Financial Inclusion and Output: Empirical Evidence from Nigeria

Nneka B. Charles-Anyaogu[1*]

[1]*Imo State Polytechnic Umuagwo, Nigeria.*

Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

Original Research Article

ABSTRACT

The study is on the effect of financial inclusion on output in Nigeria. It made use of time series data sourced from Central Bank of Nigeria statistical bulletin for the period of 1992 to 2018. The Co-integration, Causality, Unit Root and the Ordinary Least Square tests were used for the analyses. The Causality test result shows a unidirectional causality flowing from Microfinance Bank Deposit to the Output, whereas a unidirectional causality existed between Loan and Advances and Output, with causality flowing from Output to Loan and Advances. The unit root test result shows that all the variables are stationary at first differencing. Besides, Output recorded a significant positive relationship with Bank Deposit but an insignificant relationship with Loan and Advances. However, there exists a long-run equilibrium relationship among the variables. This means that what existed in the short-run persisted in the long-run in the case of Bank Demand Deposit and Output. It goes on to show that the effect of Loan and Advances on Output is best felt at the long-run when companies that acquired the loan must have produced goods and services in the economy. The study recommends that Central Bank Nigeria and Commercial Banks should encourage financial inclusion since it has proven to have a great influence on the output. Also, Banking Services when extended to the remote areas will not only reduce financial exclusion but will enhance the output in the economy.

_____

Corresponding author: E-mail: nekbcharles@yahoo.com;

1. INTRODUCTION

Financial inclusion has assumed a greater level of importance among policy makers and researchers across the globe. This is as a result of its efficient role as a driver of economy, and also, the promise it holds as a tool for economic development, particularly in the area of wealth creation, employment generation, poverty reduction, improving welfare and general standard of living. That is why Price [1] saw financial inclusion as a key in reducing poverty and global partnership for boasting prosperity. For the purpose of clarity, financial inclusion is a situation where individuals and businesses have access to useful and affordable financial products and services that meet their needs:- transactions, payments, savings, credit and insurance delivered in the right way. This means that financial inclusion is achieved only when individuals especially adults of banking age have easy access to a broad range of formal financial services that meet their needs at affordable costs. These services include, but are not limited to payments, savings, credit, insurance, pension and market products. According to Kama and Adigun [2], financial inclusion is a state where financial services are achieved by a range of providers, mostly the private sector, to reach everyone who could use them. It refers to a process that ensures the ease of access, availability and usage of this formal financial system by all members of an economy [3]. For Harley, Adegoke and Adegbola [4], financial inclusion is the delivery of financial services at affordable costs to some disadvantaged and low income segment of the economy. This is very correct in view of the fact that most unbanked population are in the rural and remote areas where banks are finding it difficult to operate, may be as a result of the people's low earnings and generally low level of financial literacy.

However, financial inclusion can be defined from the exclusion point of view, which is the inability of individual, household or group to access particularly the formal financial products and services. It signifies lack of access by certain segments of the society to appropriate low cost, fair and safe financial products and services from mainstream providers [5]. The World Bank [6] defines voluntary exclusion as a condition where the segment of the population or firms choose not to use financial services either because they have no need for them or due to cultural or religious reasons. In contrast, involuntary exclusion arises from insufficient income and high risk profile or due to discrimination and market failures and imperfections. In some cases, it can be as a result of lack of nearness to bank or financial institution in an area. The role that bank as a financial intermediation plays on ensuring that unbanked money found their way into the financial system especially in Africa has been a major monetary policy directive pursued by Central Banks of different African countries. The effect of this move has continued to attract attention among scholars of financial inclusion but different results have been recorded in different countries studies. This must form the focus of most researchers and policy initiates as it can be addressed by appropriate economic program and policies which can be designed to elevate and increase income levels and correct other imperfections. According to Andrianairo and Kpodar [7], the dearth of access to financial services by billions of adults all over the world poses serious challenges to global economic growth and development. The anecdotal evidence has shown that only four hundred and sixty five (465) of the world's adults have access to financial services. However, improving the global average level of financial inclusion becomes a global challenge.

A survey conducted in Nigeria in 2008 by Development Finance Organization, reveals that about 53.0% of adults were excluded from financial services. However, the exclusion rate reduced from 53.0% in 2008 to 46.3% in 2010 following the intensive moves towards financial inclusion by the Central bank and openings through the electronic banking system. This encouraging positive effect that is; the reduction from 53.0% in 2008 to 46.3% in 2010 motivated the Central Bank of Nigeria in collaboration with stakeholders to launch the National Financial Inclusion Strategy on 23rd October, 2012 which aimed at further reduction of exclusion rate to 20% by 2020. Specifically, adult Nigerians with access to payment services increased from 21.6% in 2010 to 70% in 2020 while those with access to savings should increase from 24.0% to 60% and credit from 2% to 40%, insurance from 1% to 40% and pension from 1% to 40% within the same period.

The question that easily comes to mind is whether these stated targets will be achievable in Nigeria. Is the Nigerian economic environment suitable and ready for financial inclusion strategy, looking at banks expansion rate to the rural area and the use of electronic banking. These and other related questions will form the basis for this

study. Besides, financial inclusion despite its global policy agenda for sustainable development, economic literature on it has still not be very vast or achieved its effects on the economy. Many researches on financial inclusion have been on the varying levels of financial inclusion both in developed and developing economies. It is important to note that these studies have laid foundations in this area and provided key policy insights on importance of financial inclusion on sustainable development. Although, it can be said that the direction of policy makers shifted from financial development to financial inclusion in enhancing sustainable economic growth especially in developing countries, but more work needs to be done in this area. Hence, the study financial inclusion and output in Nigeria.

The study employs powerful econometric tools in modeling and estimation using - Granger causality, unit root, Co-integration and Least square techniques to determine the actual direction and magnitude of causation of financial inclusion and output in Nigeria.

2. LITERATURE REVIEW

2.1 Conceptual Review

Financial Inclusion has a broad concept and its existing literature has varying definition on the concept. Onaolapo [3] defined Financial Inclusion as a process that ensures the ease of access, availability and usage of the formal financial system by all members of an economy. Also, Financial Inclusion is defined as the timely delivery of financial services to the disadvantaged and low income segment of the society at an affordable price [5]. The most recent study by the Center for Financial Inclusion saw financial inclusion as a state in which all people who can use financial services have access to it, provided at affordable price in a convenient manner and with dignity for the clients. However, it is the benchmark used to access how financial services reach to common people in the economy.

Some studies define the concepts in terms of financial exclusion, which can be explained in the context of social inclusion. For instance, the study by Sinclair [8] saw the inability to access necessary financial services in an appropriate form as financial exclusion. But policy makers have viewed financial inclusion as a basic access for all citizens highlighting its non rivalries. This is

why Metrotra and Kandpal [9] explained that the degree of "*publicness*" in financial inclusion may be different from typical public goods like Defense but no doubt that financial inclusion meets some features of public goods and thus can be regarded as a quasi public good. However, how public financial inclusion is in developing economy like Nigeria becomes a question begging for an answer. A study conducted by Buckland [10] showed that on the regional breakdown of predictions, Sub-Saharan Africa (SSA) and South Asia (SA) were the two regions with the lowest percentage of banked individuals with medians of 12.0% and 22.0% respectively while Europe and Central Asia were the regions with median of 50%. However the global financial inclusion average opined that the number of adults with access to financial services is less than 50.0 percent. The problem is on the increase in developing Asian and African countries such that achieving a higher financial inclusion level becomes a global challenge.

In Nigeria, the recent study by the Central Bank of Nigeria in collaboration with stakeholders to launch the national Financial Inclusion Strategy targeted financial exclusion to the reduction level of 20% by 2020. Specifically, adult Nigerians with access to payment services increased to 70% in 2020 while those with access to savings should increase to 60% and credit to 40%, insurance to 40% and pension to 40% within the same period. How this should be achieved is yet to be known. But a bigger question is what effect financial inclusion should have in the output of the economy of Nigeria. This remains the main focus of this research.

2.2 Theories

Certain theories provide necessary foundations for this study. Some of these would include; Modern Development Theory, Sustainability Theory, Financial Repression Theory, Human Capital Theory.

Modern development theory was developed in the year 1958. It is a conglomeration or a collective vision of theories about how desirable change in society is best achieve. The theory was based on modernization which is used to analyze the way in which aspect of the economy can foster development and which one that constitutes obstacles for economic growth. This is because the idea of financial inclusion for rural dwellers is a development assistance targeted at

those particular aspects that can lead to modernization of tradition and backward societies. The earliest principles of development theory can be derived from the idea of progress which stated that people can develop and change their society themselves.

Sustainability theory describes sustainability as a form of economy and society that is lasting and can be lived on a global scale. The society changing potential of the claim: More justice between generations, more global justice at the same time faces the problems of getting out of sight. Sustainability is just not the general claim to take social, economic and environmental policy serious but to strike a sound balance between these aspects. The theory tries to explain the potential for long term maintenance of well being sustainability required the reconciliation of environmental, social equity and economic demands to achieve its aim especially in the rural areas.

Financial Repression Theory: In developing countries, the term financial repressed means that, governments hold financial markets under the repression by interfering them. It achieves this by distribution of credits with holding interest rates at low levels synthetically. However, in fact, the hypothesis financial repression depends on the criticisms of neoclassical and neo-Keynesian views about interest rates policies. Financial repressed theory first came up within two independent studies by Mckinnon and Shaw [11] and financial markets were first examined systematically by McKinnon in 1973. Generally, an entrepreneur must take approval from banks or money lending broker to have a financial support. This approach was supported by money lending brokers at main point of analysis. Because developing countries are exposed to financial repression, money lending bankers create limitations to financial deepening and economic growth rates with veto powers on potential investment projects. Schumpeter (1911) in Mickinnon (1973) supports not only money lending bankers and institutions that change purchasing power with existing standards as an intermediary but also conversely create purchasing power itself. For an efficient market, government must not interfere with financial markets; deposit rates and credit rates must occur in market conditions. If this situation can be met, organization of financial system will be safe.

Human Capital Theory: This states that other things being equal, personal incomes vary according to the amount of investment in human capital; that is, the education and training undertaken by individuals or groups of workers. Human capital arises out of any activity able to raise individual worker productivity. In practice full-time education is too readily, taken as the principal example [12]. For workers investment in human capital involves both direct costs, and costs in foregone earnings. Workers making the investment decisions compare the attractiveness of alternative future income and consumption streams, some of which offer enhanced future income, in exchange for higher present training costs and deferred consumption. Returns on societal investment in human capital may in principle be calculated in an analogous way. People need access to credit in order to invest in their human capital; e.g. via schooling, university etc. to find eventually a well-paid job [12].

2.3 Empirical Review

Globally, studies have been conducted on financial inclusion. This is not far from its importance as driver of the economy. For instance, Parker and Regelio [13] conducted a study on financial inclusion, poverty and income inequality focusing on developing Asian economies. The research is based on regression models in order to test the impact of Financial Inclusion using control variables on poverty and income inequality. The result shows that financial inclusion insignificantly reduced the poverty and income inequality.

In their own study, Babajide, Adeboye and Omakhelen [14] examined the relationship between Financial Inclusion and economic growth in Nigeria. The study made use of development indications. The analysis was done using ordinary least square and result shows that Financial Inclusion is a significant determinant of total factor of production as well as output in the economy.

But the study of Nkwede [15] on financial inclusion and economic growth in Nigeria found otherwise. The study covered a period of 1981 to 2013 and it shows a negative relationship between financial inclusion and growth of the economy. He attributes this negative effect on high level of financial exclusion of adults from financial services.

Harley, Adegoke and Adegbola [4], carried out an empirical study on the role of financial inclusion on economic growth and poverty

reduction in a developing economy using panel data analysis ranges from 2006 to 2015 within a log linear model specification framework. The methodology they applied to the study was extracted from the literatures they came across. From their regression result, the records of active Automated Teller Machine (ATM), bank branches and government expenditures selected from three African countries were the most robust predictors for financial inclusion on poverty reduction in a developing economy. According to them, one percent increase on ratio of active ATM will leads to about 0.0082 percent increase in the gross domestic product and a reduction of poverty in developing economy. According to them an indicator shows that most of the ATM in developing economy are outdated and thus required a technological upgrade to have a significant impact in rural areas. Their coefficient of determination was very high as it showed that about 92 percent of the total variations in real growth rate of Gross Domestic Product are explained by all the independent variables in the model. Consequently, the researchers recommended that Government should focus on poverty reduction through focus on infrastructural development that will enhance banking services.

Furthermore, the study of Kama and Adigun [2] on financial inclusion in Nigeria evaluates critically the challenges affecting the attainment of financial inclusion growth in Nigeria by reviewing past and present efforts aimed at promoting the financial inclusion in the country. The findings showed that there is a need for stable electricity to drive banks infrastructures, telecommunication companies and other related services providers as many areas especially rural areas are yet to be covered with services like Automated Teller machines (ATM), point on sale (POS) etc.

However, Gretta [16], in his work on Financial Inclusion and Growth examined the impact of financial inclusion on the growth of the economies in developing countries such as the Middle East and North Africa (MENA) and the BRICS region and tired to identify the various channels of transmission between financial literacy, financial intermediaries and growth. The study applied a VAR regression in order to quantify the relationship between financial inclusion in terms of financial activities, financial literacy and growth and to study its impact on the economic growth in the MENA region. His findings showed the importance of financial inclusion in the MENA and BRICS region.

In Malaysia, Bakar and Sulong [17] conducted a study on the effect of financial inclusion on growth with interest on the type of effect whether it is positive or negative and also the causal effect. He made use of panel data of 44 African countries, using generalized method of moment, vector error correction and ordinary least square to test for significance. The result shows that financial inclusion enhances growth rate of the economy. They maintained that other studies that confirm negative or weak contribution of financial inclusion on growth are due to weak financial system, and low availability of financial system.

Okoye, Adetiloye, Erin and Modebe [18], in their own study; financial inclusion as a strategy for enhanced economic growth and development; investigated the outcome of financial inclusion on economic growth and development in Nigeria over the period 1986 to 2015 using the Ordinary Least Squares techniques. They measured financial inclusion in the study using loan to deposit ratio, financial deepening indicators, loan to rural areas, and branch network. Measures of financial deepening adopted in the study are ratios of private sector credit GDP and abroad money supply to GDP. Economic growth proxy as growth in GDP over successive periods by the researchers while per capital income was adopted as a measure of poverty, hence an index of development. The study showed that credit delivery to the private sector has not significantly supported economic growth in Nigeria and that financial inclusion has promoted poverty alleviation in Nigeria through rural credit delivery. The study recommended that the monetary authorities should deepen financial inclusion efforts through enhanced credit to the private sector as well as strengthen the regulatory framework in order to ensure efficient and effective resource allocation and utilization.

In the same line, Onaolapo [3], examined the effects of financial inclusion on the economic growth of Nigeria (1982-2012). According to the researcher, data for the study were collected from secondary sources likes Statistical Bulletins of the Central Bank of Nigeria (C.B.N), Federal Office of Statistics (F.O.S) and World Bank. Primary data used for the study consisted of some bank parameters as Branch Network, Loan to Rural Area, Demand Deposit, Liquidity Ratio, Capital adequacy, and Gross Domestic Product. Ordinary least square was employed in analyzing the data. The overall results of the regression

analysis show that inclusive Bank financial activities greatly influenced poverty reduction (R2=0.74) but marginally determined national economic growth and Financial Intermediation through enhanced bank Branch Networks, Loan to Rural Areas, and loan to small scale enterprise given about 50% relatedness between variables on either sides of the equation.

Ugbade, Mend and Ahmed [19] carried out a study on financial inclusion and Nigerian economy. The study made use of deposit and loan on rural dwellers from commercial banks on gross domestic product. The study made use of data from statistical Bulletin of the central bank of Nigeria over a period of 33 years. The Joehansen cointegration test was use to investigate whether or not the variables was co-integrated. The findings showed that deposit and loans of rural dwellers have influence on the performance of the economy. The study also revealed that 56% of adults in the world have no access to financial services and that the situation is worst in developing world with above 64% of adult unbanked.

Odeleye [20] studied on financial inclusion and inclusive growth in Nigeria. The study examines the long-run relationship between financial inclusion and economic growth in Nigerian at the period of 1981-2014. The study agrees that there is a long-run relationship between financial inclusion and economic growth in Nigeria.

In a most recent study by Enueshike and Okpebru [21] examined the effects of financial inclusion on economic growth in Nigeria from 2000 to 2018. Archival data sourced from Central Bank of Nigeria Statistical Bulletin was used for the estimation of the variables. The dependent variable of financial inclusion proxy by contribution of financial institutions to gross domestic product (GDP) was regressed on the explanatory variable of loan to small and medium enterprises (LSME), rural bank deposit (RBD) and control variable of inflation (INF). The ex-post factor research design was adopted for the study and diagnostic tests of unit roots and co-integration were conducted which show that the variables co-integration were mixed and show a long term relationship respectively. The statistical estimation of the explained and explanatory variable were done using auto-regressive distribution lag and findings from Wald tests indicate that loan to small and medium enterprise (LSME), rural bank deposit (RBD) and inflation (INF) has a significant effect on economic growth

in Nigeria. The study recommended among other things that rural bank deposits (RBD) should be encouraged by Central Bank of Nigeria.

Therefore, the present study will not only use of the same rural bank deposit but will also use loan and advances to small scale businesses. It intends to use granger causality test, the unit root test the co-integration test and the ordinary least square test to check for the magnitude and the direction of the variables.

3. METHODOLOGY

This study utilizes the ex-post facto causal comparative design that is fashioned after the hypothetic-deductive Fin metrics methodology. Accordingly, it employs the causal relationship between the identified financial phenomena. The models are estimated using the Granger Causality, Augmented Dickey-Fuller unit root, Johansen cointegration and Ordinary Least Square method. The data relates to average annual data on output, demand deposit of Microfinance Bank and loan and advances to Small and Medium Scale Enterprise sourced from Central Bank of Nigeria (CBN) statistical bulletin and estimations were done using E-view 9 software.

3.1 Model of the Study

The study hypothesizes that output in Nigeria is a positive function of financial inclusion.

GDP = f (FI);

The Gross Domestic Product (GDP) is used to proxy output and FI is financial inclusion. Many economies are opened to financial inclusion for the assumption that financial inclusion will affect growth of their economies positively. Also it is a known fact that the demand deposit of banks in the rural area is a way of making the unbanked to be financially included, not forgetting the loan and advances to small businesses which a major source of growth for small economies. Therefore, the model becomes thus;

GDP= f (BDD and LAA), f_1, f_2>0

Where BDD= Microfinance banks demand deposit and LAA = Loan and advances to small businesses. This can be written in an explicit form as

GDP_t= b0 + b1BDD +b2LAA + U_t

This expression can be reformulated to capture the causal imperatives using the Granger causality equation, the stationarity implications using the Augmented Dickey and fuller formulation, the co-integration modeling and the least square method of estimation.

4. ESTIMATION RESULTS

The first in the study's analysis is to examine the data characteristics of the source data for the analysis. Accordingly, the graphic description and analysis of the data is summarized in Fig. 1 for all the variables namely GDP, BDD and LAA and their joint graph. The graphs show mild fluctuations with only a prominent peak for GDP at the period under review.
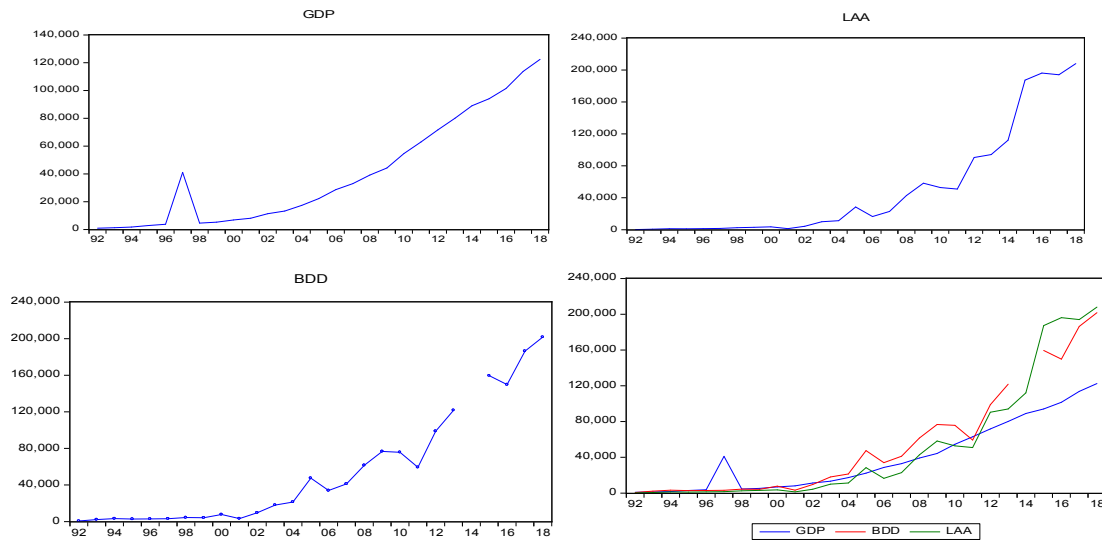
4.1 Causality Analysis

The granger causality test was used to check the causal imperatives of the variables. From Table 1, it can be seen that bank demand deposits (BDD) granger causes output (GDP). This is evident from the F-statistics of 3.42939 and the

probability of 0.0561. Thus, the null hypothesis which states that BDD does not Granger causes GDP is rejected in favor of Alternative hypothesis. Therefore, BDD Granger causes GDP at 5% level of significance. However, there is no evidence of bi-causality as GDP does not granger cause BDD.

For the loan and advances (LAA) and GDP, the null hypothesis that LAA does not Granger causes GDP was not rejected. This is evident from the F-statistics of 0.16016 with the probability of 0.5528. However, GDP granger causes LAA. This is evident from the F-statistics of 5.2088 and the probability of 0.0145. The null hypothesis was rejected in favor of the alternative hypothesis. Thus, there is a causal relationship between GDP and LAA with causality flowing from GDP to LAA.

For LAA and BDD, there is no causal relationship between LAA and BDD. This is evident from the values of F-statistics for both (2.22750 and 1.70922) and their associated probabilities (0.1383 and 0.2106) which are insignificant at even at 10% level of significance.

Fig. 1. Graphical Representation and analysis of the Data

Table 1. Pairwise granger causality tests

Null Hypothesis:	Obs	F-Statistic	Prob.
BDD does not Granger Cause GDP	22	3.42939	0.0561
GDP does not Granger Cause BDD		1.76053	0.2019
LAA does not Granger Cause GDP	25	0.61061	0.5528
GDP does not Granger Cause LAA		5.27088	0.0145
LAA does not Granger Cause BDD	22	2.22750	0.1383
BDD does not Granger Cause LAA		1.70992	0.2106

4.2 Stationarity Analysis

Table 2 shows the stationarity test result of the variables in a bid to check for presence of unit root. The Augmented dickey-Fuller was adopted for this purpose. From the result of the test, it can be seen that all the variables -GDP, LAA and BDD attained stationarity at order 1(1). This means that they attained stationarity at first differencing. This is evident from the ADF statistics which were greater than the critical values as shown in Table 2.

Panel A of Table 2 summarizes ADF test statistic for GDP (-7.018708; Prob.= 0.0000) which is greater than the critical value 1% level of significance (-3.724070) which indicates that the variable GDP is stationary at order 1(1). Also, Panel B of Table 2 tested the presence of unit root on the variable BDD using the ADF test statistic (-3.70959 and prob. 0.0123) which is greater than 5% level of significance (-2.986225). Thus, BDD is stationary at order 1(1). Finally, Panel C of Table 2 shows the ADF test result of LAA to check for the presence of unit root. The ADF statistic for LAA (-4.409678 and prob.=0.0020) which is greater than even the

1% level of significance (-3.724070) which indicates that the variable LAA is stationary at order 1(1).

4.3 Ordinary Least Square Analysis

Table 3 is the result of OLS estimation of rural bank demand deposit and loan and advances to small and medium scale enterprises effect on output of the economy. From the Ordinary Least Square result of Table 3, bank demand deposit (BDD) recorded a significant relationship with output (GDP). This is evident from the t-statistic test (3.810922 and the Prob.= 0.0009) which is significant at 5% level of significance. Therefore, the null hypothesis of no significant effect is rejected in favor of the alternative. Thus, there is a significant positive relationship between Bank demand deposit and output. In the case of loan and advance and output, it was found that LAA has no significant effect on the output. This is seen from the t-statistic of 0.158187 and prob. =0.8757. In this case, the null hypothesis of no significant relationship cannot be rejected. Hence, there is no significant relationship between loan and advances to SMEs (LAA) and output (GDP).

Table 2. Unit root test results

Null Hypothesis: D(GDP) has a unit root (Panel A)

Augmented Dickey-Fuller test statistic		t-Statistic	Prob *
		-7.018708	**0.0000**
Test critical values	1% Level	-3.724070	
	5% level	-2.986225	
	10% level	-2.632604	

Null Hypothesis: D(BDD) has a unit root (Panel B)

Augmented Dickey-Fuller test statistic		t- Statistic	Prob. *
		-3.709759	**0.0123**
Test critical values	1% level	-3.808546	
	5% level	-3.020686	
	10% level	-2.650413	

Null Hypothesis: D(LAA) has a unit root (Panel C)

Augmented Dickey-Fuller test statistic		t- Statistic	Prob. *
		-4.409678	**0.0020**
Test critical values	1% level	-3.724070	
	5% level	-2.986225	
	10% level	-2.632604	

Table 3. Least square method result of GDP, BDD and LAA

Dependent variable: GDP

Variable	Coefficient	Std. Error	t- Statistic	Prob.
C	6.307.798	2800.069	2.252729	0.0341
BDD	0.569325	0.149393	3.810922	0.0009
LAA	0.021294	0.134613	0.158187	0.8757
R- squared	0.940806	Mean dependent var	37966.88	
Adjusted R- squared	0.0935659	S.D. dependent var	38208.94	
S.E of regression	9691.932	Akaike info criterion	21.30414	
Sum squared resid	2.16E+09	Schwarz criterion	21.44931	
Log likelihood	-273.9538	Hannan-Quinn criter	21.34594	
F- Statistic	182.7761	Durbin – Watson Stat	1.956279	
Prob(F- Statistic)	0.000000			

Table 4. Johansen co integration Result for GDP, BDD and LAA Relation unrestricted co integration Rank Test (Max-Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None*	0.807384	36.23528	21.13162	0.0002
At most 1	0.426376	12.22719	14.26460	0.1024
At most 2*	0.280335	7.237324	30841466	0.0071

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

4.4 Co-Integration Analysis

From Table 2, it was established that the variables are stationary at first differencing; we have to proceed with co-integration test. The co-integration test is carried out to determine whether or not there is existence of long-run equilibrium relationship between the variables in question. There may exist in a short-run relationship as we have seen in Table 3, but there is every need to establish whether what happened at the short-run can persist in the long-run.

Table 4 summarizes the result of the co-integration test. As seen from Table 4, the test shows that there is one co-integrating equation at 5% level of significance. This means that there is a long-run equilibrium relationship between output and the variables (bank demand deposit and loan and advances to SMEs). The observed Max-Eigen statistic of 36.23528 (0.0002) is greater than the 0.05 critical value of 21.13162. Thus, it can be inferred that what happened at the short-run persisted in the long-run in the case of BDD. Also, there is a long-run relationship

between GDP and LAA as against their insignificant relationship at the short-run. All in all, financial inclusion has a long-run relationship with the output of the Nigerian economy.

5. CONCLUSION

The study utilizes the ex-post facto causal comparative design that is fashioned after the hypothetic- deductive Fin metrics methodology. Accordingly, it employed the modeling of classical linear and the causal relationship between the identified financial phenomena. The models are estimated using the Granger Causality, Augmented Dickey- Fuller unit root, Ordinary Least Square, and co-integration techniques. The data relates to average annual data on loan and advances to Small and Medium Scale Enterprise, rural Bank demand deposit (Microfinance Bank) and Gross Domestic Product from 1992 through 2018, and sourced from Central Bank of Nigeria statistical bulletin 2018.

The study found the existence of uni-directional causality of the variables of financial inclusion

(bank demand deposit and loan and advances) and output of the country. This means that the variable of financial inclusion granger causes output and vice versa. Also, the result indicated that all the variables attained stationarity at first differencing and were co-integrated. Thus there existed long-run equilibrium relationships among them. However, the Ordinary Least Square test showed that there is a significant relationship between output and bank demand deposit, but loan and advances though not significant at the short-run but showed a strong relationship in the long-run.

6. POLICY IMPLICATION AND RECOMMENDATIONS

It is the policy implication of this study that Government and banks should encourage financial inclusion as it has proven to have positive influence on the output of the economy. Although loan and advances seem to be insignificant in the short-run, but the long-run witnessed a significant effect on output. This can be easily explained; in that the loan and advances to SMEs will not encourage output immediately (at the short-run) since it is cash outflow. But its effect will be felt only when the Small and Medium Scale Enterprises have produced goods and services (at the long-run) that will increase output. Therefore, effort should be made to extend banking services to remote area where serious banking services are not in place. This is because the banks demand deposit will not only reduce the number of people that are excluded in the country but also improve output in the country.

COMPETING INTERESTS

Author has declared that no competing interests exist.

REFERENCES

1. Price E. Financial inclusion strategy and review in Nigeria: A report of Central Bank of Nigeria; 2018.
2. Kama U, Adigun M. Financial inclusion in Nigeria: The journey so far; 2013.
3. Onaolapo AR. The effect of financial inclusion on economic growth of Nigeria. International Journal of Business and Management Review. 2015;3(8):11-28.
4. Harley TW, Adegoke AJ, Adegbola D. Role of financial inclusion on economic growth and poverty reduction. Internal Journal of Research in Economics and Social Sciences (IJRESS). 2017;265-271.
5. Mohan R. Economic growth, financial deepening and financial inclusion. Annual Bankers' Conference Hyderabad; 2006.
6. World Bank. Global financial development report: Financial inclusion Washington, DC, USA; 2014.
7. Andrianairo M, Kpodar K. ICT, financial inclusion and growth: Evidence from African countries. IMF Working Paper 11/73; 2011.
8. Sinclair SP. Financial exclusion: An introductory survey. A Report of Centre for Research in Socially Inclusive Services. Heriot-Watt University, Edinburgh; 2001.
9. Metrotra R, Kandpal V. Financial inclusion: The role of Fintech and digital financial services in India. Indian Journal of Economics and Business. 2019;19:85-93.
10. Buckland J. Barriers and opportunities to financial inclusion. Theories and evidence from a Winnipeg study; 2005.
11. Mckinnon, Shaw G. Money and capital in economic development. The Brookings Institution, Washington DC, USA; 1973.
12. Schmeid AJ. Financial inclusion and poverty: The case of Peru, London. University of Greenwich; 2013.
13. Parker CY, Rogelio VM. Financial inclusion, poverty and income inequality in developing Asia. ADB Economic Working Paper Series Conference on Financial Inclusion, Regulation and Education Tokyo Japan; 2014.
14. Babajide AA, Adegboye FB, Omankhanlem AE. Financial inclusion and economic growth in Nigeria. International Journal of Economics and Financial Issues. 2015;629-637.
15. Nkwede F. Financial inclusion and economic growth in Africa: Insight from Nigeria. European Journal of Business and Management. 2015;7(35):2222-2839.
16. Gretta S. Financial inclusion and growth. The Business and Management Review; 2017.
17. Bakar HO, Sulong Z. The effects of financial inclusion on economic growth in Nigeria. Economies Journal of Business and Finance Affairs; 2018.
18. Okoye LU, Adetiloye KA, Erim O, Modebe NJ. Financial inclusion: A panacea

for balanced economic development; 2015.

19. Ugbade O, Mend L, Ahmed K. Financial inclusion and the Nigerian economy: Empirical evidence; 2017.

20. Odeleye AT. Financial inclusion and inclusive growth in Nigeria. Conference on Attaining Inclusive Growth in Nigeria at Abuja, Nigeria; 2016.

21. Enueshike P, Okpebiuo O. The effect of financial inclusion on economic growth in Nigeria. Journal of Research and Methods in Education. 2019;10:44-49. ISSN: 2320-1959.