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Impact of money supply and private sector credit on economic growth of Nigeria

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Abstract

This study examines the relationship between Money supply and Private Sector Credit on economic growth in Nigeria with a secondary data emanated from Central Back of Nigeria Statistical Bulletin for the period 1985 to 2019 using Autoregressive Distributed Lag (ARDL) approach. The result shows long run relationship between the variables. More so, it reveals Money supply and Private Sector Credit have significant positive impact on economic growth in Nigeria in both short-run and long-run. The results further reveal insignificant negative relationship between interest rate and economic growth in in both the period. Furthermore, causality test reveals bi-directional relationship financial development Money supply, Private Sector Credit and economic growth in Nigeria. The study also reveals unidirectional causality running from interest rate to economic growth in Nigeria. In view of these findings, the study recommends need for government to improve on the macroeconomic environment through the harmonization of monetary and fiscal policies in order to ensure stability of the economic aggregates. Also, attention should be focused on deepening the financial sector in Nigeria through the creation of modern, efficient and strong financial institution that will mobilize the idle financial resources domiciled outside the financial system use them to drive Nigeria's economic growth.

Key words: Financial Development, Money Supply, Private Sector Credit, Economic Growth.

1. Introduction

Economic growth is a key policy objective of any government (Uwakaeme, 2015; Kumar and Paramanik 2020). Economic growth has been a major concern of governments of developing countries including Nigeria by putting a lot of effort to sustain Nigerian economy and to improve social welfare. Even though the GDP per capita is still low compared to some emerging economies (Olaniyi, 2020). The growth and development of every economy depends on the performance of various sectors of the economy. Apparently, the alternative important way to speed up economic growth and development is through a developed financial system (Iheonu, Asongu, Kingsley & Patrick, 2020). The financial system serves as one of the most important synergists to economic development, the system seeks and attract idle funds and savings and allocate same to entrepreneurs, governments, household for investment projects and other purpose with view of returns, this form the basis of the Financial development. (Khan, Siddique and Sarwar 2020).

The financial sector is the engine house that drives productive activity of an economy as it performs the vital role of intermediation, provider of payment services and the fulcrum of monetary policy implementation. The financial sector has long been identified as a sector that is instrumental to the development of any economy (Olushola and Uzoma, 2018; Ohiomu and Oligbi, 2020). A well-functioning financial system is considered as one of the key foundations on which sustained economic development (Bist, 2018; Valickova, Havranek and Horvath, 2015; Ezeanyeji and Imoagwu, 2019). However, there is no consensus on the relationship between financial development and economic growth. One of the highly debated issues in the literature of financial economics is the finance-growth nexus.

Many economic literature and economists believe that a well-functioning economy needs a financial system that moves funds from people who save to people who have productive investment opportunities. In other words, a sound financial system acts as a channel for sustainable economic growth (Ductor and Grechyna 2015; Kilinc, Seven and Yetkiner, 2017; Iheanacho, 2016; Sehrawat, and Giri, 2015). In order to achieve the objective of maintaining unemployment and inflation at the desired level, monetarists and classical school of thought, the strong advocates of free-market economy propose the monetary measures (Khan, Sherazi and Liaqat 2020). Private sector credit generates economic activities by transferring funds from financial intermediaries such as banks to households for private consumption and firms for private investment. The plays a very vital role in an economy by enhancing the productive capacity of an economy which in turn reduces unemployment and level of poverty and contributes to the financial sector development and economic growth (Begum and Aziz, 2019; Khan, Sherazi and Liaqat 2020).

It has been observed by Olushola and Uzoma, (2018) that what accounted for lack of funds in the Nigerian financial sector is traceable to the underdevelopment of the real sector. Most business operators in the productive sector are folding up due to their inability to acquire loans from the financial institutions or because the interest rate was outrageous. The Nigerian banks have concentrated on short term lending as against the long-term investment which should have formed the strength of a transformed economy, this ought not to be so because over the long run, there has been in most countries a rough but unmistakable parallel between economic growth and financial development (Ewetan, Ike and Ese, 2015; Adeola and Evans 2017). Since the emergence of the new theories of endogenous economic growth there has been a revival of interests in the potential role played by financial development in the process of economic development. Nigeria has a rich history of financial sector reforms. A series of financial restructuring programs that aimed at improving the financial system has been launched since the 1980s.

A study of this kind is always necessitated by the existence of certain problems. The major problem that trigged off this work is the recurrence of general price instability, persistent inflationary pressures and unemployment, and high cost of living in the economy, in spite of the various monetary policy measures adopted and applied over the years by various government in the country. Recently, these inflationary pressures have succeeded in bringing about devaluation in Nigeria's currency value as a result of expansionary measures of money supply. As Nigerian financial sector has undergone series of

reforms with the objectives of strengthening the financial sector's role of financial intermediation, this study is carried to demonstrate whether there is relationship between Money Supply, Credit to Private Sector and economic growth in Nigeria as most of the previous studies like that of Chinaemerem and Chigbu, 2012; Osuji, 2015; Bist, 2018 and Matei, 2020. Give less concern or neglected the role of money supply and credit private sector on economic growth. More so other studies like that of Aaqib Muhammad, Zahid and Wajid, 2020; Younesse, 2019 among others were panel studies conducted outside Nigeria. An important question in the literature is whether the financial system influences growth, or vice versa. Empirical studies on the relationship between finance and growth have been dominated by cross-country studies until recently due to the lack of sufficient time series data for developing countries.

Against this background, this study intends to make a modest contribution to the literatures by attempts to answer the following questions:

1. What impact do Money Supply and Credit to Private Sector have on economic growth in Nigeria?
2. Does long-run relationship exist between Money Supply, Credit to Private Sector and economic growthin Nigeria?
3. Is there any causal relationship between Money Supply, Credit to Private Sector and economic growth in Nigeria?

2. Review of Literature

2.1 Conceptual Review

Debate on finance-growth nexus has started since Schumpeter (1911) later supported by Patrick (1966), Goldsmith (1969), McKinnon (1973) and Shaw (1973) who view the importance of financial sector development for economic growth, the considered finance as the lubricant of the main engine of economic growth. Schumpeter (1911) argued that development of the financial sector is essential for economic growth. His argument is that money supply served as a monetary instrument and private sector credit affects economic growth by providing sufficient fund to the firms that have a best productive use. According to Sulaiman (2020) increase in the supply (stock) of money will lowers interest rates, which in turn, will stem investment and enhance access to credit by private sector players, small and medium scale enterprises, consumers and firms, thereby stimulating investment spending. Off-course, increase money supply that lowers interest rate will mean that businesses and individuals will increase consumption, increase production and investment drive and stem economic boom. The increased business activity raises the demand for labour. The reverse is the case if invariably money supply falls or when its growth rate declines. Furthermore, private sector is said to be the engine of economic growth for a country, especially, for developing economies. The private sector remains the nucleus that drives economic growth (Ubesie, Echekoba, Chris-Ejiogu, and Ananwude, 2019).

Private sector credit is no doubt a driver of the real economy, particularly in developing economies like Nigeria where the financial markets are porous and near well developed to mobilize the needed resources to accelerate the desired level of economic development. The private sector is the part of the economy that is run by individuals and companies for profit and is not state controlled. Therefore, it encompasses all for-profit businesses that

are not owned or operated by the government (Ubesie, Echekoba, Chris-Ejiogu, and Ananwude, 2019).

2.2 Theoretical Framework

The theoretical framework underpinning this study is that of endogenous growth theory credited to Romer 1986. In this model the financial development variable is included in an endogenous growth model. The model shows how indicators of financial development through economic relations turn to have an impact on economic growth. The endogenous growth theory was first created due to deficiencies and dissatisfaction with the idea that exogenous factors determined long-term economic growth. In particular, the theory was established to refute the neoclassical exogenous growth models, as it made predictions about economic growth without factoring in technological change. The endogenous growth theory challenges such an idea by placing importance on the role of technological advancements. Since long-term economic growth is derived from the growth rate of economic output per person, it would depend on productivity levels. In turn, productivity would depend on the progress of technological change, which relies on innovation and human capital. The endogenous growth theory is the concept that economic growth is due to factors that are internal to the economy and not because of external ones. The theory is built on the idea that improvements in innovation, knowledge, and human capital lead to increased productivity, positively affecting the economic outlook. The theory holds that changes in financial development indicates cause changes in economic growth.

2.3 Review of Methodological Issues

A large number of empirical investigations have been carried out aimed at testing the conflicting theoretical developments in money supply, private sector credit and economic growth nexus using different techniques. While some studies look at the relationship between the variables be it short run or long run others looked in to determine the casual relationship.

Most of the empirical results reported have supported the proposition that financial development does indeed, stimulate growth while others refuted the proposition that financial development stimulate economic growth. For instance, Matei (2020) studied the impact of financial development on economic growth for 11 Emerging European Countries (EEU) on the period 1995–2016 by using dynamic panel models. The findings, suggest that financial development produces positive effects on economic growth only in the short-run horizon validating the supply leading channel. Bist, (2018). Investigate the long-run relationship between financial development and economic growth using panel unit root and panel cointegration analysis in 16 selected low-income countries for the period of 20 years from 1995 to 2014 using fully modified and dynamic OLS techniques. The results show that there exists a cross-sectional dependence across the countries. The Pedroni's panel cointegration analysis provides clear support for the hypothesis that there exists a long-run cointegrating relationship between financial development and economic growth. The long-run panel estimates indicate that financial development has a positive and significant impact on economic growth. The results also show the positive impact of financial development on economic growth in the majority of the countries. Likewise, it is found that flow of credit to the private sector is very low in this region of the world. More so, Opoku, Ibrahim & Sare (2019) studied the causal relationship

between financial development and economic growth in Africa find strong support for the neutrality hypothesis (no link between these two dimensions) by using a frequency-domain spectral causality approach for 47 African countries over the period 1980–2016.

In the work of Wadud (2005), The empirical findings suggested causality between financial development and economic growth but running from financial development to economic growth lending its support to the supply-leading hypothesis in 3 South Asian countries namely India, Pakistan and Bangladesh. Also Mixed results were found by Esso (2010) in a study that re-examine the co-integrating and casual relationship between financial development (and economic growth in the Economic Community of West Africa States (ECOWAS). The results show that there is a long-run relationship between financial development and economic growth but with different direction of causality. In Ghana and Mali, financial development leads economic growth while growth causes finance in Burkina Faso, cote d'ivoire and Sierra Leone, and bidirectional causality is found in Cape Verde, Ghana and Mali should give policy priority to financial reform while Burkina Faso, cote d'ivoire and Sierra Leone should promote economic growth. Also, Pradhan, Arvin, Bahmani, Hall, and Norman (2017) examined the finance-growth relationships in ASEAN region for the period of 1991 to 2011. Their results show that banking sector development, stock market development, bond market development, insurance market development, and per capita economic growth shared a cointegrating relationship in long-run. However, in the case of causality, their results are sensitive to the use of financial development proxy. They accounted a unidirectional causality from banking sector development to economic growth and a bi-directional causality between stock market development and economic growth, and insurance sector development and economic growth.

Younesse (2019) examined the impact of financial development and foreign bank penetration on African economies covering the period 1995–2015 using the system GMM estimator. His empirical results indicate that foreign bank entry has a positive and significant impact on economic growth in the countries of North and Southern Africa, while in the other two regions considered in this study (West and Central Africa, East Africa) the impact is negative and rarely significant. In addition, the result further show that the development of financial markets has a positive and significant effect on economic growth only in the Southern African region. More so, Dabos and Gantmann (2010) used a panel data set of 27 developed and 71 developing countries using dynamic panel regression analysis during the period of 1961 – 2007. Their study reveals that financial development does not have a statistically significant effect on economic growth. Md and Wei (2018) question the same relationship for Asian countries and find an asymmetric linkage between financial innovation, banking sector expansion and economic growth. The feedback hypothesis between financial innovation and economic growth, and banking sector development and economic growth both in short and long run is also supported by their estimations. Their study supported the existence of a relationship between financial sector and economic growth. More also, Chinaemerem and Chigbu, (2012). Investigates the impact of financial development variables on economic growth Nigeria using Correction Method (ECM) with a time series data covering from 1960-2008 and the results revealed

Money Supply (MS) and Credit to Private Sector (CPS) are positively related to economic growth of Nigeria. Granger tests shows Money Supply and Credit to private Sector (CPS) are cointegrated with GDP in Nigeria within the study period and the Granger tests indicated that all the exogenous variables Granger cause GDP and GDP Granger cause other variables in Nigeria.

Shahbaz**,** Nasir and Lahiani (2020). Studied role of financial development in economic growth in the light of asymmetric effects and financial efficiency in top 10 financially developed countries using autoregressive distributed lags (TARDL) model by including trade openness, capital formation and labour as potential determinants of economic growth**.** The empirical findings revealed the existence of threshold asymmetric co-integration between variables. In particular, in the upper regime, financial development boosts economic growth in Singapore while it exerts a negative impact on economic growth in Finland. In the middle regime, financial development increases economic growth in Australia and Singapore. However, in the lower regime, financial development hampers economic growth in the US, Malaysia and Singapore. Trade openness has a positive long-run influence on economic growth in Canada, South Africa, Australia, Malaysia, New Zealand, Singapore, Finland and Norway. Capital formation strengthens economic growth in the US and Malaysia in the long-run. Labour is found to sustain economic growth in the long-run for Malaysia and Singapore. The dynamic multipliers which depict the response path of economic growth to a one-unit shock of financial development in the three regimes highlight the discrepancies in the reaction of economic growth to financial development shocks occurring in different regimes.

Aaqib *et al.,* (2020). Investigate the critical aspect of financial development, human capital and their interactive term on economic growth from the perspective of emerging economies. Data set ranged from 2002 to 2017 of 83 emerging countries used in this research and collected from world development indicators of the World Bank. The two-step system generalized method of moments is used within the endogenous growth model while controlling time and country-specific effects. The findings of their study indicated that financial development has a positive and significant effect on economic growth. Financial development and human capital interactively affect economic growth for emerging economies positively and significantly. However, Demetriades and Rousseau (2016) on the non-monotonic relationship between financial development and economic growth concluded that financial depth is no longer a significant determinant of long-run growth. However, one common issue with these study on the non-monotonic relationship between financial development and economic growth is that they are conducted on highly heterogeneous panels (including higher, lower, middle or low-income countries). Similarly, the study shows that development of the financial sector is very poor in selected low-income countries (i.e. average flow of credit to the private sector is only about 13.524% of the GDP).

3. Methodology

This study examines the relationship between Money supply and Private Sector Credit on economic growth in Nigeria with a secondary data emanated from Central Back of Nigeria Statistical Bulletin for the period 1985 to 2019 using Autoregressive Distributed Lag (ARDL) approach. The data collected for this study was analyzed

in three stages. First the data have been subjected to stationarity test by checking the properties of the data using the Augmented Dickey-Fuller (ADF) test, and the Phillips-Perron test. Autoregressive Distributed Lag (ARDL) model was also used to examine the long run and short run relationship among the variables. Furthermore, the Granger causality test was used to determine the direction of causality between the variable. Finally, various diagnostic tests were conducted.

The justification behind adopting Autoregressive Distributed Lag (ARDL) model is because after conducting unit root test using augmented Dickey Fuller test (ADF) and Philip-Perron (PP) test we found out there is mixture of integration among the variables, some are integrate of order one I(1) while some are integrate of order zero I(0). The data series order of integration does not impose any restriction on its application. The model can be applied regardless of whether variables are I(0) or I(1). In addition, it does not matter whether explanatory variables are exogenous (Pesaran & Shin, 1997). More so, it can be applied to a small sample size study. Thirdly, it estimates the short- and the long-run components of the model simultaneously, removing problems associated with omitted variables and autocorrelation. Fourthly, this technique generally provides unbiased estimates of the long-run model and valid t-statistic even when some of the regressors are endogenous (Pesaran, Shin and Smith 2001).

3.1 Model Specification

Consistent with the theory and the empirical literature, the empirical specification of the model to determine the relationship between Money supply, Private Sector Credit and economic growth, this study adopted the model with modification from the works of Olushola and Uzoma, (2018) However, the choice of variables is based on the consideration of the economic condition of the country. The model is given as:

RGDP= F (M_2, PSC, INTR) ……i

putting the above equation into an econometric model

RGDP= $\beta_0 + \beta_1 M_{2t} + \beta_2 CPSC_t + \beta_3 INTR_t$ +μ……ii

Where:

RGDP= Real Gross Domestic Product

M_2 =Broad Money supply

PCS=Private Sector Credit

INTR= Real Interest rate:

Interest rate was used as control variable. This was introduced aimed at given robust result. Including interest rate as control variable in the model will improve the robustness of the model because it serves as a vehicle for financial intermediation in the economy. It influences saving and investment decision of economic agents. It is used as an instrument in macroeconomic policy.

$\beta_0 \beta_1 \beta_2$ & β_3= Parameters

μ = Stochastic or error term

A priori expectation: $\beta_1 > 0$, $\beta_2 > 0$, $\beta_3 < 0$.

Specification of Autoregressive Distributed Lag (Bound Testing) Model for testing the nexus between financial development and the economic growth in Nigeria are presented in equation 3 below

$$\Delta RGDP_t = \beta_0 \sum_{i=1}^{m} \beta_1 RGDP_{t-i}\, \beta_0 \sum_{i=1}^{m} \beta_1 M2_{t-i} + \sum_{i=1}^{m} \beta_2 \Delta PSC_{t-i} + \sum_{i=1}^{m} \beta_3 \Delta INTR_{t-i} + \alpha_1 RGDP_{t-1} + \alpha_2 M2_{t-1} + \alpha_3 PSC_{t-1} + \alpha_4 INTR_{t-1} + \mu_t \quad \ldots\ldots iii$$

Where M is the optimal lag length which is determined using the Akaike Information Criteria (AIC) and the Schwartz Information Criteria (SIC), Δ is the difference operator, β_0 in each equation is the constant parameter, β_1 to β_3 are the vectors of the coefficients of the first difference lagged values of the variables controlled in models, while α_1 to α_4 for each equation represent the coefficients of the level lagged values of variables captured in models. Although, the ARDL model consists of two parts, the first part of the equations with β_1 to β_3 stand for the short-run dynamics of the models, while the coefficients α_1 to α_4 represents the long-run relationship. The null hypothesis of the above models is defined as H_0: $\alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = 0$ which tell us that there is no cointegration (no existence of long run relationship) among the variables under consideration. Whereas the alternative hypothesis is defined as H_1: $\alpha_1 \neq \alpha_2 \neq \alpha_3 \neq \alpha_4 \neq 0$ which signifies the existence of cointegration (presence or evidence of long run relationship (Pesaran, Shin, & Smith 2001).

Once the cointegrating relationship is established, the short run dynamics is also analyzed. The error correction model representation of the ARDL model is specified in equation 4 below:

$$\Delta RGDP_t = \sum_{i=1}^{k} \alpha_1 RGDP_{t-i} + \sum_{i=1}^{k} \alpha_2 M2_{t-i} + \sum_{i=1}^{k} \alpha_3 \Delta PSC_{t-i} + \sum_{i=1}^{k} \alpha_4 \Delta INTR_{t-i} + \lambda ECM_{t-1} + \varepsilon_t \ldots\ldots iv$$

Where λ is the speed of adjustment parameter, ECM is the residual obtained from the long run estimation and ε_t is a white noise error term.

3.2 Variables Description/Measurement

RGDP: Since dependent variable is economic growth therefore, this study used real GDP as a proxy of economic growth. Real GDP is an inflation-adjusted measure that reflects the value of all goods and services produced by an economy in a given year (expressed in base year prices) and is often referred to as constant-price GDP, inflation-corrected GDP, or constant dollar GDP. It is use to know the general progress of the economy. It is served as endogenous variable. It is measure as nominal GDP divided by deflator. Deflator is a measure of price levels of new goods that are available in the country domestic market. It includes price for businesses, the government and private sector consumers.

M_2: Broad Money supply to is one of the independent variables. It is a measure of the money supply that includes cash,

checking deposits, and easily convertible near money is a broader measure of the money supply which just includes cash and checking deposits. It is closely watched as an indicator of money supply and future inflation, and as a target of central bank monetary policy. It is measure as annual ratio of M_2 to GDP.

PSC: Ratio of Private Sector Credit is one of the independent variables. It refers to financial resources provided to the private sector, such as loans and advances, purchases of non-equity securities, trade credits and other accounts receivable, which establish a claim for. It is measure as annual ratio of PSC to GDP.

Interest rate (INTR): This control variable is measured using real interest rate. It was introduced aimed at given robust result. Is the amount of interest due per period, as a proportion of the amount lent, deposited, or borrowed. The total interest on an amount lent or borrowed depends on the principal sum, the interest rate, the compounding frequency, and the length of time over which it is lent, deposited, or borrowed. It is measure as annual nominal interest rate minus inflation rate.

3.3 Estimation Procedures

3.3.1 The Unit Root Test

The first step in time series study is to test the stationarity of the variables. For the purpose of this study, the Augmented Dickey-Fuller (ADF) and the Phillips-Perron (PP) unit root tests will be used. The premise behind these tests of stationarity is to ensure that the results of the regression analysis are not spurious.

3.3.1.1 The Augmented Dickey-Fuller Unit Root Test

The Augmented Dickey-Fuller (ADF) test constructs a parametric correction for higher-order correlation by assuming that the Yseries follows an AR(ρ) process and adding lagged difference terms of the dependent variable to the right-hand side of the test regression:

$$\Delta Y_t = \alpha Y_{t-1} + X_t\delta + \beta_1 \Delta Y_{t-1} + \beta_2 \Delta Y_{t-2} + \ldots + \beta_p \Delta Y_{t-p} + \varepsilon_t \quad \ldots\ldots\ldots\ldots v$$

This augmented specification is applied using the t-ratio. An important result obtained by Fuller is that the asymptotic distribution of the t-ratio is independent of the number of lagged in the first differences (Dickey and Fuller, 1997; 1981).

3.3.1.2 The Phillips-Perron Unit Root Test

Phillips and Perron (1988) propose an alternative (nonparametric) method of controlling for serial correlation when testing for a unit root. The PP method estimates the non-augmented DF test equation, and modifies the t-ratio of the αcoefficient so that the serial correlation does not affect the asymptotic distribution of the test statistic. The PP test is based on the following statistics:

$$\lambda_\alpha = t_\alpha \left(\frac{\gamma_0}{f_0}\right)^{\frac{1}{2}} - \frac{T(f_0 - \gamma_0)(\delta\ell(\hat{\alpha}))}{2f_0^{\frac{1}{2}}\delta} \ldots\ldots\ldots\ldots vi$$

Where $\hat{\alpha}$is the estimate and t_α the t-ratio ofα, $\delta\ell\hat{\alpha}$ is coefficient standard error, and is the standard error of the test regression. In addition, γ_0 is a consistent estimate of the error variance, the remaining term, f_0, is an estimator of the residual spectrum at frequency zero.

3.3.2 The Autoregressive Distributed Lag (ARDL) Model Approach

The autoregressive distributed lag (ARDL) bound testing cointegration procedure introduced by Pesaran and Shin (1997) and further extended by Pesaran, Shin and Smith (2001) has been used to verify if the long- run relationship exist in the model between financial development and economic growth in Nigeria. The calculated F-statistics is compared with the Critical Value. If F-statistics exceeds or supersedes the upper critical value, then the decision rule will be to reject the null hypothesis of no long-run relationship (no cointegration) irrespective of whether the underlying order of integration of the variables is zero or one i.e. I(0) or I(1), whereas if F-statistics falls below a lower critical value, then the null hypothesis cannot be rejected.

3.3.3 The Granger Causality Test

If variables are integrated of order I (1) and they are cointegrated, it implies at least one way of causality (Granger, 1988). Therefore, if variables are cointegrated, we should estimate causality relationship in order to absorb both the short run and the long run information. However, if the variables are not cointegrated, we have to estimate regressions using unrestricted VAR in first difference of the variables and exclude error correction terms, in this case, the significance of F test will give short run causality. This help to avoid the short run loss of information. The Short run deviations towards the long run equilibrium, is adjusted instantly to the long run equilibrium, therefore, the Error Correction term helps to correct the proportion of disequilibrium in the next period.

3.3.4 Diagnostic Test

3.3.4.1 Breusch-Godfrey LM Test for Autocorrelation

Autocorrelation problem is the current and past error term has relationship among each other and this most likely to occur in time series data. Compare to Dubin-Watson (DW) test and Durbin's h test, we chose the Breusch-Godfrey LM test because Durbin-Watson test will provide inconclusive results and cannot take higher orders of series correlation into account and the Durbin's h test is unable to use the lagged dependent variable. In the test there is no autocorrelation problem for null hypothesis. The null hypothesis will be rejected if P-Value of F-statistics is lower than the level of significance, α.

3.3.4.2 Jarque-Bera (JB) Test for Normality

Jarque-Bera Test is used to determine whether the error term is normally distributed. The null hypothesis for JB test in error term is normally distributed and vice versa in alternative hypothesis. The null hypothesis would be rejected if P-value of Jarque-Bera statistics is lower than the level of significance, α. We should make sure that the JB test statistics value (P-value) is small that not allow us to reject null hypothesis to ensure the error term is normally distributed.

3.3.4.3 Breusch-Pagan-Godfrey Heteroscedasticity Test

In order to ensure that the residuals are randomly dispersed throughout the range of the dependent variable, we will use heteroscedasticity test. The variance of the error should therefore be constant for all values of the dependent variable. In the presence of heteroscedasticity, the distributions of the parameters are no longer normal. The decision rule is to reject the null hypothesis if the probability

of the F-statistics and observed R^2 are less than 0.05, meaning heterocesdasticity is present. On the other hand, if the probability of the F-statistics and the observed R^2 are greater than 0.05, we do not reject the null hypothesis, implying that there is no heterocesdasticity. As such, errors are homoscedastic.

4. Data Presentation, Analysis

4.1 Unit Root Test

In line with the methodology, unit root tests were conducted using Augmented Dickey Fuller and Phillips and Perron's tests in order to determine the nature of the series and to avoid getting spurious result. The table below summarized the result of the tests.

Table 1: Unit Root Test Result

Augmented Dickey Fuller (ADF)			
Variables Series	**Level Value**	**First Difference**	**Order of Integration**
RGDP	-1.4653	-5.5385***	I(1)
M_2	1.6352	-4.5642***	I(1)
PSC	2.5733***	-4.5673***	I(0)
INTR	-0.5749***	-3.6452***	I(0)
Phillips and Perron's (PP)			
Variables Series	**Level Value**	**First Difference**	**Order of Integration**
RGDP	-1.4528	-5.9239***	I(1)
M_2	2.5789	-7.5623***	I(1)
PSC	4.4632***	-4.6343***	I(0)
INTR	-3.3651***	-3.5752***	I(0)

Note that *** indicate significant at 1% level.

Source: Author's Computation

Table 1 shows the stationarity of the variables at different order of integration which was carryout using ADF and PP test respectively, from the result obtained some of the variables were said to be stationary at a level value 1(0) and others stationary after the first difference 1(1). To overcome this shortcoming, the study applied ARDL. This is because ARDL is an approach that provides valid and reliable results irrespective of whether the series are I(0) or I(1).

4.2 Optimum lag Test Result

After ADF and PP unit root test was conducted, and the result confirm the stationarity of the series variable at different level, it is important to determine the number of lags to be included in the regression. Optimal lag selection was

carried out to determine the number of lag (s) to be included in the model.

Table 2: Optimum lag Test Result

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-82.354	194.3463	9.16005	2.75744	1.90954	1.352332
1	22.4174	187.8952	4.54782	6.35225	4.35441	1.856443
2	54.3294	53.05416	5.34743*	6.37374*	8.30085*	1.872435*
3	156.734	29.54243*	5.45346	6.06947	7.25357	3.546748
4	178.545	32.3412	5.74463	7.36376	5.37652	3.746436

Note that * indicate lag order selected by the criterion.
LR: sequential modlified LR test statistic (each test at 5% level)
FPE: Final Prediction Error,
AIC: Akaike Information Criterion,
SC: Schwarz Information Criterion and
HQ: Hannan-Quinn Information Criterion.
Source: Author's Computation

As presented in table 2, optimum lag order selection was carried out to determine the number of lag(s) to be included in the model prior to ARDL test. The maximum lag for the model was selected based on the five different information criteria. It evident from the table 2 that only for LR which agreed at 3 lags, all the remaining agrees at lag 2. Hence, the study adopted 2 lags as the maximum for the model.

4.3 ARDL Model Estimation

After knowing the stationary level of the variables and number of lags to be included in the model, next is to carry out the ARDL test. This done by conducting a cointegration bound test, a long run estimate of ARDL, a short run dynamic estimate of ARDL using ECM.

4.3.1 ARDL Cointegration Bound Test Estimate

Cointegration bound test was conducted in order to see if there is cointegration among the variables, this will give way for the estimation of the ARDL long run and short run estimate. Cointegration test is required so as to know whether there is long run relationship among the variables captured in the model.

Table 3: Cointegration Bound Test Estimation Results

Test statistic	Value	Sign. Level	Lower Bound I(0)	Upper Bound I(1)
F- statistic	5.42	1%	3.25	4.41
K	3	5%	2.78	3.73
		10%	2.13	2.83

Note: k= no of observation, lower bound = 1(0), upper bound = 1(1)
Source: Author's Computation using

Table 3 shows that there is cointegration among the variables. This is because the F-statistics of 5.42 is greater than the critical

upper bound value of 4.41 and the lower bound value of 3.25 at 1% significant level, hence there is existences of cointegration among the variables under study. K=3 represent the number of independent variables. Therefore, since the bound test has revealed evidence of long-run cointegration among the variables there is a need to test for the long run relationship of ARDL.

4.3.2 ARDL Long run Coefficient Estimation Result

This has been carried out after knowing the level of cointegration among the variables so as to know the nature of long run relationship among the variables.

Table 4: ARDL Long run Coefficient Estimation Results

Dependent Variable: RGDP				
Independent Variables	**Coefficient**	**Std. Error**	**T- statistics**	**P- value**
M_2	0.1821***	0.1426	1.2770	0.0002
PSC	0.2428***	0.1217	1.9951	0.0000
INTR	-.0.0014	0.0284	-0.0493	-0.2147
C	0.3328***	0.1037	3.5329	0.0026

Note that ***, ** and * indicate level of significant at 1%, 5% and 10% respectively
Source: Author's Computation

Table 4 shows that there is a long run significant positive relationship between M_2, PSC and RGDP in Nigeria throughout the study period at 1% respectively. 1% increase in M_2 and PSC, will lead about 18.21% and 24.28% increase in economic growth in Nigeria. The result furthers reveal statistically insignificant negative relationship between real RGDP and interest rate in Nigeria. Meaning that 1% increase in interest will result in about 0.14% decrease in real RGDP in Nigeria. The estimates finally show that holding all variables constant, RGDP will be will be 33.28 billion which is significant at 1% level.

4.3.3 ARDL Short run Estimate Result

The ARDL error correction model is conducted to detect the short run relationship between the dependent variables (RGDP) and independent variables namely; money supply, credit to private sector and real interest rate).

Table 5: ARDL Short Run Estimate Result

Dependent Variable: RGDP				
Independent Variables	**Coefficient**	**Std. Error**	**T- statistics**	**P- value**
M_2	0.3254**	0.2244	1.4501	0.0238
PSC	0.2428***	0.5142	0.4722	0.0043

INTR	-0.0211	0.0296	-0.7128	0.5471
ECM	-0.2682***	0.0813	-3.2989	0.0000
R-squared	0.781873			
Adjusted R-square	0.661668			
F-Statistic	4.476432			
Durbin-Watson stat	1.972531			

Note that ***, ** and * indicate level of significant at 1%, 5% and 10% respectively
Source: Author's Computation

Table 5 shows the short run dynamic associations between real GDP and its explanatory variables was estimated using ARDL error correction model. The ECM is negative, (-0.27) and statistically significant at 1% level. indicate that our variables are well defined as it observes the usual negative sign which enables it to adjust to equilibrium position whenever the system is out of equilibrium. The estimated coefficient indicates that about 27% of this disequilibrium is corrected annually. The negative sign confirms our earlier conclusion that economic growth and its regressors are indeed cointegrated. The negative sign is an indication of the fact that any short-term fluctuations between the independent variables and the dependent variables will give rise to a stable long run relationship between variables, and the value is statistically significant at 1%. Nearly 27% of the disequilibrium of the previous year's shock adjusts back to the long-run equilibrium in the current year.

The estimated result show significant positive relationship broad money supply and real gross domestic product in the short run at 5% level. Its estimated coefficient being 0.3254. This means that a one percent increase in M_2 will yield a 32.54% increase in real GDP. More so, ratio of private sector credit to GDP on the other hand is also estimated have significant positive relationship with real GDP with an estimated co-efficient of 0.2428. This implies that a one percent rise in ratio of private sector credit to GDP will lead to 24.28 percent increase in real GDP which is also significant at 1% level.

Furthermore, the estimated coefficient of interest rate is -0.0211 reveals insignificant negative relationship with RGDP. This shows the existence of inverse relationship between interest rate and real RGDP. Precisely, a one percent increase in lending rate will cause 2.11% fall in Nigeria RGDP.

The coefficient of determination R^2, account for 0.7819 (78%) of the variation of RGDP between the year 1985 to 2019 are explained by the variables controlled in the model while the remaining 22% percent are explained by other variables not captured in the model (error term). Moreover, the result proves F- statistic 0.7819 is statistically significant at 5%, meaning that all independent variables have joint effect on RGDP. Therefore, the model is adequate to uphold for policy making.

4.4 of the Granger Causality Test Result

The main aim of conducting Granger Causality test is to determine the nature and direction of causality between the

variables. The result is presented in the table below:

Table 6: Result of the Granger Causality Test

Null Hypotheses	Lags	Obs.	F-statistics	P-values
M_2 does not Granger Cause RGDP	2	32	3.03575	0.0216
RGDP does not Granger Cause M_2	2	32	2.05432	0.0619
PSC does not Granger Cause RGDP	2	32	4.05352	0.0003
RGDP does not Granger Cause PSC	2	32	3.73473	0.0230
INTR does not Granger Cause RDGP	2	32	0.25449	0.0141
RGDP does not Granger Cause INTR	2	32	2.52746	0.3532

Note that ***, ** and * indicate level of significant at 1%, 5% and 10% respectively
Source: Author's Computation

As presented in Table 6, the Granger causality result shows the existence of bi-directional causality between M_2, PSC and economic growth in Nigeria. This is because significant F-statistics (3.03575, 2.05432, 4.05352 and 3.73473) at 5%, 10%, 1% and 5% respectively. Furthermore, there is no evidence of causality running from economic growth to interest rate given the insignificant P-value of 0.3532 but interest rate granger cause RGDP given the significant P-value at 5%.

4.5 Diagnostic Tests Result

Diagnostics test for serial auto correlations, normality and heteroskedasticity were carried out for the estimated model this can be shown in table 7

Table 7: Diagnostic Test Result for ARDL

Tests	Coefficient	P-Value
Jarque-Bera Residual Normality Test	31.4342	0.7614
Serial Correlation LM Test	6.9453	0.2935
Residual Heteroskedasticity Test	128.732	0.5961

Note that ***, ** and * indicate level of significant at 1%, 5% and 10% respectively
Source: Author's Computation

From table 7, the model passes the normality test through the joint Jarque-Bera statistics the result from the test shows residual have normal and identical distribution. this prove the normality of the series variables, the ARDL residual normality test confirmed acceptance of null hypothesis of normality properties given the insignificant p-value of tests conducted (0.7614) This provides some support for the hypothesis that residuals from our ARDL model have a normal distribution. ARDL residual serial correlation LM test shows that we cannot reject the null hypothesis of no autocorrelation up to lag 2, given

insignificant p-value of (0.2935). This proved that there is no serial correlation of residual among the selected lag. Lastly, heteroskedasticity test was carried out and the result confirm the acceptance of null hypothesis going by its insignificant p-value (0.5961). This proved the adequacy of the selected ARDL model.

5. Conclusion and Recommendations

5.1 Conclusion

In conclusion, this study explores the relationship between money supply, credit to private sector and economic growth in Nigeria for the period 1985-2019. The results reveal consistent relationship between the exogeneous variable and economic growth in Nigeria. The ARDL cointegration bound test analysis shows the existence of long run relationship between the variables which implies that any deviation from equilibrium among them is temporary as equilibrium holds in the long-run. The results show significant positive impact of money supply and credit to private sector on economic growth in Nigeria for both the periods. It further reveals insignificant negative relationship between interest rate and economic growth. Lastly, the study reveals bi-directional relationship money supply, credit to private sector and economic growth in Nigeria.

5.2 Recommendations and Policy Implications

Some policy implications can be gleaned from our findings. This study outlines the importance of suitable financial policies in Nigeria. The findings have implications for monetary authority, venture capitalists, investors and academics as it would shed new light on the nature of the relationship in both short-run, long-run periods, causal relationship as well as increase our understanding of the responses of changes in private sector credit to changes in monetary policy.

In view of these findings, the study recommends the need for government to improve on the macroeconomic environment through the harmonization of monetary and fiscal policies in order to ensure stability of the economic aggregates. Also, attention should be focused on deepening the financial sector in Nigeria through the creation of modern, efficient and strong financial institution that will mobilize the idle financial resources domiciled outside the financial system use them to drive Nigeria's economic growth. Furthermore, government should have sound, credible and feasible policies to strengthen financial system. The policies should be given priority to develop financial sector. An effective flow of finance to private sector economy is capable to stir prospective investors to invest and raise the nation's productivity; this can be achieved by good monetary policy instrument mix. Lastly, in other to sustain the momentum of growth occasioned by financial development, attention should also be given to the complimentary and coordinated development returns in other sectors of the economy thus there is the need to address the structural rigidities in the Nigeria economy and the decay in the critical infrastructures.

References

Aaqib S., Muhammad A. K., Zahid S., & Wajid K. (2020). Financial development, human capital and its impact on economic growth of emerging countries. *Asian Journal of Economics and Banking*. 2615-9821, 1-15 Doi10.1108/AJEB-06-2020-0015 www.emeraldgrouppublishing.com/licensing/reprints.htm

Adeola, O., & Evans, O. (2017). Financial inclusion, financial development, and economic diversification in Nigeria. *The Journal of Developing Areas*, 51(3), 1-15.

Begum, H. M., & Aziz, S. I. (2019). Impact of Domestic Credit to Private Sector on Gross Domestic Product in Bangladesh. *Journal of Economics and Finance (IOSR-JEF),*10(1), 45-54

Bist, J. P. (2018). Financial development and economic growth: Evidence from a panel of 16 African and non- African low-income countries. *Cogent Economics & Finance*, 6: 1449780: 1-17

Chinaemerem, O. and Chigbu, E.E. (2012). An evaluation of financial development and Economic growth of Nigeria: a causality test *Kuwait Chapter of Arabian Journal of Business and Management.* 1(10), 27-44

Dabos, M.P. and Gantman, E.R. (2010). The Fading Link? A New Empirical Analysis of the Relationship between Financial Development and Economic Growth, MFI Working Paper Series No. 2010-013. Accessed on 21 February, 2021 from http://www.ssmcom/abstract=1710303

Demetriades, P. O., & Rousseau, P. L. (2016). The changing face of financial development. *Economics Letters, 141*, 87–90. https://doi.org/10.1016/j.econlet.2016.02.009

Dickey, D. A. & Fuller, W. A. (1979), Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American Statistical Association*, 74(1), 427-31.

Dickey, D. A. & Fuller, W. A. (1981). Likelihood ratio statistics for autoregressive time series with a unit root. *Econometrica*. 49 (4), 1057-1072

Ductor L, Grechyna D (2015). Financial development, real sector, and economic growth. *Int Rev Economic Finance* 37, 393–405.

Esso, C. (2010). Re-examining the finance growth nexus: Structural bank, threshold co-integration and causality evidence from ECOWAS. *Journal of Economic Development,* 35(3), 57-79.

Ewetan, O.O and Ike N.D & Ese U. (2015). Financial Sector Development and Domestic Savings in Nigeria: A Bounds Testing Co- Integration Approach. *International Journal of Research in Humanities and Social Studies,* 2 (2), 37-44.

Ezeanyeji C.I. & Imoagwu, C. P. (2019). Financial Development and Economic Growth Nexus in Nigeria *International Journal of Business and Management Invention (IJBMI)*, 8(3): 50-63.

Goldsmith, R. W. (1969). Financial structure and development. New Haven, CT: Yale University Press.

Granger, C.W.J. (1988), Some recent developments in a concept of causality. *Journal of Econometrics,* 39, 199 - 211.

Iheanacho, E. (2016). The Impact of Financial Development on Economic Growth in Nigeria: *Economies*, 4(26), 1-12

Iheonu C. O., Asongu s. a, Kingsley O. O. & Patrick K. O. (2020). Financial sector development and Investment in selected countries of the Economic Community of West African States: empirical evidence using heterogeneous panel data method. *Journal of Financial Innovation* 6(29), 1-15

https://doi.org/10.1186/s40854-020-00195-0

Khan, M.A., Siddique, A. & Sarwar, Z. (2020). Determinants of non-performing loans in the banking sector in developing state, *Asian Journal of Accounting Research*, 5(1), 120-135

Khan, S. M.; Sherazi, H. & Liaqat, S. (2020). Impact of Money Supply and Domestic Credit on Economic Well-being: A Case of Pakistan. *European Online Journal of Natural and Social Sciences*, 9(3), 618-627. www.european-science.com

Kilinc, D., Seven U, Yetkiner H (2017). Financial Development convergence: New evidence for EU. *Central Bank Review,* 17, 47–54.

Kumar K. & Paramanik R. N. (2020). Nexus between Indian Economic Growth and Financial Development: A Non-Linear ARDL Approach *Journal of Asian Finance, Economics and Business,* 7(6), 109 –116

Matei I. (2020). Is financial development good for economic growth? Empirical insights from emerging European countries. *Quantitative Finance and Economics* 4(4), 653–678. http://www.aimspress.com/journal/QFE

McKinnon, R. I. (1973). Money and capital in economic development. Washington, DC: Brookings Institution.

Md Q, & Wei J. (2018). Investigation of the asymmetric relationship between financial innovation, banking sector development, and economic growth. *Quantitative Finance and Economics* 2, 952–980.

Ohiomu S. & Oligbi, B. S. (2020). "The Influence of Financial Sector Development and Financial Deepening on Economic Growth: Empirical evidence from Nigeria." *IOSR Journal of Economics and Finance,* 11(1), 58-67.

Olaniyi E. (2020). Fiscal Discipline, Financial Development & Economic Growth in Nigeria. Dynamics of Fiscal and Monetary Policies in ECOWAS Countries, University of Lagos Press. https://mpra.ub.uni-muenchen.de/99242/MPRA Paper No. 99242.

Olushola O. A. & Uzoma M. E. (2018). Financial Sector Development and Economic Growth in Nigeria: An Econometric Analysis. *International Journal of Economic and Financial Development,* 3(3), 35-50

Opoku E.E.O., Ibrahim M., & Sare Y.A. (2019). The causal relationship between financial development and economic growth in Africa. *International Review Journal of Applied Economics* 33, 789–812.

Osuji O. (2015). Financial Development and Economic Growth in Nigeria. *Journal of Economics and Sustainable Development*, 6(20), 20-40

Patrick, H.T. (1966). Financial Development and Economic Growth in Underdeveloped Countries. Economic Development and Cultural change, 14, 174 – 189.

Pesaran M.H, and Shin Y. (1997). Generalized impulse response analysis in linear multivariate models. *Econ Lett*, 58, 17–29

Pesaran M.H., & Shin Y. (1997). The role of economic theory in modelling the long-run. *Journal of Applied Economics*. 107, 178–191

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bound testing approach to the analysis of level relationships. *Journal of Applied Econometrics, 15*:289-326

Philips, P. B., & Perron, P. (1988). Testing for unitroot in time series regression. *Econometrika, 15*, 335-346.

Pradhan, R. P., Arvin, M. B., Hall, J. H., & Nair, M. (2017). Innovation, financial development and economic growth in Eurozone countries. *Applied Economics Letters, 23*(16), 1141–1144. https://doi.org/10.1080/13504851.2016.1139668

Romer, P. M. (1986), Idea Gaps and Object Gaps in Economic Development, in: *Journal of Monetary Economics*, 32, 543–573.

Schumpeter, J. A. (1911). The theory of economic development. Cambridge, MA: Harvard University Press.

Sehrawat, M. & Giri, A.K. (2015). Financial development and economic growth: empirical evidence from India, *Studies in Economics and Finance*, 32(3), 340-356.

Shahbaz, M., Nasir, M. A. & Lahiani, A. (2020). Role of financial development in economic growth in the light of asymmetric effects and financial efficiency. International *Journal of Economics and Finance*. https://doi.org/10.1002/ijfe.2157

Shaw, E. S. (1973). Financial deepening in economic growth. New York, NY: Oxford University Press.

Sulaiman, Z. A. (2020) Money Supply and Private Sector Funding in Nigeria: A Multi-Variant Study. *Asian Finance & Banking Review,* 4(1), 24-41

Ubesie, C.M., Echekoba, F.N., Chris-Ejiogu, U.G. & Ananwude, A.C. (2019). Sectoral Allocation of Deposit Money Banks' Credit and the Growth of Nigerian Real Economy: A Disaggregated Analysis. *Journal of Economics, Management and Trade*, 22(1), 1-22

Uwakaeme O. S. (2015). Economic Growth in Nigeria: An Empirical Investigation of Determinant and Causal Relationship. American Journal of Economics, 5(1), 9-20

Valickova P, Havranek T, Horvath R (2015) Financial development and economic growth: A meta-analaysis. *Journal of Economic Survey* 29, 506–526

Wadud, M. A. (2005). Financial Development and Economic Growth: A Cointegration and ECM Approach for South Asian Countries Paper presented at International Conference of the Asian Law and Economics Association at Seoul National University, South Korea on 24-25 June, 2005.

William, O., Zehou, S. & Hazimi, B.H., (2019). Determinants of domestic credit to the private sector in Ghana: Application of Vector Auto Regressive Method. *Advances in Social Science, Education and Humanities Research*, 3(9), 90-119.

Younesse E. M. (2019). Financial Development, Foreign Banks and Economic Growth in Africa. *African Development Review*. 31(2), 190-201. https://doi.org/10.1111/1467-8268.12377