

An Analysis of Financial System Development and Banking Sector Performance in Nigeria

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ABSTRACT

The study assessed the impact of financial system development on the banking sub-sector performance in Nigeria by using indices representing financial access, financial efficiency and financial depth as its explanatory variables. The proxy used for banking sector performance is the capital adequacy ratio. Due to the paucity of high-frequency data for the relevant variables, the study converted the sourced annual data spanning from 2004 to 2021 to monthly data. The preliminary data investigation indicated that the ARDL model is appropriate for the analysis. An ARDL-ECM model was then estimated using the Ordinary Least Square estimation technique. The results reveal that the financial market's activities are significant determinants of banking performance in Nigeria. The paper recommends that making the capital market and other non-bank institutions more attractive to investors should be a priority policy

Keywords: ARDL-ECM, Financial Efficiency, Global Financial Indicator

INTRODUCTION

As with complex systems, a complete financial system is a collection of hierarchical, independently separate, yet mutually dependent systems. Hierarchies of distinct units at various levels beginning from the micro levels-household and firms-to macro levels- government and international organizations can be identified. For example, a household financial system comprises how the household's income from salaries, dividends or bequeaths is spent on consumables, durables, investments in interest-yielding and wealth-maximising assets and educational needs. Each unit in the respective level is capable of making its decisions independently, however, whatever decision is taken is intrinsically intertwined with the decisions taken by members of its level as well as units in every other level (Onwe, 2013; Sillitto, Dori, Griego, Krob & 5 others, 2017; Alpert & Courage, 2019)

Problems in financial systems disrupt financial intermediation, reduce monetary policy effectiveness, trigger capital flight and exchange rate pressures, and create large fiscal costs related to rescuing troubled financial institutions (Mishkin & Serletis, 2011). Moreover, with increasing connectivity among financial institutions and closer global trade linkages, financial shocks can rapidly spill over across financial sectors and national borders. On the other hand, well-developed financial systems enhance the efficient allocation of resources, investment, capital formation, and faster technological progress. Financial system development is therefore essential for successful growth and industrialization strategies. Coupled with sound institutions, judiciary and property rights, the requirements for the efficient functioning of a financial system include a central bank, well-defined and stable monetary arrangement, sound public debt management, well-functioning securities markets and a variety of banks that meets the financial needs of all economic units in an economy (Alpert *et al*, 2019)

The Nigerian financial system is made up of three broad structures. These are the regulatory institutions, the

formal bank and non-bank financial institutions, and the informal institutions which comprise local money lenders and unregistered thrift societies. Despite this obvious compliance with standard requirements, Nigeria's financial system is yet to effectively provide the financial services required for economic progress (Onwe, 2013; Alade & Tule, 2017). The inability of both the formal and informal financial sectors to provide the support required for the expansion of the real sector has been severally indicted as the major hindrance faced by the real sector in their effort to maximize their contribution to Nigeria's economic growth (Alade & Tule, 2017; Sennuga, Adenaike, Adedayo, & Sennuga, 2021). The Nigerian financial sector has been described as "shallow" while its capital market is termed "undeveloped". The informal sector has also been described as fragmented and exploitative. Being the dominant institution in the financial sector, commercial banks (Deposit Money Banks) are regarded as the major financial intermediaries and the fulcrum of the financial system in Nigeria (Chenaf-Nicet, 2012; Alade & Tule, 2017).

Regardless of its dominant role in the financial system, Deposit Money Banks (DMBs) cannot operate in isolation. There is a mutual interdependence between banks and Non-bank Financial Institutions (NBFIs) due to the complementary and competitive roles NBFIs play. By providing ancillary services and backup facilities, NBFIs complement banking services while the multiple intermediation alternatives offered by NBFIs make them competitors to the banks. DMBs are also not insulated from financial regulation and their operations are significantly guided by the regulatory and supervisory policies of these regulators (Onwe, 2013). Evaluating the growth relationship between banking sector performance and financial system development in Nigeria is of the essence and a growing number of research works are found in the literature. However, Levine, Demirguc-Kunt, Feyen and Cihak (2013) pointed out that due to a lack of data, most of these studies do not sufficiently measure financial development. They stressed that the proxy for financial development- the ratio of private credit to GDP- can be used as a proxy for the degree of access alone and does not capture other aspects such as quality, efficiency, stability and financial depth.

Based on these and other similar concerns, the International Monetary Fund (n.d.) and the World Bank (2016) listed some quantitative metrics for measuring various aspects of financial system development. The World Bank further developed the Global Financial Database which addresses financial system-related issues for over 200 countries spanning from 1960; including data for Nigeria. Unfortunately, despite the availability of this database, Nigerian-based researches on financial system development such as Ebiringa and Duruibe (2015); Abdulraheem, Ogbuide, Adeboje and Musa (2019); Sennuga *et al* (2021) and Akindipe (2022) still rely on proxies already acclaimed to be insufficient. Reassessing financial development in line with current realities is of essence. This study therefore aims to assess the relationship between financial system development and bank performance in Nigeria based on the null hypothesis stated as:

HO: Financial systems development-measured in terms of its depth, access and efficiency- has no impact on Bank performance in Nigeria

The paper is divided into five sections, following the introduction is section two which contains the literature review, section three is the methodology, section four is the empirical results and analysis section five is the conclusion and recommendations.

LITERATURE REVIEW

Conceptual Literature

The main reason for the existence and flourishing of the financial system is to create the forum for synergising and reconciling the fragmented, short-term offers of loanable funds of the lenders with the relatively longer-term investment capital needs of the borrowers (Mishkin *et al*, 2011). The basic definition of a lender is anyone who deliberately gives out money with the intention of getting not less than the principal amount at a future date (Jacoby & Saulnier, 1942). In a broader perspective, the ultimate

description of a lender is a person who (1) puts money in a savings account at a bank or (2) contributes to a pension plan or (3) pays premiums to an insurance company or (4) invests in government bonds, or (5) invests in company shares. Interestingly, at some point or the other, a lender of some sort may also be a borrower of another sort either at different times or through a simultaneous transaction (Neave, 2009; Levine, 2005; Drake & Fabozzi, 2010). While a person may not be aware that, by his actions, he has become a lender, borrowing is done more intentionally because of the liabilities attached. Borrowing is done either via bankers' [loans](#) or by issuing stocks or bonds or by organizing mutual funds.

Every country's financial system differs from other countries' systems in size, composition, ownership arrangements and levels of concentration. Important differences also exist in the range of activities in which different sectors of the financial system are allowed to engage. For instance, the financial systems of more developed countries are significantly larger and the relative role of the formal sector in providing external funding for firms in these developed countries is significantly different from those of emerging economies. The most widely cited contrast is between the heavy use of capital markets for financing firms in advanced economies such as the United States and the primacy of bank loans for such purposes in emerging economies. Again, the operations of a financial system may be laissez-faire as in a market economy or may be controlled as done in a centrally planned economy or maybe in line with the operations of a mixed economy (Bhole, 1999; Pandey, 2000; Levine *et al*, 2013; Alpert & Courage, 2019).

Peltonen, Rancan and Sarlin (2015) noted that in many economies including Europe, banks are the largest intermediaries and for this reason, the number of finance literature focused on the banking sector is rapidly growing. Gobat (2023) remarked that aside their primary role of intermediation, banks do many things which includes facilitating domestic and international payment systems, creating money and transmitting monetary policies. Peltonen *et al* (2015) emphasized that banks are key counterparties to Central banks in many ways. For example, banks are the main agents in the central banks' securities market transactions. Again, while central banks control the money supply at the national level through required reserves legislation, banks can control the flow of money in an economy through their activities. Through their activities, banks can instigate a credit crunch thereby causing an economic downturn. Banks, therefore, are vital to the survival of any economic and financial system which makes their safety and soundness a major policy and research concern.

Financial Development

The underlying reason for financial intermediation is to save transaction cost and time involved in matching the specific needs of those demanding some sort of finance and with the available supply, or otherwise, converting the available supply of finance to match the required demand. Financial system development (or financial sector development or financial development) is concerned with how effective the mechanisms employed in reducing these transaction costs are. According to Guru and Yadav (2019), financial development happens when there is an expansion of financial access and an improvement in the ability of financial institutions and markets to sustain huge investments and economic growth. To Levine (2005), financial development involves the amelioration of market frictions and improvements in the ability of the financial sector to naturally influence the allocation of resources across time and space.

To Adnan (2012), a very pertinent issue that needs to be properly addressed is the question of how to measure financial development. Beck, Feyen, Ize and Moizeszowicz (2008) opined that the most natural way to measure financial development is according to the functions performed by the financial sector. They however noted that many of these functions are hard to define and are much harder to measure. To Pill and Pradhan (1997), Adnan (2012), Levine *et al* (2013), Measuring financial development using indicators such as real interest rates and the ratios like broad money to GDP or private sector credit to GDP can lead to misleading results because they focus narrowly on one subsector thereby neglecting other sub-sectors. Furthermore, these indicators overlook financial openness and government sector finance. This view is

widely supported and various measures of financial development have been suggested. A chronology of various measures suggested by concerned authors is documented in Reid (2010).

As a response to the providing reliable indices for measuring financial development, the World Bank developed a 4×2 framework that captures four aspects of financial development in two sub-sectors. The aspects captured were the depth, the access, the efficiency and the stability while the sub-sectors were financial institutions and financial markets. Scrutinizing the various indices shown in the framework reveals that some of these indices will be near impossible. For example, the indices for efficiency include price impact, private information trading and settlement efficiency. While it is possible to find appropriate proxies for price impact and settlement efficiency, getting a proxy that would appropriately capture private information may be quite impossible.

A more comprehensive suggestion given in IMF’s Financial Sector Assessment Handbook includes size, breadth, composition, competition, concentration, efficiency, access, scope, coverage, an outreach of financial services and soundness.

An attempt at a synthesis of the conclusions reached by both documents is that though these measures put a spotlight on the multifaceted nature of modern financial systems, they are rough estimation methods and do not capture all aspects of financial development.

Some adaptations of the World Bank framework can be found in extant literature. For instance, in Marszk and Lechman (2019), some non-quantifiable variables were not included. Based on Marszk *et al* (2019), an adaptation of the World Bank’s framework is shown in Table 1.

Table 1: Financial Development Variables used by Marszk *et al* (2019)

Indices	Financial institutions	Financial markets
Efficiency	<ul style="list-style-type: none"> • Net interest margin, • lending-deposits spread, • non-interest income to total income, • overhead costs to total assets, • return on assets, • return on equity 	<ul style="list-style-type: none"> • Stock market turnover ratio (stock turnover/capitalization)
Depth (calculated as % of GDP)	<ul style="list-style-type: none"> • Private Sector Credit, • Pension Funds’ Assets, • Mutual Funds • Assets, Life and nonlife insurance premiums 	<ul style="list-style-type: none"> • Stock market capitalization, • Stock turnover ratio • International debt securities of government, • total debt securities of nonfinancial corporations, • total debt securities of financial corporations

Access	<ul style="list-style-type: none"> • Branches of commercial banks per 100 thousand adults, • ATMs per 100thousand adults 	<ul style="list-style-type: none"> • % of market capitalization outside the top 10 largest companies, • total number of issuers of debt
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Source: Compiled from Marszk and Lechman (2019)

As a way of accommodating as many variables as possible; Marszk *et al* (2019) recommends the principal components of these 6 segments.

Banking Sector Performance

Measuring the performance of the banking sub-sector generally implies analyzing data on the effectiveness and efficiency of the sub-sector.

Bikker (2010) demonstrated that measuring bank performance is not easy and suggested various measures for bank performance. However, the CAMELS rating system, designed in the United States has been adopted by bank supervisory authorities for assessing bank performance. Known by its acronym CAMEL(S), the rating model uses six ratios, namely capital adequacy (C), asset quality (A), management Efficiency (M), earning ability (E), liquidity (L), and sensitivity to market risk (S). These criteria and their basic measuring indices are extensively discussed in Ebrahimi, Bahraminasab and Seyedi (2017), Shukla and Gupta (2021) and Edilawit (2021). A summary of the discussions as well as some of the suggested measurements is given in Table 2.

Table 2: Banking Sector Performance using CAMEL Rating

Parameter	Objective	Measurement
Capital Adequacy (C)	Checks compliance to Statutory Capital Reserve Ratio	(Tier1 capital+tier2capital)/ risk weighted asset or debt/equity ratio
Asset Quality (A)	Measures loss-absorbing capacity	Ratio of Non-Performing Loan to total advances
Management Efficiency (M)	Checks efficiency	Ratio of total advances to total deposits or non-interest expense to gross expense
Earning Ability (E)	Checks profitability and productivity	Return on Asset (ROA) or Return on equity (ROE)
Liquidity (L)	Checks quality of balance sheet items and ability to discharge liabilities easily	Liquid assets to total demand deposit
Sensitivity (S)	Addresses interest rate risk	Net Interest Margin between assets and liabilities

Source: Authors compilation

This rating is widely accepted in literature and variants of it are used for empirical analysis.

Empirical Literature

Myriads of the empirical literature on financial development exist. Some of the more recent studies include Younsi and Bechtini (2018) who examined the causal relationships between economic growth, financial development and income inequality in Brazil, Russia, India, China, and South Africa (BRICS countries) using annual panel data spanning from 1990 to 2015. The proxy used for financial development was the principal component of the banking sector's domestic credit, broad money supply and market capitalization. The result showed an inverted U-shaped relationship between financial development and income inequality. Using the same set of countries and by extending the study period to 2017, a positive relationship was obtained in Biyase, Zwane, Mncayi, and Maleka, (2023) when they employed the panel fully modified OLS technique and used an indicator of financial development which captures financial institutions and financial markets alongside access, depth and efficiency sub-dimensions.

The financial development measure used by Lassoued (2021) was the ratio of credit to the private sector/GDP. The study was on the effects of financial development on income inequality drawing a sample of data spanning from 1995-2015 for 43 sub-Saharan countries. The result supports a positive effect of financial development on alleviating income inequality. The concern of Abbas, Masood and Ali (2021) was on the influence of financial development on the risk-taking behaviour of banks in the United States/ the study sourced data covering the period 2002 to 2019. The financial development indicators employed were market capitalization, domestic credit to GDP ratio, and bank industry assets to GDP ratio. The results reveal a positive and significant impact.

Some financial development related researches focused on Nigeria also exist. Ayunku (2018) was interested in the nexus between financial development and economic growth in Nigeria; using the co-integration estimation approach. The study employed annual data spanning from 1981 to 2016. The variables used for financial development were credit to private sector, prime lending rate, total bank deposit, stock market capitalization and value of money market instruments. The study revealed positive impact of financial development on economic development. Akintola, Oji-Okoro and Itodo (2020) empirically re-examined financial sector development and economic growth in Nigeria by looking at the independent contributions of money, capital and foreign exchange markets.

The study employed the Auto regressive distributed lag (ARDL) technique on quarterly data covering the period 2000Q1 to 2019Q4. Financial development variables used were financial deepening, short-term interest rate spread, All-Share index, market capitalization and exchange rate. The result further confirmed that financial development positively impact economic growth. Despite the variations in financial development variables, methods of analysis and timeframe, results obtained unanimously confirm that financial development positively and significantly drives economic growth and aids poverty reduction in many countries including Nigeria.

Research Gap

To the best of our knowledge, several questions have been neglected in empirical research. For example, what factors contribute to financial development? Given the fact that the banking sector is the major subsector in the financial systems of developing countries including Nigeria, to what extent has the financial system contributed to the performance of the banking sub-sector? These questions and particularly the second question need to be examined because of the major role the banking subsector plays in the system, and by extension, the economy.

A weak attempt to address this question was made in Igbinosa, Sunday and Babatunde (2017) when they made an empirical assessment of financial sector reforms using the co-integration and error correction

technique. However, the results obtained cannot be taken as reliable, based on several observed computational flaws. Two of these flaws are the panel model for pure-time series data and obtaining a variance of 745 for dummy data whose values are either 0 or 1. Based on this observed gap in existing literature, by following Marszk *et al* (2019), this study sets out to provide empirical confirmation of the impact of financial system development on bank performance in Nigeria.

MATERIALS AND METHODS

Model Specification

The performance of the banking sector is measured using Capital Adequacy criteria. For the explanatory variables, this study aligns with Marszk *et al* (2019) and selects the variables used from the list of variables given in Table 1. Based on paucity of data, the study picked one index each from each group. The control variables are the ratios of broad money supply to GDP and debt securities to GDP these control variables were chosen to reflect government sector’s monetary policy. The time series data spanning from 2004 to 2021 were sourced from various issues of Central Bank of Nigeria (CBN) annual statistics, Nigerian Securities and Exchange (NSE) database, the global financial database and the World Development Index, both of the World Bank. The data information is given in Table 3

Table 1: Description of Variables Used

Indicator	Variables	Acronym used	Description	Source	Sign expectations
Dependent variable	Capital Adequacy Ratio	BCAR	Bank nonperforming loans to total gross loans (%)	WDI	
Explanatory Variable	Financial Institution Depth	FID	Domestic credit to private sector (% of GDP)	WDI	–
Explanatory Variable	Financial Institution Efficiency	FIE	Return on Asset	CBN	–
Explanatory Variable	Financial Institution Access	FIA	Borrowers from commercial banks (per 1,000 adults)	WDI	–
Explanatory Variable	Financial Market Depth	LFMD	Log of Market Capitalization	NSE	–
Explanatory Variable	Financial Market Efficiency	FME	Stock Turnover ratio	NSE	–
Explanatory Variable	Financial Market Access	FMA	Number of issues of debt instruments	NSE	–
Control variable	Government bonds	DSEC	Government Bonds to GDP ratio	NSE	+
Control variable	Money Supply	MS	Broad money (% of GDP)	WDI	+

Source: Authors’ compilation

As shown in Table 3, WDI and NSE were the major sources of data used; data contained in these databases

are mainly low-frequency annual data. To get good degrees of freedom, the study increased the number of observations per variable by converting the annual data to monthly data using the conversion tool provided by e-views 10 software. We then proceeded to conduct the preliminary series data normality test to ascertain if each of the data series follows the Gaussian distribution, we also tested the associative properties of the data using group statistics. The result of the various tests is presented in

Table 4. Preliminary Data Investigation Results

Test Type	BCAR	FIA	FID	FIE	FME	LFMD	LFMA	MS	DSEC
Mean	9.98	5.20	12.55	0.133	11.55	9.41	5.61	22.13	0.40
Median	10.48	4.91	12.24	0.114	9.97	9.69	5.59	24.04	0.39
Std. Dev.	3.52	0.85	2.81	0.121	5.85	0.64	0.07	4.65	0.20
Skewness	-0.15	0.26	0.74	1.918	2.15	-1.15	0.30	-1.48	0.71
Kurtosis	2.88	1.60	3.33	5.813	7.14	3.56	1.54	3.80	3.37
Jarque-Bera	0.414***	37.71*	39.33*	385.6*	607.4*	47.60*	21.26*	80.56*	18.21*
Correlation	1.00	-0.16	-0.10	-0.01	0.09	0.33	0.19	-0.42	-0.58
Unit Root Test	I(1)*	I(1)*	I(1)**	I(0)*	I(1)*	I(1)**	I(1)*	I(1)*	I(0)**
<p>Note: Degree of significance:*=1%; **=5%; ***= not significant</p> <p>Unit Roots used: Augmented Dickey-Fuller (ADF) test using the no trends and nointercept</p>									

Source: Authors' computation

The mean and median values given in Table 4, reveal that the series follow a Gaussian distribution. By using the rule-of-thumb, the standard deviation results do not support the suspicion of significant outliers in any of the data series. The table also shows that the explanatory variable (BCAR) is not significantly correlated with the respective explanatory variables. Given the unit root tests that reveal mixed levels of stationarity among the variables, the study adopted the Autoregressive Distributed Lag (ARDL) model. This model is especially favoured in this research for other two reasons. Firstly, the model provides unbiased estimates of the long run model as well as valid t-statistics even when some of the regressors are endogenous and secondly, different variables can be assigned different lag lengths as they enter the model (Harris & Sollis, 2003; Hor, 2015). Based on the null hypothesis of no co-integration (or no levels relationship) among the variables (i.e. $c(2)=c(3)=c(4)=c(5)=c(6)=c(7)=c(8)=c(9)=0$), the Bounds tests ARDL model is specified as:

$$\Delta BCAR_t = \alpha_0 + \alpha_1 \sum_{i=1}^k \Delta BCAR_{t-i} + \alpha_2 \sum_{i=1}^m \Delta FID_{t-i} + \alpha_3 \sum_{i=1}^n \Delta FIE_{t-i} + \alpha_4 \sum_{i=1}^p \Delta FIA_{t-i} + \alpha_5 \sum_{i=1}^q \Delta FMD_{t-i} + \alpha_6 \sum_{i=1}^r \Delta FME_{t-i} + \alpha_7 \sum_{i=1}^s \Delta FMA_{t-i} + \alpha_8 \sum_{i=1}^t \Delta MS_{t-i} + \alpha_9 \sum_{i=1}^s \Delta DSEC_{t-i} + \beta_1 BCAR_{t-1} + \beta_2 FID_{t-1} + \beta_3 FIE_{t-1} + \beta_4 FIA_{t-1} + \beta_5 FMD_{t-1} + \beta_6 FME_{t-1} + \beta_7 FMA_{t-1} + \beta_8 MS_{t-1} + \beta_9 DSEC_{t-1} + \mu_t$$

..... 3.2

Where $k, m, n, p, q, r, s, t, u$ are the appropriate lag lengths for the respective variables as determined by the Akaike lag length selection criteria. The results of the bounds tests as well as the appropriate ARDL (p,q) model is given in Table 5.

Table 5. Bounds test and Lag selection Result

Selected Model: ARDL (1, 0, 0, 1, 1, 1, 1, 1, 1)				
Bounds test	Critical values @5% level of significance		Computed value	Remarks
	Lower bound	Upper bound		
F-statistic	2.22	3.39	1.59	Accept Null Hypothesis
t-statistic	-2.86	-4.72	-2.96	Undecided

Source Authors' computation

Using the Long Run Form and Bounds Test tool provided in e-views 10 software, the appropriate ARDL (p,q) model selected is the ARDL (1, 0, 0, 1, 1, 1, 1, 1, 1). The F-statistic and t-statistic results did not give sufficient evidence for accepting the null hypothesis of co-integration which made it expedient to employ the Johansen co-integration test. An extract of the Johansen co-integration result is given in Table 6.

Table 6: Johansen Co-integration Result

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None	0.153867	33.41566	33.87687	0.0567
At most 1	0.126382	27.02245	27.58434	0.0589
At most 2	0.089005	18.64359	21.13162	0.1076
At most 3	0.051422	10.55836	16.26460	0.1778

Source: Authors' computation

The Johansen co-integration supports the null hypothesis of no co-integration among the variables. This implies that there is no long run relationship existing among the variables. Based on this, an ARDL model is appropriate. We however included the long run ECM and estimated n ARDL-ECM model. The result of the estimated ARDL (1, 0, 0, 1, 1, 1, 1, 1, 1). – ECM model is shown in Table 7

Table 7- ARDL_ECM Regression Result

Dependent Variable: BCAR				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
BCAR (-1)	1.360022	0.404887	3.359017	0.0009
FIA	-0.232173	0.398768	-0.582226	0.5611
FIE	-0.807356	0.946929	-0.852604	0.3949
FID	-0.280345	0.152204	-1.841906	0.0670
FID (-1)	0.120265	0.264714	0.454319	0.6501
FME	-0.374018	0.052208	-7.164031	0.0000

FME (-1)	0.565807	0.209317	2.703113	0.0075
LFMA	16.99826	5.793357	2.934095	0.0037
LFMA (-1)	-14.05647	6.742247	-2.084835	0.0384
LFMD	-3.057658	0.965751	-3.166094	0.0018
LFMD (-1)	3.705155	0.929350	3.986822	0.0001
MS	0.782165	0.116033	6.740903	0.0000
MS (-1)	-0.762236	0.129473	-5.887225	0.0000
DSEC	-1.319646	0.136656	-9.656695	0.0000
DSEC (-1)	1.954031	0.672696	2.904776	0.0041
ECM (-1)	-0.432936	0.405730	-1.067054	0.2872
C	-30.43238	32.79720	-0.927896	0.3546
R-squared	0.955704	Mean dependent var		9.957092
Adjusted R-squared	0.952125	S.D. dependent var		3.947391
S.E. of regression	0.863706	Akaike info criterion		2.620600
Sum squared resid	147.7057	Schwarz criterion		2.887116
Log likelihood	-264.7145	Hannan-Quinn criter.		2.728285
F-statistic	266.9966	Durbin-Watson stat		2.007106
Prob(F-statistic)	0.000000			

Source: Authors' Computation.

Table 7 is the Ordinary Least Square (OLS) estimation results for the ARDL (1, 0, 0, 1, 1, 1, 1, 1, 1)-ECM model. In the summary of the results, the Standard Error of Regression result show a good cluster around mean values, with less than 1% of the data lying outside the margins. The F-statistic and the Durbin Watson (DW) results also confirm the joint significance and the absence of serial correlation respectively. The R-squared and Adj. R-squared values suggest that the model explains about 95% of the variations noticed in the banking sub-sector performance; using the CAMEL's Capital Adequacy ratio as the performance indices. It should be noted that lower values of the capital adequacy index indicate better performance.

The results show that performance is positively autoregressive. The results further reveal that none of the financial institutions' variables have any significant influence on banking sub-sector performance at the 5% level of acceptance. On the contrary, all the financial market variables were significant in explaining the variations observed in banking sub-sector performance. This implies that the access, efficiency and depth of the financial market significantly explain observed dynamics in the performance of the banking sub-sector in Nigeria. One very interesting revelation that calls for further theoretical and empirical investigation is the reverse signs for the lags of each of the variables such that those variables that had positive influence in one period had negative influences in the next period and vice versa.

The same trend is observed with the control variables. In the first period, money supply and government debt negatively influence the performance of the banking sector in the current period while their lag values have a positive influence on banking sub-sector performance in the same period. The results of the ECM confirm the findings of no long-run relationship. Though the ECM result was correctly signed; indicating convergence to long-run equilibrium, the result indicates that such a long-run relationship is not significant. The study also conducted a sensitivity analysis to rule out the possibility of spuriousness in the estimation.

The first test conducted is the redundant variable test. The result is presented in Table 8.

Table 8: Sensitivity Test 1-Redundant Variable test

Specification: BCAR BCAR (-1) FIA FIE FID FID (-1) FME FME (-1) LFMA				
LFMA (-1) LFMD LFMD (-1) MS MS (-1) INTS INTS (-1) ECM (-1) C				
Redundant Variables: BCAR (-1) FIA FIE FID FME LFMD LFMA MS INTS				
	Value	df	Probability	
F-statistic	37.82384	(9, 198)	0.0000	
Likelihood ratio	215.0778	9	0.0000	

Source: Authors' computation

The hypothesis tested is that the variables used are redundant. The results given in Table 8 however, refute the hypothesis. The results show a less than 1% probability that any one of the variables used is redundant. The study also conducted the Breusch-Godfrey serial correlation test. The result is presented in Table 9.

Table 9: Sensitivity test 2: Serial Correlation Test

F-statistic	0.003478	Prob. F(1,197)	0.9530
Obs*R-squared	0.003796	Prob. Chi-Square(1)	0.9509

Source: Authors' Computation

The null hypothesis of no serial correlation was tested. The result infers that there is a 95% possibility of no serial correlation. We therefore accept the null hypothesis. The study also conducted the parameter stability tests by conducting the CUSUM and the CUSUM square tests. The result is presented in figure 1(a) and 1(b).

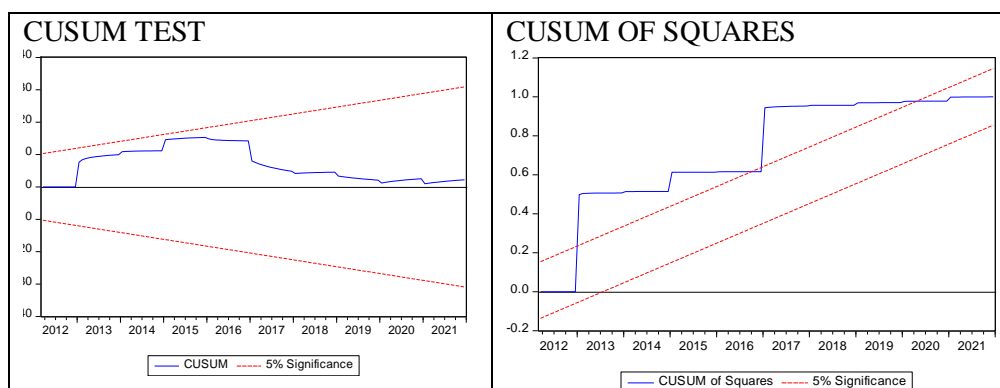


Figure 1(a) CUSUM Test

Figure 1(b) CUSUM of Squares Test

Source: Authors' computation

The hypothesis tested using the CUSUM test is that the coefficients of regression are systematically changing. The results show that plots lie within the 5% boundary lines. This supports the hypothesis tested and indicates that the parameters are stable. On the other hand, the CUSUM of squares tests the hypothesis that the parameters change suddenly. There is enough evidence to reject the hypothesis of a sudden change in the parameter since the plots lie outside the 5% acceptance region.

DISCUSSION OF FINDINGS AND POLICY IMPLICATION

Extant literature on financial development is readily available. However, most of these studies done using Nigeria data apply the financial development criteria which has been severally criticized as narrow. In line with the growing trend, this study assessed the impact of financial system development on the banking sub-sector performance by using financial access, financial efficiency and financial depth as its development indices. The proxy used for banking sector performance is the capital adequacy ratio. The preliminary data investigation indicated that the ARDL model is appropriate for the analysis. The results reveal that the model explains as much as 95% of the variations in banking sector performance. It also reveals that the financial market's activities are significant determinants of banking performance in Nigeria. This is to be expected because of the complementary and competitive roles of the sub-sectors on each other. Another effect of the complementary and competitive roles is the interchanging parameter signs such that a positive effect in one period switches to a negative effect in the next period. This indicates high-velocity reactions within periods that culminate in higher than 1 unit change in banking sector performance for a unit change in some of the explanatory variables, respectively. A theoretically plausible reason for the high goodness of fit coefficient is the dominance of the banking sector in the financial system. This dominance is due to the undeveloped nature of the financial markets. Cash and money market instruments still dominate financial transactions in Nigeria.

The findings of this research summarily show that the relationship existing between banks and non-bank financial institutions in Nigeria is more complementary than competitive. The policy implication of this finding is that whatever efforts made to enhance any of this sector will in the long run, have positive effect on other sectors. Since the banking sector presently dominate the financial sector, efforts geared toward strengthening the capital market is a double-edged solution to improving financial markets as a whole and by extension, increasing the banking sector performance in Nigeria. Efforts to make the capital market and other non-bank institutions more attractive to investors should be a priority policy as they are complementary institutions to banks This may be done by encouraging the issuance of bonds and stocks as ways of financing longer term investments. Encouraging capital market investments on bonds and stocks can be done through tax relief incentives for holders and issuers of bonds. Further studies using more CAMEL ratings to investigate the influence of financial development on bank performance are recommended

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