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Effect of Bank Loans on Agricultural Output in Nigeria

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Abstract

This study empirically assessed the impact of commercial banks' lending on agricultural output in Nigeria from 1985 to 2019 by specifically ascertaining the impact of commercial banks' lending on real gross domestic product and index of industrial production. The data sourced from the Central Bank of Nigeria statistical bulletin were diagnosed for unit root and stationarity. The Johansen co-integration revealed a long run relationship between commercial banks' lending and gross domestic product but such could not be said for index of industrial production. The granger impact assessment result shows that commercial banks' lending has significant impact on agricultural output in Nigeria. The vector error correction model depicts that for achievement of long term growth and development of the Nigerian economy, commercial banks' lending is very pivotal as the high interest rate charged by commercial banks' remain a threat to the positive influence of banks' credit to the economy. The Central Bank of Nigeria should implement regulation to stop banks from centring loans and advances to a particular sector which is, oil and gas to improve credit flow to other strategic sectors, especially agriculture and industries to increase their contributions to agricultural output in Nigeria. The monetary policy of the Central Bank of Nigeria should complement fiscal policies of the government to reduce the level of inflation in country, having regard to its negative effect on index of agricultural production.

Keyword: Bank Loans, Bank Interest Rate, Government Expenditure on Agriculture, Agricultural Development

Introduction

Commercial banking activities play a facilitating role in promoting economic development in developing countries. More than half of the population in developing countries is involved in traditional agriculture and subsistence farming (World Bank, 2017). This portion of the population is often faced with myriad of problems including underdeveloped transport system, a critical shortage of capital and lacks initiative for enterprise development (Qureshi, Akhtar & Shan, 1996; and Ijere, 1986). Other

identifiable causes of the lack of investment include specific cultural or social issues and government policies that raise the cost and risks of investment Wells (1970). Several factors account for the poor performance of the agricultural sector in Nigeria. These include: virtual neglect of the sector, poor access to modern inputs and technology, and lack of optimum credit supply (Enyim, Ewno& Okoro, 2013). Aside the problem of poor access to modern technology, the major bane of agricultural development in Nigeria is low investment finance (Salami &Arawomo, 2013).

According to Udih (2014) Bank loans are expected to impact positively on the investible sectors of the economy through improved agricultural production of goods and services. He opined that sufficient financing of agricultural projects will not only promote food security, but also enhance the entrepreneurship performance of our young investors. Concluding that, this is borne out of the expectation that a good match between adequate bank credit and agricultural entrepreneurship will ensure massive agricultural productivity. Qureshi et al (1996), in their contribution argued that Banks credit has the capacity to remove the financial constraints faced by farmers, as it provides incentives to enable farmers to switch quickly to new technologies which can enhance the achievement of rapid productivity and growth. Ijere (1996) viewed banks' credit as a catalyst that can activates the engine of growth enabling it to mobilize its inherent potentials and to advance in the planned or expected direction. In support of the same view, Umoh (2003) maintained that banks' credit constitutes the power or key to unlock latent talents, abilities, visions and opportunities, which in turn act as the mover of economic development. Banks' credit has a significant contribution to economic development by enhancing production and productivity and thus higher income and better quality of life to the people. (Well, 1970).

Over the years, the Federal Government of Nigeria through monetary authorities has been implementing monetary policies which have influenced commercial banks' abilities to perform and play their expected roles. For instance, in the 1959-1986, government implemented regulated monetary policies during which all monetary variables such as interest rates, and volume of bank credits were fixed by monetary authorities. But, with the introduction of the Structural Adjustment Programme in 1986, monetary policies were deregulated. Thus, interest rates and amount of credits were determined by individual bank.

Agricultural financing has suffered a great set back in Nigeria. Perhaps this is due to the fact that agricultural lending is considered to be more risky, problematic and unprofitable relative to other sectors (Enyim et al 2013). To this end, the commercial banks which are the major conventional financial institutions have no kin interest in agricultural finance (Obilor 2013). In the days of sectoral allocation, the agricultural sector was favoured and banks complied because of the penalties involved of which some of the

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banks even preferred to pay than to comply (Gurdenson, Glory & Due, 2003).

From available statistics of banking sector total sectorial credit distribution in Nigeria, the allocation to the agricultural sector, has been insignificant. For instance, credit allocation to the sector fluctuated between 6.98% and10.66% in 1981 to 1985; between 10.66% and 16.15% in 1985 to 1990; between 16.15% and 17.5% in 1990 to 1995. It declined sharply to 8.07% in 2000, 2.46% in 2005, and 1.67% in 2010, and fluctuated between 1.67% and 5.44% in 2010 to 2017 (CBN, 2017).

Central Bank of Nigeria(2009) reported that the contribution of agricultureto GDP fell from 48% 1970 to 20.6% in 1980 and was only 23.3% of GDP in 2005.National Bureau of Statistics(2013) also reported that the sector's contribution to the growth of the Nigerian economy in 2012 stood at 39.21 and 41.93% improvement in the third quarter of 2013. The sector recorded growth rate of 3.83% in the fourth quarter of 2012 as against 5.68 in the fourth quarter of 2011. Output in the third quarter of 2013 stood at 5.08%, up from the 3.89% recorded in the corresponding period of 2012 and also higher than the 4.52% recorded during the second quarter of 2013 with a low level of job creation as compared to education, financial intermediation, among others. Despite the involvement of commercial banks through loans, hunger, malnutrition, mass poverty and high income inequality, among small groups of businessmen and farmers, unemployment and underemployment, lack of executive capacity, over dependence on petroleum and imports of goods and services continues to take a turn for the worse thereby leading to poor agricultural output in Nigeria. The duo crisis of food and finance around the world had left agricultural export and economic growth on its lowest ebb in Nigeria. Other factors that have hampered the the good performance of banks loans on agricultural output include rising costs of productivity due to poor infrastructural facilities such as inadequate provision and/or erratic supply of electricity and lack of incentives to genuine farmers. These sluggish performances especially the decreased sector contribution from 6.5% in 2005 to 4.1%in 2012 of the agricultural sector in spite of the involvement of commercial banks motivate the urgent need to examine the trend and effect of banks loans on agricultural output in Nigeria.

2. Literature Review

2.1 Conceptual and Theoretical Review

Loan in its simplest form is temporary given money to somebody with the intent that it will be repaid within a stipulated period of time. In the banking industry, credit/loan attracts some fee called interest. Commercial banks are financial institutions established to carry out banking operation and maximize returns to their shareholders. Banks not only grant loans and advances to customers just to fulfil their operational functions but also to make profit. This profit can only be earned through the interest charged on loans and advances to customers (Anyanwu, Ananwude& Okoye, 2017).

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The interest charged by banks on loans are normally arrived at by taking into account the prevalent market rate as well as the monetary policy rate of the Central Bank of Nigeria (CBN). The interest rate of banks are usually higher than the monetary policy rate of the apex bank and incorporated with other charges such as administrative fee, handling/processing fee etc. as determined by the banks from time to time. Lending is one of the main activities of commercial banks and other financial institutions in Nigeria as evident by the size of loans that form banks' assets and the annual substantial increase in the amount of credit granted to borrowers in the country (Akujuobi & Nwezeaku, 2015).

Government total expenditure on agricultural is made up of capital expenditure, and recurrent expenditure. Public expenditure plays dual role in agricultural production and food security. On one hand, it is one of the determinants of agricultural and food production, and on the other hand, public recurrent expenditures on salaries and wages determine people's ability to purchase food items necessary for decent living. In view of this Nigeria government make budgetary allocations to agricultural sector as well as payment of salaries every year (Bello, 2004).

The goal of every nation, especially developing countries is to achieve a desired and sustained level of food production and supply. This is cannot be argued because ensuring a comfortable state and improving standard of living of all citizen is the priority of every government today. Agricultural development refers to sustained improvement in agricultural output in an economy over time (Nafziger, 2006). Agricultural development is the improvement in the agricultural productivity, economic well-being and standard of living of the farmers in particular, increased food supply and food security, reduction in poverty, increasing national income, and increasing gross domestic product, among others. Consequently, developing countries usually initiate programme for precipitous rural and agriculture development in the bid to escape from underdevelopment.

Several theories can be used to explain the relationship between banks loans and agricultural output. Cobb & Douglas (1928) propounded a theory of economic growth to explain the relationship between production (and therefore economic growth), labour and capital. Based on data on population, capital and production for the period 1899 to 1922, Cobb-Douglas (1928) established that output was a function of labour supply and capital connected within a given level. The capital component provided the way through which lending enters the equation. A significant portion of credit borrowed from banks or elsewhere is used for capital accumulation. The accumulated capital becomes one of the variables of economic growth in the Cobb-Douglas theory (King & Levine, 1993b). This theory is relevant to this research for it provides a mathematical connection between production, labour and capital though it was operational within a context of constant technology. Loans given by the banks are used as capital for the production process whose change indicates growth. This theory

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therefore provides the connection between capital and growth (Shan & Jianhong 2006).

2.2 Empirical Review

Gonzalez-Vega & Graham (1995) examined the potential role of state-owned agricultural development banks as a source of micro-financial services. It first discusses elements of a new consensus on microfinance, including the importance of formal and informal finance for the poor, the consequences of credit rationing, and progress in micro-financial technologies. While key lessons are identified from past experiences of government intervention in financial markets and from new experiments in microfinance, no dominant organizational model emerges among examples of best practice. They provided a conceptual framework to interpret the failure of state-owned agricultural development banks, their lack of success in reaching the poor, and their lack of viability. Key defining dimensions deserve special attention: (a) their specialization in agricultural credit, with the accompanying instances of market failure and high monitoring costs as well as the negative impact of policies that penalize agriculture; (b) their development orientation and lack of profit motive; (c) their possession of a bank charter which authorizes deposit mobilization; and (d) state ownership, with the resulting inadequate level of internal control and incentive problems.

Swinnen & Gow (1999) assessed the problems of financing Central and Eastern European agriculture during the present transitionary period and the role of government in this process. Initially the paper looks at why credit markets work imperfectly, even in well-developed market economies, focusing on problems related to asymmetric information, adverse selection, moral hazard, credit rationing, optimal debt instrument choice and initial wealth. It shows why these and related problems may cause transaction costs to be so high that credit rationing and high interest rates are rational and efficient responses by lenders to the imperfect information problems of the agricultural sector. A series of specific, transition-related issues are then discussed which have worsened these problems within the Central and Eastern European agricultural sector. The potential roles of governments in solving these issues and actual observed interventions by Central and Eastern Europe governments through credit subsidies, loan guarantees and specialised agricultural lending institutions are analysed.

Back in Nigeria, Udih (2014) investigated banks credit and agricultural development. The paper used primary and secondary sources of information that were extracted from five (5) banks and ten (10) agricultural enterprises in Delta State. A simple random sampling technique through the lottery method was adopted to select the samples. The data were analysed using percentage, mean, and Standard Deviation and Pearson product moment correlation to test the hypotheses. The research findings include: that banks' credits and advances to agricultural entrepreneurs promotes agricultural development and productivity, and that regulated banks' credits to the

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agricultural entrepreneurs has no or little impact on the entrepreneurship performance, and thus, suggested that adequate bank credits should be granted to small scale agricultural farmers to increase productivity: and their farms land should be used as collateral instead the of usual banks' loan security to promote entrepreneurship performance.

Kareem, Bakare, Raheem, Olagumela, Alawode & Ademoyewa (2013), examined the factors influencing Agricultural output in Nigeria: Macro-economic perspectives. The study seeks to determine the factors influencing agricultural production in Nigeria, and also determine the causality between Agricultural outputs and macro-economic variables. The study adopts regression analysis, descriptive statistics and the Granger causality tests on macroeconomic variables (i.e. Food import value, Interest rate, Commercial bank loans on Agriculture, GDP growth rate and Foreign direct investment) to find the significant relationship between the different variables chosen. The result shows fluctuations in the trend of variables considered (i.e. Interest rate, Commercial bank loans to Agriculture, GDP growth rate and foreign direct investment) in relation to the period under review. The result further shows that foreign direct investment: commercial bank loan, interest rate and food import value have positive relationship with Agricultural output.

Obilor (2013) examined the impact of Agricultural Credit Scheme Fund, agricultural product prices, government fund allocation and commercial banks' credit to agricultural sector on agricultural productivity. The result revealed that Agricultural Credit Guarantee Scheme Fund and Government fund allocation to agriculture produced a significant positive effect on agricultural productivity, while the other variables produced a significant negative effect. Nwankwo (2013) examined agricultural financing in Nigeria and its implication on the growth of Nigerian economy using ordinary least square method and quantitative research design. The study revealed that there is significant relationship between agricultural financing and the growth of Nigerian economy and that the level of loan repayment rate over the years has indeed negatively impacted significantly on the growth of Nigerian economy.

Ogbanje, Yahaya & Kolawole (2012) examined the effect of commercial banks loan on the agricultural sector in Nigeria from 1981 to 2007. Growth in agricultural sector was expressed in terms of agricultural Gross Domestic Product (GDP). Secondary data for the study were obtained from the Central Bank of Nigeria. Findings revealed that commercial banks loan to the agricultural sector increased substantially from N590.6m in 1981 to N4.221.4m in 1990, a 614.76 percent increase. From 1991, the loan stock rose from N5,012.7m to N146,504.5m in 2000, representing an increase of 2822.67 percent. There was, however, a sharp decline in loan stock from N200,856.2m in 2001 to N149,578.9m in 2007. Over the period of study, agricultural GDP showed declining growth rate. Nevertheless, agricultural GDP

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grew from N84,428.5m in 1981 to N267,051.7m in 2007. The ordinary least square method, with lagged dependent variable, revealed that commercial banks' loan positively affected agricultural GDP at 0.01 level of probability. Hence, commercial banks' loan has contributed significantly to agricultural development in Nigeria.

Enyim et al (2013) examined banking sector credit and performance of the Agricultural sector in Nigeria. The study applied econometric tests such as unit root, cointegration and its implied error correction model and Grange causality test, in which changes in AGDP was regressed on commercial bank credit to agriculture. The result of the analysis shows that the total money stated as Government Expenditure on agriculture is not statistically significant and not theoretically in line. However, the result shows that commercial banks' credit to the agricultural sector has a positive relationship with agricultural productivity.

The empirical studies considered above showed that there is no consensus on the nature and magnitude of the linkage between banks' lending and agricultural development due to the ambiguity of the nexus between these variables. Again, it may be observed that none of the studies reviewed above included other determinants of agricultural development such as banks' interest rate and government expenditure as explanatory variables. Therefore it would be necessary to include these factors as allowed by the available data. These observed shortcomings have created a knowledge gap in the literature, thus necessitating a more systematic examination of the phenomena of interest, that is, the analysis of long run relationship between banks' lending and agricultural development. Another important shortcoming of most previous studies reviewed above which the current study seeks to overcome is that explicit attention was not paid to the time-series characteristics of the data used. Using recent developments in time series econometrics, this study will distinguish between long- and short-term relationship between banks loans and agricultural development. This is the gap this study intends to fill using Nigeria as a study.

3. Methodology and Data sources

This study adopted analytical method to empirically analyse the impact of banks loans on agricultural output in Nigeria during the 1985-2019. To this end, the study uses secondary data on included variables and the method of co-integration analysis based on autoregressive distributed lag (ARDL) to carry out the analysis. The error correction mechanism (ECM) and Granger Causality tests were employed to determine whether or not there is causality among the variables. The data would be collected from various sources including Central Bank Nigeria (CBN) and National Bureau of statistics (NBS).

This study is rooted in Cobb & Douglas (1928) theory of economic growth which hypothesized that production is a function of labour (L) and capital (K). The Cobb-Douglas production function (as it later became known), is a tool in theoretical and empirical analysis of growth and

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productivity. It is widely used to represent the relationship of an output to inputs. Essentially, it considers a simplified view of the economy in which production output (P) is determined by the amount of labour (L) involved and the amount of capital (K) invested, resulting in the following equation:

$Y = bL^{\alpha}K^{\beta}$……..3.1

Where α and β are the output elasticities of labour and capital respectively. These values are constants determined by available technology. This model has been subjected to critical analyses since its inception (see for example, Samuelson, 1979 and Felipe and Adams, 2005). According to Tan (2008), there are concerns over its application in different industries and time periods. Tan argues that Cobb and Douglas were influenced by statistical evidence that appeared to show that labour and capital shares of total output were constant over time in developed countries. However, there is doubt over whether constancy over time exists. This argument is premised on the fact that the nature of the machinery and other capital goods (the K) differs between time periods and according to what is being produced. The same applies to the skills of labour (L).

Notwithstanding its weaknesses, the Cobb-Douglas model has attractive mathematical characteristics, such as highlighting diminishing marginal returns to either factor of production. It is in this regard that we utilize it in this paper to estimate agricultural output as a function of credit, capital accumulation, labour and rainfall, an approach applied by Iqbal et al., (2003), Ahmad (2011) for Pakistan and Bernard (2009) and Enoma (2010) for Nigeria. Having regard that the production function is non-linear, we log-transform the Cobb-Douglas model to derive the following equation:

LnAGDP = β0 + βlnCredit + β2 lnLabour + β3 lnCapital accumulation + β4lnRainfall + Ut……....3.2

A modified model of Agunuwa et al (2015) for a study in Nigeria which follows Chisasa& Makina (2013) was adopted for this study. The functional form of Agunuwa et al (2015) model is expressed as:

AGP = b0 + b1CBCA + b2INF + b3FER + Ut…….….3.3

Where: AGP = Agricultural Productivity,

CBCA = Commercial banks' credit to the agricultural sector, INF = Inflation rate, FER =Foreign exchange rate, Ut = Error term, and b1 > 0, b2 < 0, b3 > 0.

Since Agunuwa et al (2015) model adopted in this study is an optimization model it is suitable for application in Nigeria. We modify equation (3.2) above by replacing inflation rate and foreign exchange rate with banks' lending rate of interest and government expenditure on agriculture respectively. Thus, the model specified for this study is shown below:

AGPt = b0 + b1CBLt + b2INTt + b3GEAt + Ut……..……3.4

Where:

AGPt = Agricultural Productivity at time t;

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CBLt = Commercial banks' lending to the agricultural sector at time t;

INTRt = Interest rate on Commercial banks' credit to agriculture at time t;

GEA = Government expenditure on the agricultural sector at time t; and

Ut = Error term

Econometrically transforming the model by introducing log to ensure equal numerical base of dependent and independent variables for easy interpretation of coefficient value, the following model was developed:

$$LnAGPt = b0 + b1lnCBLt + b2lnINTt + b3lnGEAt + Ut \quad \ldots\ldots 3.5$$

Where: Ln = Logarithm. The a priori expectations of the study are that, b1, b3 > 0, and b2 < 0.

Equation (3.5) will be estimated using the Ordinary Least Squares (OLS) multiple regression technique. Annual data on the included variables during the 1985-2020 shall be used. Before estimation, we will determine whether the variables are stationary or not. This will determine the underlying properties of process that generate our time series data. In addition, the Augment Dickey-Fuller (ADF) t-test shall be used to determine the order of integration.

The data collected for the study would first be subjected to diagnostic test to determine whether or not the variables have long run relationship with one another. To achieve this, we employ the following test methods.

Here, we examine the stationarity of the variables under consideration in order to avoid having spurious result, and to determine the co-integration properties of all the variables included. The unit root property requires all variables to be stationary in levels or first differences.

Using Agunuwa et al (2015) this study will employ augmented Dickey-Fuller (ADF) unit root test to detect the presence or otherwise, of unit root in the series. To carry out the ADF test, the following model will be estimated.

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \Delta Y_{t-1} + U_t \quad \ldots\ldots 3.6$$

Where:

Y_t = variable under investigation;

$\Delta Y_{t-1} = (Y_{t-1} - Y_{t-2})$;

And U_t = pure white noise error term

The null hypothesis of non-stationary is rejected if the t-statistic (i.e, the calculated value of t) is greater than critical (or tabular) t-value, or otherwise.

The co-integration property requires all variables to converge in the long run Agunuwa et al (2015). To carry out the co-integration test, we employ Johansen co-integration method. Using this method, the null hypothesis of no co-integration is rejected if the calculated value is greater than the tabular value (at a chosen relevant significance level), or otherwise. This test is carried out only if the variables are co-integrated (meaning that they are most likely to converge in long run). To achieve this, we

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employ the Engle-Granger method. Thus we use an error correction method as:

$DAGP_t = a_o + a_1 L (\Delta Z) - a_2 ECM_{t-1} + \lambda_t$ ……. 3.7

Where Z is the Vector of Variables that co-integrated with loans and advances, L is a general lag operator, and ECM is the time series of residuals from co-integrating vector. The error correction model in its log-linear form is:

$\Delta lnAGP_t = w_o + w_i \Delta lnCBL_t + w_2 \Delta lnINT_t + w_3 \Delta lnGEA_t + Ut\text{-}1$……..…3.8

Δ = First Difference;

U_{t-1} = One period lagged value of the residual, i.e, the error correction factor whose coefficient should be negative and statistically significant to support the presence of co-integration.

As explained in equations (3.1-3.8) above, the use of these methods is justified on the ground that they have been used by many authors at different times and places in the past. For instance, studies by (Chisasa& Makina (2013); and Agunuwa et al (2015).) used the methods discussed above at different times and places. These methods are rooted in (Cobb-Douglas, 1928) with modifications.

4. Data Presentation and Analysis of Results

4.1 Unit Root Test

According to Augmented Dickey-Fuller (1979) and Philips and Perron, there is likelihood of obtaining a spurious result if the series that generated the results are non-stationary. This is why we investigated the time series properties of the data by conducting unit root test for stationarity using ADF method. The results are presented on table 4.1 below.

Table 4.1: Augmented Dickey-Fuller (ADF) unit root test.

Series	ADF test statistics	5%critical value	1% critical value	Order of integration
GDP	**5.972531**	**-1.958**	**-2.682**	**I (1)**
CBL	**-2.875370**	**-1.958**	**-2.682**	**I (1)**
INT	**4.873225**	**-1.958**	**-2.682**	**I (1)**
GEA	**3.019231**	**-1.958**	**-2.682**	**I (1)**

Source: Authors computation, 2021 using E-view 10.0 version,

The result of unit root test shown on table4.1 above indicated that all the included variables in the model were integrated of same order, that is, I(1), see column 5.

Table 4.2: Philips Perron (pp) Unit root test results

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Series	PP test stat.	5% critical value	1% critical value	Order of integration
GDP	**-4.3221130**	**-1.958**	**-2.682**	**I (1)**
CBL	**-5.64972**	**-1.958**	**-2.682**	**I (1)**
INT	**-8.408963**	**-1.958**	**-2.682**	**I (1)**
GEA	**-4.328721**	**-1.958**	**-2.682**	**I (1)**

Source:Authors computation, 2021 using E-view 10.0 version.

The Phillips Perron, PP test in table4.2 also showed that the variables are integrated of order I(1). This implies that the variables are all stationary and co-integrated.

Table 4.3: Johansen co-integration test

No. of CE (S)	Eigen value	Trace stat.	5% critical value	Prob **
None	**0.089956**	**310.7792**	**96.57388**	**0.0000**
At most 1	**0.993051**	**182.0231**	**70.31420**	**0.0000**
At most 2	**0.989375**	**99.1989**	**48.56820**	**0.0000**
At most 3	**0.786336**	**56.0023**	**28.978081**	**0.0000**

Source: Authors computation, 2021 using E-view 10.0 version,

An examination of table 4.3 showed that the Eigen value statistics shows existence of four unique co-integrating equations between the variables, GDP, CBL, INT and GEA at 5 percent level. Thus, it can be concluded that there is long-run relationship between rice output and bank credits in Nigeria during the 1985-2018.

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Table4.4: Ordinary least square parsimonious (ECM) results (Dependent variable): D (GDP).

Variables	**Coefficient**	**t-stat.**	**Prob.**	**5% critical value**
Constant (C)	**2230.12**	**4.8252**	**0.0049**	**2.042**
D (CBL)	**423.4331**	**4.51828**	**0.5314**	**2.042**
D (INT)	**-98.6528**	**-0.84750**	**0.4063**	**2.042**
D (GEA)	**6.7677**	**4.18821**	**0.5929**	**2.042**
ECM (-1)	**-0.82831**	**-4.99231**	**0.0000**	**2.042**
R-square	**0.6013521**			
R-square (adjusted)	**0.589925**			
F-stat.	**5.821103**			
Akaike info criteria	**23.68952**			
Durbin-Watson stat.	**1.152284**			

Source:Authors computation, 2021 using E-view 10.0 version

In view of the result from table 3, and in order to absolve the short-term dynamics of the relationship among the variables an Error correction model (ECM) was used (see table4.4). The results in the table indicate that the coefficient of ECM test shows a negative. This was expected. The result also showed that while variables such as: CBL and GEA have positive impact on GDP, INT has negative impact on it.

Furthermore, the coefficient of ECM which is -0.82831 implies that the system corrects itself to previous period disequilibrium at a speed of 82.83% annually, meaning that the speed of adjustment to disequilibrium is 83% approximately. This further underscore the long-run equilibrium relationship between the variables.

Consequently, this study concludes that agricultural output can be said to be positively determined by changes in CBC and PEX with the exception of INT that has negative effect. These findings are consistent with the findings of Kemboi and Tarus, (2012) and Peter and Lyndon (2015). The coefficient of multiple determination, R^2 = 60.13% indicates that the included explanatory variables accounted for about 60 percent of the changes in GDP. This means that the regression model has a good fit. Besides, the small value of Durbin-Watson statistic (1.15) implies that there is absence of first order autocorrelation.

5. Summary, Conclusion And Recommendations

This study investigated the effect of determinants of foreign exchange rate on economic growth in Nigeria during the 1985-2018. Time series data on agricultural output, bank total loans, to the economy,

interest rate, and government expenditure on agriculture were collected from various sources and used for the estimation. The major findings are summarized below:

i) It was found that commercial bank credits have positive effect on agricultural output t in Nigeria.

ii) It was found that banks' interest rate has negative effect on agricultural output in Nigeria.

iii) It was also found that government expenditure has positive effect on agricultural output in Nigeria.

This study empirically examined the effect of bank credits on rice output in Nigeria during the 1985-2018. The study investigated both the short-run and long-run relationship between the variables by using Johansen co-integration and Error correction model. From the analysis of the results, it can be concluded that while commercial bank credits and government expenditure have positive effect on agricultural output, while banks' interest rate has negative impact on it.

Based on the findings of this study, the following recommendations are made:

(i) Nigeria government should adopt policies that will lead to increase in money supply in the economy. To achieve this, the banking sector should be encouraged to increase lending to the private sector (particularly those who are engaged in agricultural productive activities).

(ii) Government should also increase its expenditure on agricultural production. To this end, more should be given to genuine farmers to enhance their production

(iii) Government should make efforts to stabilize banks' interest rate, or even reduce it. This will encourage producers to take more credits for productive activities.

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