Banking Sector Development and Economic Growth in Nigeria

Adolphus Joseph Toby, Samuel Dibiah
Department of Banking and Finance
Rivers State University, Nigeria
samuel.dibiah@portharcourtpoly.edu.ng
samueldibiah@yahoo.com

Abstract

The purpose of this study is to empirically examine the relationship between banking sector development and economic growth in Nigeria. The study examined the Central Bank of Nigeria quarterly data from 1981Q1 to 2017Q4 with the E-views software package (version 9.0). The Vector Auto Regression (VAR) methodology was used to analyse the data, while Block Exogeneity Wald test was used to test the hypothesis. The specified models included stationarity tests, reduced form VAR estimate and structural analysis. The Augmented Dickey Fuller Test indicates that the study variables are stationary at first difference or I(1). The VAR roots plot in relation to unit circle indicates that our specified reduced form VAR models are stable. The Lagrange Multiplier (LM) diagnostic tests indicate that our specified VAR models are correctly specified. The results from the granger causality wald test show that, at 5% significance level, conglomerate of indicators of banking sector development; commercial bank assets, central bank assets and banking system assets, has no significant effect on economic growth. The study therefore recommends that any strategy to further develop the banking sector should focus more on the quality of its asset than its size. To this end, the focus of micro prudential policies should be on reducing the current overconcentration of bank loans to the volatile oil and gas sector. This would allow the banking sector assets to be more evenly spread among the productive sectors, which in turn, would help reduce the high level of non-performing loans that is currently plaguing the banking sector.

Keywords: Banking Sector Development, Commercial Bank Assets, Central Bank Assets, Banking System Assets and Economic Growth

1. INTRODUCTION

1.1   Background to the study

Subsequent upon the theoretical works of Keynes (1936) who promoted government intervention in financial markets, many governments including those of sub-Sahara Africa of which Nigeria is no exception, had in the 1960s and 1970s made attempts to generate economic growth through financial repressive policies such as the use of fixed interest rates, sectorial credit allocation and inflationary monetary policies. Nevertheless, McKinnon and Shaw (1973) argued against such financial repressive policies as they acted as impediments to savings mobilization, which prevented long-run economic growth and sustainable development. Following this, developing economies in the last few decades have leaned towards to development strategies that concentrate more on the modernization and liberalization of their financial systems, sub-Saharan Africa being no exception. Certain actions in the 1980s have seen most of these countries take on policies aimed at reducing the levels of financial repression by generally watering down the extent of government intervention in national financial sectors, through the privatization of banks and other financial institutions. These policies were aimed at promoting growth through financial development and this was to be achieved through higher mobilization of savings, an increase in domestic and foreign investments and a general improvement in the efficiency of resource allocation (Cobbina, 1999).

The mere existence of a financial system is not enough though, hence, for a faster growth and expansion in economic activities, a sound and efficient financial system must be in place to effectively stimulate financial integration which will bring about the desired growth. In easing financial intermediation, funds are moved from net savers to net borrowers. The net savers are categorized as the surplus unit (investors), with substantial amount of idle funds, while the net borrowers on the other hand are categorized as the deficit unit (borrowers) in the economic chain in the sense that they have opportunities but do not possess the required finances to exploit them. Leaving them on their own, these units would find it very difficult and almost impossible to figure out the corresponding role they need to play. It follows therefore that, to save cost and time, the financial system, whether banking institutions or non-banking institutions will have to intermediate, mobilizing funds from investors and making them available to borrowers in the most efficient and cost effective manner. Ndebbio (2004) noted that an optimum measure of financial deepening must include but not limited to the total amount of banking and non-banking financial assets including domestic credits to the private sector, liquidity liabilities, stock and bond market capitalization and Treasury bills. Dehesa, Druck & Plekhanov (2007) posit that financial deepening indicators constitute the ratio of private sector credit to gross domestic product (GDP). Ang (2008) equally considers ratio of private sector credit to GDP as a primary financial deepening measure, but also selected the money supply relative to GDP as an alternative indicator.

Even though there is a general consensus among some researchers that financial deepening stimulates economic growth, the direction of causality between the two has remained unresolved and problematic to ascertain. Meanwhile, the direction of causality may either be through the supply-leading hypothesis, which suggests that financial deepening stimulates growth, or demand-following hypothesis, which proposes that economic growth drives financial deepening,

and demand for financial services or the bi-directional hypothesis which suggests the presence of a feedback effect between the financial development and economic growth. Sackey and Nkrumah (2012), Rashti, Araghi & Shayeste (2014) and Tabi, Njong & Neba (2011) among other studies, maintain that, in line with theoretical expectation, financial deepening promotes growth, meaning that finance has positive relationship with economic growth. The role of the financial system in economic growth alongside financial deepening cannot be overemphasized because of the controversy associated with it. Hence, globally, there is the belief that the financial system is critical to the development of any economy majorly because of the huge support it provides to economic activities. Rajan and Zingales (2003) opine that financial system deepening contributes to economic growth.

1.2   Statement of the problem

In recent times, more far-reaching financial reforms have been initiated which includes the restructuring of pension fund administration in 2004, bank recapitalization and consolidation policy in 2005, insurance recapitalization and restructuring in 2007, introduction of micro finance banks as well as capital market reforms. These financial reforms were expected to bring about an efficient financial system that would encourage domestic savings and investment and consequently lead to economic growth and development. These expectations however, seems to be far-fetched evidenced by dwindling economic indices including the economic recession experienced by the country in 2018. Adeoye and Adewuyi (2005) laid credence to this assertion by acknowledging that the major concern now in Nigeria is that financial institutions (mostly banks) seem not to have performed to expectations in terms of mobilizing savings for financing long-term development projects in the real sector. Furthermore, there is no apparent and substantial contribution of financial deepening to economic growth in the post-SAP era (Ayadi, Adegbite and Ayadi, 2008 and Ayadi, 2009). Nzotta and Okereke (2009) however noted that some studies on financial deepening and economic growth in Nigeria relied mostly on money market indicators (Ogun, 1986; Oyejide, 1986; Edo, 1995; Ndebbio, 2004; and Akinlo and Akinlo, 2007), thereby neglecting the contributions of the capital market and established a positive and significant relationship between financial deepening and economic growth. Also, some of these studies have adopted either theories and methodologies that omit some of the direct (credit supply and broad money supply) and indirect (market capitalization) channel(s), or models that ignore the short run effects. The Nigerian economy has not really experienced impressive performance such as attraction of foreign investment and halting of capital flight. The banking sector seems not to have made a significant effort in addressing the financial gaps in the system. This is evident to the fact that neither domestic savings nor investments in the country have increased appreciably as the sector still remained largely oligopolistic and uncompetitive, with few large banks controlling the greater segment of the market in terms of total assets, total liabilities and total credit in the banking system. It becomes imperative therefore to ascertain the effectiveness of these reforms by looking at the effects they have made in terms of contributing to economic growth.

Interestingly enough, specific studies on the finance-growth nexus in Nigeria is still marred with major controversies ranging from conflicting results and inappropriate methodologies to inadequate inclusion of financial deepening variables and indicators which makes for the unreliability of the results. It is against these backdrops that this study seeks to investigate the relationship between financial deepening and economic growth in Nigeria using quarterly data

for the period (1981Q1-2017Q4) which gives a wider range of observations and of course a more reliable result based on larger number of observations which is lacking in other studies.

1.3 Objectives of the Study

The objectives of this study are as follows: (1) To evaluate the relationship between commercial bank assets ratio and economic growth in Nigeria. (2) To evaluate the relationship between central bank assets ratio and economic growth in Nigeria. (3) To evaluate the relationship between banking system assets ratio and economic growth in Nigeria.

1.4 Research Questions

The following research questions will guide this study (1) What is the nature of relationship between commercial bank assets ratio and economic growth in Nigeria? (2) What is the nature of relationship between central bank assets ratio and economic growth in Nigeria? (3) What is the nature of relationship between banking system assets ratio and economic growth in Nigeria?

1.5 Research Hypotheses

Ho_1: There is no significant relationship between commercial bank assets ratio and economic growth in Nigeria.

Ho_2: There is no significant relationship between central bank assets ratio and economic growth in Nigeria.

Ho_3: There is no significant relationship between banking system assets ratio and economic growth in Nigeria.

2. Literature Review

2.1 Conceptual Framework

2.1.1 Concept of Economic Growth

Economic growth can be seen as the rise in the size of an economy to produce goods and services over a period of time. It is brought about by the increase in the productive capacity of a country. According to Antwi, Mills and Zhao, (2013), economic growth can be seen as the growth in a nation's real gross domestic product (an increase in a nation's output of goods and services) or the physical expansion of the nation's economy. Kanu and Ozurumba, (2013) view economic growth as a positive change in the output of a nation's manufacturing goods and services which stretch over a certain period of time. Being an aggregate measure of total economic production of a country, it therefore represents the market value of all final goods and services including personal consumption, private inventories, government purchases, paid-in construction costs as well as foreign trade balances. The most conventional measure of economic growth is the Real Gross Domestic Product (RGDP) which is considered as the widest indicator of economic output and growth. It is designed to measure the value of production of those

activities which falls within the borderline of the national accounting system. GDP measures economic growth in monetary terms. GDP can be expressed either in nominal terms which include inflation or in real terms which makes adjustments for inflation. Short term GDP represents the annual percentage change in real national output, while Long term GDP represents the increase in trend or potential GDP. In comparative studies involving different countries of different population sizes, GDP per capita is commonly used.

2.1.2 Banking Sector Development and Economic Growth

Financial intermediation refers to the process through which financial institutions transfer financial resources from surplus units of the economy to deficit units. However, for financial institutions to perform this role very well, they have to be developed in terms of liquidity, assortment of financial assets and efficiency in credit allocation. Rajan and Zingales (2002) stated strongly that a developed financial sector should mirror the ease with which entrepreneurs with viable project proposals can obtain financial resources, as well as the assurance with which investors expect satisfactory returns. The system should also be able to measure, segment, and spread difficult risks, allowing them rest where they can best be borne and all these should be able to be done at lowest cost possible. Following all these, more savings, investments and high productivity will be guaranteed, thereby leading to economic growth. Lately, the Central Bank of Nigeria implemented a financial sector consolidation and recapitalization policy directed towards raising the capital base of financial institutions for effective intermediation.

2.2. Theoretical Review

2.2.1 Financial Service Theory

This theory was made popular by Levine in 2002. The financial services view stress the role of banks and markets in research firms, exerting corporate control, creating risk management devices, and mobilizing society's savings for the most productive endeavors. This view minimizes the bank-based versus market-based debate and emphasizes the quality of financial services produced by the entire financial system.

2.2.2 Bank-based System Theory

Apart from the debates regarding the effects of financial deepening on economic growth, financial economists have had several arguments on the comparative importance of bank-based and market-based financial systems for over a century (Goldsmith, 1969; Boot and Thakor, 1997; Allen and Gale, 2000; Demirguc-Kunt and Levine, 2001). As deliberated earlier, financial mediators can improve the procurement of information on firms, deepen the rate at which creditors wield corporate control, provide risk-reducing provisions, pool capital, and simplicity of doing transactions. These are arguments in favor of well-developed banks. They are not necessarily reasons in favor of a bank-based financial system. Instead of simply stating the growth-promoting role of banks, the case for a bank-based system shoots from an analysis of the role of markets in making providing financial functions. As regards the procurement of information about firms, Stiglitz (1985) emphasized on the free-rider problem inherent in

incongruent markets. Since well-developed markets are quick in giving out information to investors at large, individual investors will be discouraged from allotting resources toward researching firms. Thus, better market development, in lieu of bank development, may actually hinder incentives for finding innovative projects that foster economic growth. Banks can alleviate the potential hindrances from efficient markets by privatizing the information they acquire and by forming long-run relationships with firms (Gerschenkron, 1962; Boot, Greenbaum, and Thakor, 1993).

2.3. Empirical Review

Olawumi, Lateef and Oladeji (2018) investigated financial deepening and bank performance in Nigeria using Granger causality test. The study reveals a strong relationship between each component of financial deepening indicators and also reveals that they are statistically significant, which provides empirical evidence that financial deepening made positive contributions to the level of profitability of the selected commercial banks in Nigeria.

In a study in South Africa, Jalil, Wahid and Shahbaz (2010) examined the relationship between financial sector development and economic growth, using time series data for the period 1965-2007 and using the ARDL model estimation strategy. The variables used for financial deepening were liquid liabilities to nominal GDP (M2/GDP), credit to private sector to nominal GDP and Commercial/Central Bank asset ratio. The study found a positive unilateral relationship between financial development and economic growth for South Africa. The study also showed that trade openness and per capita real capital are other important determinants of economic growth.

Azege (2004) examined the empirical connection between the level of development of financial intermediaries and growth. The study used data on aggregate deposit money bank credit over time and gross domestic product and found out that a moderate positive relationship exist between financial development and economic growth. It therefore concluded that the growth of the financial intermediation institutions in Nigeria is essential for overall economic growth.

King and Levine (1993) conducted a study on banking sector development using data for 77 countries; the study found out that banking sector development can spur economic growth in the long run. In their cross country growth regression, they used the ratio of M2 to GDP and growth rate in per capita real money balances as proxy for financial development and found a positive and statistically significant impact of growth rate in per capita real money balances on real per capita GDP growth.

Fadare, (2010) study the effects of banking sector reforms on economic growth in Nigeria for the period 1999-2009. Employing the ordinary least square (OLS) regression technique, the found out that interest rate margins, parallel market premiums, total banking sector credit to the private sector, inflation rate, inflation rate lagged by one year, size of banking sector capital and cash reserve ratios give rise to a very high percentage of the changes in economic growth in Nigeria. Although the study established a strong and positive relationship between economic growth and the total banking sector capital other indicators of financial development showed wrong signs.

Murinde, (1996) examines the effect of financial institution on seven African countries using

panel regression methodology. He finds only weak support of the motion that financial sector has played a significant role in the growth process. Harrison (1998) presents evidence that industries which rely heavily on external funding, grow relatively faster in countries with well-developed financial intermediaries and stock markets. He also stated that there is a feedback effect between real and financial sectors.

3. Research Methods

3.1 Research Design

This study adopts an ex-post facto research design approach for the data analysis. This approach combines theoretical consideration (a prior criterion) with the empirical observation and extract maximum information from the available data. It allows us therefore to observe the effects of descriptive variables on the dependent variables.

3.2 Nature/Sources of Data

In order to investigate the effects of banking sector development on economic growth in Nigeria, secondary data consisting of quarterly time series data are used covering the period from 1981Q1 to 2017Q4. Thus, the data consisting of a total of 148 observations is considered rich enough to yield reliable results. The data is obtained from secondary sources from the Central Bank of Nigeria database.

3.3 Method of Data Analysis

The vector autoregressive (VAR) methodology is used in this study. VAR models are mostly suitable for demonstrating the dynamic behaviour of most macroeconomic and financial time series data. It is also used for prediction (Ouliaris, Pagan and Restrepo, 2016). The use of VAR as a modelling system of autoregressive time series has several advantages which includes its flexibility nature (Brooks, 2008), forecast generated is highly reliable (Ouliaris, Pagan and Restrepo, 2016), and VAR models provide window for analysing causal impacts of policy shocks through impulse response function, variance decomposition and Granger causality. This is consistent with the aim of this study which is to examine the effect of banking sector development on economic growth.

3.4 Empirical Model Specification

The empirical analysis in this study would be based on the model below:

$$RGDPG = f(BAR, CBNR, BSAR) \qquad (3.1)$$

Where;

$RGDPG$ = Real Gross Domestic Product

BAR = Commercial Bank Assets Ratio

$CBNR$ = Central Bank Assets to GDP Ratio

$BSAR$ = Banking System Assets to GDP Ratio

The econometric representations of the above functional models are given by:

$$RGDPG_t = \phi_{01} + \phi_{11}RGDPG_{t-1} + \phi_{21}BAR_{t-1} + \phi_{31}CBNR_{t-1} + \phi_{41}BSAR_{t-1} + \mu_{1t}$$
(3.2)

$$BAR_t = \phi_{02} + \phi_{12}RGDPG_{t-1} + \phi_{22}BAR_{t-1} + \phi_{32}CBNR_{t-1} + \phi_{42}BSAR_{t-1} + \mu_{2t} \quad (3.3)$$

$$CBNR_t = \phi_{03} + \phi_{13}RGDPG_{t-1} + \phi_{23}BAR_{t-1} + \phi_{33}CBNR_{t-1} + \phi_{43}BSAR_{t-1} + \mu_{3t} \quad (3.4)$$

$$BSAR_t = \phi_{04} + \phi_{14}RGDPG_{t-1} + \phi_{24}BAR_{t-1} + \phi_{34}CBNR_{t-1} + \phi_{44}BSAR_{t-1} + \mu_{4t} \quad (3.5)$$

3.5 Apriori Expectations

Bank assets ratio to GDP is expected *apriori* to be positively related to real GDP growth. An increase in bank assets means that more and more loans and advances have been extended to the productive sectors for higher economic activities. Similarly, central bank assets and banking system assets both are expected *apriori* to have positive relationship with real GDP growth. The higher the central bank assets, the higher the real economic growth. Also, the higher the banking system assets, the higher the rate of growth of the economy.

4. Results and Discussion

4.1 Descriptive Analysis

4.1.1 Growth Rate in Real Gross Domestic Product

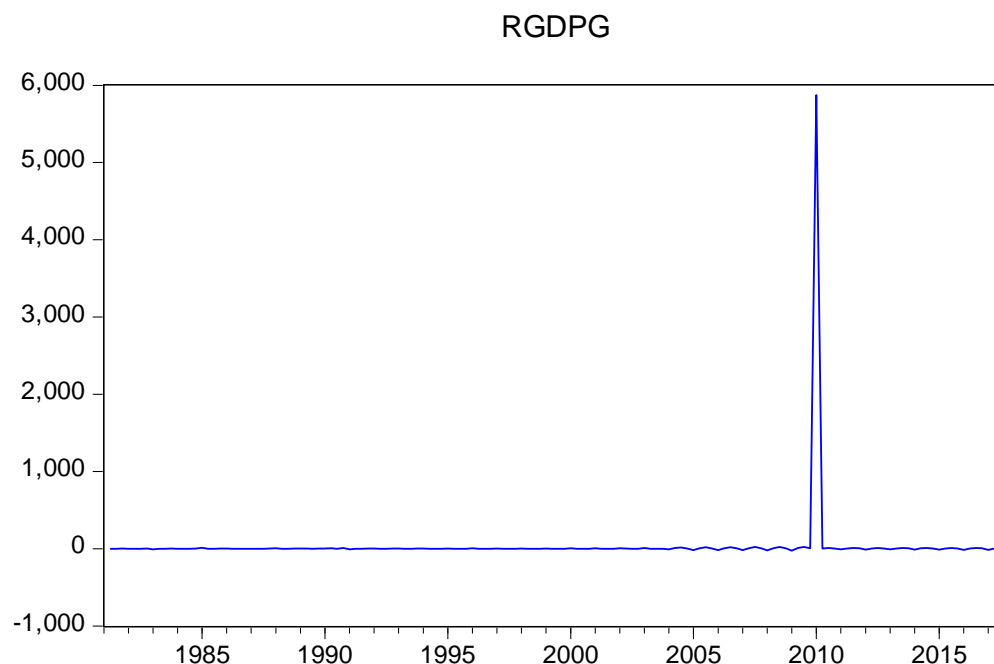Figure 4.1 shows the time series graph for quarterly real GDP growth rate from 1981Q1 to 2017Q4.

Figure 4.1: The time series plot of quarterly real GDP growth rate (1981Q1 - 2017Q4)

Source: EViews output based on Research Data

From figure 4.1, apart from the obvious outlying observation in 2010Q1, which is due to the economic rebasing in Nigeria that took effect from that quarter, all other observations stayed around their mean value over the study period? Thus, as expected, the real GDP growth rate series is stationary. The implication is that any growth model that fails to incorporate or control for the effect of this structural break would suffer model misspecification bias, which would also lead to unreliable results and spurious conclusions. Therefore, to capture the effect of this disturbing observation, all our economic growth models would include a dummy variable that takes the value 1 for 2010Q1 observation, or 0 otherwise.

Tables 4.1 presents the descriptive statistics for two sample variants for real GDP growth rate; sample that includes all observations and sample that excludes the outlying observation. We report the statistics for the two samples to underscore the importance of the economic rebasing exercise that took effect from the first quarter of 2010 in Nigeria, which is a milestone for this study.

Table 4.1: Descriptive statistics for real GDP growth rate series (1981Q1 – 2017Q4)

Statistic	Sample with outlier	Sample without outlier
$\bar{x}$	41.30542	1.348268
Max	5875.050	21.75271

Min	-23.72240	-23.72240
σ	484.5058	7.055771
S	11.99644	-0.459365
K	144.9458	6.329684
JB	126936.1	72.57941
$p\text{-}value\ (JB)$	0.000000	0.000000

Source: EViews output based on research data

From table 4.1, we can also see that the effect of the structural break on growth rate series is evident, with the difference in the key summary statistics between the two sample variants being quite substantial. Specifically, for the sample with outlier, it is obvious that the average growth rate in real GDP of 41.30%, with a standard deviation of 484.50% and a maximum of 5875% does not reflect the economic reality in Nigeria. On the contrary, however, the average quarterly GDP growth rate of 1.34%, with a standard deviation of 7.05% and a maximum of 21.75% truly reflects the economic reality in Nigeria. Further, while the sample with outlier has a large positive skewness coefficient ($S = 11.99$), the sample without the outlying observation has a small negative skewness coefficient ($S = -0.45$). Although, both samples have an excess kurtosis ($K - 3 > 0$) and consist of observations that are not normally distributed ($p\text{-}value\ (JB) = 0.0000$), the large difference in the kurtosis values of the two samples show that the sample with the outlying observation contains more data extremes than the sample without the outlying observations. Thus, as stated earlier, the implication of these results is that any GDP growth model that omits the effect of this observed structural break would suffer misspecification bias.

4.1.2 Banking Sector Development Variables

Figure 4.6 shows the time series graph for commercial banks assets ratio to GDP, central bank assets ratio to GDP and the banking system assets ratio to GDP from 1981Q1 to 2017Q4.
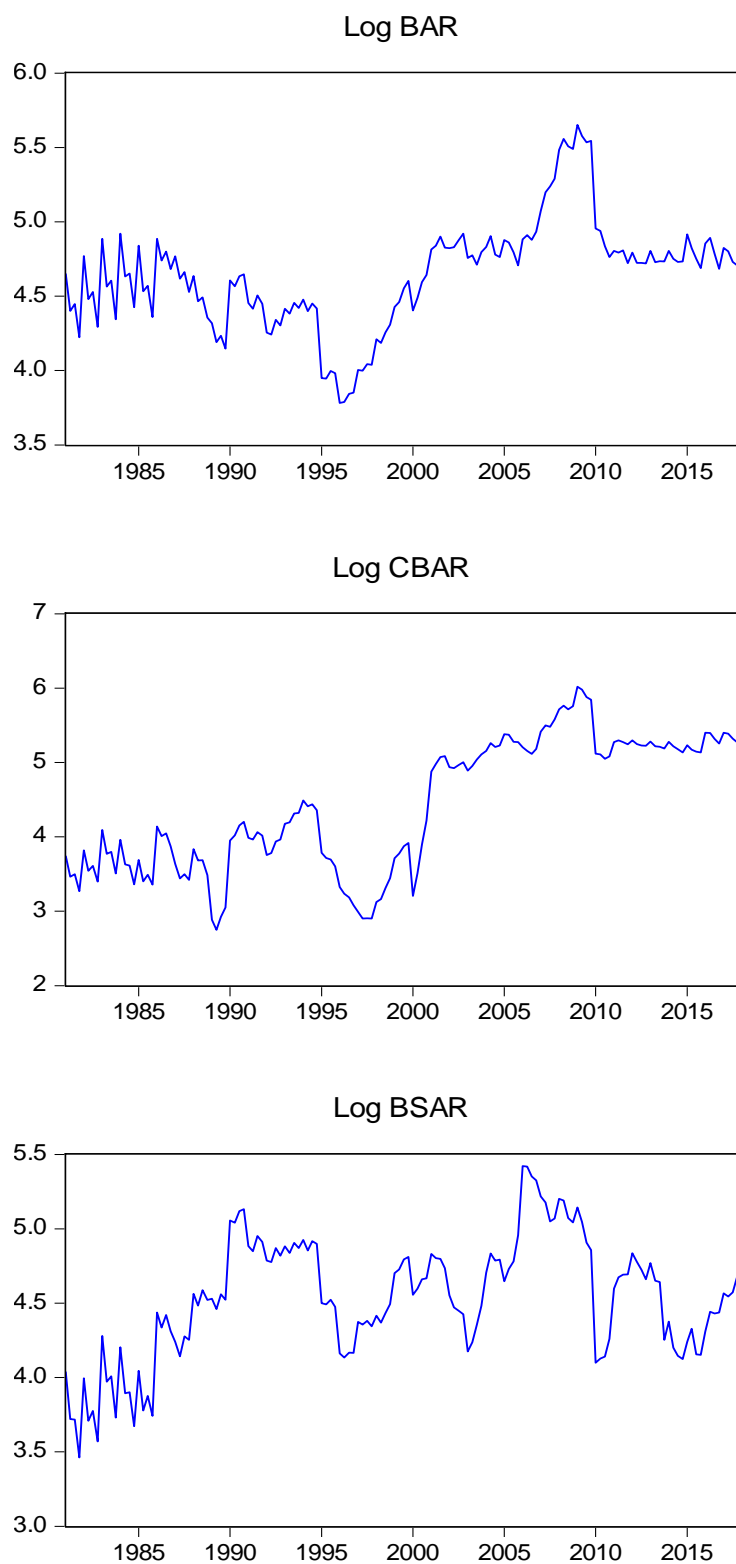
Figure 4.6:   The time series plots of the log of BAR, CBAR and BSAR (1981Q1 - 2017Q4)

Source: EViews output based on Research Data

From figure 4.6, we can see that the three measures of banking sector development trended upward over the sample period. Their movements are also like a random walk. Thus, the variables all seem to be non-stationary.

Table 4.2 shows the descriptive statistics of the Commercial Bank Assets Ratio, Central Bank Asset Ratio and Banking System Assets Ratio.

Table 4.2: Descriptive statistics for BAR, CBAR and BSAR (1981Q1 – 2017Q4)

Statistic	BAR	CBAR	BSAR
$\bar{x}$	111.0266	116.1543	100.5559
Max	284.6234	410.9652	226.1174
Min	43.93610	15.65098	31.90460
σ	44.50218	90.58008	39.93716
S	1.754365	0.868124	0.769720
K	7.062860	3.187668	3.518403
JB	177.7111	18.80697	16.27146
$p\text{-}value\ (JB)$	0.000000	0.000082	0.000293

Source: EViews output based on research data

From table 4.2, we can see that Central Bank Asset Ratio has the highest mean value ($\bar{x} = 116.15, \sigma = 90.58$) and is the most volatile, followed by Commercial Bank Asset Ratio ($\bar{x} = 111.02, \sigma = 44.50$), and then by the Banking System Asset Ratio ($\bar{x} = 100.55, \sigma = 31.90$). Although, all the variables have a positively skewed ($S > 0$) and leptokurtic distribution ($K > 3$), the distribution of Banking System Asset Ratio is however, more skewed and fatter than the normal distribution. The JB statistic also clearly rejects the null of null distribution for all variables, suggesting evidence that the series all have a distribution that is non-normal. Therefore, the banking sector development variables would enter our growth model in their logarithmic form for a more meaningful empirical analysis.

4.2.1 Estimation and Analysis of Empirical Model

4.2.1.1 Stationarity test for Model

This model seeks to establish whether economic growth in Nigeria can be explained by banking sector development, measured by commercial bank assets, central bank assets and banking system assets, all expressed as a ratio of nominal GDP. The results of the ADF test are presented

in table 4.3.

Table 4.3: ADF tests for the RHS variables in model 5

Variable	tau-statistic		Conclusion
	Level	First difference	
BAR	-2.3684 (0.1526)	-4.6520 (0.0002)	Difference Stationary I(1)
CBAR	-2.6781 (0.2473)	-12.7794 (0.0000)	Difference Stationary I(1)
BSAR	-2.968158 (0.0403)	–	Level Stationary I(0)

Source: EViews output based on research data; parenthesis contains p-values

From table 4.3, the tau-statistic for the test on level data has a probability of 0.1526 for Bank Assets Ratio and 0.2473 for Central Banks Assets Ratio, indicating that the test is not significant for both variables. On the contrary, the tau-statistic has a probability of 0.0403 for Banking System Assets Ratio, indicating that the test is significant at 5% level. For the first difference unit root test, the tau statistic (p-value = 0.0000) is associated with zero probability for both Bank Assets Ratio and Central Banks Assets Ratio, indicating that the test is highly significant in both cases. Therefore, while Lag Bank Asset Ratio and Lag Central Banks Assets Ratio are stationary at first difference series or I(1), Banking System Assets Ratio is stationary at level data or I(0). The implication of these results is that both Real Gross Domestic Product and Banking System Assets Ratio would enter our VAR model in their level form while Bank Assets Ratio and Central Banks Assets Ratio would be modelled in their first difference form.

4.1.3 Reduced Form VAR Estimation for Model 5

Tables 4.4 and 4.5 present the VAR lag length selection and the residual diagnostic test for reduced form VAR for the empirical model. Again, the VAR order selection is based on the three commonly used information criteria; AIC, SIC and HQC, and the decision rule is to select the lag order that corresponds to the minimum value of each information criterion. Also, a rebase dummy variable, DUMREBASE, is included in the model to capture the effect of the structural break observed in the first quarter of 2010 real GDP growth plot in figure 2. Further, as in the previous cases, we report the reduced form VAR estimation results for model 4 in the Appendix, since it is not easy to interpret, due to too many lags that are included.

Table 4.4: VAR order selection for the model

Lag	AIC	SIC	HQC
0	5.027193	5.196083	5.095825
1	2.104939	2.611611*	2.310837
2	2.045158	2.889611	2.388321
3	1.973134	3.155368	2.453562
4	1.340103*	2.860118	1.957797*
5	1.415378	3.273175	2.170337
6	1.532407	3.727984	2.424631
7	1.702093	4.235451	2.731582
8	1.824391	4.695531	2.991145

Source: EViews output based on research data; *indicates the selected lag order

Table 4.5: VAR LM serial correlation test for Model 5

LM statistic	p-value
3.949987	0.9990

Source: EViews output based on research data

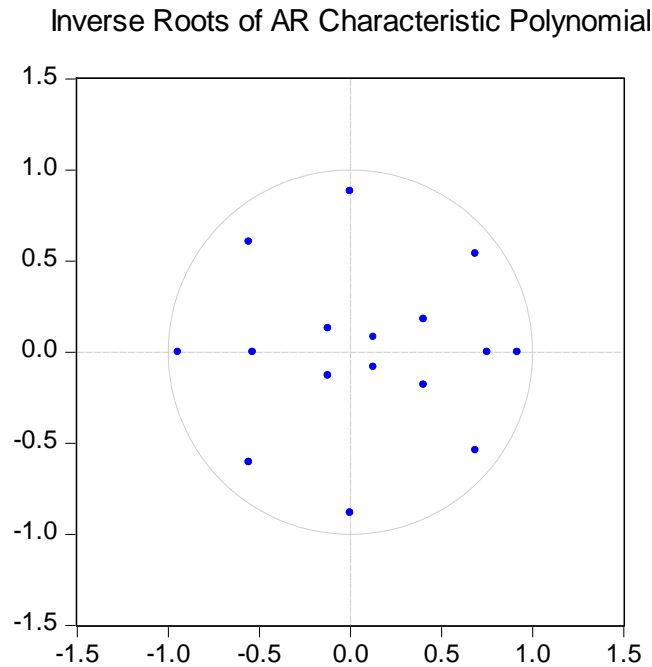Inverse Roots of AR Characteristic Polynomial

Figure 4.6: VAR roots plot in relation to unit circle

Source: EViews output based on research data

From table 4.5, as indicated by the asterisk (*), while both AIC and HQC select a VAR with 4 lags, SIC both prefers a VAR with 1 lag. Therefore, we consider 4 lags for our VAR specification for our empirical model 5.

From table 4.5, the probability of the LM statistic is very high at 0.9990, indicating that the test is not significant. Thus, we fail to reject the null hypothesis that the fitted VAR residuals are serially correlated and conclude that the fitted VAR (4) model is correctly specified.

Figure 4.5, which plots the inverted roots of the estimated VAR(4) in relation to unit circle, shows that all the roots lie inside the unit circle. Thus, the estimated coefficients are stable. This therefore implies that a structural analysis can be conducted to meaningfully interpret the fitted VAR results and test the relevant hypotheses.

4.1.4 Structural Analysis for the Model

Figures 4.7 and 4.8 show the impulse response function (IRF) and variance decomposition for real GDP growth for the model. The IRF helps to evaluate the impact on the Nigerian economy of unexpected changes in commercial bank assets, central bank assets and the banking system assets, all expressed as a ratio of nominal GDP. The variance decomposition shows the contribution of each these factors to the variation in real gross domestic product. Again, six periods (quarters) are used.

Table 4.6 shows the VAR Granger causality/blocked exogeneity Wald test for joint significance of lags of each endogenous variable in our estimated VAR(4) model.

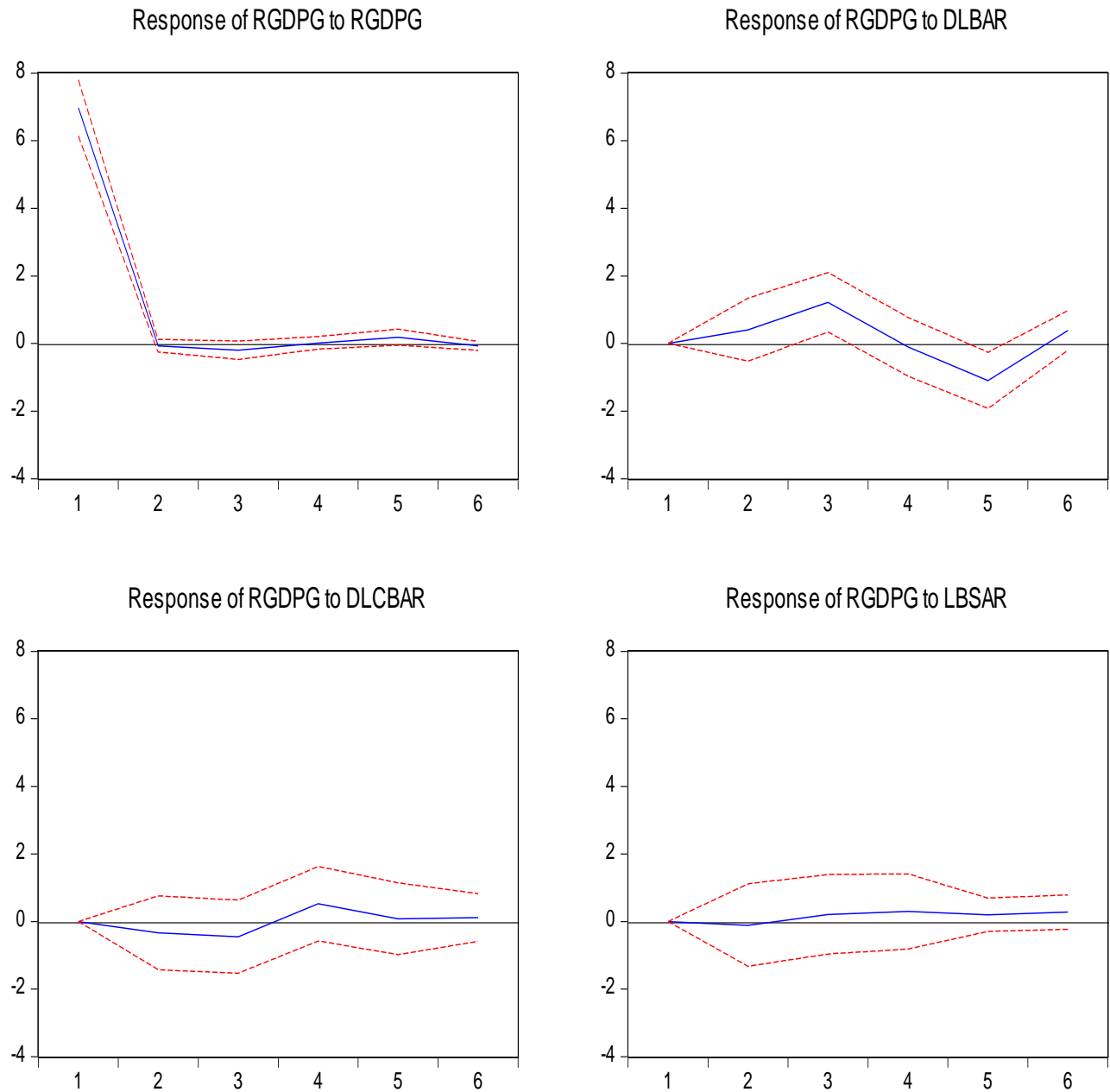**Figure 4.7: IRF for RGDPG for the model**

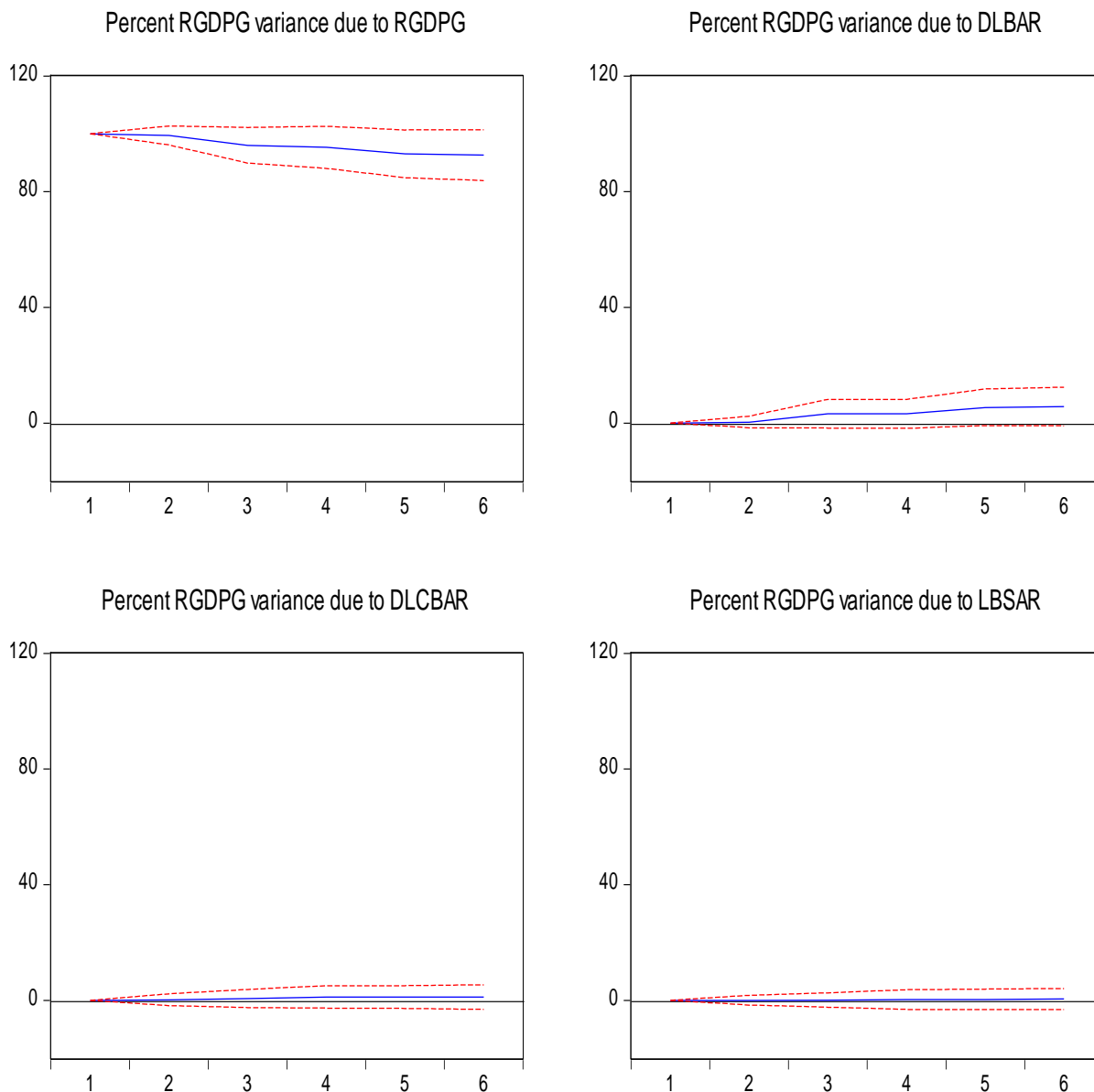**Source: EViews output based on research data**

Figure 4.8: Variance decomposition of RGDPG for the model

Source: EViews output based on research data

Table 4.6: VAR Granger causality Wald test for the model

Excluded	Chi-sq.	p-value
BAR	5.685325	0.2239
CBAR	1.481781	0.8299
BSAR	1.763120	0.7792

All	19.29199	0.0817

Source: EViews output based on research data

The impulse responses in figure 4.7 show that real GDP growth initially responds positively to own shock, but the effect dies stays around zero from the second period. There is a cyclical effect on real GDP growth rate of shocks to both Bank Assets Ratio and Central Banks Assets Ratio. However, while the initial effect of Bank Assets Ratio is positive, the initial effect of Central Banks Assets Ratio is negative. Unexpected change in Lag Banking System Assets Ratio initially produces small negative effect on real GDP growth rate, but from the second period, the effect becomes positive.

From figure 4.7, like the previous cases, most of the variation in real GDP growth is caused by its own shock, with the joint effect of Bank Assets Ratio, Central Banks Assets Ratio and Banking System Assets Ratio explaining less than 1% in the second period and approximately 5% and 7% in the fourth and sixth periods respectively.

From table 4.6, it is evident that at 5% level of significance, the Wald test statistic fails to reject the null hypothesis that Bank Assets Ratio, Central Banks Assets Ratio and Banking System Assets Ratio, each has a causal impact on real GDP growth, but at 10% significance level, these variables are jointly significant (Chi-sq. = 19.2919, p-value = 0.0817). Thus, there is weak evidence that commercial banks assets, central bank assets and banking system assets jointly have a causal impact on economic growth in Nigeria.

4.2 Testing of Hypothesis

Ho_1: There is no significant relationship between banking sector development and economic growth in Nigeria

Here, banking sector development is defined in terms of the combined effect of commercial banks assets, central bank assets and banking system assets, represented by the variable "All" in table 4.7. Therefore, the associated p-value of the Wald (Chi-sq.) statistic corresponding to All would be used to test the above hypothesis. The chosen level of significance is 5%.

If the p-value corresponding to All is less than 0.05, then we would reject Ho_1 and conclude that there is a significant causal relationship from banking sector development to economic growth in Nigeria. Otherwise, there would be no evidence against Ho_1.

From table 4.7, the probability of the Wald (Chi-sq.) statistic corresponding to All is 0.0817 which is higher than 0.05, suggesting that the test is not significant at 5% level. We therefore, fail to reject the above null hypothesis and conclude that banking sector development has no causal impact on economic growth in Nigeria.

4.3 Discussion of Findings

The bank-based theory of financial development argues that financial development, driven by the banking sector development, is a positive causal factor for economic growth. Thus, we expected

apriori, a strong positive effect of the banking sector development on economic growth. However, in disagreement with this theoretical position, the results from the Granger causality Wald test in table 4.7 show that, at 5% significance level, conglomerate of indicators of banking sector development; commercial bank assets, central bank assets and banking system assets, has no significant effect on economic growth. Although, some evidence exists of joint causality at 10% level, individually, however, each of these variables enters the growth model insignificantly. Thus, the third hypothesis, which was tested at 5% level of significance, was not rejected. The evidence of a weak joint influence of the banking sector variables implies that banking sector assets have little or no influence on the rate of growth of the real economy. Thus, in disagreement with bank-based view of financial development, the banking system plays very little or no role in the growth process of the Nigerian economy. The question now is: what can explain this weak or no relationship between the banking sector assets and economic growth?

One plausible explanation, which is consistent with the view of Koivu (2002), is that the size of the banking sector (as measured by its total banking sector assets) is not a true reflection of the quality of that sector, especially in developing countries. In Nigeria, the incidence of non-performing loans is still alarming, with the attendant negative impact on the quality of banking sector assets. According to Central Bank of Nigeria (2017), the ratio of non-performing loans to gross loans, which increased from 3.9% in June 2013 to 15.0% in June 2017, adversely affected the banking sector solvency, which in turn led to the decline in banking sector profitability. Further, the case of the recent failure of the defunct Skye Bank PLC is a clear evidence of the adverse effect of high incidence of non-performing loan on the banking sector development. Thus, the weak or no relationship between banking sector assets and economic growth is largely due to the high incidence of non-performing loans in Nigeria.

Another plausible explanation of the weak or no significant effect of banking sector development relates to the skewed distribution of banking sector assets. This view is consistent with the evidence by Njiforti, Lawong and Kevin (n.d) that the 2009 financial crisis in Nigeria is largely caused by the overconcentration of bank loans or assets to the oil and gas sector, which is also the most volatile sector in Nigeria. The Central Bank of Nigeria financial stability report for June 2017 also shows that oil and gas sector received the highest private sector credit at 29.29% in in June 2017, while in the same period, the contribution to the total private credit of manufacturing, real estate activities, power and energy, construction and agricultural sectors is 13.97%, 5.16%, 4.83%, 3.98% and 3.18% respectively. Thus, the high volatility in the oil and gas sector, which gave rise to the non-performance loan ratio, is responsible for the crisis in the banking sector, hence, the weak role of the banking sector in economic growth process. This findings is in agreement with that of Murinde, (1996), but disagrees with that of Olawumi, Lateef and Oladeji (2018), and Jalil, Wahid and Shahbaz (2010).

5. Summary and Conclusion

The analysis of the study show that although, individually, none of the banking sector development measures; commercial bank assets, central bank assets and banking system assets, all as a ratio of nominal GDP, enters the growth model significantly, the conglomerate of these indicators, however, has a weak causal impact on economic growth. Therefore, we conclude that in Nigeria, rather than the size, it is the quality of the banking sector assets that typically matters for economic growth as the former is adversely affected by the high incidence of non-performing

loans and the skewness in its distribution among the productive economic units. The study recommends that any strategy to further develop the banking sector should focus more on the quality of its asset than its size. To this end, the focus of micro prudential policies should be on reducing the current overconcentration of bank loans to the volatile oil and gas sector. This would allow the banking sector assets to be more evenly spread among the productive sectors, which in turn, would help reduce the high level of non-performing loans that is currently plaguing the banking sector.

This study is not without some contributions to knowledge. They include:

1. The study adopted quarterly data for its analysis. This makes for large number of observations thereby making the results more reliable. This is different from the studies reviewed which used mainly annual data.
2. The study captured the rebasing of 2010. This makes the work more robust and its results more accurate and reliable.

References

Adeoye, B. W. & Adewuyi, A. O. (2005). Benefits and costs of financial sector reforms: Nigeria's experience. In: *Cost and benefits of economic reforms in Nigeria. Selected Paper for the 2005 Annual Conference of the Nigeria Economic Society,* Chapter 16.

Akinlo, A. E. & Akinlo, O. (2007). Financial development, money, public expenditure and national income in Nigeria. *Journal of Social and Economic Development, 1*(5), 23-35

Allen, F. & Gale, D. (2000). *Comparing financial systems*, Cambridge, MA: MIT Press

Ang, J. B. (2008). Are financial sector policies effective in deepening the Malaysian financial system? Discussion paper. 33, 1-13.

Ayadi, O.F., Adegbite, E.O., & Ayadi F.S. (2008). Structural adjustment, economic sector development and economic prosperity in Nigeria. *International Research Journal of Finance and Economics* 15(45), 57-75.

Azege, M. (2004). *Financial Intermediation and Economic Growth: The Nigeria experience.* The University of Lagos Press

Demirgüç-Kunt, A., & Levine, R.(2001). Bank-based and market-based financial systems: Cross-country comparisons. In A. Demirguc-Kunt, & R. Levine (Eds.), Financial structure and economic growth: A Cross-country comparison of banks, markets, and development. Cambridge, MA, MIT Press, 81-140.

Goldsmith, R. W. (1969). *Financial structure and development,* New Haven, CT: Yale University Press.

Keynes, J.M. (1936). General theory of employment, interest rates and money. London Macmillan.

King, R. G., & Levine, R. (1993). Finance and growth: Schumpeter might be right. *Quarterly Journal of Economics, 108*, 717-738.

Levine, R. (2004). Finance growth, theory, evidence, and mechanism. *Handbook of EconomicReview,88*(3), 537-558.

Ndebbio, J.E.U. (2004). Financial deepening, economic growth and development: Evidence from selected Sub-Sahara African countries. AERC Research Papers No. 142 African Economic Research Consortium.

Olawumi, S.O., Lateef, L.A., & Oladeji, E.O. (2017). Financial deepening and bank performance: A case Study of selected commercial banks in Nigeria. *Journal of Mathematical Finance, 7, 519-535*

Rajan, R. G., & Zingales, L. (2003). Saving capitalism from capitalist. Crown Business, New York.

Rashti, N. A., Araghi, E. S., & Shayeste, M. (2014). Relationship between financial development and economic growth: Evidence from financial crisis. *Asian Economic and Financial Review*. *4*(7), 930-940.

Sackey, F. G., & Nkrumah, E. M. (2012). Financial sector deepening and economic growth in Ghana. *Journal of Economics and Sustainable Development*. *3*(8), 122-139.

Tabi, A. J., Njong, A. M., & Neba, C. (2011). Financial development and economic growth in Cameroon, 1970-2005. *Journal of Economics and International Finance.3*(6), 367-375.