FINANCIAL INTERMEDIATION AND ECONOMIC GROWTH IN NIGERIA: A STUDY OF THE NEXUS

BY

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Abstract

The study examined the effects of financial intermediation on economic growth in Nigeria. Annual time series data covering 1970 to 2014 were used to analyze the long run and short run relationships between financial intermediation variables and economic growth using econometric techniques. The results of the unit root tests showed that the variables were integrated at I(0) and I(1). Using bound testing technique for cointegration, a stable long-run relationship was found between the financial intermediation variables and gross domestic product. Error correction coefficient was statistically significant. It was concluded that credit to private sector and savings have positive impacts on economic growth in both short run and long-run. However, money supply has a negative influence on economic growth. The causality tests revealed a bi-directional relationship between inflation and economic growth, while a unidirectional causality moves from savings to economic growth. It is recommended that the Central Bank of Nigeria (CBN) should make sure more credits are channeled to the real sector of the economy for effective production. Financial institutions, either government owned or private, should give more credits to the private sector at bearable interest rates. The Central Bank of Nigeria should ensure that the domestic credits provided by the banking sector are appropriately used; and credit facilities should not be restricted to the large-scale manufacturing industries; but it should also be extended to small and medium scale enterprises

Keywords: Economic Growth, Financial Intermediation, Bounds Testing, Granger Causality

Introduction

The roles of banks in the functioning of modern economies are vast and essential. According to Bencivenga and Smith (1991), the basic activities of banks are acceptance of deposits and lending to a large number of agents, holding of liquid reserves against unpredicted withdrawal demand, issuing of liabilities that are more liquid than their primary assets and eliminating or reducing the need for self financing of investments. In particular, by providing liquidity, banks permit risk-averse savers to hold bank deposits rather than liquid (but unproductive) assets. The funds obtained are then made available for investment in productive capital. This is intermediation role played by the banks. Financial intermediation refers to the art of mobilizing savings from the surplus units and channeling them into deficit units of the economy for productive investments. It is the art of channeling funds from savers to investors by mobilizing funds and ensuring efficient transformation of funds into productive capital formation. Banks play effective roles in the economic growth and development of a country. This role they perform excellently by helping to mobilize idle savings of the surplus unit (SU) for onward lending to the deficit units (DU), thus helping in the capital formation of a nation (Akpan, 2002; Ujah and Amaechi, 2005). Economic growth of a country is mainly driven by accumulation of capital and it can be conceptualized as sustained increase in income /output. Finance, on the other hand, has been identified as the underlying requirement for input factors in development, and regarded as an engine of growth in any economy (Ogiriki and Andabai, 2014).

Notably, financial intermediation influences economic growth by affecting the extent to which savings become available and allocated to investment opportunities that bring the highest return (Olomola,

1977). More so, the importance of financial intermediation results from the special role banks play in making contractual arrangements that link borrowers and lenders more efficiently than if these agents had to trade directly.

In an under banked economy like Nigeria where the financial markets are rudimentary, with a large size of financial intermediation taking place in the informal sector, savings seems not to be sensitive to the real interest rates, (Adebiyi, 2004). Given the main objective of financial reform in developing countries, which is to enhance financial deepening and intermediation by increasing savings mobilization and credit allocation for investment and growth purposes (Olomola, 1997), the Central Bank of Nigeria (CBN) has been trying hard to ensure that the financial sector in Nigeria plays it roles in the achievement of growth and development in Nigeria. Despite the efforts by the Central Bank of Nigeria (CBN) to ensure that the financial sector in Nigeria remains liquid with a view to competing effectively globally, the fear of systemic risk lingers, the supply of credit to investors is still very inadequate, while economic growth is somewhat sticky. There is also the problem of high lending rates which makes loan usually unattractive with a high tendency for subjectivity and biases in gaining easy access to funds. The problem of inadequate mobilization of funds is also evident, as the surplus saving units may not be able to save sufficient fund for deficit spending units to borrow. All these give room for inadequate financial intermediation in the country.

In view of these, this study seeks to examine how efficient the financial intermediation process affects Nigeria's growth performance. It also attempts to determine the direction of causality of financial intermediation variables on economic growth in Nigeria. Following the introduction, section two briefly discusses the literature. Section three gives stylized facts on financial intermediation indices in Nigeria. The fourth section examines the method of data analysis. Section five analyses the results, and discusses the findings, while section six concludes the paper.

2. Literature Review

The relationship between financial intermediation and economic growth has been associated with three main hypotheses namely: the Classical theory of Capital Formation, Financial Repression Hypothesis and the Endogenous Growth theory. We shall offer a brief discussion of each of the theories in turn.

i Capital Formation Theory

Basically, capital formation theories are attributed and associated with classical writers like Adam Smith (1776) and David Richardo (1817). 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.

In the classical economic parlance, economic growth is largely influenced by the ability of the people to save more and invest more in a country. Saving, according to this theory can be formed through less expenditure and more production. Capital formation is thus an important determinant 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 brings about economic growth through improvement in saving mobilization and promotion of efficient investment which eventually accelerate economic growth.

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ii Financial Repression Hypothesis

Mckinnon (1973) and Shaw (1973) are the advocates of the financial repression hypothesis. The hypothesis states that the imposition of control on the financial system discourages savings, distorts the flow of credits, and hence intercepts and destroys impulse to economic growth.

Financial repression 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 (Fry, 1973; Athukorala and Rajaturana, 1993). The crucial role of financial sector is its ability to transfer savings from households to investors (that is financial intermediation). Mckinnon (ibid) points 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 reduce the attractiveness of holding claims on the domestic financial system. Fry and Mason (1983) posit that financial repression includes all indiscriminate distortions of financial prices including interest rates and foreign exchange rates. The consequences of financial repression, however, are low saving, misallocation of available loanable funds and fragmentation of the economy of the less developed countries (Ikhide, 1990).

iii Endogenous Growth Theory

Endogenous growth theory embraces a diverse body of theoretical and empirical work that emerged in the 1980s. It emphasizes that economic growth is an endogenous outcome of an economic system, not the result of forces that impinge from outside. Its central idea is that the proximate causes of economic growth are the effort to economize, the accumulation of knowledge and the accumulation of capital. The theory fits 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 sustain long-term growth while economic policy accelerates growth, even in the long term.

2.1 Empirical Literature

Gurley and Shaw (1967) argued that the prevalence of financial institutions leads to specialization and division between savings and investments, which promote growth. Shaw (1973) examines the benefits of an efficient and well functioning financial system, and discovered that higher real deposit rates increase financial savings and expand the role of financial institutions in intermediating funds between surplus and deficit units.

McKinnon (1973) and Shaw (1973) argued that government controls should be dismantled so that the true scarcity price of capital can allocate funds to users, so as to improve savings mobilization, promote efficient investments and accelerate economic growth., They concluded that 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.

Hao (2006) 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 (28 provinces) over the period of fifteen years, 1985-1999. The study employed the linear model and expressed 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 used the one-step parameter estimate for the generalized method of moment (GMM) estimation and finds 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. However, the study revealed that bank, as an indicator of financial development, was significant but negatively related to growth. This

was attributed to inefficiency in loan distribution and self financing ability of the provincial governments.

Odhiambo (2008) examined the dynamic causal relationship between financial depth and economic growth in Kenya. The study focused on the period, 1969 to 2005, and included savings as an intermitting variable. To achieve this task, the study adopted two econometric techniques. The dynamic tri-variant granger causality test and the error correction model (ECM Modeling). This study concluded that one-way direction causality, from economic growth to finance, existed in Kenya. In other words, finance played a minor role in the attainment of economic growth in Kenya.

Acha (2011) investigated the role banks play in economic growth. He used bank deposits and bank credit to the private sector as variables 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. He recommended that banks should be encouraged to expand credit to the private sector.
Shittu (2012) sought to establish the impact of financial intermediation in Nigeria using time series data from 1970 to 2010. For analysis, the unit root test and the cointegration test were done and the model was estimated using the Engle-Granger technique. His results established that financial intermediation had a significant impact on economic growth in Nigeria.

Andrew and Osuji (2013) analyzed empirically the trends in Financial Intermediation and Output (GDP) in Nigeria from the banking crises period beginning from 1981 to 2011. They used the endogenous components of financial intermediation such as Demand Deposits (DD), Time/Savings deposits (T/Sav) and credits (Loans and Overdraft) as explanatory variables to predict the outcome of our dependent variable Output (GDP). The findings suggested that though there exist a positive growth relationship between financial intermediation and output in Nigeria, there also exist elements of negative short-run growth relationship, especially for the periods that suffered financial shocks resulting from the global financial crisis and perhaps, numerous bank failures.

Safiat (2013) investigated empirically the long-run and short-run dynamic linkages between financial development and economic growth in Sudan during the period 1970- 2011 using the autoregressive distributed lag (ARDL) approach to cointegration. The coefficients of credit to the private sector and the liquid liabilities had expected signs. The results indicated that government expenditure, inflation, money supply and trade openness exert negative effects, while investment, private credit and liquidity have positive effect on real per capita GDP. These findings was attributed to the weak capital base of Sudanese banks, the high cost of borrowing due to insufficient inter-bank competition, the risk of extending credit to sectors other than trade, which is considered by banks as unjustifiably high and the absence of an appropriate investment climate required to foster significant private investment and promote growth in the long run.

Tonye and Andabai (2014) also examined the relationship between financial intermediation and economic growth in Nigeria for the period of 1988-2013 using a vector error correction model. They found a long run equilibrium and positive relationship between financial intermediation and economic growth in Nigeria.

Chinweoke, Onydikachi, and Elizabeth (2014) adopted the Ordinary Least Squares (OLS) regression technique to explore the extent to which financial intermediation impacts on economic growth of Nigeria between the periods of 1992 – 2011. Real Gross Domestic Product, as proxy for economic growth was adopted as the dependent variable while the independent variables included total bank deposit and total

bank credit. The empirical results of the study showed that both total bank deposit and total bank credit exert a positive and significant impact on the economic growth of Nigeria. They recommended amongst others that banks should increase the interest paid to customers on the different bank accounts they operate to encourage more patronage from them and as well ensure that a major part of their credit is channeled to the productive sectors of the economy such as agriculture, industry and power.

Umar, Dayyabu, Gambo, Danlami, and Ahmad (2015) empirically investigated the short and long run relationship between financial intermediaries and economic growth in Nigeria using annual time series data covering 1970 to 2013. Cointegration was found between the series in the presence of a structural break in 1987, 1992 and 1996. Error correction coefficient was statistically significant. It was concluded that insurance premium and value of stock transaction had a positive impact on economic growth in both short run and long-run. However, causality test revealed a bi-directional relationship between bank credit and economic growth, while a unidirectional causality moved from economic growth to insurance premium and value of stock transactions.

3. Financial Intermediation Indices in Nigeria: Stylized Facts

Financial intermediation in Nigeria is characterized by the transfer of funds from the surplus sector to the deficit sector. Banks, which act as intermediaries, match the deposit requirements of the saver with the investment requirements of the borrower; in other words, banks acts as a pool, collecting savings of different sizes from different categories of savers and meeting the investment needs of the various types of investors with interest-yielding accounts. The overall economic effect is that financial intermediation leads to a better aggregation of savings and therefore helps in capital formation and investment in the economy. Table 1 shows the contribution of commercial banks in giving credits to the private sector. Commercial banks allocated over 530 billion naira to the private sector in 2000.

Table 1: Financial Intermediation Variables in Nigeria, 2000 – 2014

YEAR	TOTAL SAVINGS (₦BILLION)	CREDIT TO THE PRIVATE SECTOR[2] (₦BILLION)	MONEY SUPPLY[2] (₦BILLION)	COM. BANKS CREDIT TO THE PRIVATE SECTOR* (₦BILLION)
2000	385.19	530.37	878.46	429.3
2001	488.05	764.96	1,269.32	714.5
2002	592.09	930.49	1,505.96	805.3
2003	655.74	1,096.54	1,952.92	1,012.4
2004	797.52	1,421.66	2,131.82	1,278.6
2005	1,316.96	1,838.39	2,637.91	1,584.5
2006	1,739.64	2,290.62	3,797.91	2,096.3
2007	2,693.55	3,680.09	5,127.40	3,861.5
2008	4,118.17	6,941.38	8,008.20	6,051.7
2009	5,763.51	9,147.42	9,411.11	7,385.8

2010	5,954.26	10,157.02	11,034.94	6,359.6
2011	6,531.91	10,660.07	12,172.49	6,098.5
2012	8,062.90	14,649.28	13,895.39	7,034.1
2013	8,656.12	15,751.84	15,160.29	7923.1
2014	12,008.21	17,128.98	17,680.52	10,357.65

* Following the adoption of universal banking, commercial banks and merchant banks figures were merged from 2001.

Source: 1. CBN *Statistical Bulletin*, 2014.
2. Figures are annual averages.

Following the adoption of universal banking, credit to private sector in 2005 grossed over 1.8 trillion naira, and increased to over 10 trillion and 17 trillion naira respectively. The effect of savings on growth cannot be overemphasized as total savings in the economy increased from 385.19 billion naira in 2000 to 1,316.96 billion naira in 2005. It increased to 5,954.26 billion naira in 2010, and grossed 12,008.21 billion naira in 2014. Money supply increased from 878.46 billion naira in 2000 to 1,952.92 billion naira in 2003. It grew from 5,127.40 billion naira in 2007 to 11,034.94 billion naira and 17,680.52 billion naira in 2010 and 2014, respectively.

Table 2: Financial Intermediation Indicators – percentage (2000 – 2014)

Year	Broad Money (% of GDP)	Credit to Private Sector (% of GDP)	Total Savings (% of GDP)	Interest Rate (%)	Inflation Rate (%)
2000	22	10	29.4	17.98	6.9
2001	26.7	19.3	10.5	18.29	18.9
2002	21.8	19.5	7.6	24.4	12.9
2003	20.2	21.2	4.5	20.48	14
2004	18.3	11.7	10.6	19.15	15
2005	17.7	8.6	19.6	17.85	17.9
2006	19	4.9	38.9	17.26	8.5
2007	28.1	19.2	16.3	16.94	6.6
2008	37.8	26.6	25.6	15.14	15.1
2009	43.3	37.1	14.7	18.99	13.9

2010	21	18.8	25.5	17.59	11.8
2011	20.7	22.1	25.8	16.02	10.3
2012	21.2	20.8	33.3	16.79	12
2013	21.5	22.3	35.2	16.72	8
2014	20.2	14.5	31.7	16.55	4.7

Source: 1. CBN *Statistical Bulletin*, 2014.

2. *World Development Indicator*, 2015.

Table 2 displays the financial intermediation indices in Nigeria in percentages. Broad money supply, as at the year 2000 constituted 22 percent of gross domestic product of the year 2000. The percentage of broad money to gross domestic product decreased to 17.7% in 2005 and experienced a rise in 2008. Its yearly contributions to gross domestic products reached its peak in 2009 with 43.3 percent. Broad money supply's contribution to gross domestic product was low in 2014 compared to 2013 and 2012 figures. The ratio of credit to private sector to gross domestic product was 10 percent in 2000. Its percentage to gross domestic product increased for the next 3 years; after which it experienced a drastic fall (evident in 2005 and 2006 figures). The ratio of credit to private sector to gross domestic product increased to an all-time peak of 37.1 percent and has gradually experienced a decrease since then. Total savings ratio to gross domestic product started to increase steadily since 2004 in which it assumed 10.6 percent. Thence, it increased from 19.6 percent in 2005 to 25.5 percent in 2010, and thereafter to 31.7 in 2014. Inflation rate has shown decreasing trends between 2010 and 2014.

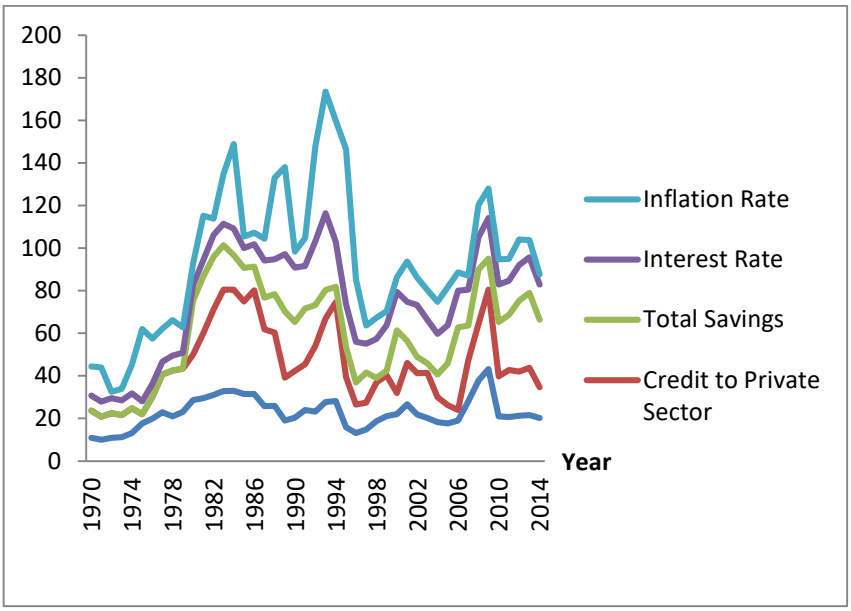


Figure 1: Trends in Financial Intermediation Indices in Nigeria
Source: World Development Index Database, 2014

4. Model Specification and Estimation

In order to examine the effects of financial intermediation on economic growth in Nigeria, the functional relationship of the model is captured as:

RGDPg = f(Privcrdt, Grossav, Broadm, Int, Infl) ……(1)

where RGDPg is real GDP grwth, Privcrdt is credit to private sector, Grossav is gross savings, Broadm is broad money, Int and Infl interest rate and inflation rate, respectively.

For econometric analysis, the functional equation is transformed into a linear function as:

$RGDPg = \beta_0 + \beta_1 Inprivcrdt + \beta_2 Ingrossav + \beta_3 broadm + \beta_4 interest$

$+ \beta_5 inflation + \varepsilon t$ ……(2)

where β_0, β_1, β_2, β_3, β_4, β_5 parameters to be estimated, and εt is the error term. Other variables remained as explained above from equation (1).

Annual time series data for 45 years ranging from 1970 to 2013 were used. The data were obtained from World Bank Development Indicators (2014) and the CBN Statistical Bulletin (2014). Private Sector Credit, the value of Gross Savings, Interest rate, and Inflation rate were used as explanatory variables. Real GDP growth was used as proxy for economic growth since it determines the size of the economy, and it was the regressed variable. Some variables were transformed into logarithms form as to have reliable results that would impact adequately on policy decisions.

It is expected that credit given to the private sector will increase investment which will in turn affect the economy positively.

The ratio of savings to GDP was used as a proxy for gross savings. It is expected that an increase in gross savings will reduce consumption but increase gross domestic product.

The rate of interest differs due to time, risk and the marginal productivity of capital. Therefore, lower interest rate motivates investment, productivity and hence brings about economic growth.

In addition, it is important to state that the ratio of broad money supply to nominal gross domestic product shows the degree of monetization in the economy (Wolde-Rufael, 2009). Thus, an increase in this ratio implies an extensive use of currency rather than an increase in bank deposits. In other words, this is an increase in monetization instead of financial depth. In Nigeria, broad money (M2) is regarded as the intermediate monetary target and it comprises both the narrow money supply (M1) and Quasi-money.

Unit Root Test

The Augmented Dickey Fuller (ADF) and Phillip-Perron unit root tests were used to test the stationary properties of time series data.

F-Bound Test to Cointegration

We adopted Autoregressive Distributed Lag (ARDL) bounds test approach as presented by Pesaran & Shin (1999) and extended by Pesaran, Shin & Smith (2001). As against the conventional Johanssen cointegration method that uses a system of the equation to estimate long run connection. The application of ARDL helps to obviate problems associated with determining short time series data (Green, 2008). Moreover, the approach can test for cointegration among the variables regardless of whether the underlying variables are I(0), I(1), or fractionally integrated.

Toda Yamamoto Causality

Toda and Yamamoto (1995) causality technique was applied in the level of Vector Autoregressive irrespective of whether the variables are cointegrated, integrated or not. Toda and Yamamoto (ibid) disagreed that the F-statistic test used for traditional Granger causality may not be valid as the test does not have a yardstick allocation when the time-series data integrated or cointegrated. Toda-Yamamoto technique is fundamentally engaged in the evaluation of an augmented VAR (k +dmax) model. K is the

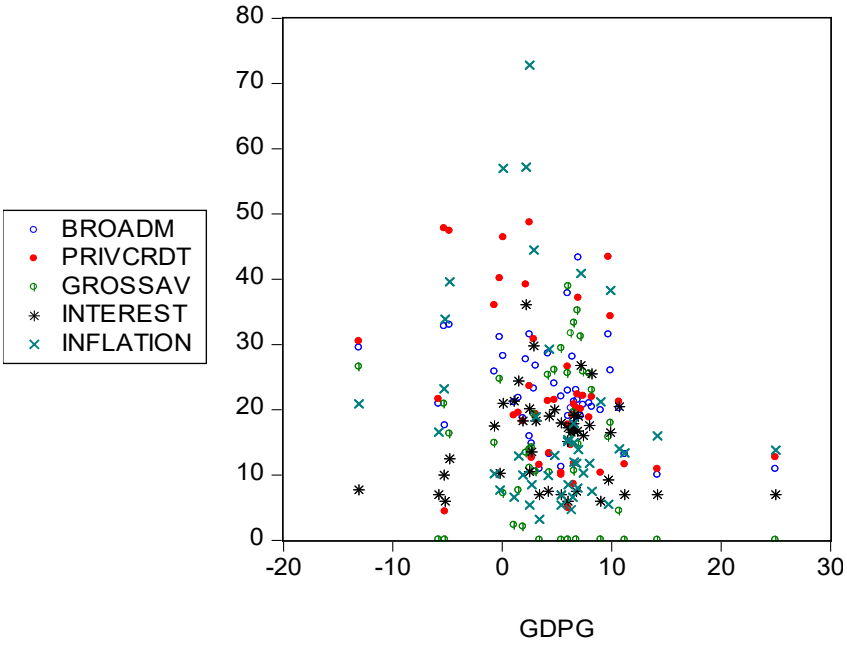
best lag criteria in the original VAR system, and dmax is the maximum order of integrations of the variables in the Vector Autoregressive system. Toda-Yamamoto causality test applies an adapted Wald test (MWALD) statistic to test zero restrictions on the parameters of the original VAR (k) model.

5. Results and Discussion

Correlation Test

The first step was to determine if the independent variables correlated with the dependent variable. The scatter diagram revealed that the variables used for the study were correlated.

Figure 2: Scatter Diagram of Dependent and Independent Variables



Unit Root Tests

After plotting the scatter diagram, the next step was to conduct a unit root test to find out the order of integration of the variables. Table 3 shows the Augmented Dickey-Fuller and Phillips-Perron unit root tests of the data series.

Table 3: ADF and Phillips Perron Unit Root Tests

VARIABLES	TESTS ADF			PHILLIP PERRON TESTS		
	Levels	1st Diff.	Order of Integration	Levels	1st Diff.	Order of Integration
GDPG	0.3419	0.0009	I(1)	0.0000		I(0)
Inflation	0.0869	0.0000	I(1)	0.1103	0.0000	I(1)
Interest	0.3878	0.0000	I(1)	0.3901	0.0000	I(1)
Log(grossav)	0.0383		I(0)	0.0356		I(0)
Log(Broadm)	0.0986	0.0001	I(1)	0.4005	0.0000	I(1)
Log(Privcrdt)	0.4438	0.0002	I(1)	0.5606	0.0000	I(1)

Authors' computation from output

The dependent variable (GDPG) was stationary at first difference in the ADF test and stationary at levels in the PP test. Inflation was stationary at first differences in both tests. Gross savings was stationary at levels in both the ADF and PP tests. Other independent variables were stationary at first differences in both tests. Thus, the variables under the study were integrated at either I(0) or I(1). Thus, in the absence of I(2), the findings justified the use of ARDL approach to detecting the long-run relationship.

Lag Selection Procedures:

The choice of lag length was based on Akaike information criterion (AIC), Schwarz information criterion (SIC) and Hannan-Quin information criterion (HQ). This is of great importance because computing ARDL F-statistic is very sensitive to lag order selection. The test in Table 4 shows that four (4) lags were selected based on the SC because it performs better than other criteria (Pesaran, Shin and Smith, 2001).

Table 4: Lag Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-90.72008	NA	15.19451	5.558793	5.604141	5.574051
1	-87.65176	5.764713	13.40613	5.433440	5.524138	5.463957
2	-86.52287	2.052545	13.30652	5.425628	5.561674	5.471404
3	-84.21765	4.051597	12.30302	5.346524	5.527919	5.407558
4	-80.44321	6.405111*	10.41087*	5.178376*	5.405120*	5.254668*
5	-79.63840	1.316959	10.55307	5.190206	5.462298	5.281757
6	-79.47754	0.253465	11.13092	5.241063	5.558504	5.347873
7	-78.86413	0.929410	11.43254	5.264493	5.627283	5.386561
8	-78.86298	0.001675	12.19851	5.325029	5.733168	5.462355

* indicates lag order selected by the criterion

Where: LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error

F-Bound Test Cointegration

The long run relationship between the indicators of financial intermediaries and economic growth was investigated by testing a joint significance of F-test. For the above stated null hypothesis of no cointegration, the calculated by Pesaran, Shin and Smith, 2001). F-statistics for GDPg, Privcrdt, Finsav, Broadm, Interest, and Inflation was 7.36. The F-statistic is higher than critical upper bound at 1, 5, and 10 percent levels of significance. These findings confirm the existence of a long-run relationship between the variables in the presence of structural breaks stemming in the series for the period 1970 to 2014 in Nigeria.

The diagnostic tests for serial correlation, heteroscedasticity, and normality were conducted, and the results are presented in Table 5. The results also showed that there is no evidence of serial correlation and heteroscedasticity among variables. The model also passed the normality test.

Table 5: Cointegration Bound and Diagnostics Test

	Value	Value
F Statistics	7.358002	7.358002
CRITICAL VALUES	5%	10%
Upper bound	3.79	3.35
Lower bound	2.62	2.26
Diagnostics Tests	**Obs. R square**	**Probability**
Serial Correlation	6.023149	0.1974
Heteroscedasticity	16.66592	0.5462
Normality	2.469870	0.290854

Authors' computation from output

ARDL Long-run Cointegration

Having established long run relationship through ARDL technique, the next step was to estimate the signs and magnitudes of the relationships. Table 6 shows the long run estimated coefficients. The overall goodness of fit of the estimated equation was high; the F-statistic measuring the overall significance was statistically significant. It is interesting to know that in the long run interest rate, inflation, and money supply exerted negative effects, while private credit and savings had positive effect on real GDP. As expected the coefficient of private credit was positive but statistically insignificant, while the coefficient of savings was positive and statistically significant. An increase in both private credit and savings increased economic growth during the period under study.

Table 6: ARDL Long-run Cointegration

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(PRIVCRDT)	0.780425	1.836465	0.424960	0.6750
LOG(GROSSAV)	1.559656	0.710968	2.193707	0.0391
LOG(BROADM)	-9.048177	4.424680	-2.044934	0.0530
INTEREST	-0.123201	0.194192	-0.634429	0.5323
INFLATION	-0.310783	0.079799	-3.894563	0.0008
C	36.151682	12.655393	2.856623	0.0092

Author's computation from output

With regard to financial development indicators, the result of the long run analysis indicates that credit to the private sector exerted positive effect while money supply affected real GDP negatively. Coefficients of credit to the private sector and savings have expected signs and this finding is consistent with theory. The private sector is usually the engine of economic growth. This explains why the extension of more credits to the private sector by the banks is encouraged. Such loans are usually meant for productive purposes; however, even when part is used for consumption, it still indirectly influences economic growth positively. This is so because when demand increases, it encourages

producers/manufacturers to expand their capacity to meet the increase in demand, and this engenders economic growth.

The result of the negative relationship between money supply and real GDP reported in this study is inconsistent with general evidence in the empirical literature; nonetheless, it is not surprising in the case of Nigeria. It could probably be due to corrupt practices by the elites who laundered money to foreign accounts. It could as well be due to heavy financial spending for war against terrorism and insurgency, which would reduce spending on production of goods and services.

Interest rate exerted a negative effect on real GDP. This implies that interest rate has not affected economic growth positively probably due to a fall in number of borrowings by investors. High lending rates have tended to discourage investors from borrowing funds for investment purposes in the economy.

Short run ARDL Cointegration

The ECM results are presented in Table 7. The results indicate that the values: credit to private sector, broad money, gross savings, and inflation, promote economic growth positively and significantly at 5 percent level of significance with the exception of lending rate which was significant at 10 percent level. The result is in line with the new growth theory that posits a positive relationship between financial development indicators (credit to the private sector, gross savings, interest rate) and economic growth. However, the result for broad money supply indicates a negative relationship with economic growth at 5 percent level of significance. The negative sign contradicts the theoretical expectation. However, the interest rate has a positive influence on economic growth. The error-correction coefficient is negative and significant. This indicates the speed of the adjustment back to the long-run equilibrium after a short-run shock. The coefficient of CointEq(-1) is -0.709199 at 1 percent level of significance. This implies 70.9 percent adjustment back to long-run equilibrium each year after a shock in the short run.

Table 7: Short-run ARDL Cointegration

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDPG(-1))	-0.640616	0.138856	-4.613528	0.0001
D(GDPG(-2))	-0.615346	0.088736	-6.934570	0.0000
DLOG(PRIVCRDT)	3.453927	1.575801	2.191855	0.0393
DLOG(GROSSAV)	0.526723	0.444536	1.184882	0.2487
DLOG(GROSSAV(-1))	1.000100	0.574685	1.740258	0.0958
DLOG(GROSSAV(-2))	-1.182865	0.529850	-2.232451	0.0361
DLOG(GROSSAV(-3))	-1.912928	0.422483	-4.527822	0.0002
DLOG(BROADM)	-6.416961	2.732969	-2.347982	0.0283
D(INTEREST)	0.288268	0.152553	1.889625	0.0721
D(INFLATION)	-0.138488	0.034591	-4.003614	0.0006
D(INFLATION(-1))	-0.077796	0.057660	-1.349208	0.1910
D(INFLATION(-2))	0.099800	0.047557	2.098524	0.0476
D(INFLATION(-3))	0.094700	0.034941	2.710312	0.0128
CointEq(-1)	-0.709199	0.181452	-3.908472	0.0008

Authors' computation from output

Non-Granger Causality (Toda Yamamoto Granger Causality)

The study employed the Toda-Yamamoto (1995) procedure to examine the causal nexus between the indicators of financial intermediaries and economic growth in Nigeria. The results are presented in Table 8. The findings indicate the existence of a bi-directional causality between real GDP and inflation rate at 5 percent level of significance. A unidirectional causality runs from savings to real GDP. Similarly, one-way causality flows from gross savings to credit to private sector. A unidirectional causality flows from gross savings to broad money supply at a significant level. Furthermore, credit to private sector, broad money, gross savings, interest rate, and inflation rate jointly cause economic growth while GDPg,

broad money, gross savings, interest rate, and inflation rate do not jointly cause credit to private sector. Since all financial intermediaries can jointly cause economic growth, the finding is in support with the theoretical view of Gurley and Shaw (1955) and Goldsmith (1969) who believe that financial intermediaries cause economic growth.

Table 8: Non-Granger Causality (Toda Yamamoto Granger Causality)

Variables	GDPg	PRIVCRDT	BROADM	GROSSAV	INTEREST	INFLATION	JOINT
GDPg	-	8.580274 (0.0725)	4.093080 (0.3936)	18.42661 (0.0010)	9.198750 (0.0563)	13.54200 (0.0089)	56.19392 (0.0000)
PRIVCRDT	1.932813 (0.7481)	-	2.809018 (0.5903)	12.34931 (0.0149)	4.062892 (0.3976)	5.122875 (0.2749)	28.38721 (0.1005)
BROADM	7.412829 (0.1156)	3.937209 (0.4146)	-	12.59693 (0.0134)	5.086243 (0.2786)	4.383289 (0.3566)	25.62597 (0.1785)
GROSSAV	2.012519 (0.7335)	1.589828 (0.8106)	2.560253 (0.6339)	-	3.120408 (0.5379)	1.712080 (0.7885)	16.17053 (0.7060)
INTEREST	9.033117 (0.0603)	16.67568 (0.0022)	7.576465 (0.1084)	19.65067 (0.0006)	-	22.02807 (0.0002)	78.14989 (0.0000)
INFLATION	15.58823 (0.0036)	3.553996 (0.4697)	1.744285 (0.7827)	2.302528 (0.6803)	3.717366 (0.4456)	-	42.10477 (0.0027)

Authors' computation from output.

6. Conclusion and Recommendations

This research examines the effect of financial intermediation on economic growth of Nigeria using time series data from 1970 to 2014. This was made possible by examining selected financial intermediation variables, determining their effects on the growth of the Nigerian economy. The credit to private sector, gross savings, interest rate, broad money supply, and inflation were financial intermediation variables used as independent variables while real GDP growth was used as dependent variable.

The result showed that the variables exhibited various levels of stationarity, and had long run relationships. Diagnostics tests were favourable. In the short run, the results showed positive and significant relationships between selected financial intermediation variables (credit to private sector, gross savings, and interest rate) and real GDP. However, their long run effects varied. Credit to private sector was positively related to growth but insignificantly. The private sector is usually the engine of economic growth. This explains why the extension of more credits to the private sector by the banks is necessary Average lending did not support growth. However, gross savings exerted a positive and significant effect on growth.

Broad money supply and inflation rate exert negative and significant effects on growth in both the short run and long run. From our findings, it was observed that credits to private sector and financial savings were the outstanding financial intermediation variables that affected growth positively in the Nigerian economy during the period under study.

Based on our results, the following were recommended.

1. The Central Bank of N Nigeria should make sure more credits are given to operators in the real sector of the economy.
2. All financial institutions (government and private) should be persuaded by the CBN to give more credits to the private sector at bearable interest rate. The Central Bank of Nigeria should ensure that the domestic credits provided by the banking sector for productive purposes are appropriately used.
3. Credit facilities should not be restricted to the large-scale manufacturing industries; but should also be extended to small and medium scale enterprises. This will go a long way in stimulating economic growth and development.
4. The government should formulate short and long run policies aimed at financial deepening in the economy.

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APPENDIX

Financial Intermediation Variables and GDP Growth

Year	GDP Growth Rate	Credit to Private sector (% of GDP)	Total Savings (% of GDP)	Broad Money (% of GDP)	Interest Rate	Inflation Rate
1970	25	12.7	0.07	10.9	7	13.8
1971	14.2	10.9	0.06	10	7	16

1972	3.4	11.5	0.06	10.9	7	3.2
1973	5.4	10.3	0.05	11.2	7	5.4
1974	11.2	11.6	0.06	13.2	7	13.4
1975	-5.2	4.4	0.08	17.6	6	33.9
1976	9	10.3	0.08	19.9	6	21.2
1977	6	17.7	0.08	22.9	6	15.4
1978	-5.8	21.6	0.08	20.9	7	16.6
1979	6.8	20.3	0.1	23	7.5	11.8
1980	4.2	21.3	25.3	28.6	7.5	9.9
1981	-13.1	30.5	26.6	29.5	7.75	20.9
1982	-0.2	40.1	24.7	31.1	10.25	7.7
1983	-5.3	47.8	20.9	32.8	10	23.2
1984	-4.8	47.4	16.3	33	12.5	39.6
1985	9.7	43.4	15.8	31.5	9.25	5.5
1986	2.5	48.7	11.1	31.5	10.5	5.4
1987	-0.7	36	14.9	25.8	17.5	10.2
1988	9.9	34.3	18	26	16.5	38.3
1989	7.2	20.1	31.2	19	26.8	40.9
1990	8.2	21.9	23	20.4	25.5	7.5
1991	4.8	21.5	26.1	24	20.01	13
1992	2.9	30.8	19.3	23.2	29.8	44.5
1993	2.2	39.2	13.4	27.7	36.09	57.2
1994	0.1	46.4	7.2	28.2	21	57
1995	2.5	23.6	13.9	15.9	20.18	72.8
1996	4.3	13.3	10.4	13.2	19.04	29.3
1997	2.7	12.6	14.2	14.8	13.54	8.5
1998	1.9	18.2	2.1	18.7	18.29	10
1999	1.1	19.1	2.31	21.1	21.32	6.6
2000	5.4	10	29.4	22	17.98	6.9
2001	3.1	19.3	10.5	26.7	18.29	18.9
2002	1.5	19.5	7.6	21.8	24.4	12.9
2003	10.7	21.2	4.5	20.2	20.48	14
2004	6.58	11.7	10.6	18.3	19.15	15
2005	6.51	8.6	19.6	17.7	17.85	17.9
2006	6.03	4.9	38.9	19	17.26	8.5
2007	6.45	19.2	16.3	28.1	16.94	6.6
2008	5.98	26.6	25.6	37.8	15.14	15.1
2009	6.96	37.1	14.7	43.3	18.99	13.9
2010	7.98	18.8	25.5	21	17.59	11.8
2011	7.43	22.1	25.8	20.7	16.02	10.3
2012	6.58	20.8	33.3	21.2	16.79	12
2013	6.89	22.3	35.2	21.5	16.72	8
2014	6.31	20.2	14.5	31.7	16.55	4.7

Sources: World Development Index database, 2015,
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