Re-appraising the effect of the banking sector on the Nigerian economy

Damisah, Osikwemhe and Ekor, Maxwell

2019

Re-appraising the effect of the banking sector on the Nigerian economy

Osikwemhe Damisah
University of the West of Scotland, United Kingdom
osidamisah@yahoo.com

Maxwell Ekor
Ecopol Associates Limited, Nigeria
maxwellekor@gmail.com

Abstract

The banking sector remains pivotal to Nigeria's quest for sustainable economic growth and development. Using quarterly data between 2001 and 2018, and applying the Johansen Cointegration and Vector Autoregression techniques, the evidence shows that long-run equilibrium relationship exist among Gross Domestic Product (GDP), Credit to the Economy (CRD), All Share Index (ASI) and the Monetary Policy Rate (MPR). The response of GDP to shock to CRD was initially flat but turned negative for some periods, before becoming positive. On the contrary, the response of GDP to shock to the ASI was initially positive, and then became negative from the third period, and remained so for a longer period when compared with the response of GDP to CRD. It however turned positive at the final stage. This evidence supports the view that economic growth can be achieved faster through the banking sector when compared with the stock market which is an avenue for sourcing long-term funds. The response of GDP to shock to the MPR was also flat originally and then became negative for the rest of the period, confirming the interest rate stance of the Central Bank of Nigeria which has been more of a restrictive posture. The variance decomposition analysis indicates that GDP accounts largely for its own variation, meaning that it is highly endogenous.

Keywords: Credit, All Share Index, Impulse-Response, Variance Decomposition

1. Introduction

Theoretical and empirical evidence have established the importance of financial sector deepening for economic growth and development. This finance-growth nexus can simply be explained using the monetary policy transmission mechanism, where the pass-through effects of central bank actions affect the broader economy through the banking sector. Also, the regulatory functions of central banks ensure that the financial sector in general and the banking sub-sector is safe, sound and capable of supporting public and private sector investments.

In Nigeria, the Central Bank of Nigeria (CBN) launched the Financial Systems Strategy 2020 in 2004 in order to improve the depth of the financial sector. This strategy was premised on the theoretical and empirical views linking financial sector deepening and economic growth. Theoretically, the McKinnon-Shaw model explains the impact of financial liberalization as a prerequisite for growth while the Endogenous Growth Theory holds that policy measures have an impact on long-run economic growth rate.

Empirically, King and Levine (1993) found that better financial systems improve the probability of successful innovation and thereby accelerate economic growth. Apart from credit to entrepreneurs, De Gregorio (1996) argued that household credit can foster growth if it increases human capital accumulation. In contrast, Grossman and Stiglitz (1980) posit that stock markets may enhance growth by stimulating production of information about firms, a view that was supported by Greenwood and Jovanovic (1990).

To contribute to the finance-growth literature, this study revisits the impact of the banking sector on the Nigerian economy and is structured as follows: Section 2 highlights the key developments in the Nigerian banking sector while section 3 explains the methodological approach for the empirical analysis. Section 4 presents the results and the associated discussions while section 5 summarizes and concludes the study.

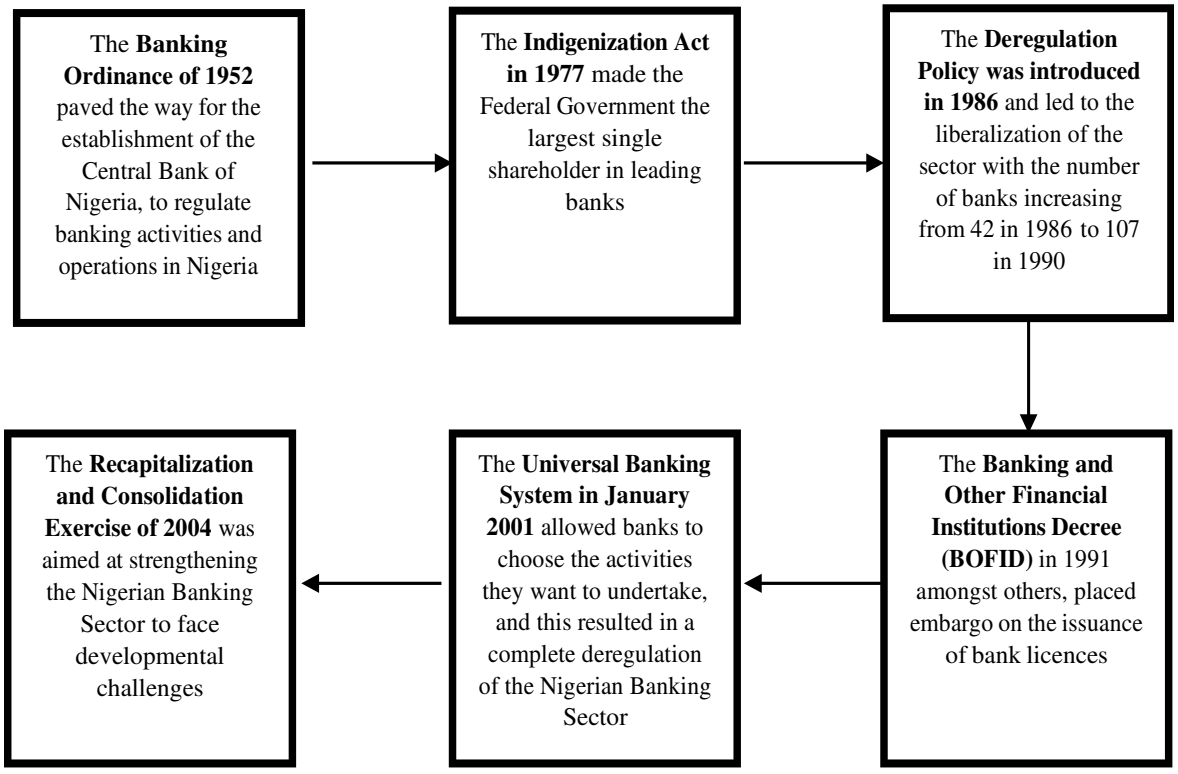
2. Issues in the Nigerian banking sector

In general, developmental reforms in Nigerian banking sector can be divided into three stages – the pre-consolidation era (1952 - 2004), consolidation era (2004 - 2008), and the post consolidation era (2009 – till date). At each stage, various policy reforms and regulations were implemented to develop and position the banking sector for effective economic development. However, the 2004 recapitalization and consolidation reform marked a critical watershed in the development of the Nigerian banking sector.

As indicated in Figure 1 below, the CBN introduced the recapitalization and consolidation reform in 2004 by increasing the minimum capital for banks operating in Nigeria from 2 billion to 25 billion naira. This was aimed at strengthening the capital base of banks in

order to position the sector to face the developmental challenges of the 21st century. The recapitalization and consolidation reforms had positive outcomes in the banking sector. These outcomes include strengthened capital base, improved regulatory framework, and increase in public confidence, adherence to ethical banking practices, improved corporate governance culture, and industry competitiveness (Sanusi 2012; Abdul- Qadir & Kwanbo 2012; Ajisafe & Akinlo 2013).

Figure 1: Key Developments in the Nigerian Banking Sector



Source: Compiled by Authors

The reforms notwithstanding, the Nigerian banking sector is still faced with challenges, some of which emerged from the growth that accompanied the recapitalization and consolidation reforms. Others are traceable to the resistance that accompanies the change process. For example, the consolidation resulted to mergers and acquisition, which meant that banks had to address the problems associated with integrating the culture and operating systems of the associating banks.

Despite the challenges, the Nigerian banking sector could be said to have performed relatively well in the post consolidation era (Somoye, 2008; Odeleye, 2014). The banking sector now plays an active role in growing the Nigerian economy because the provision of loans for

Small and Medium Scale businesses has increased (Sanusi 2012; Aribaba, *et al*., 2019). In addition, the hitherto huge spread between deposit and lending rates have narrowed from the pre-consolidation levels, thereby contributing to improved macroeconomic environment.

3. Methodology

3.1 Data type and source

The study uses quarterly data from Q3 2001 to Q4 2018 and sourced mainly from Central Bank of Nigeria's statistical bulletin 2018. The advantage of pooling data from a single or limited source is that it helps to achieve consistency and reduce statistical and measurement errors. The rationale for using quarterly data is that more data points are available for the empirical analysis as against annual data that would have provided a lesser sample size. Also, the quarterly data is preferred to the monthly data because higher frequency data are more susceptible to measurement errors and are thus usually revised. Table 1 describes the variables and provides their justifications while they all enter the estimated model in their log form.

Table 1: Description, Rationale and Source of Variables

Variable	Description	Rationale	Source
GDP	Gross Domestic Product at Current Prices - (₦' Billion)	The traditional indicator for measuring the size of the economy	CBN 2018 Statistical Bulletin
CRD	Total Credit to the economy - (₦' Million)	Funds mobilization from surplus to deficit units needed for growth	CBN 2018 Statistical Bulletin
ASI	Stock Market All Share Index	Indicates how the equity market has grown and its impacted on the economy	CBN 2018 Statistical Bulletin
MPR	Monetary Policy Rate (%)	Used to capture the effect of policy in the analysis	CBN 2018 Statistical Bulletin

3.2 Unit Root, Cointegration and Estimation Technique

The first task in any empirical analysis involving times series data is to establish whether the variables have unit roots. To do this, the Augmented Dickey-Fuller (ADF) test is applied, with the null hypothesis that the variables have unit root versus the alternative hypothesis that the variables are stationary.

The cointegration test determines if there is a long-run relationship among the variables. In a two-variable equation model, the Engle-Granger approach is used while in the multivariate

case, the Johansen test is applied. This study applies the latter approach given that the estimated equation has four variables as indicated in Table 1.

The study applies the Vector Autoregression (VAR) model developed by Christopher Simms (1980). It is a theory-free method of estimation in which all variables are treated as endogenous, and a VAR of order *p* can be described as follows:

$Xt = \delta + A1Xt\text{-}1 + A2Xt\text{-}2 + \ldots ApXt\text{-}p + \varepsilon t$

- X depends on its own lagged values up to order *p*
- δ is the constant
- A1, A2, AP are the parameters up to lag *p*

If the cointegration test show evidence of cointegration, the restricted VAR or the Vector Error Correction Model is estimated, otherwise the Basic VAR is assessed. The Impulse Response Function and Variance Decomposition Analysis are the centerpiece of the model while the Granger causality test helps to ascertain the direction of causality among the variables.

4. Results and Discussions

4.1 Descriptive analysis

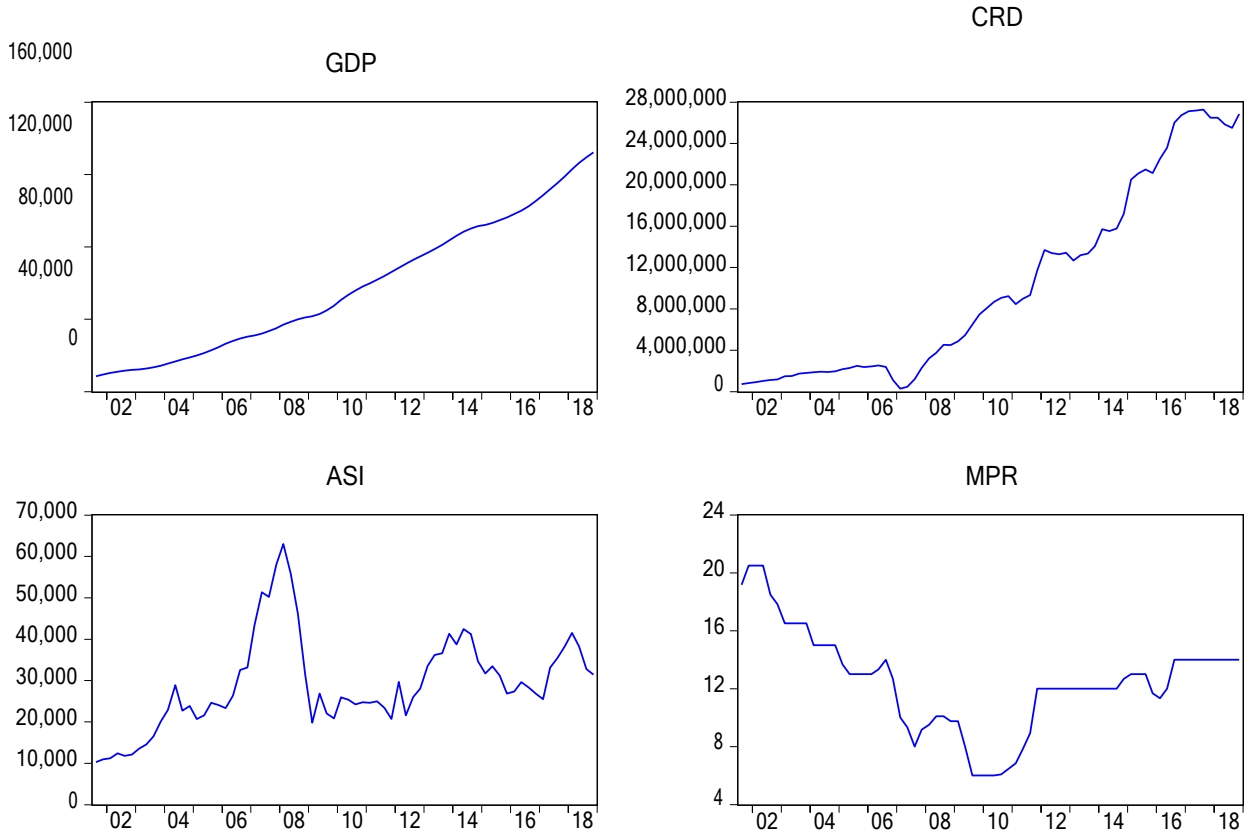
To gain precise idea of the distribution of the selected variables in the study, we provide the summary statistics as shown in Table 2. While CRD averaged 10.34 trillion naira, reaching a maximum of 27.28 trillion and minimum of 309.73 billion in the period, the ASI peaked at 63,016.56 and averaged 29,192.66, hitting its lowest level of 10,274.20. The MPR averaged 12.47% in the period while recording maximum and minimum values of 20.50% and 6% respectively. The correlation coefficient of 0.973 shows that the relationship between GDP and CRD is stronger than GDP and ASI of 0.362.

Table 2: Summary Statistics and Correlation Analysis

	GDP	**CRD**	**ASI**	**MPR**
Mean	57,679.13	10,341,336.00	29,192.66	12.47
Median	52,168.75	8,286,166.00	26,872.93	12.67
Maximum	132,255.10	27,280,046.00	63,016.56	20.50
Minimum	8,572.00	309,737.40	10,274.20	6.00
GDP	1.000			
CRD	0.973	1.000		
ASI	0.362	0.227	1.000	
MPR	-0.196	-0.054	-0.433	1.000

In addition to the summary statistics, graphical illustrations of the variables are also provided as diagrams are considered essential tools for seeing the 'big picture' in data because they reveal a large amount of information in one view (Dimitrios and Hall, 2007). Graphs also make checking for outliers or structural breaks much easier, and the line graph option is preferable in describing time series. Figure 2 displays the individual graphs for the variables in the study, with GDP and CRD both showing sustained upward trend while the ASI and MPR show more of cyclicality in movement. Despite the graphs showing the likelihood of the variables having unit root, a formal test using the Augmented Dickey-Fuller test is required.

Figure 2: Graphical Depiction of Variables



4.2 Unit Root Test

The results of the stationarity tests are summarized in Table 3. The null hypothesis of non-stationarity was carried out at 1%, 5% and 10% levels of significance whilst the MacKinnon (1996) critical value for the rejection of hypothesis of a unit root was utilised. The ADF results show that all the variables have unit root at level, leading to their being tested at first difference after which they became stationary. Thus, all the variables are integrated of order one.

Table 3: Augmented Dickey-Fuller Test

	Test Critical Values			ADF		Test Critical Values			ADF		Order of
	1% Level	5% Level	10% Level	Statistic	Prob.*	1% Level	5% Level	10% Level	Statistic	Prob.*	Integration
GDP	-3.530	-2.904	-2.589	-2.547	0.109	-3.530	-2.904	-2.589	-6.661	0.000	I(1)
CRD	-3.530	-2.904	-2.589	0.601	0.988	-3.530	-2.904	-2.589	-5.357	0.000	I(1)
ASI	-3.532	-2.906	-2.590	2.934	1.000	-4.101	-3.478	-3.167	-4.474	0.003	I(1)
MPR	-3.530	-2.904	-2.589	-2.662	0.085	-3.530	-2.904	-2.589	-5.821	0.000	I(1)

4.3 Cointegration

Having confirmed that all the variables are integrated of order one, the next step is to test for the existence of a cointegration relationship. The co-integration test is carried out using the Johansen approach, with Table 4 showing the results of the Trace Test and Table 5 the Max-Eigen Test. While the latter indicates the presence of only one cointegrating equation at 0.05 level, the former shows that there are four cointegrating equations at 0.05 level. Although the two tests show different number of cointegrating equations, the evidence is that there exists long-run equilibrium relationship among the variables, meaning that causality also exists.

Table 4: Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.3818	70.8929	47.8561	0.0001
At most 1 *	0.2489	39.1498	29.7970	0.0032
At most 2 *	0.1814	20.2575	15.4947	0.0089
At most 3 *	0.1011	7.0413	3.8414	0.0080
Trace test indicates 4 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Table 5: Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.3818	31.7430	27.5843	0.0137
At most 1	0.2489	18.8923	21.1316	0.1000
At most 2	0.1814	13.2161	14.2646	0.0727
At most 3 *	0.1011	7.0413	3.8414	0.0080

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Table 5…

4.4 Impulse-Response and Variance Decomposition

The individual impulse-response charts in Figure 3 shows the reaction of GDP to shocks to CRD, ASI and the MPR. Put differently, the charts illustrate how the broader economy responds to developments in the banking sector, the stock market, and policy changes. The first chart shows the response of GDP to shock to CRD and indicates that there was no impact at the initial stage. However, the reaction became negative from the second stage and then turned positive in the eighth period. The response remained positive for the rest of the period. The second chart illustrates the response of GDP to shock to the ASI. The response was positive initially but became negative from the third period. The reaction remained negative for a long period before turning positive in the final stage. The third chart shows that the response of GDP to shock to the MPR was neutral initially and then became negative for the remaining stages. This confirms the negative relationship between GDP and MPR as earlier indicated in the correlation analysis.

Figure 3: Response of GDP to Shocks to CRD, ASI and MPR

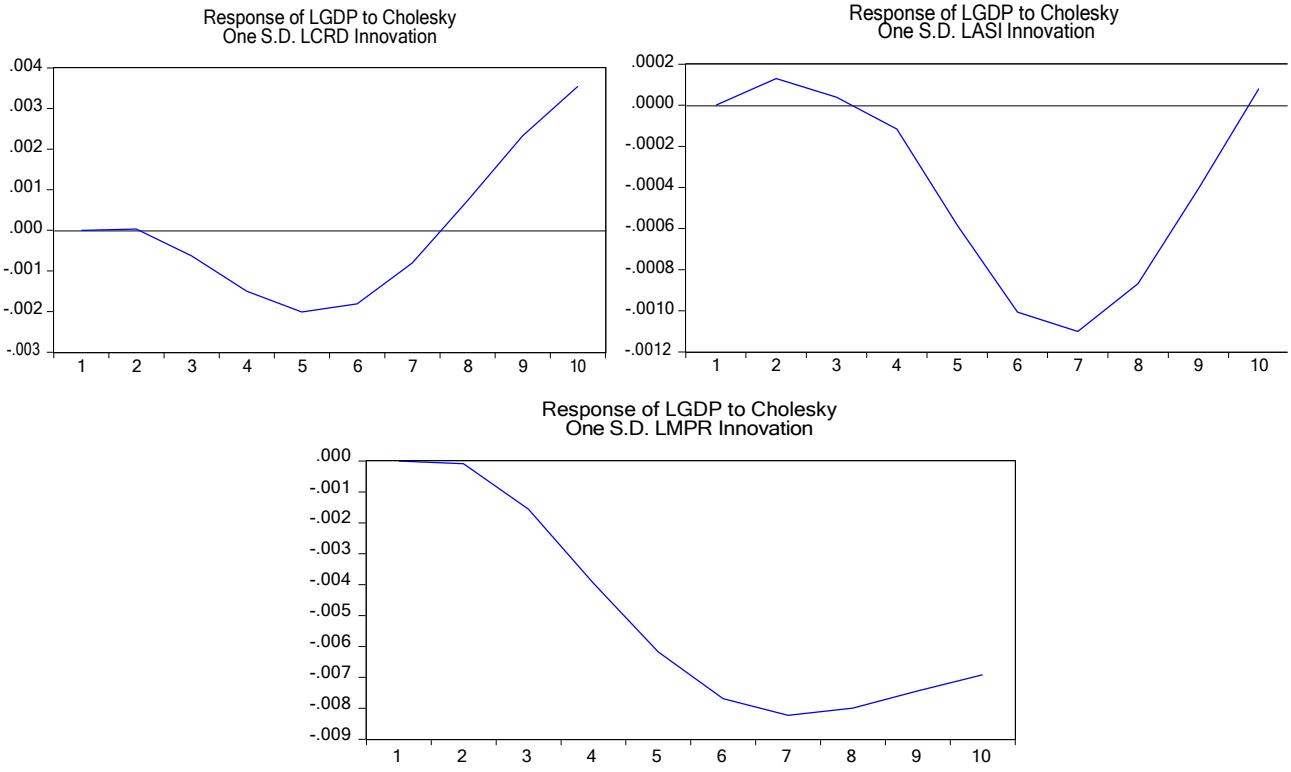


Table 6 shows the variance decomposition which explains the extent to which all the variables account for variation in GDP. The results indicate that GDP is endogenous as it accounts largely for its own variation. The impact of MPR however increased in the long-term when compared with CRD and ASI that account for less than 1% of the variation in GDP throughout the period.

Table 6: Variance Decomposition for GDP

Period	S.E.	GDP	CRD	ASI	MPR
1	0.0061	100.00	0.0000	0.0000	0.0000
2	0.0150	99.9887	0.0006	0.0075	0.0032
3	0.0244	99.5210	0.0661	0.0031	0.4098
4	0.0325	98.0430	0.2479	0.0030	1.7061
5	0.0388	95.7962	0.4427	0.0247	3.7364
6	0.0432	93.2044	0.5324	0.0744	6.1888
7	0.0462	90.8123	0.4945	0.1216	8.5716
8	0.0485	88.8714	0.4723	0.1426	10.5137
9	0.0504	87.3113	0.6506	0.1383	11.8998
10	0.0523	86.0118	1.0642	0.1287	12.7953
Average	**0.0357**	**93.9560**	**0.3971**	**0.0644**	**5.5825**

Cholesky Ordering: GDP CRD ASI MPR

4.5 Diagnostic Tests

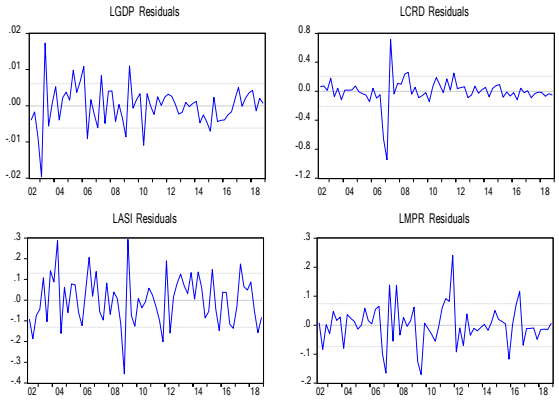
Two key diagnostic tests were conducted in order to check that the estimated VAR model is stable and does not suffer from serial correlation. Table 7 shows the results of the autocorrelation test and indicates that the problem is not severe. The stability of the model is confirmed by the stationarity of the residuals (Panel A) and the Inverse Roots of AR Characteristic Polynomial (Panel B) in Figure 4.

Table 7: LM Autocorrelation Test

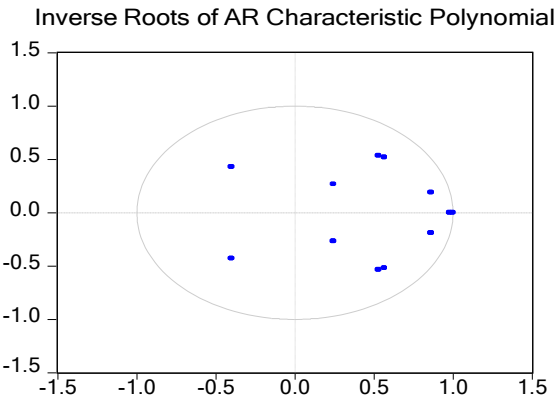
Lags	LM-Stat	Prob
1	20.8963	0.1825
2	27.6594	0.0347
3	17.1761	0.3743
4	31.7583	0.0107
5	13.1978	0.6582

Figure 4: Stability Test

Panel A



Panel B



5. Summary and Conclusion

The study revisits the finance-growth nexus, with focus on the banking sector impact on the Nigerian economy. The Johansen Cointegration and Vector Autoregression techniques were applied while graphical illustrations and summary statistics were used to describe the distribution of the variables. The findings show that long-run equilibrium relationship exist among GDP, ASI and the MPR. The Impulse-Response Function indicates that the reaction of GDP to shock to CRD was initially flat, then became negative for some periods before turning positive. On the contrary, the response of GDP to shock to ASI was initially positive and then became negative from the third period and remained so for a longer period when compared with the response to CRD, before it turned positive in the final stage. This supports the view that economic growth can be achieved faster through the banking sector when compared with the stock market. The response of GDP to shock to the MPR was also flat initially and then became negative for the rest of the period. The variance decomposition analysis shows that GDP accounts largely for its own variation while the influence of MPR increased in the long-term when compared with CRD and ASI. Given the interplay between monetary and fiscal policies, future studies may incorporate relevant fiscal indicators to ascertain how GDP will respond in the VAR model.

REFERENCES

Akinlo, A., and Akinlo, B. (2007). Financial Development, Money, Public Expenditure and National income in Nigeria. Journal of Social & Economic Development, 9(1).

Akinlo, A. E., & Akinlo, O. O. (2009). Stock Market Development and Economic Growth: Evidence from seven sub-Sahara African countries. Journal of Economics and Business, 61, 162-171

Abdul-Qadir, A.B., & Kwanbo, M.L. (2012). Corporate Governance and Financial Performance of Banks in the Post Consolidation Era in Nigeria. International Journal of Social Science and Humanity Studies, 4(2).

Adegbaju A. A., & Olokoyo, F. O. (2008). Recapitalization and Banks' Performance: A Case Study of Nigerian Banks. African Economic and Business Review, 6(1). The African Education and Business Research Institute, Inc.

Agusto & Co. (2013). Banking Industry Report. Retrieved August 19th 2014, from http://www.agusto.com/

Ajisafe, R. A., & Akinlo, A. E. (2013). Testing for Competition in the Nigerian Commercial Banking Sector, Modern Economy, 4, 501-511.

Aribaba, F. O., Ahmodu, A. O., Oladele, R., Yusuff, A., S. & Olaleye, A. B. (2019). The role of Deposit Money Banks' Loan Facilities in Financing Small and Medium-Scale Enterprises in Nigeria, Academic Journal of Interdisciplinary Studies, 8(2).

Central Bank of Nigeria Statistical Bulletin: Various editions

De Gregorio, J. (1996). Borrowing Constraints, Human Capital Accumulation, and Growth. Journal of Monetary Economics, 37, 49-71.

Demetriades, P.O., & Hussein, K.A. (1996). Does Financial Development cause Economic Growth? Time-series evidence from 16 countries. Journal of Development Economics, 51, 387-411.

Demetriades, P., & Andrianova, S. (2003).Finance and Growth: what we know and what we need to know. Retrieved October 4, 2019, from http://www.le.ac.uk/economics/research/RePEc/lec/leecon/dp03-15.pdf

Dimitrios, A & Hall, S. G. (2007). Applied Econometrics- A Modern Approach, Palgrave Macmillan.

Donwa, P., & Odia, J. (2011). Effects of the Consolidation of the Banking Industry on the Nigerian Capital Market, Journal of Economics, 2(1), 57-65.

King, R. & Levine, R. (1993a). Finance and Growth: Schumpeter might be right. Quarterly Journal of Economics, 108(3), 717-737.

King, R & Levine, R. (1993b). Finance, Entrepreneurship and Growth: theory and evidence. Journal of Monetary Economics, 32(3), 513-542.

Levine, R. (1997). Financial Development and Economic Growth: views and agenda. Journal of Economic Literature, 35, 688-726

Levine, R., Loayza, N., & Beck, T. (2000). Financial Intermediation and Growth: causality and causes. Journal of Monetary Economics, 46, 31-77

Levine, R. & Zervos, S. (1998). Stock Markets, Banks, and Economic growth. American Economic Review, 88, 537-558.

Nwankwo, G. O. (1975). Bank Lending in a Developing Economy: The Nigerian Experience. Journal of African Law, 19(1/2), 84-104. International Conference on Banking Law and Development in Africa.

Odeleye, T. A. (2014). Pre-Consolidation and Post-Consolidation of Nigerian banking sector: a Dynamic Comparison. International Journal of Economics and Financial Issues, 4,(1), 27-34

Ofoegbu, D. I., & Iyewumi, A. T. (2013). Bank Consolidation and Deregulation effects on the level of Competition in the Nigerian Banking Industry. International Journal of Economic Practices and Theories, 3(1).

Odhiambo, M. (2004). Is Financial Development still a spur to Economic Growth? Causal evidence from South Africa. Journal of Savings and Development, 28(1), 47-62.

Olomola, S. A., (1995). Co-integration, Error-correction and Causality: exploring the relationship between Financial Deepening and Economic growth in Nigeria. Ife Journal of Economics and Finance, 2(1/2).

Pagano, M. (1993). Financial Markets and Growth. European Economic Review, 37, 613-622

Pinar, O. A., & Damar, A. E. (2006). Financial Sector Deepening and Economic Growth: evidence from Turkey. Retrieved October 12, 2019, from http://www.luc.edu/orgs/meea/volume9/PDFS/Damar%20Ardic%20-%20paper.pdf

Sanusi, L.S. (2012). Banking Reform and its impact on the Nigerian Economy. CBN Journal of Applied Statistics, 2(2) 115. Lecture delivered by Mr Sanusi Lamido Sanusi, Governor of the Central Bank of Nigeria, at the University of Warwick's Economic Summit, Warwick, 17 February 2012. Retrieved September 9, 2019, from https://www.bis.org/review/r120320d.pdf

Sanusi, L. S. (2010). The Nigerian Banking Industry: what went wrong and the way forward. Text of a Convocation Lecture delivered by Sanusi Lamido Sanusi, Governor of the Central Bank of Nigeria, at the Convocation Square, Bayero University, Kano, on Friday 26 February 2010 to mark the Annual Convocation Ceremony of the University. Retrieved September 5, from https://www.bis.org/review/r100419c.pdf

Soludo, C. (2004). Consolidating The Nigerian Banking Industry to meet the Developmental challenges of the 21st Century. Address by Mr Charles Chukwuma Soludo, Governor of the Central Bank of Nigeria, at the Special Meeting of the Bankers' Committee, Abuja, 6 July 2004. Retrieved September 17, 2019, from https://www.bis.org/review/r040727g.pdf

Soludo, C. (2006). The Outcome of the Banking Sector Recapitalization and the Way Forward forthe Undercapitalized Banks. Press conference by Mr Charles Chukwuma Soludo, Governor of the Central Bank of Nigeria, January 16, 2006. Retrieved September 22, 2019, from https://www.cbn.gov.ng/OUT/SPEECHES/2006/GOVADD%2016-1-06.PDF