RESEARCH ARTICLE

INTERACTION BETWEEN CREDITS TO PRIVATE SECTOR, BROAD MONEY SUPPLY AND ECONOMIC GROWTH

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ARTICLEINFO	ABSTRACT
	This study examines the impact financial variablesand economic growth in Nigeria over the period 1981 – 2017 using the classical learn regression this study found indicators of financial variables; credit to private sector and broad money supply triggers economic growth. A unidirectional causal relationship exists amongst them. We recommend as follows that the government should duly make policies that are aimed at increasing the availability of credit provided to private sector. This is because it will aid rational economic decisions that will aim at increasing productivity within the sectors of the economy.

INTRODUCTION

Debate on financial depth is argued to pose importance in understanding the economic structure and drivers of economy growth. Various interaction between credits to private sector, broad money supply and economic growth came to the centre of academics as well as policy-makers discussions especially in relation to the financial sector development. Together with financial liberalization and international financial integration economists focus their attention to the credits to private sector and broad money supply especially due to its potential effects on the real economy. According to Ngongang (2015), size credit to private sector and broad money supply is usually closely related to the overall economic performance of the country. It seems the higher the per capita income in the country the faster the growth in the financial assets. Perspective of the fast and sustainable economic growth increased attractiveness for the foreign investors that resulted in increased foreign capital inflows (Aye, 2015). The progress in the financial sector development and the financial deepening are considered to be a crucial aspect of the continuously increasing process of the international financial integration. Of course, institutional aspects, heritage from the central planning period and transitional rigidities among different economies have fundamentally affected the overall progress as well as durability of partial steps shaping the individual features of the financial sector development and the financial deepening in each particular country (Mirdala, 2011).

Numerous empirical literatures have been carried out testing the relationship between finance and economic growth. Financial depth, development of financial sector, banking in general, ownership of banks, and the characteristics of banking sector are among those that have been studied as correlates of economic growth. Bakay (2014) maintained that studies utilizing cross-country data have linked economic and financial deepening variables; including the legal environment of countries, existence of market-dominated financial systems, inflation, human capital, and urban development along with others. Financial depth is traditionally hypothesized to be positively associated with the provision of financial services. Increasing financial services allows investors to reach more relevant and improved information about market opportunities, companies, managers and investments alternatives. In addition, financial services include monitoring of investments, and creating intermediation for trading and risk management. Having access to financial services, investors are able to manage risk, investment and portfolios with detailed information and analytical tools. Therefore, measures of financial depth can be utilized as factors explaining economic development that is arguably highly correlated with the foreign trade; imports and exports (Wachtel, 2003). In the creation of knowledge with respect to businesses and providing this information to market participants, financial institutions and banks in particular are important actors of today's complex financial system. The functions of the financial system through

which economic growth may be stimulated, can be categorized as follows: Generating information about capital allocation and possible investments opportunities, monitoring investments, exerting corporate governance, provide services for and ease trading, diversification and risk management, create savings pool and mobilize them (Levine, 2005). The investigation for information creation about the types of firms, markets; investors incur a heavy burden of market research costs. Therefore, the investment that requires excessive research and information decreases its chances of flowing to higher value positions. By the presence of financial intermediaries, the information creation about markets, economic conditions, firms and managers; is made easily available to investors allowing better capital allocation (Levine, 2005). However, understanding the underlying relationship between there financial variables and economic growth and how it relates to each other needs further attention is the center of this study. Therefore, exploring the propositions using verified secondary data could illuminate aforementioned gap in this research field. There are large number of studies that attempts to identify the main drivers of economic growth and the potential sources of growth differentials across space and time from both theory and empirical perspectives. The level of financial development has been identified as one of such drivers of growth. This notwithstanding, the evidence is not conclusive and the debate on whether financial variables are the cause or effect of the growth process is still on-going. Another source of dispute on this strand of the growth literature is the issue of appropriate or correct measure of financial variables. This study aims to address these concerns in the literature using time series econometric techniques.

Such measures as Money supply, credit to private sector, ratio of credit to private sector on Gross Domestic Product and other non quantitative indicators like ratio of persons to banking services, access to money transmission channels as well as financial literacy levels; have been presented at sundry times as indicators of the level of financial deepening. The nagging question here, becomes, what is the most appropriate indicator of the financial depth of an economy? This creates a research need and constitutes of the profound inquisition of this research endeavor. There is no doubt on strong positive relationship between financial deepening-economic growth (herein referred to as FD-EG) nexus, but the method of estimation and efficient form of relationship is of importance to size and reliability of the relationship, therefore, there is a question on the reliability and robustness of method of estimation used by previous studies. It is also important to note that Nigerian financial market is unique. This creates a problem of formulating a model unique enough to align with the uniqueness of the Nigerian economic space. This study would be the first study to consider the predictive power of credit to private sector and broad money supply on development on the economy in Nigeria using classical linear ordinary least square. The remainder of this study is structured as follows: section 2 provides a review of existing empirical literature. Section 3 presents the data and methodology of the study. Section 4 presents and discusses the empirical results. Finally, section 5 offers some concluding remarks on the findings.

Theoretical review

Theory of financial intermediation: Credit is an important aspect of financial intermediation that provides funds to those economic entities that can put them to the most productive use. Theoretical studies have established the relationship that exists between financial intermediation and economic growth. Earlier studies like McKinnon (1973) and Shaw (1973) strongly emphasized the role of financial intermediation in economic growth. In the same vein, Greenwood and Jovanovich (1990) observed that financial development can lead to rapid growth. In a related study, Bencivenga and Smith (1991) explained that development of banks and efficient financial intermediation contributes to economic growth by channeling savings to high productive activities and reduction of liquidity risks. They therefore concluded that financial intermediation leads to growth. Based on this assertion, this study examines the extent to which intermediation or credit to various sectors of the economy has influenced economic growth in Nigeria.

Greenwood and Jovanovic (1990) model the dynamic interactions between finance and growth and emphasize the two-way causality between them. Financial intermediaries produce better information and improve resource allocation According to Caporale, Rault, Sova and Sova (2009), an expanded system of financial intermediation is able to allocate more capital to efficient investments and thus to foster economic growth. Bencivenga and Smith (1991) highlight the fact that, by eliminating liquidity risk, banks can raise economic growth. Financial intermediaries boost productivity, capital accumulation and growth by improving corporate governance.

Empirical review: There are a number of empirical studies devoted about the nexus between the financial variables and economic growth. Adekunle, Salami and Adedipe (2013) examined the impact of financial sector development and economic growth in Nigeria. They sought to know the impacts of the sector in the Nigerian economy and whether the sector has been able to achieve its main objective of intermediation as a result of the inability of the sector to assist the real sector despite the huge profits declared yearly & also the short term lending of the banks instead of long term investment that can boost the economy. The OLS method of the regression analysis was employed; the financial development was proxied by ratio of liquidity liabilities to GDP (M2GDP), real interest rate (INTR), ratio of credit to private sector to GDP (CPGDP) while the economic growth was measured by the real GDP (RGDP).The study found that only the real interest rate is negatively related. All the explanatory variables are statistically insignificant. Though the overall statistic showed that the independent variables were able to explain 74 percent variation in the dependent but contrary to a priori expectation, it is statistically insignificant.

Aye, (2015) investigated the role of financial development on economic growth in Nigeria. Since a causal link may evolve over time, a bootstrap rolling window approach was used to account for potential time variation in the relationship with annual Nigerian data on money supply as a ratio of nominal GDP and real GDP per capita from 1961-2012. Starting first with a full sample bootstrap Granger causality, the results indicate no causality between the two series. The relevant VAR is unstable for the full sample which undermines the confidence in the bootstrap full sample Granger causality tests. Therefore a bootstrap rolling window estimation was used to evaluate Granger causality between financial deepening and economic growth over different time periods. These tests revealed periods where financial deepening has predictive power for economic growth.

Table 4.1. Data Description

	CPS	CPSGDP	GDP	INTR	M2	M2GDP
Mean	2912.315	12.63559	15567.01	7.758360	3226.415	17.18168
Median	334.0816	10.81772	4110.775	5.490000	450.7130	16.51089
Maximum	17128.98	36.74587	89043.62	18.80000	17680.52	37.99238
Minimum	8.570050	5.917133	94.32502	1.410541	14.47117	8.577088
Std. Dev.	5056.871	6.514180	25099.22	5.192509	5123.145	5.911907
Skewness	1.737604	1.993148	1.844361	0.630067	1.577474	1.687597
Kurtosis	4.611871	7.294863	5.070776	2.023801	4.114282	6.855288
Jarque-Bera	20.78986	48.64324	25.35094	3.599611	15.86004	37.19484
Probability	0.000031	0.000000	0.000000	0.165331	0.000360	0.000000
Sum	99018.70	429.6102	529278.3	263.7842	109698.1	584.1772
Sum Sq. Dev.	8.44E+08	1400.340	2.08E+10	889.7508	8.66E+08	1153.371
Observations	37	37	37	37	37	37

SOURCE: Author's Eviews Computation

Table 4.2. Correlation Matrix

	CPS	CPSGDP	GDP	INTR	M2	M2GDP
CPS	1.000000	0.717129	0.980401	-0.579804	0.994630	0.499310
CPSGDP	0.717129	1.000000	0.595702	-0.569314	0.733495	0.928722
GDP	0.980401	0.595702	1.000000	-0.592340	0.981011	0.383100
INTR	-0.579804	-0.569314	-0.592340	1.000000	-0.617755	-0.559212
M2	0.994630	0.733495	0.981011	-0.617755	1.000000	0.536849
M2GDP	0.499310	0.928722	0.383100	-0.559212	0.536849	1.000000

Source: Author's computation from Eviews

Table 4.3 Summary of Philip Peron Unit Root Test

Variables	PP test statistics	Critical values at 5%	P value	Order of integration
CPS	-2.480265	-1.951687	0.0148	1(1)
CPSGDP	-7.190087	-1.951687	0.0000	1(1)
GDP	-3.325635	-1.951687	0.0016	1(1)
M2	-8.764452	-1.952066	0.0000	1(1)
M2GDP	-5.959666	-1.951687	0.0000	1(1)
INTR	-5.850447	-2.957110	0.0000	1(1)

Source: Author's computation (extract from the Eviews results of Philip Peron unit roots test results

Table 4.4 Regression Result for the Test (GDPGRt = α + β₁PSCGDP_t + β₂ INT + μ)

$$GDPGRt = \alpha + \beta_1 PSCGDP_t + \beta_2 INT + \mu$$

Dependent Variable: GDP				
Method: Least Squares				
Date: 12/01/15 Time: 20:05				
Sample: 1981 2017				
Included observations: 37				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	12010.69	1622.937	7.400587	0.0000
CPS	1.478418	0.712592	2.074705	0.0473
CPSGDP	-1138.901	212.1567	-5.368208	0.0000
INTR	-203.9260	75.92031	-2.686053	0.0120
M2	4.232710	0.685998	6.170151	0.0000
M2GDP	91.20465	203.8990	0.447303	0.6581
R-squared	0.996721	Mean dependent var		15567.01
Adjusted R-squared	0.996136	S.D. dependent var		25099.22
S.E. of regression	1560.277	Akaike info criterion		17.70190
Sum squared resid	68165042	Schwarz criterion		17.97126
Log likelihood	-294.9323	Hannan-Quinn criter.		17.79376
F-statistic	1702.293	Durbin-Watson stat		1.501002
Prob(F-statistic)	0.000000			

Sources: eviews 10

Table 4.5. Heteroskedasticity Test: White for Model 1

F-statistic	2.007415	Prob. F(19,14)	0.0940
Obs*R-squared	24.87089	Prob. Chi-Square(19)	0.1648
Scaled explained SS	11.75091	Prob. Chi-Square(19)	0.8960

Author's computation (Extract from Model 1 Diagnostics)

Table 4.6. Granger Causality Test for Model 3

Pairwise Granger Causality Tests			
Date: 12/01/17 Time: 20:02			
Sample: 1981 2017			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
CPSGDP does not Granger Cause CPS	35	1.58937	0.2226
CPS does not Granger Cause CPSGDP		2.69850	0.0854
GDP does not Granger Cause CPS	35	2.76510	0.0808
CPS does not Granger Cause GDP		17.8465	1.E-05
INTR does not Granger Cause CPS	35	1.07224	0.3564
CPS does not Granger Cause INTR		0.08794	0.9161
M2 does not Granger Cause CPS	35	20.7842	3.E-06
CPS does not Granger Cause M2		3.71765	0.0375
M2GDP does not Granger Cause CPS	35	2.84159	0.0759
CPS does not Granger Cause M2GDP		0.73902	0.4870
GDP does not Granger Cause CPSGDP	35	10.1042	0.0005
CPSGDP does not Granger Cause GDP		33.6323	5.E-08
INTR does not Granger Cause CPSGDP	35	2.53941	0.0976
CPSGDP does not Granger Cause INTR		0.00766	0.9924
M2 does not Granger Cause CPSGDP	35	34.6273	4.E-08
CPSGDP does not Granger Cause M2		0.75477	0.4798
M2GDP does not Granger Cause CPSGDP	35	0.72890	0.4917
CPSGDP does not Granger Cause M2GDP		0.73342	0.4896
INTR does not Granger Cause GDP	35	0.45756	0.6376
GDP does not Granger Cause INTR		0.16195	0.8513
M2 does not Granger Cause GDP	35	77.1282	7.E-12
GDP does not Granger Cause M2		1.06633	0.3583
M2GDP does not Granger Cause GDP	35	15.2381	4.E-05
GDP does not Granger Cause M2GDP		4.18120	0.0262
M2 does not Granger Cause INTR	35	0.23131	0.7951
INTR does not Granger Cause M2		0.82172	0.4504
M2GDP does not Granger Cause INTR	35	0.05404	0.9475
INTR does not Granger Cause M2GDP		2.75080	0.0818
M2GDP does not Granger Cause M2	35	1.24734	0.3033
M2 does not Granger Cause M2GDP		11.4827	0.0002

Source: Researcher's Eview Result
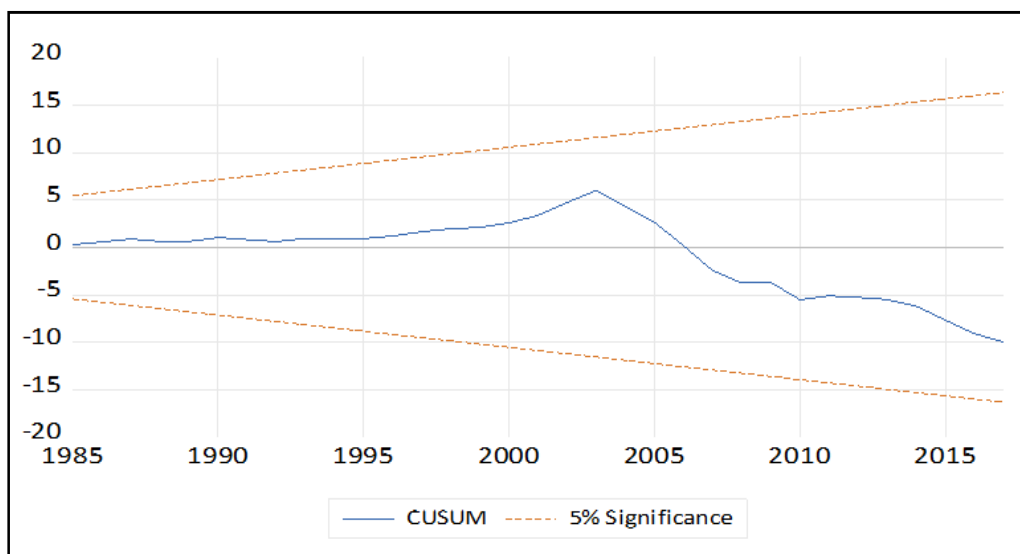
Source: Author's Eviews Computation

Fig. 2. Recursive estimates cusum test graph for model 1

Against the backdrop of importance of finance in enhancing economic growth and development especially in developing economies like Nigeria, Onwumere, Onodugo and Ibe, (2013) investigated whether financial structure has positive and significant impact on economic growth and development in Nigeria. The results revealed from the findings support existing literature that total financial structure has positive and significant impact on economic growth. However, while some sectors exert more influence (banking and market), other sectors (such as insurance) were found to have non-significant impact on economic growth. Ngongang (2015) attempted in his paper to analyze and to verify empirically the controversy on the relationship between the financial sphere and the real sphere. From the data observed on 21 Sub-Saharan African (SSA) countries and by using the dynamic panel GMM technique, it was found that there exists a positive link between financial development and economic growth. Soltani et al. (2014) show through the method of generalized moments (GMM) on a sample of 11 countries of the region of MENA4 (during the period 1995-2011) that financial development is detrimental to economic growth in this region.

AlaouiMonstain (2004) in Bakhouche (2007) also tests the relationships between financial sector development and economic growth in Morocco using the real GDP to measure growth, and the ratios of liquid liabilities M3 to GDP, domestic credit issued by the banking sector to GDP and the domestic credit issued to the private sector to GDP are used as the financial development indicators. Causality relationships are identified from economic growth to the liquid liabilities and domestic credit indicators and from credit to the private sector to economic growth. There is evidence of a stable long-run relationship between economic growth and the financial indicators. Adu et al., (2013) investigated the long-run growth effects of financial development in Ghana. They find that the growth effect of financial development is sensitive to the choice of proxy. Both the credit to the private sector as ratios to GDP and total domestic credit are conducive for growth, while broad money stock to GDP ratio is not growth-inducing. The indexes created from principal component analysis confirmed the sensitivity of the effect to the choice of proxy. The findings thereof suggested that whether financial development is good or bad for growth depends on the indicator used to proxy for financial development. Kargbo and Adamu (2009) examined the relationship between financial development and economic growth in Sierra Leone for the period 1970–2008. Their results corroborate the finance-led growth hypothesis in Sierra Leone with financial development exerting a significant positive growth effect. More importantly they show that investment is an important conduit via which financial development feeds economic growth.

In their paper, Quartey and Prah (2008) show that there is some evidence in support of demand-following hypothesis, when growth of broad money to GDP ratio is used as a measure of financial development. However, there is no evidence to support either the supply-leading or demand-following hypotheses when growth in domestic credit to GDP ratio, private credit to GDP ratio, and private credit to domestic credit ratio are used as proxies for financial development. Finally, their findings reveal that there is no statistical evidence to support Patrick's stages of development hypothesis in Ghana. In South Africa, Odhiambo (2009) examined the dynamic relationship between interest rate reforms, financial development and economic growth.

The author concludes that the causal relationship between financial depth and economic growth exhibit a demand-following path. However, emerging issue in the discussion in finance–growth literature is the issue of direction of causality between financial development and economic growth (Chee-Keong and Chan, 2011). As a result, myriads of theoretical and empirical studies have made attempts at delving deeper into the understanding of this relationship For instance, Al-Yousif (2002) opines that most of the existing studies seem to over-emphasize the correlation between financial development and economic growth, while failing to acknowledge that the existence of a high correlation between two variables is a mere depiction of linear association rather than causality. Wang (1999) also offers some criticisms by raising issues of mis-specification and possible endogeneity bias in most studies studying the finance–growth relationship. He argues that the use of an augmented production function approach results in misleading conclusions since a measure of financial development is also a component of the production function. Wang (1999) further argues that this approach assume economic growth as endogenous thereby testing only for causality running from financial development to economic growth while neglecting the possibility of a reverse or even bi-directional causality hence, resulting in model mis-specification problems.

Sackey and Nkrumah (2012) examined the effects of financial deepening on economic growth in Ghana using the Johansen Co-integration analysis. The paper examines empirically the causal link between financial sector development and economic growth in Ghana. The Johansen Co-integration techniques within a bi-variate vector auto-regressive framework were used for the regression. Using a quarterly time series set of data on Ghana over a ten year period (2000 – 2009), the result of the study shows that, there is a statistically significant positive relationship between the Financial Sector Development and Economic Growth in Ghana. Ardic and Damar (2006) analyzed the effects of financial sector deepening on economic growth using a province-level data set for 1996-2001 on Turkey. They pointed out that the selected period is associated with a weakly regulated and relatively unsupervised expansion of the banking sector which led to the 2001 financial crisis. Contrary to findings in the previous literature, our results indicate a strong negative relationship between financial deepening both public and private and economic growth. Arfaoui and Abaoub (2012) emphasizes that in order to get benefits from the financial deepening associated with the foreign capital inflows the country should liberalize capital account transactions only when the legal and regulatory institutions were successfully well developed.

Baltagi et al. (2013) argue that the financial deepening and the international financial integration is not necessary accompanied only with the positive influence on the domestic transition economy (i.e. economic growth) and the overall effect is largely determined by the financial deepening features and the structure of the foreign capital inflows. While capital market depth has usually a strong influence on the growth the bank credits may have non-significant or sometimes even negative impact on the growth. At the same time the equity and debt capital inflows have obviously positive influence on the economic growth. Esso (2009) assumed that the financial deepening has usually overall positive macroeconomic outcomes, but on the microeconomic level it is rather questionable, whether such performance

incentives also extend to small and medium enterprises. He also emphasizes that it is rather inconclusive, whether intensified financial intermediation usually coupled with the financial deepening also includes small and medium enterprises. On the other hand the international financial integration is usually coupled with broad set of the microeconomic collateral benefits, i.e. increased quality of institutions and the corporate governance. Christopoulos - Tsionas (2004) investigated the long run relationship between financial depth and economic growth, utilizing the data in the most efficient manner via panel unit root tests and panel cointegration analysis for 10 developing countries. Threshold cointegration tests were also implemented together with dynamic panel data estimation for a panel-based vector error correction model. The long run relationship was estimated using fully modified OLS. Their analysis confirmed an idea that there exists a unique cointegrating vector between growth, financial development and ancillary variables. The empirical evidence also points to the direction that there is no short run causality between financial deepening and output, so the effect is necessarily long run in nature.

Rachdi and Mbarek (2011) investigated the direction of causality between finance and growth using panel data cointegration and GMM system approaches. Their empirical analysis is based on a sample of 10 countries, 6 from the OECD region and 4 from the MENA region during 1990-2006, reports the following results: a panel data cointegration analysis confirms a long-term relationship between financial development and economic growth for the OECD and the MENA countries. Results support the idea that the causality is bidirectional for the OECD countries and unidirectional (economic growth- financial development) for the MENA countries. Apergis, Filippidis and Economidou (2007) examined whether a long-run relationship between financial development and economic growth exists employing panel integration and cointegration techniques for a dynamic heterogeneous panel of 15 OECD and 50 non-OECD countries over the period 1975–2000. Their findings support the existence of a single long-run equilibrium relation between financial deepening, economic growth and a set of control variables. Pradhan (2010) analyzed the long run equilibrium nexus between financial deepening, foreign direct investment (FDI) and economic growth in India during 1970-2007. Using Johansen's cointegration technique, the author investigated that financial deepening; foreign direct investment and economic growth are cointegrated, indicating the continuation of long run equilibrium relationship between them. The ECM further confirmed the presence of bidirectional causality between foreign direct investment and economic growth and a unidirectional causality from financial deepening to foreign direct investment. Abu-Bader - Abu Quarn (2006) examined the causal relationship between financial development and economic growth in five Middle Eastern and North African (MENA) countries for different periods ranging from 1960 to 2004 implementing VAR framework. Authors employed four different measures of financial development and applied Granger causality tests using cointegration and VEC methodology. Their results showed weak support for a long-run relationship between financial development and economic growth.

Research methodology and design

Nature and sources of data: This study will use secondary sources of data. The justification for the use of secondary data in this study is based on the conviction that relevant data so obtained will be highly reliable, verifiable, and free from any bias, sentiment and spuriousness. Therefore, consistent with the above and also in line with researches conducted in this area of finance which is a time series data for this research will be of secondary nature. Secondary data are data which have been processed, collated and exist in published form. The data will be extracted from Central Bank of Nigeria Annual Reports and Statistical Bulletins within the coverage period.Essentially, extensive use of journals will be made, while other published works and online materials relevant to the study will also be consulted.

Model specification: A model is a simplified view of reality designed to enable a researcher describe the essence and inter relationship within the system or phenomenon it depicts (Yomere and Agbonifoh, 1999). In writing the model equation, the following symbols will be used to denote their respective variables.

GDPGR=GDP growth rate
PSCGDP=Ratio of private sector credit to GDP
M2GDP=Ratio of broad money supply to GDP
α=Constant of the Equation
β=Coefficient of the Independent Variable
μ=Error Term

This study will use a simple model developed by De Gregorio and Guidotti (1995) and Abduroluman (2003). In this model the financial development variable is included in an endogenous growth model. The linear regression employed by the authors is of the form:

$$\text{LogGDP}_t = \beta_1 \text{LogFD}_t + \beta_2 \text{LogX}_t + \mu_t \text{----(1)}$$

Where:

GDP_t=an indicator of economic development
FD_t=an indicator of financial development
X_t=a set of control variables
μ_t=the error term

Models for this study will be patterned after the above model. The functional relationships for hypotheses one, two and three are therefore specified as follows:

Technique of data analyses

Classical Ordinary least square: In order to achieve the objective of determining the relationship between financial variables and economic growth, regression method of statistical analyses is considered more favourably. This is because the regression method explains the variation in an outcome (dependent variable) Y, as it depends on a predictor (independent explanatory) variable, X. It is a correlation based test. Correlation is one of the most common and useful statistics. It describes the degree of relationship between two variables. In this context what works ideally is the Multiple Regression Co-efficient which is a measure of the proportion of variability explained by, or due to the regression (linear relationship) in a sample of paired data. It is a number between zero and one and a value close to zero suggests a poor correlation or non-sense relationship. More tests like the use of Granger Causality and Phillip Peron Test for (Unit Root and Stationarity) will be conducted.

Unit Root Test: In carrying out this research work, it is important to test the stationarity properties of the time series. It has been observed of late that the body of statistical estimation theory is based on asymptotic convergence theorems which assume that the data are stationery. However, econometric models are increasingly being brought to bear on non-stationary data which are not even asymptotically consistent with the notions of convergence. The essence of the problem lies with the possibility of spurious regression which arises with the regression of non-stationary series.

This is a test of stationarity or non-stationarity in a data. By stationarity, we mean that the "mean" and "variance" are constant over time and the value of the covariance between the two time periods depends only on the distance or lag between the two time periods and not the actual time at which the covariance is computed. The model is as follows:

$$Y: = Py_t\text{-}1 + e_t$$
Where:
$$P = 1$$

When the above assumption is violated, there is a problem of non-stationary data. This test will be done to confirm the stationarity properties of the data. Phillip Peron test will be used here.

Pairwise Granger Causality Test: This is used to prove the direction of influence. The test assumes that the information relevant to the prediction of the variable are contained solely in the time series data on these variables. Generally, since the future cannot predict the past, if variables x1, x2 and x3, should precede y. Therefore, in a regression of y on the variables (including its own past values) if we include past or lagged values of x and it significantly improves the predication of y, then we can say that x (Granger) causes y and vice-visa. The direction of such influence will be explored and exposed. This will be done to evaluate and determine whether the causality is bidirectional or unidirectional.

EMPIRICAL RESULTS

The data description in table 4.1 above shows the basic aggregative averages like mean, median and mode for all the observations. The spread and variations in the series are also indicated using the standard deviation. Significantly kurtosis which shows the degree of peakedness is also shown together with skewness which is a reflection of the degree of or departure from symmetry of the given series. From Table 4.2 above, the Jacque Bera statistics which is a test for normality (a combined test of skewness and kurtosis) shows that all the distributions are not normally distributed. There is a very strong evidence to reject the null hypothesis that variables are normally distributed. All the variables have JB statistics with pvalues of less than 0.0000 respectively. With all the variables having kurtosis in excess of 4, there is evidence that they are all playtykurtic. Though this suggests a departure from normality, it is still consistent with behavior of most economic and financial time series Brooks (2010). In the bid to further describe the behavior of the datasets, Figure 4.1 presents a bar chart of the relationship between GDP at current basic prices and Credit to private sector, Money supply to the economy as contained in Table 4.1.

Test of Linear Association: The correlation matrix in the table above shows a test of the linear association of the variables under study. The essence is not to test impact or causation, but just an indication of whether or not a linear relationship can be established among the variables of interest.CPS demonstrated a positive correlation with all the variables CPSGDP, GDP, M2 and M2GDP. As revealed from the correlation matrix, a 1% increase in CPS over 1 year creates 0.71%, 0.98%, 0.99%, 0.49% increase in CPSGDP, GDP, M2, and M2GDP respectively. A study of the table above shows there is no negative relationship existing among the variables.

Test for stationarity: Table 4.3 report the test for stationarity properties of the series following the Philip Peron statistics. All the variables were found to be stationary at order 1. At the first difference as reported, the Philip Peron statistics for the respective variables were more negative than the critical values at 5% level of significance. (The reported p-values are all less than 0.05 for which cause, the null hypothesis of the presence of unit root in all the variables is convincingly rejected. From the above table, CPS (the explanatory variable of interest) with a coefficient of (1.478418 and a p value of 0.0473 < 0.05) shows a positive and significant response to growth in Gross Domestic Product (GDP). This is evidenced by the t-value (2.074705 with a p value of 0.0000). it shows that as CPS increases, GDP increases too.The R^2 which is a show of the goodness of fit of the model is 99% which means that 99% of variation in GDP was explained by the regressors and about 1% of the relationship is explained by factors not captured by the model. The adjusted R^2 of about 99% takes account of more number of regressors if included and it still explains 99% variation in the dependent variable.

The F-statistics of (1702.293, P-value = 0.000) at a critical value of 0.05 shows that the overall regression is significant and can be used for meaningful analyses. The Durbin Watson statistics (DW) value of 1.50 shows evidence of a first order serial autocorrelation (AR (1)). By rule of thumb, if the DW statistics is approximately equal to 2, it is evidence against the existence of a first order serial correlation. The model represented by the line in the middle is within upper and the lower bounds which is an evidence of stability of the model. With the stability of the model and its correct specification confirmed, the next step is to take decision regarding the stated hypothesis

Test for Heteroscedasticity: In order to confirm that the assumption of homoscedasticity is not violated by the model for this hypothesis, the White Test for Heteroscedasticity was used on the model and the result stated below. The null hypothesis that the model is not homoscedastic is rejected because the p values of all the three tests are greater than the 5% level of significance. It shows that the model is homoscedastic and can be relied upon not to exhibit variance of the error term.

Decision: Having confirmed the validity of the model and given the fact that the pvalue (0.0473) is less than 5% level of significance and that the coefficient is positively signed (1.478418), we now conclude that private sector credit is a positive and significant function of GDP. By that we reject the null hypothesis and accept the alternate hypothesis. From the Granger Causality Test result in Table 4.9 above, done with a lag of 2, financial deepening indicators are disaggregated and

the causal relationship with GDP tested. The choice of a lag of 2 is aimed at not sacrificing greater degrees of freedom which may be prejudicial to the outcome of the test. In determining the existence and direction of causality, the pvalue of the F-statistics is used with a 5% level of significance to either accept or reject the null hypotheses as stated. Many of the indicators tested showed no causal relationship found among these CPSGDP, INTR, M2GDP, with CPS, CPSGDP and GDP respectively. There is bi directional causality running from M2 to CPS and a feedback returning from CPS to M2, same also is GDP to CPSGDP, M2GDP to GDP and a returning feedback respectively. However, of interest to us in this work are the key financial deepening indicators which are CPS and M2 and their relationship with the GDP.

From the results, a unidirectional causality is found from CPS to GDP. Similarly, the result also showed that M2 granger causes GDP in a unidirectional fashion. It is consistent with the result of the regression and we therefore, conclude that a causal relationship exist between financial deepening indicators and economic growth.

IMPLICATIONS OF RESULTS

This study examined the impact of financial deepening on economic growth in Nigeria from 1981 to 2017 with the view to affirming or refuting financial deepening economic growth nexus using empirical evidence from Nigeria. Following a detailed theoretical review and empirical analyses, findings were made in line with the research questions as well as set and tested hypotheses. The implications of these findings are discussed in line with the objectives of this study. Credit to private sector represented by CPS (the explanatory variable of interest) shows a positive and significant response to the growth in Gross Domestic Product (GDP). This is evidenced by the t-value (2.074705 with a p value of 0.0000). It shows that as CPS increases, GDP increases. To conclude that increase in availability of credit to private sector (CPS) will lead to increase in gross domestic product (GDP) or that gross domestic product responds to credit to private sector. This shows that the result is positive and statistically significant, and it who found out that the proportion of private sector credits to total credits and to GDP was found to be correlated with economic growth.

Broad money supply represented by M2 (the explanatory variable of interest) shows a positive and significant response for growth in Gross Domestic Product (GDP). This is evidenced by the t-value (6.170151 with a p value of 0.0000). This shows that as M2 increases, GDP is bound to increase too. To conclude that increase in M1 + all time-related deposits referred to as broad money supply (M2) will lead to increase in gross domestic product (GDP). This is in line with the postulations of Popiel (1990), Nnanna and Dogo (1999) and Nzotta (2004) that financial deepening generally entails an increased ratio of money supply to gross domestic product or measured by relating monetary and financial aggregates such as M1, M2 and M3 to the Gross Domestic Product. This explains the fact that the more liquid money is available to an economy, the more opportunities exist for continued growth of the economy. Financial deepening indicators are disaggregated and the causal relationship with GDP tested. The choice of a lag of 2 is aimed at not sacrificing greater degrees of freedom which may be prejudicial to the outcome of the test. In determining the existence and direction of causality, the pvalue

of the F-statistics is used with a 5% level of significance to either accept or reject the null hypotheses as stated. The key financial deepening indicators which are CPS and M2 and their relationship with the GDP were tested and from the results, CPS granger causes GDP though a unidirectional causality. Similarly, the result also showed that M2 granger causes GDP which is also a unidirectional causality. The causality tests are consistent with the result of the regression and we therefore, conclude that the results of the causality tests basically affirm the regression results which show positive and significant relationship among CPS, M2 and GDP respectively. This also agrees with the study of King and Levine (1993) on this subject that showed a strong positive link between financial development and economic growth. The explanation is that financial development has predictive power for future growth and it is interpreted in the finding as evidence for a causal relationship that run from financial development to economic growth.

Summary and Conclusion

Motivated by the heated debate on the unstable nature of Nigeria's financial infrastructure and economic growth largely from various works.This investigates empirically the predictive power on financial indicators; ratio of liquidity liabilities to GDP (M2GDP), real interest rate (INTR), ratio of credit to private sector to GDP (CPSGDP) on the economic growth was measured by the real GDP (RGDP) in measuring this relationship.To achieve this main objective, the study sought to specifically: (i) ascertain the impact of credit to the private sector on economic growth in Nigeria. (ii) assess the impact of broad money supply on Nigeria's economic growth. (iii) determine the causal relationship between financial deepening indicators and economic growth in Nigeria.The results emanating from the study proved that credit to private sector and broad money supply triggers economic growth. A unidirectional causal relationship exists amongst them. This means that financial deepening caused economic growth in Nigeria within the period that was studied. We recommend as follows that the government should duly make policies that are aimed at increasing the availability of credit provided to private sector. This is because it will aid rational economic decisions that will aim at increasing productivity within the sectors of the economy.

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