



**EFFECT OF FINANCIAL DEEPENING ON ECONOMIC GROWTH IN NIGERIA: A VECTOR ERROR CORRECTION MODEL APPROACH**

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**Abstract**

*Financial deepening is one of the techniques whose usage can revive the pace of economic growth. In any case, the impact of this policy should be resolved and inspected now and again particularly to developing economies. Emerging countries have financial resources and instruments that are limited and this condition is normally similar to shallow financial depth. Hence, this study aims to examine the effect of financial deepening on economic growth in Nigeria for the periods of 1960-2017. The study proxied financial deepening with broad money supply and credit to private sector while economic growth was proxied with real gross domestic product. Expo-facto research design was utilised and secondary data were extracted from Central Bank of Nigeria statistical bulletin. The study employed the Ordinary Least Square method to estimate the model. In so doing, Vector Error Correction model was used. The study employed Augmented Dickey Fuller test for stationarity of the variables. The Johansen cointegration test was used to determine the long run relationship among the variables. The result indicates that all the variables are non-stationary at levels, but became stationary after first difference. The result of the ordinary least square revealed that broad money supply has positive and significant effect on economic growth in Nigeria while credit to private sector has negative and significant effect on economic growth in Nigeria. The Vector Error Correction model result suggests that there is long and short run effect among the variables. Test for adequacy was performed on the residuals and the results indicate that they are homoskedastic, no serial correlation and are normally distributed. The study concludes that broad money supply drives economic growth in Nigeria while credit to private sector retards economic growth in Nigeria. Based on the findings, the study recommends that Federal government of Nigeria through the Central Bank of Nigeria should continue to increase the volume of broad money supply to the economy as it is found to increase economic growth in Nigeria, it also recommends that Central Bank of Nigeria should reduce interest rate in the economy so that investors may raise their investment and output.*

**Keywords:** Credit to the Private Sector, Economic Growth, Financial Deepening, Money Supply



## **1. Introduction**

Financial deepening indices are the financial parameters that enhance productivity of the financial market which consequently activate the non-financial sector of an economy; thus, the connection between financial deepening indices and economic growth has received attention in emerging economies recently. This is as a result of the influence the financial sector has on economic growth and policy proposition of Nigeria. Nigeria has embraced different financial reforms intended to overhaul the financial sector and to enhance development and overall improvement of the economy. However, it is clear that the aim of the Nigerian financial sector is undermined because of macroeconomic volatility (Kama, 2006).

Financial deepening has the capacity to reduce poverty and enhance family capacity to get essential needs such as human services and education. Financial deepening has been contended to improve growth through two channels – the supply leading theory which contends that financial deepening improves economic growth and the demand following theory which contends that growth creates the interest for monetary items (Claessens & Feijen, 2006).

Economic growth is an expansion in the ability of an economy to create commodities and services compared from one timeframe with another. Economic growth can be estimated in basic terms which incorporates, inflation, nominal GDP, Gross National product, interest rate, budget expenditure, Gross National Product (GNP) or in genuine terms which are adjusted, which incorporate real GDP. Economic growth is an expansion in an economy's real level of yield after some time. It is outright increment in financial parameter, for example, GNP, Per Capital Income, GDP, and RGDP and so on (Todora, 1997). The Nigeria economy is distinctive and accounted for primary sector amid agriculture assuming a critical part. The oil and gas sector, specifically, keeps on being a noteworthy driver to the economy, representing more than 69 percent of government income in the period of 2017. The area contributed 9.04 and 8.53 percent to GDP in 2016 and 2017 respectively (Central Bank of Nigeria (CBN), 2018).

This study measures financial deepening with money supply and credit to the private sector while economic growth is measured with real gross domestic product. Money supply applies extensive impact on economic activity in both developed and developing economies. Nigeria positions 26th on the world economy as per the International Monetary Fund gauges for 2016 (CBN, 2017). It is in this light the recapitalisation in the banking sector in 2005 must be complimented. As per the measurements given by the CBN, in the vicinity of 1960 and 2014, add up to money supply remained at N109,824.15 trillion (CBN, 2016). This is little in respect to other rising economies like Brazil, Russia, India, Indonesia, and China. While trying to attach money supply to economic growth, researchers are looking at the role of financial structure, which surmises that the level of money supply drives economic growth (Arestis, Demetriades & Luinted, 2001).

Then again, credit to the private sector refers to the financial resources made available to the organised private sector by financial institutions, for example, through advances, buying of non equity securities, and trade of credits and other accounts receivable, that build up a claim for reimbursement. As per the CBN, add up to credit to the Private sector over the study time frame increased to N99,087.86 trillion (CBN, 2016). Granting credits to the organised private sector



will transfer funds that are created by banks to real sector of the economy, consequently making openings for jobs and decreasing neediness level.

The connection between economic growth and financial deepening has been a boundless focus of empirical study in recent time. In spite of the fact that there has been broad examinations testing the perspectives on the finance-growth nexus, studies are less consensual and few investigations have researched this connection in Nigeria with conflicting conclusions. For example, Ajakaiye (2002); Nkoro and Uko (2013); Akomolafe (2014); and Chamalwa and Bakari (2016) all established a positive significant connection between financial deepening and economic growth in Nigeria utilising different indices to measure financial deepening.

Despite conflicting findings in literatures, the investigation of Adekunle, Salami and Adedipe (2013); Kromtit and Tsenkwo (2014); Oriavwote and Eshenake (2014); and Onipe, Zakaree, Farouk, Ojo, Musah and Isah (2015) all found negative connection between economic growth and financial deepening in Nigeria utilising diverse indices to measure financial deepening. Ajakaiye (2002) employed one indicator of financial deepening which is not rich enough and cannot be used to make a long term policy implications for Nigeria. Similarly, Akomolafe (2014) analysed the connection between financial deepening and economic growth in Nigeria from 1980 to 2010. Two measures of financial deepening were used in the study; they include money supply proxied by M2, total commercial banks loans. GDP was used as proxy for economic growth. Meanwhile, Onipeet *al.* (2015) did not test for stationarity of the time series data. Lastly, the study of Chamalwa and Bakari(2016) analysed the connection between economic growth and some financial deepening indices (money supply and credit to private sector), the study covered the period of 1981-2012. The study used three variables (GDP, money supply and credit to private sector).

This study filled the gap in literature by using real GDP to proxy economic growth which is against what prior extant literature have utilised, prior literature used Nominal GDP, also this study limit financial deepening indicators to broad money supply and credit to the private sector, these are the specified financial deepening indices in Nigeria specified by CBN. This study also filled the gap in literature by using a wider observation period of 58 years (1960-2017), this means that a larger observation adds information, increases the degree of freedom, and allows the estimation process to work better, thereby give a more generalised results.

This study would be substantial to the CBN which need to organise among different arrangement to help the societies grow faster. The study will be imperative for future analysts and researchers particularly in the area of finance-growth connection.

This study will be relevant to researchers and different specialists; to government strategy producers and to financial analyst. In the scholarly field much research has concentrated on how investment influences GDP growth. Different studies have concentrated on how financial liberalization affects economic growth in different nations other than Nigeria. The outcome of this study will give insight about discoveries of how financial deepening affects economic growth in Nigeria.

Government economic fashioners will likewise find this study helpful. It is the target of the Nigerian government to fortify twofold digit economic growth rate. Policy designers like CBN



need exact data that can enable them to devise strategies that can fortify economic growth through the financial system. The strategy can deliver the best outcomes in the event that it is known which parts of the financial system ought to be handled, keeping in mind the end goal to produce economic growth and, development. This study will be critical for it will discover the connection between financial deepening and economic growth in Nigeria.

The management of both the Capital Market Institutions and the Banking sector will have an appreciation about the centrality of their exercises to economic growth. Thus they will set up components that will help reinforce economic growth through their exercises. This will happen if there is exact research done to underscore the impact of their financial deepening exercises on economic growth as will be done by this study.

The broad objective of this study is to determine the effect of financial deepening on economic growth in Nigeria. Other specific objectives of this study are to determine the effect of broad money supply ( $M_2$ ) and credit to private sector on real gross domestic product in Nigeria.

The following hypotheses are tested to achieve the objectives of the study;

Ho<sub>1</sub>: broad money supply ( $M_2$ ) has no significant effect on real gross domestic product in Nigeria.

Ho<sub>2</sub>: credit to private sector has no significant effect on real gross domestic product in Nigeria.

## **2. Literature Review**

### *Conceptual Issues*

Haller (2012) agreed that there is no generally accepted definition of economic growth but most scholars think of the economic growth as an increase in the per capita income of a country. More widely, economic growth involves the increase of the GDP, GNP and National Income, and, therefore, of the national wealth. This growth includes the growth in production capacity. These growths can be expressed in both absolute and relative quantities per capita and encompassing the structural modifications of an economy.

Economic growth can be described as the continued increase in welfare of an economy. For some, economic growth is tantamount to economic development and is associated with such things as growth of population, development of resources, technological advancement and increasing capital formation. Economic growth is commonly measured as the annual rate of increase in a country's gross domestic product by economists or by related indicators, such as gross national product or gross national income which is derived from the GDP calculation (Arthur, 1964). Economic growth can be either favourable or adverse. Adverse growth can be referred to by saying that the economy is shrinking. Adverse growth is associated with economic recession and economic depression. Then, in order to compare countries of different population sizes, the per capita figure is quoted. To compensate for changes in the value of money the GDP or GNP is usually given in "real" or inflation adjusted terms, rather than the actual money figure compiled in a given year, which is called the nominal or current figure (Ayres, Robert, Warr & Benjamin, 2006). This study makes use of real gross domestic product as the dependent variable to proxy economic growth.

Shaw (1973) defines financial deepening as the aggregation of financial resources at a quicker pace than the collection of non-financial wealth and yield. Levine (2005) gives a more extensive



definition by clarifying that financial deepening happens when financial markets, instruments and stakeholders connect to lessen the expenses of agreement authorisation, exchange and information keeping in mind the end goal to perform five principle works to be specific: i) encourage products and ventures trade ii) prepare and pool funds of a substantial number of financial specialists iii) procure and handle information about the organisations and the potential speculation ventures and in this manner distributing public savings to the most gainful uses, iv) take after investments and apply corporate administration, and v) expand and decrease liquidity hazard and inter-temporal risk.

As indicated by Rahman and Mustafa (2015), financial deepening has been recognised as one of those techniques whose execution can animate the pace, improvement and commitments of the market. Financial deepening is more concerned about the procedure of financial intermediation. A decent number of related writing have contemplated the effect of financial deepening, regularly measured by M2, or credit to private sector, and market capitalisation as a proportion to GDP, on economic growth; King and Levine (1993) and Levine, Loayza and Beck (2000) concurred that financial depth is related emphatically with resulting economic growth. Indicators of financial deepening contrast in economies and between the nations. As per CBN (2013) financial deepening indicators are money supply and credit to private sector, this study is restricted to these two indicators of financial deepening. This study considers two indicators of financial deepening as determined by CBN namely, money supply and credit to private sector.

#### *Empirical Review*

Onwumere, Ibe, Ozoh and Mounanu (2012) appraised the impact of financial deepening on economic growth in Nigeria. The study established that broad money velocity and market liquidity promote economic growth in Nigeria while money stock diversification, economic volatility and market capitalisation did not affect economic growth within the period studied. Likewise, Nkoro and Uko (2013) appraised the financial sector development-economic growth nexus in Nigeria. In doing this, the study employed the cointegration/ECM with annual dataset covering the period, 1980-2009. The empirical results showed that there is a favourable effect of financial sector development on economic growth in Nigeria. However, credits to private sector and financial sector depth are ineffective and fail to accelerate growth.

Adekunle, Salami and Adedipe (2013) appraised the impact of financial sector development and economic growth in Nigeria. The OLS method of the regression analysis was employed. The study established that only the real interest rate is adversely related. All the explanatory variables are statistically insubstantial. Ibrahim and Shuaibu (2013) appraised the finance-growth nexus for Nigeria using the bounds testing approach to cointegration within an ARDL framework. The study established that financial deepening substantially affects economic growth in the short and long run.

Waiyaki (2013) carried out an assessment of the connection between financial deepening, economic growth and poverty in Kenya for the 1997-2012 periods. The study used OLS method under the PARCH model. The outcome showed that some financial deepening variables such as M3 and credit to the private sector did not lead to growth while bank deposits did during the period of the study. Also, Uddim, Sjö and Shahbaz (2013) looked at the connection between financial deepening and economic growth in Kenya over the period of 1971-2011. The study



established that, in the long run, development of financial sector, measured by domestic credit provided by banking sector; domestic credit to private sector; money plus quasi money (M2) as a ratio of money (M1) had a favourable impact on economic growth.

Kromtit and Tsenkwo (2014) evaluated the performance of Nigeria's financial sector deepening and unveiling its implications on the economic growth and development of the country in recent times. It was established that the deepening of the financial system in the country in itself was insubstantial as its impact on the economy was established to be mainly adverse. The OLS result corroborated the evidence revealed by the analysis of the trend of financial deepening and economic growth in Nigeria as its impact on the economy is disappointing. Similarly, Ogbuagu and Dennis (2014) evaluated the short-run and long-run impact of financial deepening on inflation in Nigeria from 1980 to 2012 using open economy model. The study employed the use of ARDL. Result indicates a favourable and significant impact of financial deepening on Consumer Price Index. The variance decomposition test indicates that shocks to FD1 can rarely cause variation in price level while shocks to PSC/GDP ratio (FD2) can cause variations in prices more than any other variable both in the short-run and long – run. Moreover, Oriavwote and Eshenake (2014) appraised the implications of financial deepening for economic growth in Nigeria using time series data covering the period between 1990 and 2011. The cointegration technique with its implied ECM was applied. The Over parameterize and Parsimonious ECM was next and this was followed by the VECM, diagnostic tests and Cholesky variance decomposition. The variables included RGDP, financial deepening which is a ratio of money supply to GDP, liquidity ratio, interest rate and credit to the private sector. Financial sector development has not substantially improved private sector development.

Akomolafe (2014) analysed the connection between financial deepening and economic growth in Nigeria from 1980 to 2010. The result showed that there is long run and short run favourable connection among the variables. Likewise, Onuonga (2014) appraised connection between economic growth and financial deepening in Kenya over the period 1980–2011. Financial deepening was measured by M2 and domestic credit to the private sector. Outcome indicated that there was a stable long-run connection among, financial deepening, trade openness and economic growth in Kenya. It also established that financial deepening had a substantial favourable effect on economic growth. Onipe *et al.* (2015) appraised the tie between financial system broadening and economic performance. The time series data were collected from the CBN Statistical Bulletins covering a period of 55 years (1960–2014). The study also established that money supply is favourably correlated with economic performance. Private sector credit also showed a favourable connection with economic performance. Equally, Chamalwa and Bakari (2016) analysed the connection between economic growth and some FINDEEP indicators (money supply and credit to private sector), using a data obtained from the CBN statistical bulletin for the period 1981-2012. The VECM submitted a long-run connection among the three.

The studies reviewed above all made use of nominal gross domestic product as denominator of financial deepening indicators while the same nominal gross domestic product was also used as the dependent variable. This is called a perfect but spurious regression by Halcoussis (2005) because this type of regression always has a perfect fit, likewise no study has been able to cover observation periods of 58 years (1960-2017), this means that a larger observation adds



information, increases the degree of freedom, and allows the estimation process to work better, thereby give a more generalised results.

Ajakaiye (2002) used the banking sector credits to the private sector to examine the effect of financial deepening on real investment in Nigeria between 1981 and 1995. The study revealed that there was a favourable connection between banking sector credits to the private sector and real sector activities. Similarly, Kiran, Yavus and Guris (2009) employed panel analysis and Fully Modified OLS methods to examine the connection between financial deepening and economic growth for 10 emerging economies over the period 1968-2007. The study used three measures of financial deepening (ratio of liquid liabilities to GDP, bank credit to GDP, and private sector credit to GDP) to quantify the impact of financial deepening on economic growth and concluded that financial deepening exerts favourable and statistically substantial impact on growth.

Moshabesha (2010) conducted a study to find out the connection between financial deepening and growth in Southern African Customs Union countries namely Botswana, Lesotho, RSA and Swaziland, for the period 1976 to 2008. The results of the connection between manufacturing growth and financial deepening were very weak and insubstantial across the four countries. In like manner, Akpansung and Babalola (2010) conducted a study that appraised the connection between the banking sector credit and economic growth in Nigeria covering the period starting 1970 and ending 2008. The regression analysis indicated that private sector credit impacts favourably on economic growth. Further, Bakang (2015) analysed the effects of financial deepening on economic growth in the Kenyan banking sector. The study achieved this objective using quarterly time series data from 2000 to 2013. Specifically, the empirical results revealed that liquid liabilities, CPS, commercial-central bank assets and commercial bank deposits have favourable and statistically substantial effects on GDP.

The studies of Moshabesha (2010) and Kiran et al., (2009) reviewed above are cross-country studies which has little application to Nigeria as a result of differences in economic and political environments, likewise the study of Bakang (2015) was carried out in Kenya. The studies of Ajakaiye (2002) and Akpansung and Babalola (2010), though are Nigerian studies, only focused on credit to the private sector without examining money supply. This present study combined money supply with credit to the private sector to explain economic growth in Nigeria.

#### *Theoretical Framework*

This study is used supply-leading theory. The theory was first put forth by Schumpeter (1911) and later supported by the works of McKinnon (1973), Shaw (1973), Gupta and Verma (1984), Fry (1988), Greenwood and Jovanovich (1990), Bencivenga and Smith (1991) among others. The supply-leading hypothesis submits that financial deepening spurs growth. The thrust of this theory is that the existence and development of the financial markets brings about a higher level of saving and investment and enhance the efficiency of capital accumulation. This hypothesis contends that well-functioning financial institutions can promote overall economic efficiency, create and expand liquidity, mobilise savings, enhance capital accumulation, transfer resources from traditional (non-growth) sectors to the more modern growth inducing sectors, and also promote a competent entrepreneur response in these modern sectors of the economy.



The conventional view of the supply-leading theory postulates that financial deepening causes economic growth. In a world with frictionless transaction, information and monitoring costs, no financial intermediaries are needed. If transaction, information and monitoring costs are sufficiently high, no exchange among economic agents will take place. The desire to reduce those costs and enable exchanges led to the emergence of financial institutions and markets that make up the financial sector.

### 3. Methodology

#### *Research Design*

This study adopts ex-post facto research design and secondary data were extracted from CBN statistical bulletin from 1960 to 2017. The data required are real GDP, broad money supply and credit to the private sector. These data are gotten from the CBN statistical bulletin (CBN, 2017). The study follows OLS multiple regression analysis. This is done using the partial adjustment approach to estimating given parameters of a model. In so doing, VECM is used. This is because past value of real GDP is likely to determine the present value and also the connection among real GDP, broad money supply and CPS are likely to be dynamic in nature. That is, broad money supply and CPS may transmit beyond the present period.

#### *Model Specification*

$$RGDP_t = \beta_0 + \beta_1 M_{2t} + \beta_2 CPS_t + \varepsilon_t \dots\dots\dots 1$$

Where;

RGDP= Real gross domestic product

M<sub>2</sub>=Broad money supply

CPS= Credit to the private sector

β<sub>0</sub>= Constant term

β<sub>1</sub>- β<sub>2</sub>= coefficient of the explanatory variable

Hence the VECM is stated as;

$$X_t = \alpha + \pi_1 X_{t-1} + \pi_2 X_{t-2} + \dots + \pi_n X_{t-n} + \varepsilon_t \dots\dots\dots 2$$

Coefficient measuring the degree of error corrected

Hence, the model VECM is estimated thus:

$$\Delta RGDP_t = a_0 + \sum_{i=1}^n a_1 \Delta RGDP_{t-i} - 1 + \sum_{i=0}^n a_2 \delta_i \Delta M2_t - 1 \delta_i \Delta CPS_t - 1 \phi Z_{t-1} + \mu_t \dots\dots\dots 3$$

#### *Measurement the Study Variable*

Real Gross Domestic Product (RGDP): Is an inflation-adjusted measure that reflects the value of all goods and services produced in Nigeria in a given year, expressed in base-year prices, and is often referred to as "constant-price," "inflation-corrected" GDP or "constant Naira GDP". The justification for using RGDP is that real GDP does a reasonable job in capturing changes in economic well-being. Real GDP is the most closely-watched aggregate economic indicator and one which is so often used as a measure of the standard of living. Accurately measuring real GDP is essential to accurately measuring productivity. Real GDP has been used to measure economic growth in prior studies like the study of Onwumere *et al.* (2012); Nkoro and Uko (2013); Ibrahim and Shuaibu (2013).





Money Supply: This comprises coins and notes in circulation and other money equivalents that are easily convertible into cash plus short-term deposits in banks and 24-hour money market funds. This was sourced from CBN statistical bulletin from 1960 to 2017. The justification for the use of broad money supply as one of the proxy for financial deepening is that broad money supply is one of the widest range of financial assets in Nigeria. Broad money supply has been used to proxy financial deepening in previous studies like the studies of Onwumere *et al.* (2012); Nkoro and Uko (2013); Ibrahim and Shuaibu (2013); Uddin *et al.* (2013); Onuonga (2014); Akomolafe (2014); Onipe *et al.* (2015) and Chamalwa and Bakari (2016).

Credit to the Private Sector: Is the credit extended by the banking institutions to the private sector only: both firms and households. It does not include lending to the government. Credit to the private sector has been used to proxy financial deepening in previous studies like the studies of Ajakaiye (2002); Kiran *et al.* (2009); Akpansung and Babalola (2010); Moshabesha (2010); Bakang (2015).

#### 4. Results

##### *Normality Tests*

This section conducted Diagnostic test of the study variable.

Table 1: Descriptive Statistics

	RGDP	M <sub>2</sub>	CPS
Mean	254490.0	2576510	2384365
Maximum	933123.2	20470436	18882238
Minimum	2233.000	267.6000	109.3300
Std. Dev.	274795.8	5260775.	5142936.
Skewness	0.899883	2.133681	2.179419
Kurtosis	2.582087	6.335897	6.338798
Jarque-Bera	8.107804	69.67915	71.59921
Probability	0.017355	0.0000	0.0000
Observations	58	58	58

Source: E-view 9 Output, 2018.

Result of the descriptive statistics in Table 1 shows that the mean of RGDP is 254490 with standard deviation of 274795.8, the minimum and maximum values of 2233 and 933123.2 respectively. It implies that the average value of RGDP in Nigeria is 254490 to 933123.2, and the deviation from both sides of the mean is 274795.8. The table also indicates a minimum money supply (M<sub>2</sub>) of 267.6, and maximum value of 20470436. The mean value of money supply (M<sub>2</sub>) is 2576510 with standard deviation of 5260775. It implies that the average value of money supply (M<sub>2</sub>) in Nigeria is 2576510 to 20470436, and the deviation from both sides of the mean is 5260775. This implies that the data are widely dispersed from the mean, because the standard deviation is more than the mean value. The table also indicates that the mean of CPS is 2384365 with standard deviation of 5142936, the minimum and maximum values of 109.33 and 18882238 respectively.



Table 2: Correlation Matrix

	RGDP	M2	CPS
RGDP	1		
M2	0.74453655	1	
CPS	0.710309382	0.659905283	1

Source: E-view 9 Output, 2018.

The correlation matrix is used to determine the relationship between dependent and independent variables of the study. Table 2 represents the correlation matrix for the sample observations. It is observed that the variables correlate fairly well (between 0.65 and 0.74). There is no correlation coefficient greater than 0.8, hence there is no problem of multicollinearity of data (Wallace & Naser, 2005).

Table 3: DF Unit Root Test

Variable	ADF test statistics	Test Critical Value @ 5% level	Maximum Lag	Probability Value	Stationarity
RGDP	-13.00032	-3.493692	1	0.0000	1(1)
M2	-4.819862	-3.495295	1	0.0068	1(1)
CPS	-6.367162	-3.493692	1	0.0467	1(1)

Source: Compiled from E-view 9 Statistical Software, 2018.

The properties of the time series data for the time of study covering 1960-2017 was analysed with a specific end goal to test its stationarity utilising the ADF test measurements. The number of lag utilised as a part of ADF test was chosen utilising Schwarz information criterion. Table 3 indicates ADF test outcome of the time series data. Therefore, the regression is not spurious as they are all stationary at 5% critical value.

Table 4: Cointegration Test (Unrestricted Cointegration Rank Test -Trace)

Hypothesized No of CE(s)	Eigen value	Trace Statistic	0.05 Critical Value	Prob
None *	0.715793	88.88248	29.79707	0.0000
At most 1 *	0.210360	19.68961	15.49471	0.0110
At most 2 *	0.114688	6.699828	3.841466	0.0096

Unrestricted Cointegration Rank Test (Maximum Eigen value)

Hypothesized No of CE(s)	Eigen value	Max-Eigen Statistics	0.05 Critical Value	Prob
None *	0.715793	69.19288	21.13162	0.0000
At most 1	0.210360	12.98978	14.26460	0.0787
At most 2 *	0.114688	6.699828	3.841466	0.0096

Source: Compiled from E-view 9 Statistical Software, 2018.

Table 4 shows the result of the cointegration test which indicates that this study rejects the null hypothesis that there is no cointegration among the variables and accept the alternative hypothesis that there is cointegration among the variables because the p-value of trace statistics



of 0.000 and maximum Eigen value of 0.000 are less than 0.05. It therefore means that the three variables have long run connection.

Table 5: VECM Model

Variable	Coefficient	Standard Error	t-statistics	Prob
C(1)	-0.072029	0.031007	-2.322978	0.0243
C(2)	-0.208393	0.160613	-1.297486	0.2004
C(3)	-0.245016	0.078774	-3.110348	0.0031
C(4)	0.160060	0.056943	2.810903	0.0070
C(5)	48043.23	21290.99	2.256505	0.0284
R-squared	0.40			
Adjusted R <sup>2</sup>	0.35			
F-statistic	8.35			
Prob(F-statistic)	0.000			
Durbin-Watson stat	2.13			

Dependent Variable: D(RGDP)

Source: Compiled from E-view 9 Statistical Software, 2018.

Table 5 contains the VECM and its coefficients as well as their t-statistics and p-value. C(1) is the coefficient of the cointegrated model (long run) with RGDP as the dependent variable while C(2), C(3), C(4) and C(5) are short run coefficient. C(1) is the speed of adjustment toward long run equilibrium which is substantial because its p-value of 0.0243 is less than 0.05 and the coefficient is also negative which means that there is long run influence of M2 and CPS on economic growth in Nigeria.

Table 6: Wald Test

Test Statistics	Value	Probability
F-Statistics	4.909408	0.0113
Chi-Square	9.818817	0.0074

Source: Compiled from E-view 9 Statistical Software, 2018.

Table 6 indicates that there is short run effect of M2 and CPS on RGDP because chi-square probability of 0.007 is less than 0.05.

Table 7: Residual Analysis

Test	P-Values
Heteroskedasticity Test: Harvey	0.15
Breusch-Godfrey Serial Correlation LM Test	0.32
JarqueBera Normality Test	0.40

Source: Compiled from E-view 9 Statistical Software, 2018.

The Table 7 shows the result of the residual examination performed to test for the sufficiency of the model, the outcome uncovered that the residuals have no serial connection, they are homoscedastics and are normally distributed since all the p-value are more than 0.05.



Table 8: Variance Inflation Factor

Variable	VIF	1/VIF
C	NA	5.530008
M2	1.3236	6.002189
CPS	1.3236	7.002291

Source: Compiled from Eview 9 Statistical Software, 2018.

Result of the Variance Inflation Factor in the Table 8 presents the variance factor (VIF) and tolerance coefficients of each of the explanatory variables. It is observed that the collinearity diagnosis revealed a VIF well below 10, a tolerance above 0.2. This shows that there is no threat of multicollinearity or independent errors. Researchers submitted that multicollinearity does not constitute a problem when the VIF does not exceed 10 and when the tolerance for each of the variable is above 0.2 (Wasserman & Kutner, 1990).

#### 4.2 Estimation Regression Result

Table 9 presents outcome of regression result used to test the stated hypotheses to draw conclusion.

Table 9: Effect Estimation Using Least Square Multiple Regression

Variable	Coefficient	Standard Error	t-statistics	Prob
C	-6392.674	15961.37	-0.400509	0.6904
D(M2)	0.232256	0.036193	6.417168	0.0000
D(CPS)	-0.192241	0.038178	-5.035346	0.0000
R <sup>2</sup>	0.44			
Adjusted R <sup>2</sup>	0.41			
F-statistic	20.91			
Prob(F-statistic)	0.000			
Durbin-Watson stat	2.285			

Dependent Variable: D(RGDP)

Source: Compiled from E-view 9 Statistical Software, 2018.

Table 9 presents the results of least square multiple regressions. The result shows that the P value of F-statistics is 0.000 which is less than 5%. This shows that the model is fit and that the model is statistically significant as it implies that all the independent variables are statistically significant. The R square value of 0.44 means that the independent variable contributes 44% to the dependent variable. It also indicates that 44% of the variation in RGDP is clarified by variability in M2 and CPS. The remaining 56% are the value of other variables that are not captured in the model. The adjusted R square of 0.41 indicates that any variations that can occur as a result of the introduction of additional independent variable are being taken care of and cannot affect the R square more than 41%.

#### Discussion of Findings

The empirical evidence derived from the regression model indicates that broad money supply (M2) has a significant positive effect on economic growth in Nigeria. It is significant at five percent level and positive. The positive sign on the coefficient shows that M2 has a direct influence on the level of economic growth in Nigeria. The study also revealed that there is long



run influence of M2 on economic growth; it was established that there is short run effect of M2 and CPS on economic growth. Expectedly, M2 is to have a positive significance on economic growth given that money supply to the economy could contribute to growth when channeled into investment and productive activities. This is because the investment will lead to long time growth. The positive and significant association between money supply (M2) and economic growth is consistent with prior outcome of Onwumere *et al.*(2012); Nkoro and Uko (2013); Ibrahim and Shuaibu (2013); Uddim *et al.*(2013); Onuonga (2014); Akomolafe (2014); Onipe *et al.* (2015) and Chamalwa and Bakari (2016), but contradicts Maiyaki (2013); Adekunle *et al.* (2013); Ogbuagu and Dennis (2014); Kromtit and Tsenkwo (2014); and Oriavwote and Eshenake (2014).

Credit to the private sector was established to be negatively significant on economic growth in Nigeria. The study also revealed that there is long run influence of CPS on economic growth in Nigeria, it was established that there is short run effect of CPS on economic growth. Expectedly, CPS is supposed to have a positive significant influence on economic growth in Nigeria. This result supports the outcome of Kiran *et al.* (2009), but contradicts Ajakaiye (2002); Akpansung and Babalola (2010); Moshabesha (2010); Bakang (2015).

##### **5. Conclusion and Recommendations**

This study concludes that broad money supply improves economic growth in Nigeria, because money supply to the economy could contribute to growth when channeled into investment and productive activities. This is because the investment will lead to long time growth. This study also concludes that credit to the private sector retards economic growth in Nigeria. This could be as a result of improper utilisation of credits and investment of credit in sectors that do not drive economic growth in Nigeria.

In the light of the outcome of this study, the accompanying recommendations are made: Federal government of Nigeria through the CBN should continue to enhance the amount of broad money supply to the economy as it is established that money supply increases economic growth in Nigeria. CBN should lessen interest rate in the economy so that investors may increase their investment in productive sector. This study is limited to Nigeria alone and only two financial indicators such as broad money supply and CPS as provided by CBN were utilised by this study. The outcome and recommendations therefore are only applicable to Nigeria alone.

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