FINANCIAL INCLUSION AND ECONOMIC GROWTH IN NIGERIA: AN APPLICATION OF THE AUTOREGRESSIVE DISTRIBUTED LAG (ARDL) APPROACH

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ABSTRACT

Financial inclusion entails access of the populace to financial services to tackle poverty, improve welfare and general standard of living; which consequently promote economic growth. Due to this linkage, financial inclusion has assumed a critical development policy priority in many countries, particularly in developing economies like Nigeria. Although financial inclusion has a sound theoretical backing, most empirical works as to whether it impact on economic growth in Nigeria still remains uncertain due to contrasting results found as well as the prevailing worsening poverty, unemployment, inflation, high interest rate and large unbanked rural economy. On that premise, the study investigated the long run impact of financial inclusion on economic growth in Nigeria between 1980 and 2019. Using annual time series data in an Autoregressive Distributive Lag (ARDL) model, the findings shows a negative impact of high interest rate, high price level and poor credit access by the private sector on economic growth during the study period. On that note, the Central Bank of Nigeria was urged to reach out to the Nigerian producers at a subsidized cost to encourage local production and also implement very urgently policy reforms aimed at reducing the official cost of borrowing (interest rate) in Nigeria so as to encourage local productivity.

Keywords: Financial Inclusion, Economic Growth, ARDL, Nigeria

JEL Classification: E4, E44, & E65

1.1. INTRODUCTION

It is not easy to define many subject matters in the field of social sciences with precise and universal acceptable definition. Experts and authorities only give a

relative conceptualization. To that end, the Central of Nigeria (CBN, 2020) defined financial inclusion or inclusive financing as the delivery of financial services ataffordable cost to sections of disadvantaged and low income segment of society. It is theprovision of broad range of high quality financial products, such as credit, savings,insurance, payments and provisions which are relevant, appropriate and affordable forthe entire adult population especially low income segment.The Bank of India (2013) views financial inclusion as a way weaker group and low income earners have access to appropriate financial services at an affordable cost in a transparent and fair manner. Similarly, the World Bank (2014) defines financial inclusion as the way financially excluded and underserved people in a society have access to a range of available financial services without any discrimination.

It is thus the process that ensures the ease of access, availability and usage of the formal financial system by all members of an economy. According to Okoye (2017) it is the process of availing varieties of the needed financial services at good prices, at the right places, forms and times without any form of segregation societal members. The Central Bank of Nigeria (CBN), (2020, 2018) contended that, financial inclusion is achievable when adult members in a country have unhindered access to a wide range of formal financial services that meet their needs at affordable costs. These services include, but are not limited to, payments, insurance, savings, pension, credit and the capital and money market products. To this end, financial inclusion can be said to be the purposeful effort on the part of government and financial operators and regulators to ensure access and availability of financial services such as loans, deposit service, insurance, pension and payments to the bankable citizens (Onaolapo, 2015).

The capacity of energetic people to haveeasy, affordable and safe financial services is a prerequisite for increasing inclusive economic growth because poverty is usually synonymous with financial exclusion. That is to say during periods of lack of formal finance amidst high poverty, people are left with no option but to patronize the informal finance managers which in most cases are exorbitant, unorganized and full of doubts (Odeleye and Olusoji, 2016).The fact that millions of people are not included in formal financial services worldwide, there is a potential loss of deposits or savings, loss of investible funds and an attendant loss of capacity of the global economy to generate the needed wealth. Access to financial services is widely acknowledged as capable of promoting credit creation and enhancing capital accumulation thereby raising the level of investment and economic activity.

As a matter of fact, most adult and bankable citizens in Africa are not fully financially integrated within the economy (World Bank, 2013).The formal financial system provides services to only about 35% of the economically active populationin Africa while the remaining 65% are excluded from access to financial services. This 65% is being served by the informal financial sector through the non-governmental organisation (NGOs) – microfinance institutions, money lenders, friends, relatives, credit union and financial cooperatives (CBN, 2018).

This poor African statistics collaborate withthe empirical evidence that a large number of bankable adult populations in Nigeria have no financial access and usage at all(Nwede, 2015). For instance, a total of 40.1 million adult Nigerians (41.6% of the adult population) were financially excluded in 2016. Further analysis has revealed that 55.1% of the excluded population were women, 61.4% of the excluded population were within the ages of 18 and 35 years, 34.0% had no formal education and 80.4% resided in rural areas (CBN, 2018).In other words, majority of active and energetic Nigerian populationare being financially excluded from the economy(Otiwu, Okere, Uzowuru and Ozuzu, 2018). There are many reasons for the high rate of the unbanked and those lacking of access to financial services, especially among the rural dwellers in Nigeria. These include, lack of infrastructural development, illiteracy, poverty and insecurity (Nwafor and Yomi, 2018).

Therefore, providing access to financial services is gradually becoming an area of concern for every policymaker for the understandable reason that it has far reaching economic and social implications.The formal financial sector in Nigeria anchored on banking has grown tremendously in the last few years with increasing conventional banking services to the rural areas through establishment of commercial banks' branches in rural areas, establishment of special banks in the form such as People's banking, community banking and lately, microfinance banking. The sector has become the delight for the establishment of branches of multinationals banks and direct foreign investment in Nigerian banks. Despite these modest achievements, majority adults in the country still lack access to formal financial services.

Rooting our research from the CBN statistical data that only 40.1 million Nigerians have access to financial services (CBN, 2020) while the majority 140 million have not, the spread or growth in the number of commercial banks in the country becomes questionable. It goes to shows that commercial banks are growing in numbers but financial services are not made available to everyone that needs them in Nigeriaas noticeable in many other African countries, this

has given impetus to this research into the dogma of financial inclusion for a well populated society like Nigeria.

Empirically too, the recent works of Otiwu, Okere, Uzowuru and Ozuzu (2018) and Nwafor and Yomi (2018) on financial inclusion in Nigeria centered mostly on the spread of banks branches at the expense of bank services thereby creating a wide gap to be fill by this study. Thus, this study is broadly aimed at investigating the short and long run impact as well as direction of causality of financial inclusion from the angle of money availability, rate at which money is borrowed and rate of exchange of money in Nigeria, volume of financial investment, the price level and credit available to the private sector on economic growth in Nigeria using a more complicated econometrics technique, the ARDL model.

2.1. REVIEW OF RELATED LITERATURE

Financial inclusion can be defined as the pursuit of making financial services accessible at affordable costs to all individuals and businesses, irrespective of net worth and size respectively.In the words of the World Bank (2014), it is referred to the proportion of individuals and firms that use financial services. Several authors have highlighted the beneficial effects of financial inclusion on economic growth. Some works such as those of Otiwu, Okere, Uzowuru and Ozuzu, 2018) have shown that financial inclusion had the potential to enhance economic growth and development. Nwafor and Yomi (2018) have demonstrated that financial inclusion indicators had a positive impact on growth but had to be coupled with financial development. Sharma (2016) has found that various dimensions of financial inclusion promoted economic growth.

Development economics also suggest that increased provision of financial services leads to the development of all levels of society. Economic growth fosters development through financial inclusion; on the other hand, financial inclusion enhances wealth creation and consequently economic growth on the other hand (CBN, 2018). The supply-leading hypothesis suggests that financial development spurs growth, boosting overall economic efficiency, liquidity, savings, capital accumulation, and entrepreneurship. In contrast, the demand-following view suggests a lagged response to economic growth, implying growth creates demand for financial products. In other words, as the economy advances, economic growth generates increased demand for financial services, leading to higher financial development and thus financial inclusion.

In order to enhance the flow of financial services to Nigeria's rural areas, government has, in the past, initiated a series of publicly financed micro and

rural credit schemes and policies targeted at the poor. Notable among such schemes were the rural banking programme, sectoral allocation of credit, a concessionary interest rate, and the agricultural credit guarantee funds scheme (Otiwu, Okere, Ozowuru and Ozuzu, 2018). Other institutional arrangements were the establishment of the Nigerian Agricultural and Co-operative Bank Ltd (NACB), the National Directorate of Employment (NDE). The Nigerian Agricultural Insurance Corporation (NAIC), the People's Bank of Nigeria (PBN), the Community Banks (CBs), and recently the Bank of Industry (BOI) and Bank of Agriculture (BOA).

The CBN also introduced a microfinance policy framework to enhance the access of micro-entrepreneurs and low income households to financial services required to expand and modernized their operations in order to contribute to rapid economic growth (CBN, 2018). The policy complements the banking sector reforms, not only brings the microfinance activities under the regulatory purview of the CBN but also aims at providing sustainable access to financial service by the economically active poor. At the same time, it is targeted at creating an environment of financial inclusion to boost capacity of Micro, Small and Medium Enterprises (MSMEs) to contribute to economic growth and development.

However, in spite of the about four decades of implementation of policies relating to financial inclusion in Nigeria, available statistics show sub-optimal performance. As far as the social benefits are concerned, financial inclusion increases the amount of available savings, increases efficiency of financial intermediation, and allows for tapping into new business opportunities.Financial inclusion has therefore become an explicit strategy for accelerated economic growth and is considered to be critical for achieving inclusive growth in a country (Karlan, Ratan and Zinman, 2014). As far as the individual is concerned, absence of financial inclusion forces the unbanked into non-formal banking sectors characterised by high interest rates and small amount of available funds. Due to the fact that the non-formal banking structure is not enshrined into any legislative framework, any disagreement between lenders and borrowers cannot be dealt with legally (Dupas, Karlan and Ubfal, 2016), and hence borrowers are in greater danger of being overcharged interest or manipulated.

2.2. SELECTED RECENT EMPIRICAL STUDIES

Bigirimana and Hongyi (2018) examine the relationship between financial inclusion and economic growth of Rwanda using annual data from 2004 to 2016. They used ARDL as a new approach to the problem of testing the

existence of a level relationship between a dependent variable and a set of regressors, when it is not known with certainty whether the underlying regressors are trend- or first-difference stationary as developed by Pesaran. The results revealed that there is long-run relationship between financial inclusion and economic growth of Rwanda. They study recommends for more innovations in financial services in Rwanda for the needed impact.

The work of Otiwu, Okere, Ozowuru and Ozuzu (2018)focused on the relationship between financial inclusion and economic growth with reference to microfinance for the period 1992 to 2013. Using Ordinary Least Square method and employing the Johansen Cointegration tests the study revealed that the activities of microfinance as one of the financial inclusion strategy significantly contribute to economic growth. The study reveals that the growth and development of a nation is significantly dependent on the expansion of banking and financial services to the currently financially-excluded class of citizens of the country, as they possess untapped and unexplored valuable potentials that will be of tremendous to the country. In view of the benefits inherent in financial inclusion, this study recommends that microfinance banks should concentrate efforts on low cost deposits which are in line with their operations than competing with the conventional banks in mobilizing fixed deposits that has higher cost attached to it.

Nwafor and Yomi (2018) research work focused on the relationshipbetween financial inclusion and economic growth in Nigeria.Two hypotheses were formulated, corresponding data spanningfrom 2001 to 2016 were obtained and tested using Two-stagedLeast Squares Regression Method. Findings revealed thatfinancial inclusion have significant impact on economic growth in Nigeria and that financial industry intermediation have notinfluenced financial inclusion within the period under review. Itwas recommended that Nigerian banks should develop financialproducts to reach the financially excluded regions of the countryas this will increase GDP per capital of Nigeria and consequently economic growth.

Ammar and Azhar (2017) investigated the nexus between financial inclusion and economic development in Iraq. The study uses two dimensions offinancial inclusion the first is the access of financial services and the second is the usage of the financial services, while GDP per capitaused as proxy for economic development. The paper finds low level of financial inclusion index in Iraq estimated by (10%). In addition,by using the Autoregressive Distributed Lag Model (ARDL) for coin-integration the paper finds unfortunately no relationship

the financial inclusion indicators and economic growth during the period 1990-2016. This fact emphasizes that more efforts need to be done toenhance and extend the financial inclusion in Iraq through financial literacy, costumers protection, providing financial services to ruralarea, and engage of low income people in the formal financial services especially via microfinance products.

Okoye (2017) investigates the effect of financial inclusion on economic growth and development in Nigeria over the period 1986-2015 using the Ordinary Least Squarestechnique. Financial inclusion was measured in the study using loan to deposit ratio,financial deepening indicators, loan to rural areas, and branch network. Measures offinancial deepening adopted in the study are ratios of private sector credit to GDP andbroad money supply to GDP. Economic growth was proxied as growth in GDP oversuccessive periods while per capita income was adopted as a measure of poverty,hence an index of development. The study shows that (i) credit delivery to the privatesector has not significantly supported economic growth in Nigeria (ii) financial inclusionhas promoted poverty alleviation in Nigeria through rural credit delivery. The monetary authorities should deepen financial inclusion efforts through enhanced credit delivery tothe private sector as well as strengthen the regulatory framework in order to ensure efficient and effective resource allocation and utilization.

Odeleye and Olusoji (2016) explored the relationship between financial inclusion and economic growth in Nigeria between 1981 and 2014. Based on the specified regression model, money supply, liquidity ratio and credit to the private sector appear to be the major drivers of economic growth in Nigeria. The study also validates the finance led growth hypothesis and established that finance causes growth in Nigeria. The implication of the findings was that policy makers need to focus more on long run financial policies that can enhance effectiveness of the financial sector (both money and capital markets) in promoting growth. Also, the government should provide enabling environment and create awareness that can engender more public trust in the country's financial system.

Babajide, Adegboye and Omankhanlen (2015) in their paper investigated the impact of financial inclusion on economic growth in Nigeria. It aimedto highlight the determinants of financial inclusion and its impact on economic growth. Secondary data were sourced from world development indicators and ordinaryleast square regression model was used to analyse the data. The result shows that financial inclusion is a significant determinant of the total factor of

production, aswell as capital per worker, which invariably determines the final level of output in the economy. This study recommends that natural and economicresources should be adequately harnessed, as alternative means of revitalization and diversification of Nigeria's oil-dependent mono-cultural economy.

Nwede (2015) investigated financial inclusion and economic growth of Africaneconomy, using Nigeria as a case study. Extrapolated time series financial inclusion data from Nigeria, coveringthe period of 1981 to 2013 were used in the analysis. The multiple regression models anchored on OrdinaryLeast Square technique was adopted in estimating the contributions of the variables. While controlling for othermacroeconomic exogenous variables; the results show that financial inclusion has significant negative impact onthe growth of Nigeria economy over the years. The researcher attributes the result to high level of financialexclusion of bankable adult citizens in Nigeria in particular and Africa in general. The researcher suggests moreinclusive financial system in Nigeria (and Africa) with focus on the rural populace because 'growth is good,sustained high growth is better and sustained high growth with financial inclusiveness is best of all' especially inthe developing economy.

It will be observed from the foregoing that the recent works of Bigirimana and Hongyi (2018) and Ammar and Azhar (2017) used a satisfactory dynamic ARDL model to capture the long run effects of financial inclusion on economic growth, the scope of these works was however Rwanda and Iraq respectively. The works of Otiwu, Okere, Ozowuru and Ozuzu (2018), Nwafor and Yomi (2018), Okoye (2017), Odeleye and Olusoji (2016) and Nwede (2015) used an elementary OLS which is econometrically considered inadequate in exploring long run effects and hence the choice of an ARDL in examining financial inclusion and economic growth in Nigeria is justified.

3.1. METHODOLOGY

The research design employed by the researcher is *ex post factoresearch* which aims at determining or establishing ormeasuring the relationship between one variable and anotheror the impact of one variable on another. The nature of datafor analysis used in this study was secondary annual time series data that was obtained fromthe CBN Statistical Bulletin, 2020 and National Bureau of Statistics (NBS), 2020 and summary of economic indicators in Nigeria between 1970 and 2019. Rooting the methodology in the Solow growth model and

Schumpeterian model, a simple linear relationship between financial inclusion and real GDP growth is specified as:

$$GDP = f\ (FINC) \tag{3.1}$$

Where, GDP = Real GDP growth rate and FINC = financial inclusion.Equation (3.1) issimply a non-stochastic relationship which implies that all changes in the GDP are accounted for by changes in the FINC. However, expanding FINC into various measures of financial inclusion, deepening and development following Bigirimana and Hongyi (2018) and Ammar and Ashar (2017), the relevant model for estimation is specified in a stochastic manner as follows:

$$GDP = \alpha_0 + \beta_1 MSS + \beta_2 INTR + \beta_3 INVT + \beta_4 CPS + \beta_5 BCB + \beta_6 CPI + \varepsilon \tag{3.2}$$

Where GDP= Real Gross Domestic Product, MSS = Broad Money Supply which in Nigeria included the cash at hand, deposit with commercial banks and near money , INTR = Interest Rate, INVT = Volume of Investment from National Savings, CPS = Credit to the Private Sector, BCB = Branches of Commercial Banks per 1,000 and CPI = Consumer Price Index as a measure of Inflation. An ARDL representation of long run equation (3) can be specified as follows:

$$\Delta LGDP = a_0 \sum_{i=1}^{p} a_{1i} \Delta LGDP_{t-1} + \sum_{i=1}^{p} a_{2i} \Delta MSS_{t-1} + \sum_{i=1}^{p} a_{3i} \Delta INTR_{t-1} + \sum_{t-1}^{p} a_{4i} \Delta INVT_{t-1}$$

$$+ \sum_{t-1}^{p} a_{5i} \Delta CPS_{t-1} + \sum_{t-1}^{p} a_{6i} \Delta BCB_{t-1} + + \sum_{t-1}^{p} a_{4i} \Delta CPI_{t-1} + \lambda ECM + \zeta$$

$$\tag{3.3}$$

All the variables are as already defined except the introduction of the ECM into the model to test the speed of adjustment to equilibrium in reaction to any policy changes.

4.1. DATA PRESENTATION AND ANALYSIS OF FINDINGS

The data and results are presented and discussed in order of descriptive statistics, ADF unit root test are levels and 1st difference, the bound testing procedure, ARDL long run and ECM, residual and the associated stability tests such as CUSUM and CUSUMSQ have been tested and the result presented and discussed below:

Table 4.1: Descriptive Statistics

	GDP	MSS	INTR	INVT	CPS	BCP	CPI
Mean	388331.3	22.13000	22.42105	5389074.	3551.642	2589.474	20.7657
Median	389196.5	19.19000	22.75000	236959.2	753.7050	2357.000	12.9500
Maximum	868879.5	63.30000	31.90000	78236002	18890.45	4001.000	72.9000
Minimum	31546.90	3.230000	12.50000	8799.900	21.78000	350.0000	4.70000
Std. Dev.	246412.8	12.86944	4.322984	17529693	5272.805	1017.846	17.5604
Skewness	0.286518	1.359846	-0.19099	3.911890	1.565374	-0.172747	1.49171
Kurtosis	1.959901	4.892939	3.140096	16.56189	4.349942	1.934915	4.13079
Jarque-Bera	2.232778	17.38490	0.262117	388.1327	18.40455	1.985140	16.11753
Probability	0.307460	0.000168	0.077166	0.000000	0.000101	0.070623	0.00031
Sum	14756589	840.9400	852.0000	2.05E+08	134962.4	98400.00	789.100
Sum of Sq. Dev.	2.25E+12	6128.032	691.4632	1.14E+16	1.03E+09	38332399	11409.63
No of years	38	38	38	38	38	38	38

Source: Author's Computation using Eviews 10

From the result displayed in Table 4.1, skewness is positive for four variables and negative INTR and BCP, implying that the distribution was skewed to the right. The kurtosis on the other hand revealed that only INTR almost satisfied its symmetrical condition of the expected value of three (3). GDP and BCP had values less than three. This implies that the distribution of the variables is flat or platykurtic.

Table 4.2: ADF Stationarity Test

	ADF Test Statistic	0.05 Critical value for ADF Statistic	Order of Integration
GDP	-0.548081	-2.945842	-
D(GDP)	-5.938038	-2.951125	I(I)
MSS	-2.956699	-2.938987	I(0)
D(MSS)	-5.505572	-2.945842	-
INTR	-4.159824	-2.938987	I(0)
D(INTR)	-8.361291	-2.941145	-
INVT	-0.894642	-2.963972	-
D(INVT)	6.030258	-2.963972	I(1)
CPS	3.396074	-2.963972	I(0)
D(CPS)	-3.251512	-2.967767	-
BCP	-2.227683	-2.938987	-
D(BCP)	-6.078592	-2.941145	I (1)
CPI	-3.357085	-2.938987	I(0)
D(CPI)	-6.138595	-2.941145	-

Source: Author's computation using Eviews 10

On the other hand, MSS, INVT, CPS and CPI had values greater than three, indicating the distribution to be peaked or leptokurtic. However, the probability of all the variables was shown to be statistically significant at 5% and some at 10% level of significance. This gives way for the rejection of the hypothesis that the data set is approximately abnormal.

The result of ADF stationarity test in Table 4.2 above shows some of the model variables – MSS, INTR, CPS and CPI to be stationary at levels while the GDP, INVT and BCP not to be stationary at levels. After the first difference; all variables became stationary at 5% level of significance but were not integrated of the same order. Thus, with all the variables not having the same order of integration but a mix order of co-integration as shown in the result of the ADF unit root test, the use of Johasen co-integration has collapsed, necessitating the use of Bounds co-integration test. The bound test does not only establish the existence of long run relationship but also gives the ECM, short run and dynamic long run parameter coefficients about the dependent and independent relationship.

Table 4.3: Result of the Bound Test

F-statistic	Alpha Level	Critical Bound		Decision
		Lower Bound	Upper Bound	
4.913	5%	2.62	3.79	Co-integrated

Source: Author's computation using Eviews 10

Table 4.3 above indicates the calculated F-statistic of 4.913. Given the upper bound critical value of 3.79 which is less than the F-statistic, the null hypothesis of no co-integration is rejected, implying long-run co-integration relationships exist amongst the variables. This leads to the estimation of the long run relationship and the associated short-run dynamics.

The result of the long-run estimates of the ARDL in Table 4.4 revealed MSS, INVT and BCP to be positively related with the GDP while INTR, CPS and CPI to be negatively related with GDP in the long-run. The result goes to show that MSS, INVT and BCP are crucial motivators of GDP in Nigeria within the periods of analysis.MSS as an index of financial is a significant motivator of GDP growth and is statistically significant at 5% level. This result collaborates with earlier findings of Nwafor and Yomi (2018) and Okoye (2017) that high interest rate and consumer price index are detrimental to economic

Table 4.4: Estimated Long Run Coefficients

ARDL (3, 4, 4, 4, 4, 4) selected based on Schwarz Bayesian Criterion

Dependent variable is GDP: Estimated from 1980 to 2019

Regressors	Coefficient	Standard Error	T-Ratio	Prob.
MSS	0.7172	0.0656	10.931	0.0016
INTR	-5.1204	12.489	-4.3888	0.0219
INVT	0.0493	0.0044	11.187	0.0015
CPS	-5.2865	6.1830	-8.5533	0.0034
BCP	1.1584	14.399	8.0057	0.0041
CPI	-8.5866	25.043	-3.4327	0.0415

Source: Author's computation using Eviews 10

growth in Nigeria. This suggests clearly that the cost of borrowing (INTR) remains quite high in Nigeria thereby depriving the private sector access to the needed credit facilities from the financial system. The general price level has remained high in Nigeria despite the financial crisis and COVID-19 outbreak. This portends danger for both import and export of goods and services in Nigeria and hence the objective of financial inclusion in Nigeria is put under serious jeopardy.

Table 4.5: ECM for the Selected ARDL

ARDL (3, 4, 4, 4, 4, 4) selected based on Schwarz Bayesian Criterion

Dependent variable is GDP: Estimated from 1980 to 2019

Regressors	Coefficient	Standard Error	T-Ratio	Prob.
dMSS	0.913111	0.033118	27.57123	0.0001
dINTR	-5.668120	3.019866	-18.76944	0.0003
dINVT	0.049346	0.000786	62.81121	0.0000
dCPS	-5.288865	1.113528	4.749648	0.0000
dBCP	1.152784	6.428387	1.793271	0.0004
dCPI	-8.586685	79.53105	-10.79665	0.0017
ECM(-1)	-0.106818	0.000125	-5.439319	0.0000
R-Squared	0.998917			
Adj. R-Squared	0.995804			
DW-statistic	2.196649			
F-Statistic	320.8446			
Prob. (F. Statistic)	0.000000			

Source: Author's Computation Using Eviews 10

Table 4.5 above revealed the coefficient of the lagged error correction term (-0.106818) to be negative but statistically significant at the 1% level. The negative

and significant coefficient is an indication of co-integrating relationship among the variables. The magnitude of the coefficient implies that about 10.6% of the disequilibrium caused by previous year's shocks converges back to the long-run equilibrium in the current year. The coefficient of multiple determinations (R^2) is 0.998917 and the adjusted value is 0.995804 indicating that about 99.8% of total variation or a change in the present value of GDP is explained by changes in the explanatory variables in the model while the remaining 0.2% is explained by other factors not explicitly captured in the model. The Durbin-Watson statistic of 2.196649 shows positive serial correlation but within the normal bound of 2. The probability of F-statistic is statistically significantly at 1% level of confidence, which implies the ARDL model is robust and fit.

The ECM result has further replicated the long run estimates showing MSS, INVT and BCP to be positively related with the GDP while INTR, CPS and CPI to be negatively related with GDP in the short-run. This is a wakeup call to the government and policy makers in Nigeria to change policy tactics if financial inclusion is to be achieved in Nigeria. The econometrics result has consistently shows interest rate, poor credit to the private sector that are the supposed engine of economic growth and the high price of goods and services have denied many Nigerians access to finance. The objective of financial inclusion remains elusive for Nigeria except the needed policy measures are not only introduced but rigorously implemented especially during the post COVID-19 pandemic era.

Furthermore, the stability tests - Cumulative Sum of Recursive Residuals (CUSUM) detecting systematic departure of the β_i coefficients that results in a systematic sign on the first step ahead forecast error and the Cumulative Sum Squares of Recursive Residuals (CUSUMSQ) useful when the departure of the coefficients from constancy is haphazard rather than systematic but that involves a systematic change in the accuracy of the estimated equation as observations are added.

Both are derived from the residual of the recursive estimation known as recursive residuals. Under the null hypothesis of perfect parameter stability, both the CUSUM and CUSUMSQ statistics are zeros. Given that the expected value of a disturbance is always zero, a set standard error bands is usually plotted around zero and any statistic lying outside the band is taken as evidence of parameter instability. Plots of CUSUM and CUSUMSQ in figures 4.1 and 4.2 respectively showed that both statistics fall within the critical bounds implying that, all the coefficients of the estimated model for are stable over time.
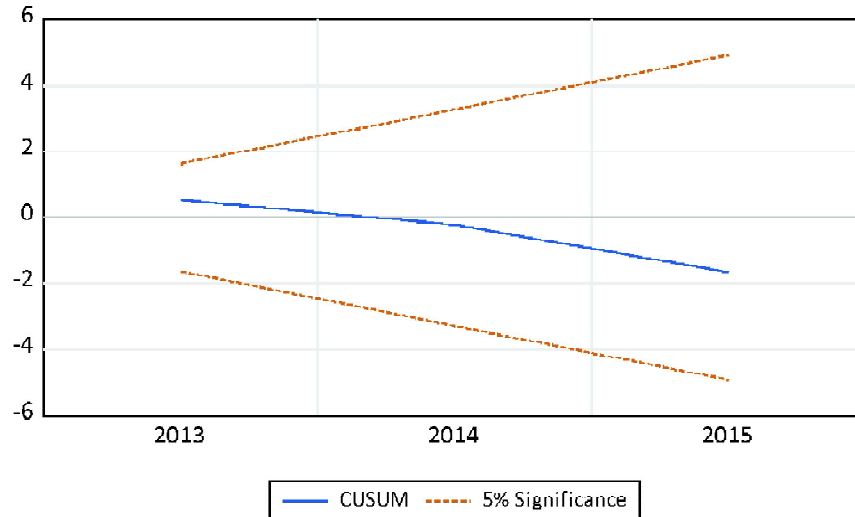
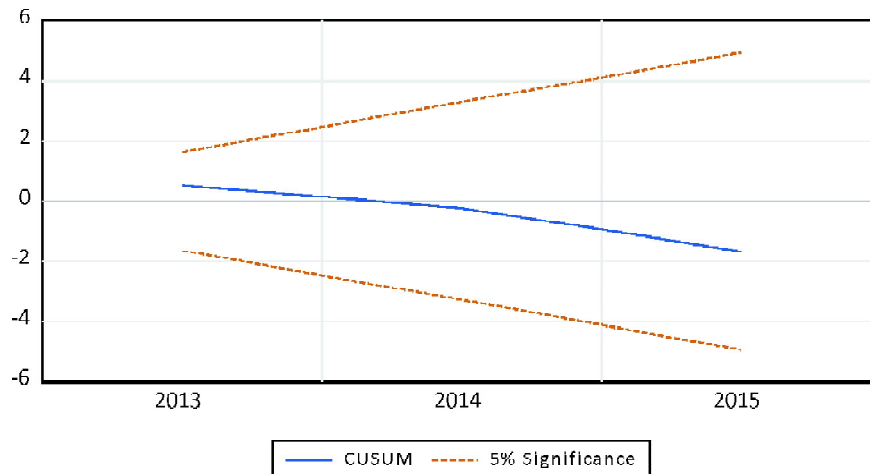**Figure 4.1: CUSUM Test of Significance at 5%**

Figure 4.2: CUSUMSQ Test of Significance at 5%

The stability is followed by normality test presented in figure 4.3. The figure shows the series to be normality distributed with negative skewness. Kurtosis was shown to produce the asymmetric quality of the expected value of 3. However, the Jarque-Bera test did not produce significant probabilities. This can however be ignored since the ADF unit test suggested mix- order of co-integration for the data set and the appropriate dynamic model was employed in examining the relationship.
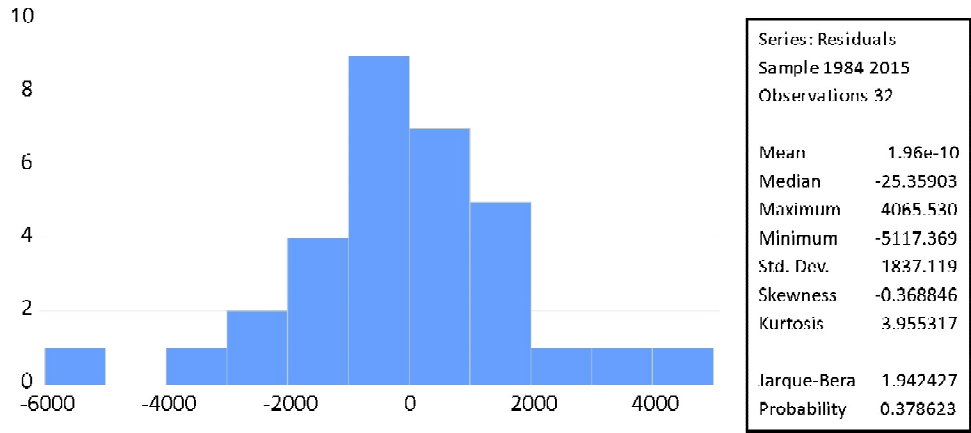
Series: Residuals
Sample 1984 2015
Observations 32

Mean	1.96e-10
Median	-25.35903
Maximum	4065.530
Minimum	-5117.369
Std. Dev.	1837.119
Skewness	-0.368846
Kurtosis	3.955317
Jarque-Bera	1.942427
Probability	0.378623

Figure 4.3: Normality Test of Significance at 5%

Table 4.6: Other Model Residuals

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	251.8852	Prob. F(2,1)	0.0445
Obs*R-squared	31.93660	Prob. Chi-Square(2)	0.0000
Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	2.140047	Prob. F(28,3)	0.2926
Obs*R-squared	30.47429	Prob. Chi-Square(28)	0.3409
Scaled explained SS	0.395777	Prob. Chi-Square(28)	1.0000

Source: Author's Computation using Eviews 10

The Breusch-Godfrey serial correlation Langrange Multiplier (LM) is used to evaluate the assumptions of Best Linear Unbiased Estimator (BLUE) popularized by Gauss-Markov. The null hypothesis of the test is that there is no serial autocorrelation in the residuals up to the specified lag order. The BG-LM serial correlation test reported F-statistic value of 0.0445 with a significant probability of 0.0000. We therefore reject the null hypothesis, implying that the model is free from serial correlation. The Breusch-Pagan-Godfrey test as a chi-squared test which depends on an appropriate threshold for heteroscedasticity to occur has been applied. The test reported an F-statistic value of 0.2926 and insignificant probability value of 1.0000. We therefore fail to reject the null hypothesis which implies variances of the model are homoscedastic (constant).

5.1. CONCLUSION AND RECOMMENDATIONS

It can be concluded on the basis of this findings that there is poor financial inclusion in Nigeria with most or majority of Nigerians not having access to financial services. While there are positive developments in the quantity ofbroad money supply, volume of investment generation and commercial banks spread in Nigeria, high cost of borrowing, inflation and poor credit to the private sector have denied most Nigerians in accessing finance needed for daily economic activities. On that note, Nigeria remains one of the underdeveloped economies despite her endowments and encouraging population.To overcome some of these challenges, the following policy recommendations are made:

i) There is the urgent need to revise downwards the official cost of borrowing (interest rate) in Nigeria. Additionally, tax incentives should be given to specific organizations involved in local production inNigeria to encourage local productivity.

ii) Deliberate efforts should be made by the Central Bank of Nigeria to ensure adequate financial servicesreaches out to the Nigerian producers who predominates the rural economy at a subsidized cost to encourage local production.

iii) The much talked about economic diversification in Nigeria should become a reality rather than political gimmick. The over-dependent on oil for revenue and budget has crippled other productive sectors in Nigeria such as agriculture and mining. The more many Nigerians are involved in production, the more money they can earn on their own.

iv) Commercial and microfinance banks in Nigeria should be directed to extend their coverage to include the rural economy by establishing branches or putting on Automated Teller machines (ATM) and POS at strategic locations. At the moments, most banks in Nigeria only operate at the state headquarters thereby, depriving the rural economy access to finance.

v) The government must fight to eliminate insecurity currently ravaging productive activities to ensure smooth operation of the economy and access to money by Nigerians.

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