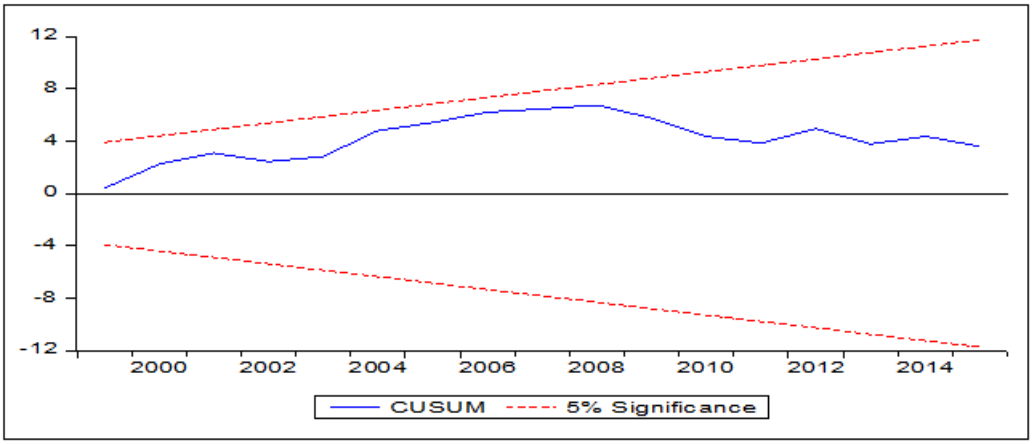

Fig-1: Cumulative Sum of Recursive Residuals (CUSUM) Test

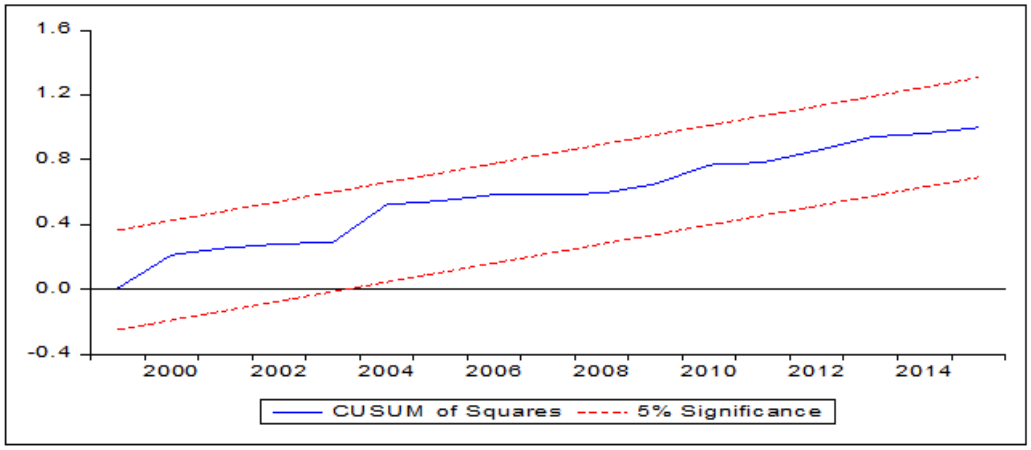

Fig-2: Cumulative Sum of Squares of Recursive Residuals (CUSUMSQ)

The Granger Causality Test for Economic Growth

The result of the granger causality test is presented below excluding the ECM values since our main variables of interest here are financial intermediation (CPSY) and economic growth (GDPGR). The causality test results from Table-7 suggest a- unidirectional causation between financial intermediation (CPSY) and Economic Growth (GDPGR) that is financial intermediation causes economic growth without any significant causality in the relation. Thus, we could represent this relationship as (CPSY→GDPGR). The probability of the F statistics is significant at 1 percent using a two-tailed test. This is a clear indication of the relative positive impact of financial intermediation on the economic growth of Nigeria.

The finding is in support with the theoretical view of Gurley and Shaw [46] who believes that financial intermediaries cause economic growth. Thus, this evidence of unidirectional causality between financial intermediation and economic growth suggests that financial intermediation is necessary for enhancing economic growth in Nigeria.

Table-7: Granger causality Wald Test of GDPGR and CPSY

Null Hypothesis (Ho)	F-statistics	Df	P- Value	Conclusion
CPSY does not Granger Cause GDPGR	12.42118	2	0.0020	Reject H_0
GDPGR does not Granger Cause CPSY	0.562683	2	0.7548	Do not reject H_0

CONCLUSION AND RECOMMENDATIONS

This paper set out to investigate the impact of financial intermediation on economic growth in Nigeria using annual data spanning the period of 1980–2015. Following a detailed time series analysis, the finding from this paper revealed that financial intermediation has a positive impact on economic growth in Nigeria. Thus, the policy implication arising from the finding is that financial intermediation holds great potential for promoting economic growth in Nigeria. This implies that the banking sector which is the major source of credit to the private sector is an important channel of financial intermediation through which financial resources can be mobilized for productive investment.

Given the above, this paper recommends that the government should implement policies such as

market regulation that will aid easy access to credit from financial institution by the people in the society for investment purposes.

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