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Abstract
This study empirically investigates the influence of financial inclusion on economic growth and the causality between financial inclusion and economic growth in Nigeria using Ordinary Least Squares (OLS) and Granger Causality Test. Findings suggest that financial inclusion significantly contributed to Nigeria’s economic growth over a period of thirty-six years (1982-2017). The coefficient of determination indicated that 99.95% of variations in economic growth can be explained by the changes in financial inclusion variables. The study further shows evidence of unidirectional causality between financial inclusion and economic growth. It is recommended among others that there should be increased financial intermediation for small businesses and robust credit financing programmes for private enterprises. The study also recommended that conscious and collaborative efforts must be made to achieve financial literacy through intense enlightenment programme while government policies should be directed towards enhancing financial inclusion activities geared towards economic growth.

Keywords: Causality, Economic Growth, Exclusion, Financial Inclusion.

1. Introduction
Nigeria entered recession in 2016 as a result of lower oil prices and lower production exacerbated by militant attack on oil and gas infrastructure in the Niger Delta region, coupled with detrimental economic policies, including foreign exchange restrictions. However, the economy’s Gross Domestic Product (GDP) growth turned positive in 2017 from -1.6% in 2016 to 0.8% as oil prices recovered and output stabilize (Central Intelligence Agency (CIA) World Factbook, 2018). The population of the country was estimated at 203 million in 2018 with a labour force of 60.08million (CIA World Factbook, 2018). However, despite its strong fundamentals, Nigeria has been hobbled by a disproportionate distribution of income (among other factors) which has widened the disparity between the rich and the poor. The economic diversification and strong growth indices have not translated into a significant decline in poverty levels, over 70% of Nigeria’s 203 million population still live below poverty line (CIA World Factbook, 2018). Lack of access to financial services has been identified as key cause of poverty (Kama & Adigun, 2013) as there seems to be an inability to access productive assets in the face of inadequate finance.

Enhancing Financial Innovation and Access (EFInA) 2018 survey shows that Nigeria with all the resources at her disposal has a total adult population (18 years and above) of about 99.6million. According to the survey, 63million adults (63.2%) are financially included while 36.6million adults (36.8%) are financially excluded (i.e individuals who demand for financial services but have no access to any of the products in the full suite of basic financial services - savings, credit, insurance, and payment
services) from a formal financial service provider. This is not only peculiar to Nigeria but also obtains in Asia, Latin America, Middle East and other African countries. Poverty is created due to lack of financial resources to generate livelihood and income, creating a vicious cycle of low incomes, lack of livelihoods and low resources (Oyewo & Oyewole, 2014).

Financial Inclusion is the process of ensuring access to financial services, and timely and adequate credit where needed by vulnerable groups such as weaker sections and low income groups at an affordable cost (Rangarajan, 2008). It refers to a process that ensures the ease of access, availability and usage of the formal financial system for all members of an economy. It is a process where financial services are delivered by a range of providers, mostly the private sector, to reach everyone who could use them. Specifically, it means a financial system that serves as many people as possible in a country (Kama & Adigun, 2013). It is a measure of the proportion of individuals and firms that use financial services provided by formal institutions. The focus is mostly on very basic financial services and covers not only access to (supply of) financial services but also the use of (demand for) financial services.

The concept of financial inclusion has continued to assume increasing importance across the globe. The main reason for this is the promise which financial inclusion holds in addressing global poverty, income inequality, underdevelopment and welfare. It is believed that when everybody in the world has access to financial services, their joint contributions to the entire development process will create faster and more quantitative and qualitative impact. Globally, the levels of inclusions vary among regional blocks, gender, age, educational and income brackets (Conroy, 2008; Nwankwo & Nwankwo, 2014). The importance of financial inclusion therefore cannot be over emphasized due to its key role of bringing integrity and stability into an economy’s financial system. It is more pertinent in the case of Nigeria to use financial inclusion as a platform not just for growing the financial sector but as an engine for driving economic growth (Moghalu, 2010).

This paper attempts to address the influence of financial inclusion on economic growth in Nigeria and the causality between financial inclusion and economic growth in Nigeria.

2. Literature Review and Conceptual Framework
The Center for Financial Inclusion (2014) defines full financial inclusion as a state in which everyone who can use them has access to a full suite of quality financial services, provided at affordable prices, in a convenient manner with respect and dignity. The World Bank (2006) report states that financial inclusion or broad access to financial services is as a result of absence of price and non price barriers in the use of financial services. The report recognizes the fact that financial inclusion does not imply that all households and firms are able to borrow unlimited amounts or transmit funds across the world for some fee. It makes the point that creditworthiness of the customer is critical in providing financial services. The report also stresses the distinction between ‘access to’ and ‘use of financial services as this difference has implications for policy makers. ‘Access’ essentially refers to the supply of services, whereas use is determined by “demand” as well as “supply”. Among the non-users of formal financial services a clear distinction therefore needs to be made between voluntary and involuntary exclusion. Financial inclusion addresses the’ involuntarily excluded’ as they are the ones who despite demanding financial services, do not have access to them.
Financial inclusion therefore refers to a process that ensures the ease of access, availability and usage of the formal financial system for all members of an economy (Swamy, 2010). The importance of an inclusive financial system is widely recognized in policy-making circles and recently financial inclusion has become a policy priority in many countries including Nigeria. Initiatives for financial inclusion have come from the financial regulators, the governments and the banking industry. For example the Central Bank of Nigeria (CBN) launched the National Financial Inclusion Strategy (NFIS) in October 2012, though efforts at financial inclusion in Nigeria dates back to 1977 with the introduction of rural banking scheme. The introduction of People’s Bank of Nigeria in 1989; commencement of Community Banking in 1990 and the launching of Microfinance Policy, Regulatory and Supervisory Framework in 2005 which was subsequently revised in 2011 (Onaolapo & Adetayo, 2012) are all evidence of the need for financial inclusion as recognized by policy-makers in Nigeria.

According to Sanusi (2012), Nigeria through its MAYA Declaration is committed to reducing its rate of financial exclusion from 39.7% of the population in 2012 to 20.0% by 2020 through the implementation of seven (7) key intervention policies which include Simplified Know Your Customer (KYC) Framework, Agent Banking Regulatory Framework, National Financial Literacy Framework, Consumer Protection, Mobile-Payments and “cashless” policy initiatives, Establishing linkages between government, Development Financial Institutions (DFIs), Deposit Money Banks (DMBs) and Microfinance Banks (MFBs)/ Microfinance Institutions (MFIs) and introduction of credit enhancement schemes and programmes.

The term financial inclusion needs to be interpreted in a relative dimension. Depending on the stage of development, the degree of financial inclusion differs among countries. For example, in a developed country nonpayment of utility bills through banks may be considered as a case of financial exclusion, however, the same may not (and need not) be considered as financial exclusion in an underdeveloped nation as the financial system is not yet developed to provide sophisticated services. The key barriers to financial inclusion were identified to include long distance to access points, cumbersome eligibility requirements, low financial literacy, and high cost of financial services, among others (Ipumbu, 2010; Oyewo & Oyewole, 2014). This underscores the Revised National Financial Inclusion Strategy specifically developed to reduce the proportion of adult Nigerians that are financially excluded to 20% in year 2020 from the baseline figure of 46.3% in 2010 (CBN, 2018). The key initiatives in the Strategy include tiered approach to know your customer (KYC), agent banking, mobile payment, cash-less policy, financial literacy framework, consumer protection and implementation of credit enhancement schemes and programmes. For this purpose, the CBN avers that “Financial inclusion is achieved when adults (18 years and above) have easy access to a broad range of financial products designed according to their needs and provided at affordable costs”.

The ultimate goal of financial inclusion is financial empowerment, economic engagement, income improvement, and contribution to growth, development and societal welfare. The aspiration that every adult should be provided with and have access to and usage of financial services is not only legitimate but imperative and compelling. The main goal of financial inclusion is to ensure access at a reasonable cost of all households and enterprises to the range of financial services, for which they are ‘bankable’ including savings, short and long term credit, leasing and factoring, insurance, pensions, payments, local money transfers and international remittances (Umar, 2011). The importance of financial inclusion according to Oyewo and Oyewole (2014) includes necessary condition for sustaining equitable growth.
protection of the poor people from the clutches of usurious moneylenders and provision of avenue for bringing the savings of the pool into the formal financial intermediation.

The concept of financial exclusion implies that financial services are used only by a section of the population. It assumes that there is demand for these services but such demand has not been met. The excluded regions are usually rural, poor regions and also those living in harsh climatic conditions where it is difficult to provide these financial services. The excluded population then has to rely on informal sector (money lenders, trade associations, etc) for availing finance that is usually at exorbitant rates. High cost of finance implies that, first, the poor person has to earn much more than someone who has access to lower cost finance. Second, the major portion of the earnings is paid to the money/lender and the person can never come out of poverty.

According to The World Bank (2008), the reasons why people are financially excluded vary from country to country. These range from people with low information and accessibility, to people with no social security or insurance cover. The main reasons behind exclusion include the following among others Lack of Information; High Transaction Charges; Lack of Access to Financial Services; Illiteracy or Lack of Financial Education; Lack of Required Identification; Unemployment and Low Income and Cultural Barriers. However, as Oyewo and Oyewole (2014) assert, the challenges facing financial inclusion among others include:- Inadequate Financial Literacy; Low Level of Income; Lack of assurance to savers of the safety of their member-savings; Lending risk and risk perceptions inherent in lending to key productive sectors; Poor level of Technological Infrastructure; Lack of financial literacy and the improved financial capability within the majority of the population. One of the issues limiting financial inclusion is paucity of information provided to clients and the lack of a good understanding or interpretation of that information. We need a national framework to address financial literacy and financial consumer protection. This framework should assign roles to different stakeholders within the financial sector plus providing for coordination among financial service regulators.

Luigi, Paola and Luigi (2004) study the effects of differences in local financial development within an integrated financial market by estimating a regional effect on the probability that, ceteris paribus, a household is shut off from the credit market and concluded that financial development enhances the probability that an individual starts his own business. In other words, financial development favors entry of new firms, increases competition, and promotes growth. The results suggest local financial development is an important determinant of the economic success of an area even in an environment where there are no frictions to capital movements. Oyewo and Oyewole (2014) found that financial inclusion has a positive impact on economic development and that financial inclusion is an important corporate social responsibility and sustainable development perspective that financial institutions should embrace.

Ogwumike and Salisu (2012) found a consistently positive impact of the financial sector on real development and indeed found causality to be unidirectional from the financial sector to real growth while Lucas (1988) found causality to run from real growth to financial development in a unidirectional manner. However, Akinlo & Egbetunde (2010) found causality to be bi-directional while Adegbite (2015) opined that there is high degree of significant and positive correlation between financial development and real growth. That, when the financial sector is getting more deepened and widened, the tendency is to see the real economy grow. Also, that as the economy grows; the tendency is for the
financial sector to show signs of improved development. Mbutor and Ibrahim (2013) analysed the impact of financial inclusion on monetary policy in Nigeria and concludes that financial inclusion is veritable strategy for improving the effectiveness of monetary policy hence recommends that the CBN should increase its vigour for pursuing financial inclusion as it not only helps with economic growth but also effectuates monetary policy in Nigeria.

For achieving the current policy stance of ‘‘inclusive growth’’ the focus on financial inclusion is not only essential but a prerequisite (Moghalu, 2010). Therefore in achieving a comprehensive financial inclusion, the first step is to achieve credit inclusion for the disadvantaged and vulnerable sections of our society. The state has to play an important role in financial markets. The role itself is necessitated due to pervasive market failures which in the current globalised scenario are not a rare occurrence. In developing countries like Nigeria, both market and government as institutions have their limitations, but it is necessary to design government policies that are attentive to those limitations. Financial inclusion is one such intervention that seeks to overcome the frictions that hinder the functioning of the market mechanism to operate in favour of the poor and underprivileged, hence the focus of this study.

3. Methodology
This study used secondary data for the empirical analysis. Credit to private sectors, aggregate micro credit and aggregate micro deposit, financial deepening and gross domestic product from the Central Bank of Nigeria (CBN) Statistical Bulletin for a 36-year period covering 1982 to 2017 was used. The variables cover this period because rural banking scheme which is major aspect of aggregate micro credits and aggregate micro deposits commenced in Nigeria in 1982. Also, the 2018 data was not available in the statistical bulletin of the Central Bank of Nigeria (CBN) as at the time of data analysis hence the need to use 1982 to 2017 data.

Following a review of previous studies and improving upon the theoretical postulate described above, the study expressed economic growth (i.e GDP) as a function of financial inclusion such as Credit to Private Sector (CPS), Aggregate Micro Credit (AMC), Aggregate Micro Deposit (AMD) and Financial Deepening (FD).

3.1 Model Specific Specification
The model designed to determine the influence of Financial Inclusion of economic growth is stated below:

\[ \text{GDP} = f\{\text{CPS, AMC, AMD, FD}\} \] (1)

In specific form, equation (1) above translates to equation (2) thus:

\[ \ln \text{GDP} = \beta_0 + \beta_1 \ln \text{CPS} + \beta_2 \ln \text{AMC} + \beta_3 \ln \text{AMD} + \beta_4 \ln \text{FD} + \mu_t \] (2)

Equation (2) is lagged by one period to obtain the lagged model as expressed in equation (3) below:

\[ \ln \text{GDP}_{t-1} = \beta_0 + \beta_1 \ln \text{CPS}_{t-1} + \beta_2 \ln \text{AMC}_{t-1} + \beta_3 \ln \text{AMD}_{t-1} + \beta_4 \ln \text{FD}_{t-1} + \mu_t \] (3)

The apriori expectation is \( \beta_1 > 0, \beta_2 > 0, \beta_3 > 0, \beta_4 > 0 \) i.e there is positive relationship between financial inclusion variables and economic growth.

The evaluation of causal relationship between Financial Inclusion and Economic Growth was done using Granger Causality model, the auto-regressive models are fitted to the second time series and the improvement of the prediction is measured by the ratio of the variance of the error terms.
The causality model is shown in equation (4):
\[
\text{GDP}_t = \beta_0 + \sum \beta_1 \text{GDP}_{t-1} + \sum \beta_1 \text{CPS}_{t-1} + \sum \beta_1 \text{AMC}_{t-1} + \sum \beta_1 \text{AMD}_{t-1} + \sum \beta_1 \text{FD}_{t-1} + \mu_t
\] (4)

The auto-regressive model is expressed in equation (5) below:
\[
\text{FINCLU}_{t-1} = \alpha_0 + \sum \alpha_1 \text{CPS}_{t-1} + \sum \alpha_1 \text{AMC}_{t-1} + \sum \alpha_1 \text{AMD}_{t-1} + \sum \alpha_1 \text{FD}_{t-1} + \sum \alpha_1 \text{GDP}_{t-1} + \nu_t
\] (5)

Where:
\(\mu_t\) and \(\nu_t\) are the uncorrelated disturbances that capture all variations of \(\text{GDP, CPS, AMC, AMD}\) and \(\text{FD}\).

4. Data Presentation and Discussion of Findings

In analyzing the empirical relationship between financial inclusion (proxied by credit to private sector (CPS), aggregate micro credits (AMC), aggregate micro deposit (AMD) and financial deepening (FD) and economic growth (proxied by GDP), this section starts with analysis of descriptive statistics on these variables from the 1982-2017 data as presented in Appendix 1.

Table 1: Descriptive Statistics of Variables (1982-2017)

<table>
<thead>
<tr>
<th></th>
<th>GDP</th>
<th>FD</th>
<th>AMC</th>
<th>AMD</th>
<th>CPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>3.71</td>
<td>11.32</td>
<td>3.88</td>
<td>3.46</td>
<td>2.72</td>
</tr>
<tr>
<td>Median</td>
<td>3.78</td>
<td>8.21</td>
<td>4.05</td>
<td>3.84</td>
<td>2.675</td>
</tr>
<tr>
<td>Maximum</td>
<td>5.06</td>
<td>23.08</td>
<td>6</td>
<td>5.58</td>
<td>4.35</td>
</tr>
<tr>
<td>Minimum</td>
<td>2.19</td>
<td>6.22</td>
<td>1.56</td>
<td>-0.95</td>
<td>1.03</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.98</td>
<td>5.87</td>
<td>1.09</td>
<td>1.36</td>
<td>1.14</td>
</tr>
<tr>
<td>Skewness</td>
<td>-0.20</td>
<td>0.98</td>
<td>-0.31</td>
<td>-1.11</td>
<td>0.00</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>1.63</td>
<td>2.18</td>
<td>3.09</td>
<td>4.54</td>
<td>1.64</td>
</tr>
<tr>
<td>Jarque-Bera</td>
<td>3.04</td>
<td>6.80</td>
<td>0.60</td>
<td>10.95</td>
<td>2.79</td>
</tr>
<tr>
<td>Probability</td>
<td>0.22</td>
<td>0.03</td>
<td>0.74</td>
<td>0.00</td>
<td>0.25</td>
</tr>
<tr>
<td>Sum</td>
<td>133.59</td>
<td>407.53</td>
<td>139.75</td>
<td>124.56</td>
<td>97.78</td>
</tr>
<tr>
<td>Sum Sq. Dev.</td>
<td>33.76</td>
<td>1206.21</td>
<td>41.76</td>
<td>64.88</td>
<td>45.71</td>
</tr>
<tr>
<td>Observations</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>36</td>
</tr>
</tbody>
</table>

Source: Authors' computation (2019)
Note: Significant at 5%

Table 1 shows the summary of descriptive statistics of the variables included in the model. It shows the existence of wide variations in the variables as depicted by the mean values during the 1982 to 2017 study period. The analysis carried out in the above table shows that the standard deviation of the financial deepening has been unusually high. This depicts a high degree of volatility in the financial deepening during the period under investigation. The analysis was also fortified by the value of the skewness and kurtosis of all the variables involved in the model. All the distributions are positively skewed with the exception of GDP that is negatively skewed. Variables with value of kurtosis less than three are called platykurtic (fat or short-tailed) and GDP, FD and CPS, variables qualified for this during the study period. On the other hand, variables whose kurtosis value is greater than three are called leptokurtic (slim or long tailed) and AMD and AMC qualified for this during the study period. Jarque-Bera test shows that the residuals of GDP, CPS and AMC variable is normally distributed since the probability values of all the variables exceed 5%. In summary, the descriptive statistics revealed that most of the data sets are normally distributed except GDP and AMD whose probability is less than 5%.
4.1 Time Series Properties of the Variables

The analysis is based on time series data. This requires some preliminary tests on the data to determine its reliability for econometric analysis. Thus, this study seeks to avert the occurrence of spurious results. To do this, Phillips-Perron tests was used. The Phillips-Perron test was adopted because it is a robust test for serial correlation and time dependent heteroskedasticities. Table 2 presents the results of PP test statistics for the levels and first differences of the annual time series data for the period, 1982-2017.

<table>
<thead>
<tr>
<th>Variables</th>
<th>PP</th>
<th>Critical Values</th>
<th>Order of Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMC</td>
<td>-7.713</td>
<td>-3.640**</td>
<td>I(1)</td>
</tr>
<tr>
<td>AMD</td>
<td>-5.674</td>
<td>-3.639**</td>
<td>I(1)</td>
</tr>
<tr>
<td>CPS</td>
<td>-4.389</td>
<td>-3.639**</td>
<td>I(1)</td>
</tr>
<tr>
<td>FD</td>
<td>-6.220</td>
<td>-3.639**</td>
<td>I(1)</td>
</tr>
<tr>
<td>GDP</td>
<td>-3.195</td>
<td>-2.951**</td>
<td>I(1)</td>
</tr>
</tbody>
</table>

Source: Authors’ computation (2019)
Note: ** Indicates stationary at 5% level.

The result of the PP unit root test suggests that all the variables were non-stationary. They however became stationary after the first difference was taken. However, following Harris (1995) and Gujarati (2009), both I(1) and I(0) variables could be carried forward to test for co-integration which forms the basis of the next section. The Johansen co-integration test was used to test for the existence or not of a long run relationship among the variables. The Johansen methodology was preferable for the study because it has the advantage amongst others of allowing for more than one co-integrating vector. The result of the Johansen co-integration test is shown in Table 3 below.

<table>
<thead>
<tr>
<th>$H_o$</th>
<th>$H_A$</th>
<th>Trace</th>
<th>Critical Values (5%)</th>
<th>$H_o$</th>
<th>$H_A$</th>
<th>Trace</th>
<th>Critical Values (5%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>r&lt;0</td>
<td>r&gt;0</td>
<td>103.6680*</td>
<td>95.75366</td>
<td>r&lt;0</td>
<td>r&gt;0</td>
<td>42.11113*</td>
<td>40.07757</td>
</tr>
<tr>
<td>r≤1</td>
<td>r&gt;1</td>
<td>61.55691</td>
<td>69.81889</td>
<td>r≤1</td>
<td>r&gt;1</td>
<td>31.43336*</td>
<td>33.87687</td>
</tr>
<tr>
<td>r≤ 2</td>
<td>r&gt;02</td>
<td>30.12355</td>
<td>47.85613</td>
<td>r≤ 2</td>
<td>r&gt;02</td>
<td>13.05005*</td>
<td>27.58434</td>
</tr>
<tr>
<td>r≤ 3</td>
<td>r&gt;3</td>
<td>17.07350</td>
<td>29.79707</td>
<td>r≤ 3</td>
<td>r&gt;3</td>
<td>9.604039*</td>
<td>21.13162</td>
</tr>
<tr>
<td>r≤ 4</td>
<td>r&gt;4</td>
<td>7.469461</td>
<td>15.49471</td>
<td>r≤ 4</td>
<td>r&gt;4</td>
<td>5.715274*</td>
<td>14.26460</td>
</tr>
</tbody>
</table>

Source: Authors’ computation (2019)
Note: $r$ represents number of co-integrating vectors. * denotes rejection of null hypothesis at the 5% (1%) level
The results reveal one co-integrating vector based on the trace and maximum eigenvalue statistics at 5% level for the model. Since the variables are co-integrated, there is, therefore, a long run relationship among the variables i.e there is a long relationship between financial inclusion and economic growth.

4.2 Regression Analysis

Table 4: Results of the Ordinary Least Square

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>FD</td>
<td>0.031533</td>
<td>0.001256</td>
<td>25.10668</td>
<td>0.0000</td>
</tr>
<tr>
<td>CPS</td>
<td>0.988846</td>
<td>0.009645</td>
<td>102.5209</td>
<td>0.0000</td>
</tr>
<tr>
<td>AMD</td>
<td>1.67E-06</td>
<td>0.003481</td>
<td>0.000480</td>
<td>0.9996</td>
</tr>
<tr>
<td>AMC</td>
<td>0.000441</td>
<td>0.008412</td>
<td>0.052450</td>
<td>0.9585</td>
</tr>
<tr>
<td>C</td>
<td>1.383684</td>
<td>0.015535</td>
<td>89.07107</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

R-squared 0.999567  Mean dependent var 3.710833
Adjusted R-squared 0.999511  S.D. dependent var 0.982069
S.E. of regression 0.021721  Akaike info criterion -4.692849
Sum squared resid 0.014626  Schwarz criterion -4.472915
Log likelihood 89.47128  Hannan-Quinn criter. -4.616086
F-statistic 17879.40  Durbin-Watson stat 1.941968
Prob(F-statistic) 0.000000

Source: Authors’ computation (2019)
Note: Significant at 5%

\[
\text{GDP} = 1.381 - 0.032 (\text{FD}) + 0.988 (\text{CPS}) + 0.000001 (\text{AMD}) - 0.00044 (\text{AMC})
\]

The result shows that a 10% increase in Financial Deepening (\(\beta = 0.032, t=25.107, p=0.0\)) would lead to 3% increase in gross domestic product. The t-value of 25.107 which is statistically significant at 5% suggests that financial deepening is not a major determinant of economic growth during the period under consideration. In addition, Credit to Private Sector (CPS) (\(\beta =0.988, t=102.52, p=0.00\)) has a direct and significant relationship with economic growth (GDP). A 10% increase in to Private Sector (CPS) leads to 98% increase in economic growth. By implication CPS have a positive and significant relationship with the economic growth. On the other hand, Aggregate Micro Deposits (AMD) (\(\beta =0.000001, t=0.000048, p=0.999\)) and Aggregate Micro Credits (AMC) (\(\beta = 0.000441, t=0.0525, p=0.9585\)) do not contribute significantly to the economic growth during the period under consideration.

Furthermore, the adjusted \(R^2\) is an estimate of how well the model would fit different data set from the same population and its value is always smaller than the value of \(R^2\). The result in Table 4 shows an \(R^2\) value (coefficient of multiple determinants) of 0.9995. This implies that 99.95 per cent changes in the dependent variable economic growth is caused by changes in the independent variables of FD, CPS, AMD and AMC. In addition, the high value of R-squared and the adjusted R-squared indicates the explanatory power of the independent variables. This was considered high enough to determine the
statistical significance of the coefficient of determination. The F-statistics also indicates that the model is well fit for the estimation because F statistics value of 17879.40 is significant at 5% (p=0.00).

Finally, the Durbin-Watson test (D-W≈2) suggests that autocorrelation is unlikely to be a problem. Consequently, the estimated model can be confidently relied upon for making inferences and for prediction purpose hence, we reject the null hypothesis that financial inclusion do not significantly influence economic growth in Nigeria and therefore conclude that financial inclusion do positively and significantly influence economic growth in Nigeria.

4.2 Granger Causality Test

Table 5: Pairwise Granger Causality Tests

<table>
<thead>
<tr>
<th>Null Hypothesis:</th>
<th>Obs</th>
<th>F-Statistic</th>
<th>Prob.</th>
<th>Decision @ 5% Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>FD does not Granger Cause GDP</td>
<td>34</td>
<td>4.28110</td>
<td>0.0215</td>
<td>Reject</td>
</tr>
<tr>
<td>GDP does not Granger Cause FD</td>
<td></td>
<td>1.90606</td>
<td>0.1668</td>
<td>Do not Reject</td>
</tr>
<tr>
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<td>34</td>
<td>5.42495</td>
<td>0.0100</td>
<td>Reject</td>
</tr>
<tr>
<td>GDP does not Granger Cause CPS</td>
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<td>0.87821</td>
<td>0.4263</td>
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<td>6.03815</td>
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<td>AMC does not Granger Cause FD</td>
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<td>0.5452</td>
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<tr>
<td>FD does not Granger Cause AMC</td>
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<td>CPS does not Granger Cause AMC</td>
<td></td>
<td>4.37583</td>
<td>0.0218</td>
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</table>

Source : Authors’ Computation (2019)

Note: significant at 5%

The Granger causality result reveals that causality runs from Credit to Private Sector to GDP since the estimated F-Statistics (5.42495, p<0.05) is statistically significant at 5% level hence we reject the Null Hypothesis. Causality also runs from Financial Deepening to GDP since F-Value (4.28110, p<0.05) is statistically significant. From the analysis of the result in Table 5, there exists a unidirectional causality from credit to private sector (CPS) and financial deepening (FD) to gross domestic product (GDP) during the period under consideration while there is also a unidirectional causality from credit to private sector (CPS) and financial deepening (FD) to aggregate micro credit (AMC). However, there is no causal relationship between Aggregate Micro Deposit and GDP same also applies to causal relationship between Aggregate Micro Credit and GDP.

We therefore reject the Null Hypotheses that causal relationship does not exists between financial inclusion and economic growth in Nigeria and therefore conclude that there exist a unidirectional
causality between financial inclusion proxied by credit to private sector (CPS) and financial deepening (FD) and economic growth proxied by gross domestic product (GDP) in Nigeria. It could therefore be inferred that credit to private sector and financial deepening which is the ratio of the ratio of credit to private sector to Gross Domestic Products influences economic growth in Nigeria.

The findings on the influence of financial inclusion on economic growth in Nigeria revealed a positive correlation between the influence of financial inclusion and economic growth. The result of the multiple regression analysis to test the relationship between the variables revealed that financial inclusion accounted for about 99.95% variation in economic growth during the period under review. This implies that financial inclusion positively and significantly influences economic growth in Nigeria during the period under consideration. We therefore reject the null hypothesis and conclude that financial inclusion do positively and significantly influence economic growth in Nigeria.

The second objective which was to evaluate the causality between financial inclusion and economic growth in Nigeria, empirical result using Granger Causality test shows that there is unidirectional causality between financial inclusion and economic growth. The causality however runs from credit to private sector (CPS) and financial deepening (FD). This finding is consistent with earlier findings by Ogwumike and Salisu (2012) which found a consistently positive relationship between financial sector and real development and indeed found causality to be unidirectional from the financial sector to real growth.

5. Conclusion and Recommendations

This study examined the relationship between financial inclusion economic growth in Nigeria. The result of the regression analysis of the Ordinary Least Square (OLS) used to test the relationship revealed that financial inclusion significantly contributed (99.95%) to economic growth during the period under consideration (i.e 1982-2017) which indicated that 99.95% of variations in economic growth can be explained by the changes in financial inclusion variables. The study equally revealed that there is unidirectional causality between financial inclusion and economic growth. Furthermore, since causality runs from credit to private sector and financial deepening which is the ratio of Credit to Private Sector to Gross Domestic Product, the policy implication of this study is that a robust credit financing activities contributes significantly to the growth in the economy.

The following policy actions are hereby recommended:

1. Increased financial intermediation for small businesses and robust credit financing programmes for private enterprises especially the SMEs.
2. The financial regulatory agencies should be proactive in ensuring compliance with policies.
3. The reforms in the financial sectors should be sustained and enhanced to ensure resources are channeled towards improvement in the real sector of the economy.
4. Conscious and collaborative efforts must be made to achieve financial literacy through intense enlightenment programme.
References


Oladimeji, J.A. (2016). Analysis of the causal link between financial inclusion and economic growth in Nigeria. *A thesis submitted to the School of Post graduate Studies, University of Lagos in partial fulfilment of the requirements for the award of degree of Doctor of Philosophy (Ph.D) in Finance.*


