



Financial Deepening and Economic Growth in Nigeria: An ARDL Approach

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This research work investigated the impact of Financial Deepening on the Economic Growth of Nigeria (1986-2018), with three specific objectives; examining the impact of broad money supply, credit to the private sector, and monetary policy rate on the economic growth of Nigeria. Time series data were employed sourced from the Central Bank of Nigeria statistical bulletin of the 2018 edition, the classical least square of multiple regressions with the application of dummy variable to capture the effects of the various Regimes was adopted in analyzing the data. The results show that financial deepening has both short and long-term effects on economic growth, the estimated regression line is significant as confirmed by the f-statistics. Broad money supply to the gross domestic product had a negative and no significant impact on the economic growth of Nigeria, credit to the private sector to the gross domestic product had a negative and non-significant impact on the economic growth of Nigeria, monetary policy rate to the gross domestic product had a positive and significant impact on the economic growth of Nigeria. The unit root test shows that all the variable data have a unit root, the selected processes of financial deepening are the true determinant of economic growth in Nigeria with a high degree of effectiveness in the civilian regime. It is recommended that stringent measures should be taken to enhance the effects of the financial subsector of the economy to foster its role in promoting and sustaining growth in the economy.

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ABSTRACT

Keywords: Financial Deepening; Broad Money; Private Sector; Monetary Policy Rate; Economic Growth

Introduction

The importance of the financial system in the economic development of a country cannot be under-emphasized, the financial system helps in the provision of credit and as well fosters economic development, one of the processes through which these are achieved is through financial deepening, financial deepening refers to the increase provision of financial assets and services to accelerate economic activities in a country.

Okafor, Onwumer & Ezeaku (2016) defined financial deepening as an increase in assets and the provision of needed financial services to the economy. They posit that an optimal measure of financial deepening must include the total amount of banking and non-banking financial assets including domestic credit to the private sector, liquidity liabilities, stock, and bond market capitalization, treasury bills, etc. In the process, money supply and other price indices constitute financial deepening indicators. Financial deepening ensures financial stabilization and also promotes macroeconomic stability and growth.

Financial deepening and economic growth have received significant attention in literature with two major hypotheses. One hypothesis in supports that financial deepening encourages economic growth and the others opposes that financial deepening is only a result of economic growth (Ardic & damar, 2006). Understanding how the financial system of the country affects the economy is very important as it provides some regulator implications. Financial deepening encourages economic efficiency, increases liquidity, provides capital, encourages investment through mobilization of savings and credits, and also boosts the overall productivity of a nation.

Nigeria is one of the biggest economies in Africa in recent times have made moves toward expanding the breadth and depth of its financial market. An example is the recent consolidation exercise embarked by Soludo (2005) also encouraged access to credit, and electronic banking technologies, but no concrete relationship has been established between the financial sector deepening and the economic development of the country. This advocates the need for further research be carried out on the nature of the relationship between the financial sector and economic growth.

Literature Review

Empirical Review

Echekoba, Nwaolisa, Ubesie & Cyril (2018) examined the assessment of financial deepening on the growth of Nigerian Economy. The main objective of this study is to evaluate the effect of private sector credit, money supply, and market capitalization on economic growth in Nigeria. The sources of data for this study are the CBN statistical Bulletin and the National Bureau of Statistics. The data obtained were analyzed using ordinary least square regression (OLS). The result of the analyses showed that the three independent variables of the study all have a significant effect on Nigerian financial deepening. It was therefore recommended that policymakers should consider reducing impediments to liquidity in the stock market, easing restrictions on international capital and entry into the market to ensure that more companies are listed, and policies aimed to reduce the high incidence of non-performing credits to ensure that private sector credits are channeled to the real sector of the economy and monetary authorities should implement policies that increase the flow of investible funds and improves the capacity of banks to extend credit to the economy as this will make broad money supply and private sector, to significantly impact on economic growth in Nigeria.

Ifeanyi & Chinyere (2016) researched the effect of financial deepening on economic growth in Nigeria (1985 -2014). This research work examines financial deepening and economic growth in Nigeria from 1985 to 2014. It focused on the impact of the stock market and bank deepening variables such as money supply, market capitalization, private sector credit, and financial savings on the economic growth of Nigeria. The study adopted the supply leading hypothesis. The study used annual time series data for 1985 to 2014 obtained from the Central Bank of Nigeria statistical bulletin. The ordinary least square (OLS) econometric techniques were employed in which variations in the dependent variable, economic growth, measured by gross domestic product growth rate were regressed on money supply ratio to gross domestic product, private sector credit ratio to gross domestic product, market capitalization ratio to gross domestic product and financial saving ratio to the gross domestic product using time series data from 1985 to 2014. The result of the analysis reveals that both bank-based and stock market financial deepening proxies have a significant and positive effect on economic growth and that the banking sector and the stock market in Nigeria have an important role in the process of economic growth. Based on the findings there should

be improvement by encouraging more participation in the stock market. Easing restrictions on international capital and entry into the stock market to ensure more companies are listed.

Anthony, Chukwudi & Wilfred (2014) researched financial deepening and economic growth in Nigeria (1981-2012): a managerial economic perspective. The study aimed to determine the impact of financial deepening on economic growth in Nigeria. The supply leading hypothesis was adopted as the theoretical framework of the study. Data for the analysis was for the period 1981-2012 obtained from the Central Bank of Nigeria Statistical Bulletin. The explanatory variables were logged values of broad money supply/GDP and Credit to the private sector/GDP. The times series data were tested for stationarity using the ADF unit root tests of stationarity and were found to be stationary at first difference. The Engle-Granger Cointegration technique and Error correction model was used for the test of the long-run relationship. Findings reveal that money supply (MS) is positive and weakly significant in determining economic growth. However, credit to the private sector was negative and not significant in the short run. The speed of adjustment of the ECM is 25.51%. This implies that if there are short-run fluctuations, GDP will converge to its long-run equilibrium path at a speed of about 25.51% in each period. The conclusion is that financial deepening does not have the desired impact on economic growth in Nigeria. Hence, there is a need for an increase and improvement in access to private credit to enhance economic growth and investment.

Emeka & Samuel (2009) examined financial deepening and economic development in Nigeria between 1986 and 2007. The central focus is that a high level of financial deepening is a necessary condition for accelerating growth in an economy. This is because of the central role of the financial system in mobilizing savings and allocating the same for the development process. The study made use of secondary data, sourced over 22 years. They specified nine explanatory variables for the study based on theoretical underpinnings. They sought to establish a relationship between these variables and the financial deepening index. The two stages least square analytical framework was used in the analysis. A trend analysis was also done in the study. At the end of the study, they found that the financial deepening index is low in Nigeria over the years. They also found that the nine explanatory variables, as a whole were useful and had a statistical relationship with financial deepening. But four of the variables; lending rates, financial savings ratio, cheques/GDP ratio, and the deposit money banks/GDP ratio had a significant relationship with financial deepening. They concluded however that: the financial system has not sustained effective financial intermediation, especially credit allocation and a high level of monetization of the economy. Thus, the regulatory framework should be restructured to ensure good risk management, corporate governance, and stemming systemic crises in the system.

In the case of Egypt, Abu-Bader & Abu-Qarn (2008) examined the causal relationship between financial development and economic growth in Egypt during the period 1960-2001 within a trivariate vector autoregressive (VAR) framework (investment being the additional variable). They employed four different proxies of financial development and apply Granger causality tests using the cointegration and vector error correction (VECM) methodology. They found strong support for the view that financial development and economic growth are mutually causal, that is, causality is bi-directional. Furthermore, the results revealed that financial development causes economic growth through both increasing resources for investment and enhancing efficiency.

Okafor, Onwumere, and Ezeaku (2016) conducted a causality and impact study on financial deepening and economic growth in Nigeria for 33 years covering 1981-2013. The study used the Phillips-Peron test for unit roots to ascertain whether the variables are stationary or not. The VEC residual normality test and the Histogram-Normality test were utilized in other to determine if the data sets were normally distributed. A test for a long-run relationship was conducted with the aid of the Johansen cointegration test. The Error Correction Model as well as the Granger causality test was also employed. The findings revealed that there is a long-run relationship between economic growth, broad money supply, and private sector credit, with a high speed of adjustment towards long-run equilibrium. The results also revealed that while broad money has a positive and non-significant impact on economic growth, private sector credit has a negative and non-significant impact on growth. The Granger causality test results showed that neither broad money supply nor private sector credit is granger causal for economic growth and vice versa. The study, therefore, recommends that private sector-friendly policies should be implemented to ensure that investors do not only have access to credit but such credit should be at an affordable cost, i.e., at a relatively low interest rate. Monetary and fiscal policies should be harmonized in other to achieve the economic goal of sustained growth and stability.

Ohwofasa, And Aiyedogbon (2013) assessed the level of development of financial deepening in the banking sector and the extent it has impacted economic growth over the last two decades. Vector autoregressive (VAR) methodology and its derivatives, impulse response function, and variance decomposition, were employed that enable us to scrutinize the relationship between financial deepening and economic growth. The findings show that the series are co-integrated and that a long-run relationship existed between the variables. The results of the VAR estimates revealed among other things that a one-year lag of economic growth, gross national saving as a ratio of GDP (lag 1), and exchange rate (lag 1) have a significant positive impact on current economic growth while the impact of GCF (lag 1) on the current level of economic growth was negative and statistically significant. It was also empirically discovered that PSC/GDP (lag 2) and GNS/GDP (lag 2) happened to be key determinants of M2/GDP. Similarly, the key determinants of PSC/GDP include its year 1 and 2 lagged values and GNS/GDP (lag 2) with GNS/GDP (lag 2) and PSC/GDP (lag 2) exhibiting negative impact. Finally, on the current level of GNS/GDP, it is observed that M2/GDP (lag 1) and PSC/GDP (lag 2) exhibit significantly negative determining influence while PSC/GDP (lag 1) and the past value of GNS/GDP (lag 2) were also seen as its key determinant. These findings are further corroborated by the results of the impulse response function and variance decomposition. Among the recommendations of the study are that savings should be stimulated to place more funds in the hands of banks to intermediate investors seeking funds. Also, the lending rate should be reasonable so as not to deter investors to borrow to embark on viable investment projects.

Mohamed (2008) investigated the effect of financial development on economic performance in Sudan using time series between 1970 and 2004. He modeled with M3 to GDP and credit to the private sector to GDP as measures of financial development, the growth rate of GDP for economic growth as well as control variables such as investment, government spending, inflation, and trade openness. Using the ARDL approach to cointegration, the study found a weak relationship between financial development and economic growth in Sudan. These findings were attributed to the inefficient financial system, along with the absence of an appropriate investment climate required to foster significant private investment and promote growth in the long run.

Mesut (2018) researched the causal relationship between financial deepening and economic growth for fourteen upper middle-income countries for the period during 1987-2015. Broad money supply, private credits, financial system deposit liabilities, and deposit money banks' assets are determined as proxies of financial deepening. Konya (2006) bootstrap panel granger causality approach is used for this relationship based on the Seemingly Unrelated Regression (SUR) model. Empirical findings indicate that countries can be clustered according to supply-leading and demand-following approaches. Besides, there exists evidence for bidirectional causality in some countries.

Vipin, Pokhriyal & Arvind (2015) investigated the causal impact of financial deepening on economic growth in the case of India. For analyzing the long-term equilibrium relationship between the desired variables, they employed Autoregressive Distributed Lag (ARDL) Bound testing approach. ARDL being a new approach is an improvement over the other traditional techniques of cointegration. Further, using the Granger Error Correction Model (ECM) technique to estimate the causal impact in the short run also. The findings suggest that there exists an equilibrium relationship in long run between financial deepening and economic development. Results suggested that financial deepening causes economic growth in the long run and also in the short run. Therefore, it is concluded that for enhancing economic growth the government has to take an effort to improve the financial deepening. Special efforts should be put to provide easy credit to the private sector, stock market development, and also to foster foreign trade.

Onwumere, Ibe, Ozoh, and Mounanu (2012) examined the impact of financial deepening on economic growth in Nigeria for the period 1992 - 2008 and adopted the supply-leading hypothesis using variables such as broad money velocity, money stock diversification, economic volatility, market capitalization and market liquidity as proxies for financial deepening and gross domestic product growth rate for economic growth. They found that broad money velocity and market liquidity promote economic growth in Nigeria while money stock diversification, economic volatility, and market capitalization did not within the period studied. The study recommended that government policy should be geared towards increasing money supply and promoting an efficient capital market that will enhance overall economic efficiency, create and expand liquidity, mobilize savings, enhance capital accumulation, and transfer resources from traditional sectors to growth-inducing sectors.

Methodology

Research design requires the structuring of the investigation aimed at identifying the validity of most of the hypotheses and their respective relationship with one another. This is used to obtain data to enable the researcher to test the hypotheses questions (Thank God, 2004). This study employed ex-post facto design which seeks to establish the action of an event before and after including the relationship between two variables under the study. The nature of data for analysis of this study is secondary and was obtained from the Central Bank of Nigeria Statistical Bulletin from various years.

Following Campos, Karanasos, and Tan (2012), Shittu (2012), and the theoretical underpinning of Schumpeter (1911) as described in equation (3), economic growth is expressed as a function of financial deepening and exogenous macroeconomic factors X. The adopted econometric model is expressed as:

$$EG_{FDXu\ t} = \alpha_0 + \alpha_1 t + \alpha_2 + (4)$$

where: EG = Economic growth Indicator

FD = Financial Deepening Indicator

X = set of control factors.

α_0 = Intercept or constant;

α_{-21} = Parameters or Co-efficient of explanatory variables;

u = Error term;

This current study proved anchored on the related model mentioned above. The main study model specification:

$$GDFTOT = f(M2GDP, CPSGSP, MPR)$$

GDPTOT = Total Gross Domestic Product

M2GDP = Broad Money Supply

CPSGDP = Credit of Private Sector

MPR = Monetary Policy Rate

The model in an estimable form appears as follows:

$$\begin{aligned} LOGGDP_t = & \beta_0 + \sum_{k=j}^{n=l} \beta_1 LOGGDP_{t-1} + \sum_{k=j}^{n=l} \beta_2 LOGM2GDP_{t-1} \\ & + \sum_{k=j}^{n=l} \beta_2 LOGCPSGDP_{t-1} + \sum_{k=j}^{n=l} \beta_2 LOGMPR_{t-1} + \varepsilon_t \end{aligned}$$

The model for the test of the respective hypotheses with an interest rate as a control variable is shown thus:

Hypothesis One

Ho 1: Broad money supply ratio to gross domestic product did not significantly impact gross domestic product in Nigeria.

$$LOGGDP_t = \beta_0 + \sum_{k=j}^{n=l} \beta_1 LOGGDP_{t-1} + \sum_{k=j}^{n=l} \beta_2 LOGM2GDP_{t-1} + \varepsilon_t$$

Hypothesis Two

Ho 2: Credit to private sector ratio to gross domestic product did not have a significant impact on gross domestic product in Nigeria.

$$LOGGDP_t = \beta_0 + \sum_{k=j}^{n=l} \beta_1 LOGGDP_{t-1} + \sum_{k=j}^{n=l} \beta_2 LOGCPSGDP_{t-1} + \varepsilon_t$$

Hypothesis Three

Ho 3: Monetary policy rate did not have a significant impact on gross domestic product in Nigeria.

$$LOGGDP_t = \beta_0 + \sum_{k=j}^{n=l} \beta_1 LOGGDP_{t-1} + \sum_{k=j}^{n=l} \beta_2 LOGMPR_{t-1} + \varepsilon_t$$

Result and Discussion

Data Presentation

Table 1: Raw Data Presentation

YEAR	M2GDP	CPSGDP	MPR	GDPTot
1985	22.30	13.07	10.00	192.27
1986	23.81	15.25	10.00	202.44
1987	27.57	21.08	12.75	249.44
1988	38.36	27.33	12.75	320.33
1989	45.90	30.40	18.50	419.20
1990	47.42	33.55	18.50	499.68
1991	75.40	41.35	15.50	596.04
1992	111.11	58.12	17.50	909.80
1993	165.34	127.12	26.00	1,259.07
1994	230.29	143.42	13.50	1,762.81
1995	289.09	180.00	13.50	2,895.20
1996	345.85	238.60	13.50	3,779.13
1997	413.28	316.21	13.50	4,111.64
1998	488.15	351.96	13.50	4,588.99
1999	628.95	431.17	18.00	5,307.36
2000	878.46	530.37	14.00	6,897.48
2001	1,269.32	764.96	20.50	8,134.14
2002	1,505.96	930.49	16.50	11,332.25
2003	1,952.92	1,096.54	15.00	13,301.56
2004	2,131.82	1,421.66	15.00	17,321.30
2005	2,637.91	1,838.39	13.00	22,269.98
2006	3,797.91	2,290.62	10.00	28,662.47
2007	5,127.40	3,668.66	9.50	32,995.38
2008	8,008.20	,920.50	9.75	39,157.88
2009	9,411.11	9,102.05	6.00	44,285.56
2010	11,034.94	10,157.02	6.25	54,612.26
2011	12,172.49	10,660.07	12.00	62,980.40
2012	13,893.22	14,649.28	12.00	71,713.94
2013	15,154.64	15,751.84	12.00	80,092.56
2014	16,238.52	17,131.45	13.00	89,043.62
2015	18,525.22	18,675.47	11.00	94,144.96
2016	21,624.63	21,082.72	14.00	101,489.49
2017	22,363.43	22,092.04	14.00	113,711.63
2018	25,079.72	22,521.93	14.00	127,762.55

Source: CBN Statistical bulletin from various years.

Data Description

Descriptive statistics were performed to describe the variables of the study using some descriptive measures such as mean, median, standard deviation, skewness, probability, observation, and kurtosis. The results of the descriptive analysis were presented in table 2.

Table 2: Summary of Descriptive Statistics

Variables	Media	Median	Std.Dev	Skewness	Kurtosis	Jb	Pro	Ob
GDPTot	3079420	927762.5	38661.73	1.125664	2.936082	7.186	0.02	34
M2GDP	5757.6	1387.64	7753.02	1.17	3.01	7.86	0.01	34
CPSGDP	5391.6	847.72	7650.56	1.168	2.813	7.79	0.02	34
MPR	13.66176	13.50000	3.890	0.745	4.734	7.407	0.02	34

Source: Author's computation from E-views 10.00

The descriptive statistics in Table 2 presents the measures of central tendency as well as the spread of the variables under study. Skewness which measures symmetry or departure from symmetry and Kurtosis which is a measure of peak or flatness of the distribution or series are also shown. The series is reported as platy kurtosis because it is normally distributed. Jarque-Bera, which is a test for normality, is also reported. The Jarque-Bera statistics tested the null hypothesis that a series is normally distributed. The null hypothesis is rejected when the probability value is significant at 5 percent.

Correlation Matrix

To further show the properties of the series under study, the degree of linear association is shown in table 3 below:

Table 3: Correlation Matrix

VARIABLES	GDPTOT	MBSAV	MBSAVR	AGSAV
GDPTOT	-	-	-	-
M2GDP	0.996476 67.20243 0.0000	-	-	-
CPSGDP	0.991165 42.27417 0.0000	0.996122 64.04923 0.0000	-	-
MPR	-0.308432 1.834178 0.0759	-0.304863 -1.810767 0.0000	-0.294165 -1.741086 0.0913	-

Source: Author's computation from E-views 10.00

From the result in table 3, all the series share bivariate positive and significant correlations one with another while some are not. More so, all share positive/negative and no significant/significant relationship among related variables.

Unit Root Analysis

The unit root test was conducted using the Phillips-perron test statistic. All the variables are non-stationary at levels because PP-statistic is less than the test critical value at the 5 percent level and the p-value of each variable is greater than 5 percent. All the variables are stationary at the level and the first differences are 1(0) and 1(1) because the PP statistic is greater than the test critical value in absolute terms at the 5 percent level and the p-value is less than 5 percent. The PP test indicates that all the variables are integrated at order 1 and 0 at the 5 percent level. Finally, it is a combination of 1(1) and 1(0).

Table 4: Unit Root Test Results

Variable	PP	At5%level	Probability	Differences
LGGDPTOT	-3.37	-2.96	0.01	1(1)
M2GDP	-4.96	-3.55	0.01	1(1)
CPSGDP	-3.12	-2.96	0.03	1(1)
MPR	-3,15	-2.95	0.03	1(0)

* Stationary at 1% significance level ** Stationary at 5% significance level

Source: Author's Compilation from E-views 10.00

The results of table 4 above show that all the variables are stationary at levels and the first difference form since their PP values are greater than the critical values at 5%. The null hypothesis of a unit root was accepted for all the variables but was rejected at levels of difference. Thus, we conclude that the variables under investigation are integrated in order of 1(0) and 1(1). Since the variables are integrated into different orders, therefore, adopting the ARDL regression model for testing the hypothesis.

The ARDL Test Results for Hypothesis One is Presented in Box elow:

(M2GDP) Coeff = 6.79000
t= (-1.904)
Se= [-3.57000]
P VALUE = 0.06 > 0.05

As revealed that the broad money supply to gross domestic product shows a negative and non-significant impact on the economic growth of Nigeria (coefficient of the broad money supply to gross domestic product = -6.79000, t-value = -1.904). This indicates that a one percent decrease in the GDP of Nigeria is due to a 0.67% decrease in broad money supply to gross domestic product. The probability value of 0.06 > 0.05 confirms the non-significance of the result. Given the statistics of 3-1.904 and the probability oft-statistics 0.06 > 0.05 being non-significant, we reject the null hypothesis and conclude that broad money supply to the gross domestic product had a negative and non-significant impact on the economic growth of Nigeria.

The ARDL Test Results for Hypothesis Two are Presented in Box below:

(M2GDP) Coeff -6.82000
t= (-1.979)
Se = [3.45000]
P VALUE = 0.05 > 0.05

As revealed that the credit to the private sector to gross domestic product shows a negative and non-significant impact on the economic growth of Nigeria (coefficient of credit to the private sector to gross domestic product = -6.82000, t-value = -1.979). This indicates that a one percent decrease in the GDP of Nigeria is due to a 0.68% decrease in credit to the private sector to gross domestic product. The probability value of 0.05 > 0.05 confirms the non-significance of the result. Given the t-statistics, of-1.979, and the probability oft-statistics 0.05 > 0.05 being non-significant, we reject the null hypothesis and conclude that credit to the private sector to gross domestic product had a negative and non-significant impact on the economic growth of Nigeria.

The ARDL Test Results for Hypothesis Three are Presented in Box below:

(M2GDP) Coeff = 0.010837
t = (2.348)
Se= [0.00461 4]
P VALUE = 0.02 < 0.05

As revealed that the monetary policy rate to gross domestic product shows a negative and non-significant impact on the economic growth of Nigeria (coefficient of Monetary policy rate to gross domestic product = 0.010837, t-value = 2.348). This indicates that a one percent increase in the GDP of Nigeria is due to a 0.1% increase in the monetary policy rate to gross domestic product. The probability value of $0.02 < 0.05$ confirms the significance of the result. Given the t-statistics of 2.348 and the probability of t-statistics $0.02 < 0.05$ being significant, we reject the null hypothesis and conclude that the monetary policy rate on the gross domestic product had a positive and significant impact on the economic growth of Nigeria.

Conclusion

The economic decisions of individuals in the economy require policy measures to drive their potential through the financial subsector of the economy. The estimated coefficients are the true nature of the situation with both short and long-term effects. From the findings we discover that financial deepening has both short and long-term effects on economic growth in Nigeria, the effectiveness of the financial system in promoting and sustaining growth in the economy is a collective business that calls for all shoulders to be on the wheel of growth while government pilot the affairs with weak monetary measures. The findings of the study are in tandem with previous research across the globe on the impact of financial deepening on the Economic Growth of Nigeria.

Recommendation

Financial deepening in fostering economic growth in an economy. Based on the findings, the study recommends that:

- i. Government policy should pry into the unconventional attitude of economic agents on the effectiveness of conventional monetary policy in promoting growth.
- ii. There is also a need for banks and other money deposit institutions to strengthen their financial intermediation capacity, to convert the idle deposits in the banks to funds for productive purposes. Thus, banks should be encouraged to lend more to the private sector and the stringent collateral requirements should be reduced to encourage borrowing by businesses.
- iii. Finally, the need to encourage drift drivers in the rural areas in the mobilization of loanable resources by working hand in hand with financial institutions will promote economic activities in those areas and the economy at large. It is expected that the above recommendation if strictly adhered to will help foster the effectiveness of the sector and contribution of same to the economic growth of the country

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