Formal Agricultural Credit Schemes and Economic Growth in Nigeria

Eruba Dimgba¹, Rachael Morris² & Ikechi Agbugba³

 Niger Delta Development Commission (NDDC), Port Harcourt – Nigeria
 & 3. Department of Agricultural and Applied Economics, Rivers State University Port Harcourt – Nigeria

D.O.I: 10.56201/ijaes.v9.no5.2023.pg15.26

ABSTRACT

This study examined the impact of formal agricultural credits on economic growth in Nigeria between 1981 and 2021. The specific objectives were to determine the effects of the agricultural credit guarantee scheme fund, bank loans and advances to agriculture, foreign aid to agriculture and the cost of funds on real gross domestic product (GDP) growth. The data required for the analysis were obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin and the Organization for Economic Cooperation and Development (OECD) Statistics. The descriptive statistics, fully modified ordinary least squares (FM-OLS) and parsimonious error correction model (ECM) formed the basis for the data analysis. The unit root and Johansen cointegration tests results showed that the variables are all stationary at the first difference and cointegrated at the 5 per cent significance level. The long-run regression results showed that the agriculture credit guarantee scheme fund positively affected real GDP growth. The results further showed that bank loans and advances to the agriculture sector have a positive and significant effect on real GDP growth. It was found that 1 per cent increase in that bank loans and advances to the agriculture sector leads to 0.0378 per cent in real GDP growth. The effect of foreign aid to agriculture on real GDP growth was positive but insignificant at the 5 per cent significance level. Evidence of a positive and significant effect of the cost of funds on real GDP growth was established from the long-run results. The estimated coefficient showed that the real GDP growth increases by 0.00356 per cent due to a 1 per cent increase in the cost of funds. The short-run results showed that the coefficient (-0.5125) of the error correction term is negative and significant at the 5 per cent significance level, indicating that about 51.25 per cent distortion from the long-run equilibrium is adjusted each year. Given the findings, this study recommends that the CBN should ensure that deposit money banks adhere to the selective credit guidelines by continuously providing loans and advances to the agriculture sector to boost agricultural productivity and provide a roadmap for sustainable economic growth in Nigeria.

Keywords: Agricultural credits, economic growth, bank loans, foreign aid and interest rates

1. Introduction

Over time, arguments have ensued in the extant literature on the effectiveness of agricultural credits in promoting economic growth in developing economies including Nigeria. Adesanya and Ajala (2022) posit that credit availability to the agriculture sector improves farmers' productivity, food security and agriculture value added to economic growth. This is in accordance with the postulation of Ugoani, Emenike, and Ben-Ikwunagum (2015) that the provision of credit facilities to farmers offers an opportunity for improving the production threshold, revenue efficiency and the standard of living. This is based on the recognition that access to finance for agriculture provides an incentive for increasing the performance of the agricultural sector and stimulates productive growth. According to Food and Agriculture Organization (FAO, 2012), agriculture contributes immensely to the economy of countries in many ways through the provision of food, supply of adequate raw materials and provision of the market for the products of a growing industrial sector. This makes agricultural credits imperative for pro-poor growth and rapid growth development of poor countries.

Furthermore, Hamjara and Culas (2011) contend that the agricultural sector's ability to stimulate economic growth is mostly dependent on funding and the development of new market prospects that are highly advantageous to small farmers. Agriculture financing is said to include a development plan aimed at providing farmers with financial resources to encourage investment and increase output over the long run. As an important source of funding, agriculture credits provide the pathway for the transformation of the agriculture sector and promote the participation of farmers in the development process (Adewale *et al.*, 2022). It also serves as a vehicle for fast-tracking the development of the agricultural sector and driving sustainable growth in sub-Saharan Africa (Nigo and Gibogwe, 2023). The framework for agriculture financing in most countries in Africa is integrated into rural development with the objectives of poverty reduction; promoting food security and engendering rapid economic growth.

In Nigeria, there is growing recognition of the role agriculture plays in boosting economic growth, job creation and poverty reduction. Thus, successive governments and monetary authorities, especially the CBN have continued to mobilise credits to the agriculture sector to increase farmers' productivity, and pro-poor growth and improve the contribution of the agriculture sector to economic growth and foreign exchange earnings. For instance, the Nigerian Agricultural and Cooperative Bank (NACB) was established in 1973 to cater for medium and long-term credit needs of farmers for improved agricultural production. This was followed by the introduction of the Agricultural Credit Guarantee Scheme Fund (ACGSF) in 1977 to address the difficulties faced by farmers in accessing credit which would eventually translate to increased agricultural productivity.

In addition, the CBN collaborated with other financial institutions to launch the Agricultural Credit Support Scheme (ACSS) in 2006 to provide funding for large-scale agriculture production including crop production, mechanised farming, animal husbandry and plantation management. This is followed by the introduction of the Commercial Agriculture Credit Scheme (CACS) in 2009 by the CBN in collaboration with the Federal Ministry of Agriculture and Water Resources. The CACS was designed to reduce the cost of agriculture credit, accelerate agriculture transformation, boost GDP growth and create more opportunities for foreign exchange earnings.

More so, the CBN introduced the Anchor Borrowers' Programme in 2015 as a vehicle for increasing the access to smallholder farmers to quality agricultural inputs for an improved

agriculture value chain. The deposit money banks (DMBs) have continued to provide loans and advances to the agriculture sector to expand farmers' production and increase national output. Despite the various sources of credit available to the agriculture sector in Nigeria, there has been a lack of consensus on their effectiveness in promoting agricultural production and economic growth in Nigeria. It is against this backdrop that this study examined how agricultural credits contributed to economic growth in Nigeria.

2. Literature Review

2.1 Theoretical Framework

2.1.1 Supply-leading Theory

This study is anchored on the supply-leading hypothesis which was initially introduced by Schumpeter (1911). The theory is predicated on the assumption that an increase in financial services is an important driver of financial intermediation and economic growth. Gurley and Shaw (1967) and McKinnon (1973), among others, have contributed to the expansion of this theory. The theory identifies the financial sector as imperative for delivering services that have been regarded as important to the expansion of the economy. The supply-leading hypothesis, according to Ohwofasa and Aiyedogbon (2013), is predicated on the idea that well-functioning financial institutions have the ability to promote overall economic efficiency, generate and increase liquidity, mobilise savings, promote capital accumulation, and move resources from non-growth sectors to growth-enabling sectors.

Furthermore, Mckinnon (1973) and Shaw (1973) posit that an efficient financial sector tends to reduce transaction and monitoring costs as well as asymmetric information with the benefits of improved financial intermediation. This is expected to create opportunities for rapid and sustained growth of the economy and foster economic development. The supply-leading hypothesis describes how financial intermediaries reduce societal costs associated with the transfer of knowledge or wealth between households and businesses by overcoming market frictions. This is predicated on the idea that because they assist in allocating capital to its optimal use, financial intermediaries promote economic growth and efficiency.

The central tenet of the supply-leading hypothesis is that the causal relationship between financial development and economic growth actually runs from the former to the latter. As a result, financial deepening that makes credits available is viewed as the prerequisite for the best financial resource allocation for economic growth. The proponents of the supply-leading hypothesis are of the view that sector funding is largely driven by the extent of financial development. This underscores the significant position of the financial deepening in promoting broad-based financial intermediation. It further explained that an improvement in the efficiency of capital accumulation or an increase in the rate of savings as well as the rate of investment provides a pathway for financial development to stimulate economic growth (Karimo and Ogbonna, 2017). Despite the significant contributions of the supple-leading hypothesis to financial literature, it has been criticized for ignoring the role the real sector plays in promoting financial development.

2.3 Empirical Literature

Adewale *et al.* (2022) used ordinary least squares (OLS) regression analysis to examine the effect farm credit on agriculture productivity in Nigeria. The study utilized secondary data from the World Bank Development Index (WDI) from 1981 to 2016. The findings showed that agricultural

bank credit contributed positively and significantly to agriculture productivity in Nigeria. This suggests that credit to agriculture has the potential of promoting economic growth. In addition, the study showed that bank lending rates and foreign exchange rates do not significantly affect agriculture output growth. Given the findings, the study recommended for the increased mobilization of funds surplus-spending units and credits allocation to the agriculture sector.

Mbelu and Ifionu (2022) investigated the impact of agricultural financing on Nigeria's economic growth from 1981 to 2019. The study's goal is to determine how different types of agricultural financing affect Nigeria's economic growth. The study employs the stationary test, the cointegration test, the error correction model and the Granger causality model. The study found the agricultural credit guarantee scheme fund has a positive and significant effect on the gross domestic product in the long run. The commercial bank loan and micro-finance bank loans showed evidence of a positive and significant effect on the GDP during the study period. Therefore, the study recommends that the federal government should encourage DMBs to provide adequate credit facilities to the agricultural sector through moderate bank lending rates to increase production and create more opportunities for economic growth.

Using quarterly time series data sourced from Bank of Uganda and the Uganda Bureau of Statistics over the sample period of 2008Q3 -2018Q4, Nakazi and Nathan (2020) examined the short-run and long-run impact of the commercial banks' credit on agricultural sector growth. The study applied the Autoregressive Distributed Lag (ARDL) approach and found that agricultural credits have a significant positive impact on agricultural output. The study provides evidence that commercial banks' agricultural credit contributes significantly to Uganda's agricultural sector GDP. Specifically, the study provides evidence of the segment of the agriculture value where credit has the highest impact. The study recommends for policy options for improving agricultural GDP performance in Uganda.

The effect of federal government agriculture financing on economic growth in Nigeria was examined by Kareem *et al.* (2022). The study made use of time series data that was taken from the statistical bulletin of the CBN. The augmented Dickey-Fuller unit root test was used to evaluate the characteristics of the variables. The study revealed that federal government agricultural financing has a negative contribution to economic growth in Nigeria and was statistically insignificant. agricultural credit guarantee scheme funds had a positive but not statistically significant contribution to economic growth and there was no causal relationship among the variables. The study concluded that federal government agricultural financing has no significant impact on economic growth in Nigeria. Therefore, the study recommended that federal government should increase funding to the agricultural sector to be able to impact positively on the economic growth of Nigeria.

Adesanya and Ajala (2019) used time series data obtained from the CBN Statistical Bulletin and the National Bureau of Statistics to investigate the impact of agricultural credit on economic growth in Nigeria between 1985 and 2016. This study employs the three-stage least square analysis as the estimation technique and found that agricultural credit is an effective instrument for countercyclical agricultural output, non-oil export and GDP stabilization in the Nigerian economy. The study comes to the conclusion that factors such as agricultural credit, interest rates, and exchange rates all have a significant impact on Nigeria's total GDP growth. Since agricultural credits have a

causal impact on economic growth, the study recommended extending them for the expansion of agricultural production.

3. Methodology

3.1 Data Description

As previously noted, this study relied on secondary data for each of the variables. Essentially, real GDP growth captures inflation-adjusted economic growth often referred to as GDP at constant price. On the other hand, the Agricultural Credit Guarantee Scheme Fund defines the credit initiative of the Federal Government under the management of the Central Bank of Nigeria intended to ensure that banks increase lending to the agricultural sector by providing guarantees against the inherent risks. While bank loans and advances to agriculture embody the loans provided to the agriculture sector by DMBs in accordance with the sectoral credit allocation, foreign aid to agriculture is measured by the credits provided by foreign institutions to the agriculture sector in accordance with the sector-specific aid. The cost of credit is captured by the interest charged on borrowed funds. The datasets were obtained from the CBN Statistical Bulletin and the World Bank World Development Indicators (WDI) and OECD) Statistics over the study period (1981-2021).

3.2 Model Specification

The model for this study closely followed the work of Adesanya and Ajala (2019), but with modification following the expanding the scope of agricultural credits and taking into consideration the cost of credits. The functional specification of the model is presented as follows: RGDP = f (ACSF, BLAA, FAGR, COCS) (1)

Where: RGDP = real GDP growth, proxy for economic growth, ACSF = Agriculture credit guarantee scheme fund, BLAA = bank loans and advances to the agriculture sector, FAGR = foreign aid to agriculture and COCS = cost of credit

The error correction model (ECM) of the deterministic equation is expressed as:

$$\Delta InRGDP = m_0 + \sum_{i=1}^{n} v_1 \, \Delta InRGDP_{t-i} + \sum_{i=1}^{n} v_2 \, \Delta BLAA_{t-i} + \sum_{i=1}^{n} v_3 \, \Delta InFAGR_{t-i} + \sum_{i=1}^{n} v_4 \, \Delta COCS_{t-i} + \Phi ECT_{t-1} + U_t$$
(2)

 M_0 = constant term, V_1 – V_4 = short-run coefficients of the explanatory variables, n = lag selection operator, Δ = first difference operator, ECT = error correction term, ϕ = Error correction coefficient and U_t = lag length

3.2 Data Analysis Techniques

The econometrics technique of fully modified ordinary least squares (FM-OLS) developed by Stock and Watson (1993) was applied to analyse the long-term effects of agricultural credits on economic growth during the study period. In addition, the error correction model (ECM) proposed by Engel and Granger (1987) formed the basis for exploring the short-term dynamic effects of agricultural credits on economic growth in Nigeria. The choice of these estimation techniques is necessitated by the evidence of the first difference stationary and cointegrated series. In addition to the FM-OLS and ECM, descriptive and diagnostics tests for unit root, cointegration, serial correlation, heteroscedasticity and normal distribution of the residuals among others. Essentially, the descriptive statistics of mean, minimum and maximum values and standard deviation among others. The Phillips-Fuller (PP) test proposed by Phillips and Perron (1988) was utilized to test for

unit root in the variables. The general specification of the Phillips and Perron unit root test involving an intercept and linear trend is of the form:

$$\Delta Y_{t} = \alpha_{0} + \alpha_{1t} + \sum_{i=1}^{K} \beta_{i} \Delta Y_{t-i} + \mathbf{u}_{t}$$
(3)

Where = Y_t = underlying economic time series under investigation, Y_{t-1} = one period lag of the underlying economic variable under investigation, β_i = regression estimate, α_0 = constant term, α_{1t} = deterministic or linear trend, K = maximum lag length and U_t = Random error term. More so, the Johansen (1988) system of cointegration was applied in carrying out this test. The Max-Eigen statistic and Trace statistic form the basis for rejecting the null hypothesis of no cointegration among the underlying variables.

4. Results and Discussion

4.1 Descriptive Statistics

The descriptive statistics for each of the variables are summarized in Table 1.

Table 1: Summary of descriptive statistics

| | RGDP | ACSF | BLAA | FAGR | COCS |
|--------------|----------|----------|----------|----------|----------|
| Mean | 38124.89 | 3220109. | 192.6138 | 37.46263 | 22.33086 |
| Median | 26935.32 | 728545.4 | 48.56150 | 10.63800 | 22.41598 |
| Maximum | 73382.77 | 12456251 | 1457.822 | 120.3020 | 36.09000 |
| Minimum | 16211.49 | 24654.90 | 0.590600 | 4.118000 | 10.00000 |
| Std. Dev. | 20553.99 | 3898679. | 317.8070 | 40.33367 | 6.079350 |
| Jarque-Bera | 5.133416 | 5.860276 | 84.00576 | 6.103234 | 0.397853 |
| Probability | 0.076788 | 0.053390 | 0.000000 | 0.047282 | 0.819610 |
| Observations | 41 | 41 | 41 | 41 | 41 |

Source: Researchers' computation from E-views 12

The descriptive statistics showed that real GDP growth has a mean value of NGN38124.89 billion. This suggests that Nigeria has witnessed substantial economic growth during the study period. The results further showed that the agriculture credit guarantee scheme fund and bank loans and advances to the agriculture sector averaged NGN3220109 thousand and NGN192.6138 billion respectively, while foreign aid to agriculture stood at a mean value of \$37.46263 million during the study period. It was also found that the average value of the cost of credit is 22.33 per cent. In addition, the standard deviation showed that the observations for real GDP growth and cost of credit clustered around their respective mean values given their associated relatively low standard deviations. The results also showed that real GDP growth and cost of credit are normally distributed at a 5 per cent significance level based on the fact the probability values of their Jarque-Bera statistics are greater than 0.05. However, the other variables for the investigation were not normally distributed as their Jarque-Bera statistics are associated with probability values which are less than 0.05. This finding could be linked to the outlier in the series distribution.

4.2 Unit Root Test

The unit root test was conducted using the Phillips-Perron method. The results are reported in Table 2.

Table 2: Summary of Phillips-Perron unit root test results

| Variable | Adjusted t-stat. at levels | Adjusted t-stat. at 1 st difference | Order of integration |
|-----------|----------------------------|--|----------------------|
| LOG(RGDP) | 0.385604 | -3.8914 | I(1) |
| | (0.9798) | (0.0048) | |
| LOG(ACSF) | -1.0372 | -5.6550 | I(1) |
| | (0.7306) | (0.0000) | |
| LOG(BLAA) | -0.8624 | -7.1539 | I(1) |
| | (0.7897) | (0.0000) | |
| LOG(FAGR) | 0.0113 | -8.2118 | I(1) |
| | (0.9540) | (0.0000) | |
| COCS | -2.7701 | -8.4186 | I(1) |
| | (0.0717) | (0.0000) | |

Source: Researchers' computation from E-views 12

Note: Figures in parenthesis are the corresponding probability values of the adjusted tstatistics

The results showed that all the variables are not stationary at levels at a 5 per cent significance level. This is based on the fact that the probability values of the adjusted t-statistics at levels are less than 0.05. Consequently, the null hypothesis of unit root for all the variables cannot be rejected. This nonstationary status necessitated the differencing of the series and the variables were found to be stationary at first difference. In other words, the variables are integrated of order one, I(1). With evidence of the first difference stationary series, the Johansen (1988) cointegration test was employed to test for long-run relationships among the variables.

4.3 Cointegration Test

The cointegration test was conducted at the 5 per cent significance level based on the trace and maximum eigenvalue statistics. The results are presented in Table 3.

Table 3: Cointegration test results

| Tuble 5. Comite Station test results | | | | | | |
|--------------------------------------|------------|-----------|----------------|---------|--|--|
| Series: LOG(RGDP) L | | | | | | |
| Hypothesized | | Trace | 0.05 | | | |
| No. of CE(s) | Eigenvalue | Statistic | Critical Value | Prob.** | | |
| None * | 0.652568 | 97.79402 | 69.81889 | 0.0001 | | |
| At most 1 * | 0.573771 | 58.67813 | 47.85613 | 0.0035 | | |
| At most 2 | 0.419540 | 27.12535 | 29.79707 | 0.0986 | | |
| At most 3 | 0.161865 | 6.999782 | 15.49471 | 0.5777 | | |
| At most 4 | 0.012528 | 0.466461 | 3.841466 | 0.4946 | | |
| Hypothesized | | Max-Eigen | 0.05 | | | |
| No. of CE(s) | Eigenvalue | Statistic | Critical Value | Prob.** | | |
| None * | 0.652568 | 39.11589 | 33.87687 | 0.0108 | | |
| At most 1 * | 0.573771 | 31.55279 | 27.58434 | 0.0146 | | |

| At most 2 | 0.419540 | 20.12556 | 21.13162 | 0.0687 |
|-----------|----------|----------|----------|--------|
| At most 3 | 0.161865 | 6.533321 | 14.26460 | 0.5457 |
| At most 4 | 0.012528 | 0.466461 | 3.841466 | 0.4946 |

Source: Researcher's computation from E-views 12

Note: * denotes rejection of the hypothesis at the 0.05 level

The trace test results showed evidence of two cointegrating equations. This is based on the fact that the computed trace statistics are greater than the corresponding critical values at the 5 per cent significance level. Similarly, evidence of two cointegrating equations was established from the maximum eigenvalue test results. These findings necessitated the rejection of the null hypothesis of no cointegration. The evidence of cointegration between agricultural credits and economic growth is consistent with the findings of Mbelu and Ifionu (2022) and provides the condition estimating the error correction model.

4.4 Model Estimation

Following the evidence of the first difference stationary and cointegrated series, this study estimated the cointegrating regression model using the FMOLS method to determine the long-term effects of agriculture credits on economic growth, whereas the parsimonious ECM was employed to estimate the short-term relationship between the variables. The results are presented in Table 4-5.

Table 4: Cointegrating regression results

| Dependent Variable: LO | | | | |
|------------------------|------------------|-------------------------|--------------------|----------|
| Method: Fully Modified | Least Squares (F | MOLS) | | |
| Variable | Coefficient | t-Statistic | Prob. | |
| LOG(ACSF) | 0.007211 | 0.013716 | 0.525708 | 0.6024 |
| LOG(BLAA) | 0.037768 | 0.013082 | 2.887070 | 0.0066 |
| LOG(FAGR) | 0.339934 | 0.023404 | 14.52466 | 0.0000 |
| COCS | 0.003560 | 0.002004 | 1.776156 | 0.0844 |
| С | 9.110515 | 0.144852 | 62.89522 | 0.0000 |
| R-squared | 0.949957 | Mean dependent var | | 10.42107 |
| Adjusted R-squared | 0.918809 | S.D. dependent var | | 0.534306 |
| S.E. of regression | 0.056524 | Sum squared resid | | 0.111822 |
| Long-run variance | 0.002748 | | Prob.(F-statistic) | 0.0000 |
| Jarque-Bera Statistic | 0.0119 | Prob.(Jarque-Bera Star | | 0.9940 |

Source: Researcher's computation from E-views 12

The results showed that the agriculture credit guarantee scheme fund has a positive but insignificant effect on real GDP growth in the long run. At the same time, bank loans and advances to the agriculture sector has positive and significant effects on real GDP. This finding is consistent with the prior expectations. This finding highlights the significant role played by bank loans and advances to the agriculture sector and foreign aid to agriculture in promoting economic growth in Nigeria. The effect of foreign aid to agriculture on real GDP growth was positive, but insignificant at the 5 per cent significance level. The results further showed that the cost of credit exerted a positive effect on real GDP growth. Although this finding is contrary to the a priori expectation it

is not statistically significant at the 5 per cent level, it suggests that farmers tend to borrow from banks even as interest rate increases. The adjusted R-square (0.9188) showed that 91.88 per cent of the total variations in the real GDP growth were explained by changes in the explanatory variables. The probability value (0.0000) of the F-statistic indicates that the explanatory variables are jointly significant in explaining changes in real GDP growth during the study period. It is also evident from the Jarque-Bera statistic (0.0119) and its corresponding probability value (0.9940) that the residuals are normally distributed at the 5 per cent significance level. This finding provides the basis for the reliability of the estimated cointegrating regression model.

Table 5: Parsimonious ECM

| Dependent Variable: DLOG | | | | |
|--------------------------|-------------|-----------------------------|-------------|-----------|
| Method: Least Squares | | | | |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| DLOG(RGDP(-1)) | 0.424512 | 0.119111 | 3.564015 | 0.0012 |
| DLOG(ACSF) | -0.002451 | 0.014042 | -0.174544 | 0.8625 |
| DLOG(BLAA) | -0.000787 | 0.020460 | -0.038489 | 0.9695 |
| DLOG(FAGR) | 0.062967 | 0.034711 | 1.814046 | 0.0791 |
| D(COCS) | 0.002940 | 0.001143 | 2.572203 | 0.0150 |
| ECT(-1) | -0.512541 | 0.113202 | -4.527675 | 0.0001 |
| C | 0.012888 | 0.007842 | 1.643335 | 0.1101 |
| R-squared | 0.588561 | 0.588561 Mean dependent var | | 0.035463 |
| Adjusted R-squared | 0.511417 | S.D. dependent var | | 0.044636 |
| S.E. of regression | 0.031200 | Akaike info criterion | | -3.935648 |
| Sum squared resid | 0.031150 | Schwarz criterion | | -3.637060 |
| Log likelihood | 83.74514 | Hannan-Quinn criter. | | -3.828518 |
| F-statistic | 7.629314 | Durbin-Watson stat | | 2.076137 |
| Prob(F-statistic) | 0.000039 | | | |

Source: Researcher's computation from E-views 12

The parsimonious ECM reported in Table 5 revealed that a one-period lag of real GDP is positively and significantly related to its current value. This finding indicates that real GDP in the previous period is important in predicting changes in its future value. Evidence of insignificant negative effects of the agriculture credit guarantee scheme and bank loans and advances to the agriculture sector on real GDP growth was established from the short-run results. This highlights that agricultural credits are ineffective in promoting economic growth in the short run. This finding could be attributed to the difficulties associated with accessing agriculture credits due to the perceived risks and the long gestation period associated with agriculture production. On the other hand, it was found that foreign aid to agriculture and the cost of credit exerted positive but insignificant effects on real GDP growth in the short run. The coefficient (-0.5125) of the error correction term is negative and significant at the 5 per cent significance level, indicating that about 51.25 per cent distortion from the long-run equilibrium is adjusted each year.. In addition, the adjusted R-squared (0.5114) revealed that the explanatory variables jointly explained 51.14 per cent of the total variations in real GDP growth whereas the probability value (0.0000) showed that

the model is a good fit. These findings provided enough evidence for the statistical reliability of the parsimonious ECM.

Table 6: Post-estimation test results

| Test | Null Hypothesis | Test Type | Test | Prob |
|--------------------|----------------------|-------------------------|-----------|--------|
| | | | Statistic | |
| Serial correlation | Serially Independent | Breusch-Godfrey LM test | 1.8767 | 0.3913 |
| Heteroscedasticity | Homoscedastic | White's test | 2.4502 | 0.8740 |
| Normality | Normally Distributed | Jarque-Bera test | 0.3344 | 0.8460 |

Source: Researcher's computation from E-views 12

As observed from the post-estimation test results, the probability value (0.3913) of the Breusch-Godfrey LM test is greater than 0.05, which implies that the residuals are serially independent at the 5 per cent significance level. Similarly, White's test and Jarque-Bera test statistics are associated with probability values of 0.8740 and 0.8460 respectively which are greater than 0.05. This implies that the residuals are homoscedastic and normally distributed at the 5 per cent level. In sum, the post-estimation test results are impressive as they provide the basis for the reliability of the short-run results for policy formulation and forecast.

5. Concluding Remarks

The thrust of this study is to examine the contributions of agricultural credits to economic growth in Nigeria. This is motivated by the strategic position of the agriculture sector in the Nigerian economy and changing dimensions of credits available to the sector from domestic and international financial institutions. Thus, this study analysed the dynamic effects of agriculture credit guarantee scheme fund, bank loans and advances to agriculture, foreign aid to agriculture and cost of credit on real GDP growth. The findings revealed that agriculture credit guarantee scheme fund and bank loans and advances to agriculture contributed positively to economic growth in the long run. This is a pointer that agriculture credits are important in driving the process of economic growth in Nigeria. Foreign aid to agriculture was also found to impact positively on economic growth. This indicates that inflows of funds to agriculture from foreign financial institutions and other funding agencies to the agriculture sector play a substantial in promoting economic growth in Nigeria. It is also established from the results that the cost of credit contributed positively to economic growth. Based on the findings, this study concludes that agriculture credits have the potential of promoting economic growth in Nigeria. Thus, this paper recommends that government should ensure that the agriculture credit guarantee scheme fund is adequately and regularly provided to farmers to meet their credit needs and create more opportunities for economic growth in Nigeria. It is also recommended that the CBN should ensure that deposit money banks adhere to the selective credit guidelines by continuously providing loans and advances to the agriculture sector to boost agricultural productivity and improve economic growth. Again, policymakers should ensure that Nigeria remains an attractive destination for agriculture aid by improving good governance and accountability to foster sustainable economic growth in Nigeria.

References

- Adesanya, T. A., & Ajala, O. A. (2019). Agricultural credit and economic growth in Nigeria. *Humanities, Management, Arts, Education & The Social Sciences*, 7(1), 11-20.
- Adewale, A. T., Lawal, O. A., Aberu, F., & Toriola, A. K. (2022). Effect of credit to farmers and agricultural productivity in Nigeria. *East Asian Journal of Multidisciplinary Research*, 1(3), 377-388.
- Ajala, O. A., & Adesanya, T. A. (2022). Effect of corporate tax on the relationship between capital structure and firm value of deposit money banks in Nigeria. *NDA Journal Of Management Sciences Research*, 2(1), 94-103.
- Engel, R. F., & Granger, C. W. (1987). Co-integration and error correction: representation, estimation, and testing. *Econometrica: journal of the Econometric Society*, 251-276.
- Gurley, J. G., & Shaw, E. S. (1967). Financial structure and economic development. *Economic development and cultural change*, 15(3), 257-268.
- Hanjra, M.A. & Culas, R. J. (2011). The political economy of maize production and poverty reduction in Zambia: Analysis of the last 50 years. *Journal of Asian and African Studies* 46(6), 546-566.
- Johansen, S. (1988). Statistical analysis of cointegration vectors. *Journal of economic dynamics and control*, 12(2-3), 231-254.
- Kareem, R. O., Arije, R. A., Amoo, Z. O., & Avovome, H. Y. (2022). Federal government agricultural financing and economic growth in Nigeria. *Economic Review*, 20(1), 31-40.
- Karimo, T. M., & Ogbonna, O. E. (2017). Financial deepening and economic growth nexus in Nigeria: Supply-leading or demand-following? *Economies*, *5*(1), 4-15.
- Mbelu, O. N. & Ifionu, E. P. (2022). Agricultural financing and economic growth in Nigeria. *African Journal of Accounting and Financial Research*, 5(3), 30-48.
- Mckinnon, R. I. (1973). *Money and capital in economic development*. Washington, D. C.: Brookings Institution.
- Nakazi, F., & Nathan, S. (2020). The effect of commercial banks' agricultural credit on agricultural growth in Uganda. *African Journal of Economic Review*, 8(1), 162-175.
- Nigo, A., & Gibogwe, V. (2023). *Impact of financial resources on agricultural growth in Sub-Saharan Africa* (No. 116397). University Library of Munich, Germany.
- Ohwofasa, B. O., & Aiyedogbon, J. O. (2013). Financial deepening and economic growth in Nigeria, 1986-2011: An empirical investigation. *Journal of Economics and development studies*, *I*(1), 24-42.
- Phillips, P. C., & Perron, P. (1988). Testing for a unit root in time series regression. *biometrika*, 75(2), 335-346.

- Schumpeter, J.A. (1911). *The theory of economic development*. Harvard University Press, Cambridge.
- Shaw, E. (1973). Financial deepening in economic development. New York: Oxford University Press.
- Stock, J. H., & Watson, M. W. (1993). A simple estimator of cointegrating vectors in higher-order integrated systems. *Econometrica: Journal of the Econometric Society*, 783-820.
- Ugoani, J., Emenike, K., & Ben-Ikwunagum, D. (2015). Measuring farmers constraints in accessing bank credit through the agricultural credit guarantee scheme Fund in Nigeria. *American Journal of Marketing Research*, 1(2), 53-60.