



IMPACT OF FINANCIAL DEEPENING ON ECONOMIC GROWTH IN NIGERIA: AUTOREGRESSIVE DISTRIBUTED LAGGED (ARDL) APPROACH

Abbas Abdullahi Marafa Ph. D

Department of Economics, Baze University, Abuja – Nigeria

Abstract

This paper assessed the impact of financial deepening on economic growth in Nigeria with annual time series data covering the period from 1986 - 2020 and employed the Autoregressive Distributed Lagged (ARDL) bounds test approach to co-integration, and granger causality techniques. The result of the ARDL short-run analysis indicated that the coefficient of error correction term (ECT) is negative and statistically significant at the 5% significance level confirming the existence of a long-run relationship between the variables in the model. The result of both the short-run and long-run analysis indicated that the coefficient of size variables - total bank asset ratio and market capitalization ratio are positive and statistically, while the coefficients of activity variables (economic volatility and stock market liquidity) are negative and statistically significant. The result of the Granger causality test indicates that there is a unidirectional causality running from economic growth to financial deepening variables, thereby lending support to the demand-following hypothesis. The study recommends for regulatory bodies to enhance the operations and activities of the financial sector; effectively expand and improve the credit channels in favor of the real and productive sectors of the economy; and strengthen policies that will improve the institutional and legal framework for stock market operations.

Keywords: Financial Deepening, Economic Growth, Cointegration, ARDL, Granger Causality, ECM.

JEL Classification Code: C12, C22, O1

1. Introduction

The financial sector-led economic growth is no doubt is one of the most deliberated areas in economic literature (Ghildiya, Pokhriyal, & Mohan, 2015). It is hypothesized that for any development of the economy, the financial sector must be well developed. This is so because the financial sector enables the deployment of financial resources from a surplus area to a deficit thereby providing the required capital needed for economic growth. It was argued that an improved financial sector increases the accessibility of funds to the productive sector of the economy at a relatively affordable cost. This in turn spurs the level of economic activities thereby increasing inclusive economic growth and development.

Before the introduction of financial sector deregulation in 1986, the Nigerian financial system can be described to be under "financial repression" characterized by high liquidity, adverse real interest rates, the heavy tax burden

on financial earnings, financial misallocation, and reserve requirement ratio (Central Bank of Nigeria, 2003). However, as part of the active deregulation of the Nigerian economy, the Nigerian financial sector has undergone substantial restructuring which has resulted in considerable growth in the number of bank branches from 1,367 in 1986 to 5,714 in 2017; increase in total assets base of banks from ₦15.9 trillion in 1986 to ₦43.53 trillion in 2019; increase in capital base of banks from ₦2 billion to ₦25 billion in 2005; lifting of repressive control on financial market instruments and liberalization of interest rate; passing of the Universal Banking Act 2000 removing distinction between the merchant and commercial banks thereby increasing the overall banking sector activities.

Similarly, the total loan and advances and total deposit liabilities which stand at ₦6.44 and ₦7.9 trillion in 2008 increased to ₦16.0 trillion and ₦23.76 trillion in 2019, respectively. Total credit to the domestic economy (net) rose to ₦18.91 trillion in 2014 contributing about 32.1

percent of the growth in monetary assets (M2). Ratio of money supply (M3) and credit to the private sector to GDP increased from 11.76percent and 7.53percent in 1986 to 20.05 and 16.93percent in 2014 and 23.75percent and 17.28percent in 2019 respectively, with credit to the core private sector being the driving force for the increase and reflected the injection of funds by the Asset Management Company of Nigeria (AMCON) into the intervened banks (CBN, 2019).

Indicators of the capital market showed that trading at the NSE, which was valued at ₦0.5 billion in 27,718 deals in 1986, rose to ₦1,338.86 billion in 2,248,939 deals in 2014. The aggregate market capitalization which was ₦6.8 billion in 1986 appreciate to ₦25,890.22 billion in 2019. Aggregate market capitalization, as a percentage of GDP, was 5.1 percent in 1986, compared with 19.8, 19.0 and 25.02 percent in 2005, 2014 and 2020 respectively. The ratio of the value of stocks traded to GDP stood at 0.4 percent in 1986, compared with 1.8 and 1.5 percent in 2005 and 2014 respectively. The turnover value, as a percentage of market capitalization, was 7.32 percent in 1986 compared with 17.56 and 30.59 percent in 2008 and 2017 respectively.

To this end, there is clear evidence that the financial sector in Nigeria has undergone a very serious restructuring which has resulted in a remarkable increase in its asset base and activities over the years thereby changing financial deepening in Nigeria. The recent consolidation exercise of major financial institutions and privatization exercise of most publicly-owned enterprises are evidence of that direction. However, despite these developments, the Nigerian financial system is still considered as less developed when compared with developed and even some emerging/developing economies. This contrast is evident from various measures like financial intermediaries, bank financing of the economy, financial access and outreach, capacity of the banking sector to perform its core role of allocating funds between savers and firms, etc. (Marafa, 2017).

There is a plethora of research work that investigated the nexus between financial deepening and economic growth in Nigeria with conflicting outcomes, hence, inconclusive.

Majority of these studies were undertaken using a financial measure that may not adequately capture the mechanism through which financial deepening can influence economic growth. Recognizing the fact that financial services may influence growth processes via multiple channels, some of which depend on the size of the financial sector, while others depend on the level of activities in the sector. The objective of this study is to incorporate variables that capture both financial sector size and level of activities in examining the nexus between financial deepening and economic growth in Nigeria. Following this introduction, section two provides the literature review, section three captures the methodology adopted in the study, section four presents the data analysis and result, section five concludes the paper.

2. Literature Review

The Concept of Financial Deepening

Financial deepening simply refers to the creation and growth of financial tools, markets, and institutions, as well as the improvement of the efficiency of financial undertakings that support investment and progress (Acaravci, Ozturk & Acaravci, 2007). The ability of a financial organization to allocate savings for investment objectives in a creative and efficient manner is referred to as financial deepening (Nzotta & Okereke, 2009). Financial deepening refers to an upsurge in the supply of financial assets in the country, hence, the entire sum of all financial asset indicators is the best estimate of the extent of the financial deepening (Ndebbio, 2004; Hamilton & Godwin, 2013).

The Concept of Economic Growth

This concept is usually used to explain the state of health of an economy and represent an increase in the nation's income or gross domestic product (GDP). The GDP is estimated using either the monetary value of production generated within the national borders of an economy or the income generated within a country such as salaries, rents, revenues, interest, etc., from factors of production, or the value of expenditure done by all the economic agents within a nation. Economic growth determines the standard of living of the society and national improvement. As argued by Ndebbio (2004), and Iram and Nishat (2009),

the economic growth of a country depends on capital, which is one of the basic ingredients for maintaining and boosting growth.

Empirical Literature

Empirical researches on the link between financial deepening and economic growth burgeoned in the 1990s, consequent to the protuberant study by King and Levine (1993a). Findings from the study indicated that the initial level of financial development is a good predictor of the consequent rate of economic growth. Several other subsequent studies point to the same or opposing conclusion.

Okafor et al, (2021) investigated the relationship between financial deepening and economic growth in Nigeria using data from 1986 – 2016 on the ratio of credit to the private sector to GDP, the proportion of market capitalization to GDP, and real GDP. The study used the Johansen Cointegration, error correction, and granger causality. The study found that financial deepening positively and significantly influences economic growth.

Samuel-Hope et al, (2020) examined the impact of financial deepening on economic growth in Nigeria using data spanning from 1981 - 2018 on bank's time and savings deposits, credit to the private sector to GDP, money supply to GDP, and real GDP. The study employed Autoregressive Distributed Lag (ARDL). The result revealed the existence of a long-run relationship but none of the independent variables was found to be significant. The study recommends favorable policies for credit lending to the private sector.

Nwaolisa and Cyril (2019) investigated the impact of financial deepening on economic growth in Nigeria using data from 1990 – 2016 on stock market capitalization, money supply, and private sector credit and employed the ordinary least square (OLS) method. The study established that all the financial deepening variables have a positive relationship with economic growth. The study recommends minimizing liquidity barriers within the stock market, removing constraints in international markets, improving capacity in bank lending, and aiding market entry.

Herman and Klemm (2019) used data from 2007 - 2015 and disequilibrium regression approach to analyze the influence of financial depth on economic development in Mexico. Supply impacts are particularly crucial in determining bank loans, according to the findings. Most supply constraints are addressed by current policies, albeit their effectiveness is dependent on how well they are implemented. The most pressing challenge in the future is promoting financial deepening while limiting the riskiness of monetary stabilization.

Ghildiya, et al (2015) examined the causal effects of financial deepening on India's economic growth employing the ARDL Bound testing and Granger ECM approach. The findings indicated the existence of a long-run connection between the variables in the model. Also, the findings revealed that financial deepening caused both short-run and long-run impacts on economic growth. The study suggested that the improvement in financial deepening by the government to increase economic growth through the provision of easy lending to the private sector, fostering international trade and stock market development.

Bakang (2015) examined the impact of financial deepening on economic growth in Kenya using data spanning from 2000 - 2013 on the ratio of liquid liabilities, private sector credit, bank assets, and central bank assets and commercial bank deposits ratio and GDP. The Johansen cointegration approach was employed. The result indicated that the financial deepening exerted a very strong impact on economic growth. The study suggested policies to reinforce incentivize private savings, increase deposit interest rates, intensification of financial inclusion policies.

Igwe, Edeh, and Ukpere, (2014) influence of financial deepening on economic growth in Nigeria using data from 1981 – 2012 on the proportion of broad money supply and private sector credit to GDP as financial deepening variables and employed the Engle-Granger cointegration approach. The finding indicated that broad money supply (M2) exerted a positive but weak significant link with economic growth, while private sector credit was negatively insignificant in the short run. The study recommended an increase in private sector credit to make financial deepening impactful on economic growth.

The paper observed that majority of these studies was undertaken using a financial measure that may not adequately describe the process through which financial deepening can influence economic growth. Differentiating between the size of the financial sector and the level of activities in the sector can serve as an alternative source of growth. Recognizing the fact that financial services may influence growth processes via numerous channels, some of which depend on the size of the financial sector, while others depend on the level of activities in the sector. This permit both qualitative and quantitative analysis of the relationship of the subject under consideration.

Theoretical Framework: Finance-Growth

Financial Deepening Theory

According to Ohwofasa and Aiyedogbon (2013), the scale of financial deepening demonstrates how healthy financial is in terms of its ability to create credits based on deposit and lending rates. As a result, this theory elucidates the financial system's favorable impact on national development through a variety of sectoral activities.

Theory of Financial Intermediation

According to this theory, financial intermediaries play a critical role in growth processes by facilitating the flow of funds from net savers (surplus units) to net borrowers (deficit units), influencing investment and propelling growth. According to Schumpeter (1911), properly functional financial intermediaries can improve overall economic efficacy by distributing and pooling funds to promote innovation and entrepreneurship, which are critical for economic development. Financial intermediaries, according to Gurley and Shaw (1960), are opportunities to increase a lender's financial capacity (investment and savings). As a result, increased intermediation facilitates larger savings mobilization, hence increasing investment and growth.

3. Methodology

3.1 Data Source and Variables Description

To investigate the impact of financial deepening on economic growth in Nigeria, the study used annual time series data covering the period 1986 -2020. The choice of the study period is informed by the desire to focus on the financial sector reforms period in Nigeria. The study

employed financial deepening variables that capture both the size and the level of activities of the financial sector, specifically, bank and stock market based. The data was obtained from the publication of the Central Bank of Nigeria – Statistics Bulletin 2020. The variables are described as follows:

- *Real Gross Domestic Product (RGDP)* - This is a proxy for economic growth, and it represents the total value of products and services produced in a country over a given period of time, usually a year.
- *Total Bank Assets (TBA)* - This is a bank-based size variable that measures the banking sector's overall size. This determines the banking sector's capacity to perform its fundamental function of mobilizing savings. It is the value of the banking system's outstanding assets divided by nominal GDP.
- *Economic Volatility (ECV)* - This is bank-based activity level variable. It is the ratio of bank credit to the private sector to nominal GDP. It captures the extent to which the system channels funds from surplus saving unit to deficit spending unit in the private sector.
- *Market capitalization (MCAP)* - This is a stock market-based size variable that gauges the market's overall size. Market capitalization as a proportion of GDP is used.
- *Stock Market Liquidity (SML)* - This is a stock market activity level variable. The turnover ratio recognizes the ease and speed with which economic agents can trade in securities. The total value of shares traded divided by market capitalization.
- *Financial Accessibility (FAC)* - This is a financial access indicator that measures the cost of using financial services. A high level of financial deepening should support and provide a foundation for the economy's moderate lending rate. The prime lending rate (the weighted average lending rate) of banks is used.

3.2 Model Specifications

The model is specified as:

$$RGDP = F(TBA, ECV, MCAP, SML, FAC) \quad (2)$$

where RGDP is the real growth domestic product, TBA is total bank asset, ECV is economic volatility, MCAP is

$$LRGDP = \beta_0 + \beta_1 LTBA_t + \beta_2 LECV_t + \beta_3 LMCAP_t + \beta_4 LSML_t + \beta_5 LFAC_t + \varepsilon_t \quad (3)$$

First, the order of integration of each time series variable will be examined using both the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root test. By rejecting the null hypothesis of the unit root test, it implies that the time series variable is non-stationary (i.e. I(1)). Second, to examine the existence of long-run relationship, the Autoregressive Distributed Lagged (ARDL) bounds testing approach developed by Pesaran and Shin (1999) and

market capitalization ratio, SML is stock market liquidity and FAC is financial accessibility. The log-linear form of the model can be specified as:

Pesaran, Shin, and Smith (2001) is used. The advantages of the ARDL approach over other traditional approaches lie in its flexibility in using both I(0) and I(1) variables, comfortability with a small sample size, and providing an unbiased estimation of long-run parameters (Harris & Sollis, 2003). The ARDL technique of cointegration is used as a vector autoregressive (VAR) model of order p. The cointegration equation takes the following form:

$$\begin{aligned} D(L(RGDP_t)) = & \alpha_0 \\ & + \beta_{11}L(RGDP_{t-1}) + \beta_{21}L(TBA_{t-1}) + \beta_{31}L(ECV_{t-1}) + \beta_{41}L(MCAP_{t-1}) + \beta_{51}L(SML_{t-1}) \\ & + \beta_{61}L(FAC_{t-1}) + \sum_{i=1}^q \alpha_{1i} D(L(RGDP_{t-i})) + \sum_{i=1}^q \alpha_{2i} D(L(TBA_{t-i})) + \sum_{i=1}^q \alpha_{3i} D(L(ECV_{t-i})) \\ & + \sum_{i=1}^q \alpha_{4i} D(L(MCAP_{t-i})) + \sum_{i=1}^q \alpha_{5i} D(L(SML_{t-i})) + \sum_{i=1}^q \alpha_{6i} D(L(FAC_{t-i})) + \varepsilon_{1t} \quad (4) \end{aligned}$$

Where RGDP, TBA, ECV, MCAP, SML, and FAC are as already described. L is the log operator, D is the first difference and ε is the error term. Equation (4) test the null hypothesis that there is no cointegration relationship between the variables against the alternative of cointegration using the bounds testing procedure. Following the selection of the model's most optimal lag duration, the F-test will be performed to identify the upper

and lower limits critical values. We reject the null hypothesis of no cointegration if the F-statistic is bigger than the upper bounds, which is the decision rule of the test. Thus, $H_0 = \beta_{11} = \beta_{21} = \beta_{31} = \beta_{41} = \beta_{51} = \beta_{61} = 0$; $H_1 = \beta_{1i} \neq \beta_{2i} \neq \beta_{3i} \neq \beta_{4i} \neq \beta_{5i} \neq \beta_{6i} \neq 0$; For $i = 1, 2, 3, 4, 5, 6$. Third, the study estimate the ARDL long-run equilibrium between the variables. The long run form of the model can be specified as:

$$\begin{aligned} D(L(RGDP_t)) = & \alpha_0 \\ & + \sum_{i=1}^q \alpha_1 D(L(RGDP_{t-i})) + \sum_{i=1}^q \alpha_2 D(L(TBA_{t-i})) + \sum_{i=1}^q \alpha_3 D(L(ECV_{t-i})) + \sum_{i=1}^q \alpha_4 D(L(MCAP_{t-i})) \\ & + \sum_{i=1}^q \alpha_5 D(L(SML_{t-i})) + \sum_{i=1}^q \alpha_6 D(L(FAC_{t-i})) + \varepsilon_t \quad (5) \end{aligned}$$

The parameters α_0 represent the intercept, α_1 to α_6 are the coefficients of variables and represent the disturbance term respectively. The conditional ARDL model is estimated using the ordinary least square method (OLS) dictated by a

specific information criterion in the second phase when a long-run cointegration exists. The short-term association can be estimated using the error correction model. The short-run form of the model can be specified as:

$$\begin{aligned}
D(L(RGDP_t)) = & \alpha_0 + \sum_{i=1}^q \alpha_1 D(L(RGDP_{t-i})) + \sum_{i=1}^q \alpha_2 D(L(TBA_{t-i})) + \sum_{i=1}^q \alpha_3 D(L(ECV_{t-1})) \\
& + \sum_{i=1}^q \alpha_4 D(L(MCAP_{t-i})) + \sum_{i=1}^q \alpha_5 D(L(SML_{t-i})) + \sum_{i=1}^q \alpha_6 D(L(FAC_{t-i})) + \delta ECT_{t-1} \\
& + \varepsilon_1
\end{aligned}
\tag{6}$$

where, δ is the coefficient of the error correction term which measure the speed of convergence of the variables to the long run equilibrium and ε_t represent the residual. In theory, the coefficient δ is expected to be statistically significant and negative for short run convergence to take place.

4. Results and Discussions

4.1 Result of the Descriptive Statistics and Correlation Matrix

Table 1 present the descriptive statistics on the variables. LGDP had the highest mean statistics of 9.23, with 2.84 and 2.10 Jarque–Bera and standard deviation values, respectively. LFAC had a Jarque–Bera statistic of 2.34, with 2.90 and 0.20 mean and standard deviation values, respectively. The mean value of LTBA was 3.07, with 0.32, 1.25, and 0.54 standard deviation, Jarque-Bera, and probability values respectively. In addition, LMCAP had a mean value of 2.23, with Jarque-Bera of 2.78, with a standard deviation of 0.76 and 0.25 probability value.

Table 1: Result of the Descriptive Statistics

	LGDP	LTBA	LECV	LMCAP	LSML	LFAC
Mean	9.234526	3.067785	2.373464	2.227605	1.584645	2.899460
Max	11.94634	3.696802	3.124778	3.637953	2.865556	3.394508
S.Dev.	2.103212	0.317752	0.454902	0.755820	0.726460	0.201045
Skewnes	-0.427180	-0.156399	0.379294	-0.066153	-0.700266	-0.007584
Kurtosis	1.896680	2.130184	1.458769	1.625408	2.640872	4.266600
J.Bera	2.839733	1.246033	4.303324	2.781055	3.048592	2.339903
Prob.	0.241746	0.536324	0.116291	0.248944	0.217774	0.310382

Source: Author's Computation with E-views

The correlation matrix originating from the variables is presented in Table 2. The objective is to investigate the degree of association among the variables employed in the model. This was considered very vital to avoid the problem

of multicollinearity associated with most empirical studies. The result indicated that all the values of the correlation coefficients were below 0.8 in absolute terms. This indicated a complete absence of multicollinearity issue based on the rule of thumb.

Table 2: Correlation Matrix

	LGDP	LTBA	LECV	LMCA P	LSML	LFAC
LGDP	1	0.6109	0.7712	0.7382	0.4229	-0.2937
LTBA	0.6109	1	0.7432	0.5157	0.3806	-0.1851
LECV	0.7712	0.7432	1	0.7548	0.3863	-0.4020
LMCA P	0.7382	0.5157	0.7548	1	0.5219	-0.4015

LSML	0.4229	0.3806	0.3863	0.5219	1	-0.3330
LFAC	-0.2937	-0.1851	-0.4020	-0.4015	-0.3330	1

Source: Author's Computation with E-views

4.2 Result of the Unit Root Test

Table 3 presents the result of both the ADF and PP unit root test. The result indicates that all variable, except

LFAC are not stationary at levels but became stationary at the first difference. The results imply that the variables are both I(0) and I(1) variables.

Table 3: Result of Unit Root Test

Variables	ADF		PP		Decision
	Levels	I st Difference	Levels	I st Difference	
LGDP	0.011217	-3.330181***	-0.160536	-4.185136*	I(1)
LTBA	-3.308958***	-6.307654*	-3.308958***	-6.613171*	I(1)
LECV	-3.108903	-4.927928*	-2.174571	-7.201206*	I(1)
LMCAP	-2.391301	-5.540494*	-2.391301	-5.828447*	I(1)
LSML	-2.159558	-3.098742	-1.978904	--5.953992*	I(1)
LFAC	-3.342092***	-5.242073*	-5.850957*	-9.134365*	I(0)

Source: Author's Computation with E-views

4.3 Result of the ARDL Bound Test

Table 4 present the result of the ARDL bound test. The model is estimated with restricted constant using (4, 4, 4, 4, 4) selected based on the Akaike Information Criterion (AIC). The result of the bound test indicates that the value of the F-statistics is 12.40 higher than the upper and lower

bounds of 3.79 and 2.62 at a 5% significant level, respectively. This implies that there exists cointegration among the variables included in the model. This result suggests that economic growth and the selected explanatory variables move together in the long run. The result is consistent with Samuel-Hope et al, (2020).

Table 4: ARDL Bounds Test		
Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	K
F-statistic	12.39571	5
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.26	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68

Note: The upper bound critical value at 5% significance level is 3.79 less than F-statistic value of 12.40(Peseran et al., 2001).

Source: Author's Computation with E-views

4.4 Result of the Long-run Tests

Table 5 present the result of the ARDL long-run analysis, the coefficients of total bank asset ratio is positive and statistically significant at 10%, while the coefficient of

economic volatility is negative and equally significant at 10%. The coefficients stock market capitalization ratio, and stock market liquidity are positive and negative at 5% and 10% significance levels respectively. The coefficient

of financial accessibility indicates an insignificant negative relationship. This implies that the size variables positively influence economic growth, while the activity variables

affect economic growth negatively in Nigeria during the period under review. This result is consistent with Okafor et al, (2021).

Table 5: Result of the Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LTBA	13.224731	1.294182	10.218602	0.0621***
LECV	-13.764350	1.380239	-9.972438	0.0636***
LMCAP	8.532518	0.719770	11.854503	0.0536**
LSML	-4.956389	0.498992	-9.932809	0.0639***
LFAC	-4.351531	0.859000	-5.065809	0.1241
C	3.028269	2.166332	1.397878	0.3953

Note: *, **, *** indicate significant at 1%, 5% and 10% levels, respectively,

Source: Author's Computation with E-views

Table 6 shows the result of the ARDL short-run analysis. The ECT coefficient is negative and statistically significant at the 5% level, this verifies the presence of a long-run relationship among the variables. This has further reaffirmed the result of the ARDL Bound test. The adjustment coefficient is -0.14, indicating that in the current time, around 0.14 percent of the short-run disequilibrium mistakes can converge to produce a long-

run equilibrium connection. The coefficient of size variables - total bank asset ratio and market capitalization ratio are positive and statistically significant at 5% and 10% level respectively. The coefficients of activity variables - economic volatility and stock market liquidity are negative and statistically significant at 5% and 10% levels, respectively. This similar to what is obtained in the log-run analysis.

Table 6: Result of the Short-run Form and Error Correction Mechanism

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LGDP(-1))	0.165487	0.059362	2.787738	0.2193
D(LGDP(-2))	-0.253251	0.046884	-5.401650	0.1165
D(LGDP(-3))	0.805835	0.100579	8.011933	0.0791***
D(LTBA)	0.812267	0.075699	10.730257	0.0592**
D(LECV)	-0.889933	0.048483	-18.355664	0.0346**
D(LMCAP(-1))	0.344660	0.040343	8.543201	0.0742***
D(LSML)	-0.178571	0.020328	-8.784306	0.0722***
D(LFAC)	-0.352019	0.042312	-8.319551	0.0762***
CointEq(-1)	-0.142401	0.013786	-10.329435	0.0514**

Note: *, **, *** indicate significant at 1%, 5% and 10% levels, respectively.

Source: Author's Computation with E-views

4.5 Parameter Stability Checks

The CUSUM (cumulative sum of recursive residuals) and the CUSUMSQ (cumulative sum of recursive residuals) are used to test the stability of the parameters as suggested by Pesaran and Pesaran (1997). The coefficients are relatively stable, and consistent, and they lie within the 5

percent level of significance border, indicating that the calculated model is stable (see figure 1). The model has passed the good fit test with the R square value of 0.8799 (adjusted R-square value of 0.7999) and the Durbin-Watson statistic of 2.846904 affirms that the model is not spurious.

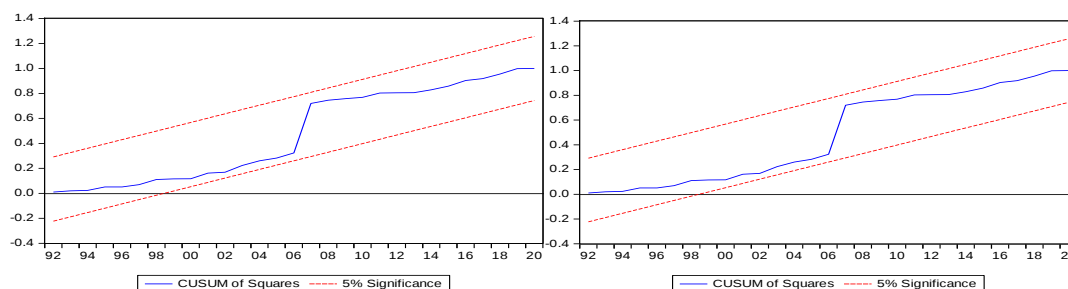


Figure 1: The CUSUM stability test

Source: Author's Computation with E-views

4.6 Result of the Granger Causality Test

Table 7: Result of the Causality Test

H ₀	F-Square	Prob
LTBA → LRGDP	2.41824	0.1075
LRGDP → LTBA	4.92433	0.0147*
LECV → LRGDP	0.12606	0.8821
LRGDP → LECV	3.63831	0.0394*
LMCAP → LRGDP	0.52584	0.5968
LRGDP → LMCAP	7.41357	0.0026*
LSML → LRGDP	0.21424	0.8085
LRGDP → LSML	0.55221	0.5818
LFAC → LRGDP	0.50180	0.6108
LRGDP → LFAC	6.49330	0.0048*

Note: *, **, *** indicates significant at 1%, 5% and 10% significance levels, respectively.

Source: Author's Computation with E-views

Table 7 presents the result of the Granger causality test. The result indicates that there is a unidirectional causality running from RGDP to TBA, ECV, MCAP, and FAC at the 5% significant level. The result also indicates a complete absence of causality between RGDP and SML. The implication is that financial deepening does not granger cause economic growth but economic growth does granger cause financial deepening. Hence, the relationship between financial development and economic growth in Nigeria follows the demand-following hypothesis.

5. Conclusion and Recommendations

This paper assessed the impact of financial deepening on economic growth in Nigeria using annual time series data spanning from 1986 - 2020 and employed the ARDL Bound test to cointegration approach. The result of the bound test result indicates the existence of a long-run

cointegration relationship among the variables included in the model. The ECT coefficient indicated a negative sign and was statistically significant, reaffirming the result of the ARDL Bound test. The result of the short-run and long-run estimates shows that financial deepening variables - total bank assets ratio and market capitalization ratio had a positive and statistically significant relationship with economic growth, while financial deepening activity variables economic volatility and stock market liquidity show a negative significant relationship. The Granger causality result indicates unidirectional causality running from economic growth to financial deepening (the demand-following hypothesis). Conclusively, financial deepening had a weak impact on economic growth in Nigeria.

The study recommends: The need for regulatory bodies to enhance the operations and activities of the financial sector

through the provision of a favorable operating environment, friendly interest rates to induce prospective investors, and diversification of financial instruments to increase financial inclusiveness and thus further financial deepening; The CBN should effectively expand and improve the credit channels in favor of the real and productive sectors of the economy through the pursuance of appropriate policies that will enhance the level of financial intermediation, ensuring the removal of all obstacles that could undermine the growth of private sector credit, and strengthening the Asset Management Corporation to free banks from a high incidence of non-performing loan and thereby improving their credit

disbursement capacity; and the fact that capital market turnover negatively influences economic growth is an indication that the market is still shallow and characterized with bottleneck inhibiting the ease of transacting business, hence, it is pertinent for the regulatory authorities to strengthen policies that will restore investor's confidence through improvement in the institutional and legal framework for stock market operations, and encouraging security ownership and stock market efficiency to ensure that stock prices justly reflect their actual values or anticipated future profitability of the quoted companies their actual values or anticipated future profitability of the quoted companies.

Reference

- Acaravci, Ali, Ozturk, Ilhan & Acaravci, Songul Kakilli (2007). Finance – Growth Nexus: Evidence from Turkey. *International Research Journal of Finance and Economics* 11, 30-40.
- Agu, C.C. & Chukwu, J.O. (2008). Multivariate causality between financial depth and economic growth in Nigeria. *Afr. Rev. Money Finance. Bank*, 7, 7–21.
- Bakang, M. L. N. (2015). Effects of financial deepening on economic growth in Kenya. *International Journal of Business and Commerce*, 4(7):1-50.
- Central Bank of Nigeria (2003). Annual Report and Statement of Account; *Central Bank of Nigeria: Abuja, Nigeria*.
- Central Bank of Nigeria (2020). Annual Report and Statement of Account; *Central Bank of Nigeria: Abuja, Nigeria*.
- Ghildiya, V., Pokhriyal, A.K. and Mohan, A. (2015). Impact of Financial Deepening on Economic Growth in Indian Perspective: ARDL Bound Testing Approach to Cointegration. *Asian Development Policy Review*, 3(3):49-60.
- Gurley, J. & Shaw, E. (1967). Financial structure and economic development. *Econ. Dev. Cult. Chang.* 15, 333–346.
- Hamilton, O.I. & Godwin (2013). Does Financial Deepening Follow Supply Leading or Demand Following Hypothesis? A Critical Look at the Nigerian Evidence. *Journal of Science and Technology*, 5, 10-15.
- Herman, A. & Klemm, A. (2019). Financial deepening in Mexico. *The Journal of Banking and Financial Economics* 1(11): 5-18.
- Igwe, Anthony; Edeh, Chukwudi Emmanuel & Ukpere, Wilfred I. (2014). Financial Deepening and Economic Growth in Nigeria (1981-2012): A Managerial Economic Perspective, *Risk governance & control: financial markets & institutions*, 4(4).
- Iram, Somia & Nishat, Mohammed (2009). Sector Level Analysis of FDI-Growth Nexus: A Case Study of Pakistan. *Pakistan Development Review* 48(4).
- Karimo, Tari Moses & Ogbonna, Oliver Ejike (2017). Financial Deepening and Economic Growth Nexus in Nigeria: Supply-Leading or Demand-Following? *Economies* 5(4).
- King, R.G & R. Levine, (1993a). Finance and Growth: Schumpeter Might Be Right. *Quarterly Journal of Economics*, 108:715-735
- Marafa, Abbas Abdullahi (2017). Monetary Policy Transmission Mechanism in Nigeria: Evidence of Bank Lending Channel (1986 – 2015) A *Ph.D thesis submitted to the Department of Economics, Bayero University, Kano – Nigeria*, May.
- Ndebbio, J. E. U. (2004). Financial Deepening, Economic Growth and Development: Evidence from Selected sub-Saharan African Countries, *African Economic Research Consortium (AERC), Research Paper 142*, Nairobi.
- Nnanna, O. J. & Dogo, M. (1998). Structural Reform, Monetary Policy and Financial Deepening: The

- Nigerian Experience. *Economic and Financial Review*, 36(2),1-29.
- Nwaolisa, Echeboka Felix & Cyril, UbesieMadubuko (2019). Assessment of Financial Deepening on the Growth of Nigerian Economy (1990-2016). *Journal of Contemporary Research in Business, Economics and Finance*, 1(2): 16-29.
- Nzotta, S. M. &Okereke, E. J. (2009). Financial Deepening and Economic Development in Nigeria: An Empirical Investigation. *African Journal of Accounting, Economics, Finance and Banking Research*, 5(5), 52-66.
- Ohwofasa, Bright Onoriode&Aiyedogbon, John Olu-Corin (2013). Financial Deepening and Economic Growth in Nigeria, 1986-2011: An Empirical Investigation, *Journal of Economics and Development Studies* 1(1); 24-42.
- Okafor, V., Bowale, E., Onabote, A., Afolabi, A., &Ejemeyovwi, J. (2021). Financial Deepening and Economic Growth in Nigeria: A Johanssen and Error Correction Model Techniques. *International Journal of Financial Research*, 12(2).
- Pesaran, M. Hashem, Yongcheol Shin, Richard J. Smith (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, 16(3): 289-326.
- Pesaran, M.H. and B. Pesaran, (1997). Working with microfit 4.0: Interactive econometric analysis. Oxford: Oxford University Press.
- Pesaran, M.H. and Shin, Y. (1999). An Autoregressive Distributed Lag Modelling Approach to Cointegration Analysis. *Econometrics and Economic Theory in the 20th Century: The Ragnar Frisch Centennial Symposium*, Strom, S. (ed.) Cambridge University Press.
- Samuel-Hope, D. C., Ehimare, O. A., and Osuma, G. O. (2020). The impact of financial deepening on economic growth in Nigeria (1981-2018). *WSEAS Transactions on Business and Economics*. DOI: 10.37394/23207.2020.17.96
- Schumpeter, J.A. (1911). *The Theory of Economic Development*; Harvard University Press: Cambridge, MA, USA.