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ACCESS TO CREDIT AND AGRICULTURAL OUTPUT IN NIGERIA; GAUGING ARDL MODEL USING DUMMY VARIABLE

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Abstract

This study investigates access to credit on agricultural output in Nigeria using data from the Central Bank of Nigeria (CBN) statistical bulletin for the period 1981 to 2022. Employing the Autoregressive Distributed Lag (ARDL) model and incorporating a dummy variable to account for structural breaks, the analysis examines the relationships between credit access and various agricultural subsectors, including crops, cash crops, livestock, and forestry production. Diagnostic tests confirm the absence of serial correlation and heteroscedasticity issues, ensuring robust estimation results. In the short run, credits to crops (TFC) and the first-differenced term of credits to crops (d(TFC)) are found to be significant, highlighting the short-term responsiveness of agricultural output to changes in credit for crop production. However, there is an insignificant relationship between funds to crop, cash crop, and livestock production with the dependent variable of agricultural output, indicating limited or non-existent long-term credit impact in these areas. Contrastingly, a significant positive relationship is observed between credit allocation to forestry production and overall agricultural output, underscoring the role of targeted credit in enhancing this subsector. The study concluded that credit access impacts agricultural output in certain areas, its effects are inconsistent across different subsectors. This highlights the need for a more tailored approach in credit allocation, particularly emphasizing credit availability for forestry, which has shown positive contributions to aggregate agricultural output. To maximize the impact of credit on agricultural productivity, policymakers should consider structuring credit facilities that align with the unique needs of each agricultural subsector. Additionally, strengthening credit access for the forestry sector could significantly contribute to the overall growth of Nigeria's agricultural sector. Lastly, mechanisms to address structural breaks and ensure stability in credit allocation policies are recommended to enhance the reliability and sustainability of agricultural financing in Nigeria.

Keywords: Access to credit, Agricultural output, ARDL model, Dummy variable

1. Background to the Study

In Nigeria, the agricultural sector includes forestry, livestock, fishing, food and cash crops production such as yams, cassava, maize, cocoa, groundnut, oil palm and many more.Agriculture can help reduce poverty, raise incomes and improve food security for 80% of the world's poor, who live in rural areas and work mainly in farming. Current food systems is threatening the health of people and the planet; generating unsustainable levels of pollution and waste (Zabatantou, Bouity & Owonda, 2023). Between January and March 2021, the agriculture contributed to 22.35 percent of the total Gross Domestic Product in Nigeria (Awujola , Ezie & Kuzhe, 2024).

Thus, over 70 percent of Nigerians engage in the agriculture sector mainly at a subsistence level. Despite the contribution to the economy, Nigeria's agricultural sector faces many challenges which impact on its productivity. These include; poor land tenure system, low level of irrigation farming, climate change and land degradation. Others are low technology, high production cost and poor distribution of inputs, limited financing, high post-harvest losses , poor access to markets and most importantly limited access to credit (Farman et al,2024).

These constraints have stifled agricultural productivity affecting the sector's contribution to the country's GDP as well as increased food imports. The Government has implemented several initiatives and programmes to address the situation including the Agriculture Promotion Policy (APP), Nigeria–Africa Trade and Investment Promotion Programme, Presidential Economic Diversification Initiative, Economic and Export Promotion Incentives and the Zero Reject Initiative, Reducing Emission from Deforestation and Forest Degradation (REDD+); Nigeria Erosion and Watershed Management Project (NEWMAP); Action Against Desertification (AAD) Programme, among others.

All these efforts aim to increase agricultural productivity in order to provide sufficient quantities of food to meet domestic demand as well as an abundance of commodity crops for export in the international market. In spite of this, only 57percent of the 6.7 million metric tons of rice consumed in Nigeria annually is locally produced leading to a deficit of about 3 million metric tons, which is either imported or smuggled into the country illegally. To stimulate local production, the Government banned importation of rice in 2019.

As for cassava, Nigeria produced 59 million tons in 2017, making it the world's largest producer (approximately 20 percent of global production). The economic potentials are enormous, with high revenue yields from domestic value addition and derived income as well as revenues for the government. With improved varieties and production techniques, production is anticipated to increase.

Animal production has remained underexploited. Livestock mostly reared by farm families in Nigeria are the small ruminants like goats (76 million), sheep (43.4million), and cattle (18.4 million). The contribution of forestry to agriculture and development in general cannot be overstressed. Nigeria's forest ecosystems are threatened by rapid population growth and economic activities with annual deforestation rate ranging between 0.72 and 2.38percent, according to FAO 2018 report. The country is largely endowed with natural resources that are necessary for the development of agriculture; such resources include abundant land supply, and human and forestry resources. (Oluwatoyese & Applanaidu, 2019). At the on-set of the oil boom in the late 1970s, the Nigerian economy became a mono-cultural one with oil being the major source of income which led to the neglect of all other sectors including the agricultural

sector (Agbaeze & Ukoha, 2018). The money allocated to the Agricultural Credit and Guarantee Scheme increased from N7.84million to N1.00billion approximately, Commercial Banks loans to the agricultural sector increased from N1284 billion to N2552 billion which result to a continuous rise of the impact of the agricultural sector to the Gross Domestic Product yearly from 23.86% in 2014 to 24.18% in 2015 and from 24.43% to 25.23% in 2016 (Federal Ministry of Agriculture and Rural Development 2016). The successive governments in Nigeria as way of boosting agricultural output have been making effort to increasing budget allocation to the agricultural sector (National Bureau of Statistics, 2018). However the impact of these budgets is still subject of debate by stakeholders.

Statement of the Problem

In Nigeria, the agricultural sector remains a vital contributor to the economy, providing employment for a significant proportion of the population and contributing substantially to GDP. However, despite its importance, the sector faces persistent challenges, one of the most critical being limited access to credit. Limited financial access hampers the ability of farmers to invest in productivity-enhancing technologies, inputs, and infrastructure, ultimately affecting agricultural output.

While various studies have explored the relationship between credit availability and economic output, there is a dearth of empirical research specifically focused on Nigeria's agricultural sector, particularly using advanced econometric models like the ARDL (Autoregressive Distributed Lag) model. Furthermore, the role of policy interventions, as captured through dummy variables, has not been sufficiently analyzed in the context of credit accessibility and agricultural productivity.

This study aims to fill this gap by investigating how access to credit influences agricultural output in Nigeria, with particular emphasis on the impact of policy changes (represented by dummy variables) over time. The use of the ARDL model will allow for an examination of both short-term and long-term relationships between credit access and agricultural productivity, considering the structural and policy shifts that may affect this relationship.

Objectives of the Study

The main objective of this research is to analyze Access to Credit and Agricultural output in Nigeria; Gauging ARDL model using Dummy Variable while the specific objectives are stated below:

(i) Evaluate the relationship between total agricultural credit guarantee scheme fund to forestry production and agricultural contribution to GDP in Nigeria.
(ii) Analyse the relationship between total agricultural credit guarantee scheme fund to cash crop production and agricultural contribution to GDP in Nigeria.
(iii) To find out the extent of the relationship between total agricultural credit guarantee scheme fund to crop production and agricultural contribution to GDP in Nigeria.

(iv) To x-ray the extent of the relationship between total agricultural credit guarantee scheme fund to livestock production and agricultural contribution to GDP in Nigeria.

Research Questions

The following questions were formulated to guide the study:

(i)What is the relationship between total agricultural credit guarantee scheme fund to forestry production and agricultural contribution to GDP in Nigeria?

(ii)Is there any relationship between total agricultural credit guarantee scheme fund to cash crop production and agricultural contribution to GDP in Nigeria?

(iii)To what extent is the relationship between total agricultural credit guarantee scheme fund to crop production and agricultural contribution to GDP in Nigeria?

(iv)Is there a relationship between total agricultural credit guarantee scheme fund to livestock production and agricultural contribution to GDP in Nigeria?

Research Hypotheses

The hypotheses to be tested in this study were stated in their null forms as follows:

H_{01}: There is no positive significant relationship between total agricultural credit guarantee scheme fund to forestry production and agricultural contribution to GDP in Nigeria.

H_{02}: There is no positive significant relationship between total agricultural credit guarantee scheme fund to cash crop production and agricultural contribution to GDP in Nigeria

H_{03}: There is no positive significant relationship between total agricultural credit guarantee scheme fund to crop production and agricultural contribution to GDP in Nigeria

H_{04}: There is no positive significant relationship between total agricultural credit guarantee scheme fund to livestock production and agricultural contribution to GDP in Nigeria.

2 Literature Review

Conceptually, credit is a contractual agreement between a borrower and a lender that permits the borrower to obtain funds now and repay later (Waugh, 2024). In this way, we can say that credit refers to the ability of individuals, businesses, or institutions to obtain financial resources from lenders (banks, microfinance institutions, or other financial institutions) with an agreement to repay the loan with interest at a future date. Thus, having good credit history will make it easier to get approved for a range of credit products.

Access to credit

Access to credit refers to the simplicity with which individuals or businesses can obtain credit under satisfactory terms. Having access to credit is essential for firms to fund their investments. Consequently, accessing financial services at affordable cost on the other hand is crucial to ensure financial security of all economic units (OECD, 2020). According to World Economic Forum (2024), access to credit can be a major impediment to success and meeting goals, whether for individuals or small and growing businesses. It also encumbers the capacity to plan for long-term goals and unanticipated emergencies.

Agricultural Output

To Anugwom (2024) agricultural output is same as agricultural productivity. It refers to the output produced by a given level of inputs in the agricultural sector of a given economy. In the terms of ratio analysis, it is the ratio of value of total farm outputs to the value of total inputs used in farm production.

Thus, agricultural output refers to the total quantity of goods and services produced within the agricultural sector over a specific period. It includes crops, livestock, fisheries, and other primary agricultural products. It reflects the overall productivity and performance of the agricultural sector, which can be influenced by factors such as climate, technology, policy, input availability, and, crucially, access to financial resources like credit. High agricultural output is associated with increased food security, rural development, and economic growth, while low output can indicate inefficiencies, resource constraints, or insufficient investments (Eboh, Moses& Nwosu, 2012).In economics, the relationship between access to credit and agricultural output suggests that easier access to credit can improve the ability of farmers to purchase inputs, adopt new technologies, or expand operations, thereby increasing overall agricultural productivity.

Empirically, David et al (2024) in their study identified the determinants of cocoa farmers' access to credit in Ghana and estimated the impact of credit access on yield, yield gap, gross income, cost of production, and net income using propensity score matching. The study finds significant positive impacts of agricultural credit on yield, gross income, and net income. They are of the view that policy efforts to improve cocoa farmers' access to credit could therefore enhance the productivity and profitability of cocoa production. In addition, it was found that with access to credit, cultivating more than one cocoa farm could make cocoa production more productive and profitable.

Awujola, Ezie & Kuzhe (2024) disaggregated agricultural credit guarantee scheme fund into agricultural credit guarantee scheme fund to crop production (ACCP), agricultural credit guarantee scheme fund to livestock production (ACLP) and agricultural credit guarantee scheme fund to fishery production (ACFP),while agricultural sector output was used as the dependent variable. the findings revealed that agricultural credit guarantee scheme fund to crop, livestock and fishery production respective had $p<0.05$, signifying that each had significant positive effect on agricultural output in Nigeria .

Nwagboso et al (2024) findings suggest the need for tailored strategies in terms of more credit to support the adoption of improved cowpea varieties in Nigeria to increase domestic production and sustainable agricultural productivity. This will also enhance exploration of international markets for export opportunities, and ultimately, household income and improve nutritional outcomes.

Ndem et al (2023) investigated the connection between agricultural funding and economic performance in Cross Rivers State's Obudu Local Government Area (LGA). They utilized primary data got from questionnaire. Farmers and agriculturalists were sampled through a stratified sample method. Findings reveal that there is a relationship between agricultural finance and economic performance, as well as a link between agricultural credit schemes and

agricultural sector expansion. They also found out that credit programmes for agricultural finance boost the expansion of the agricultural sector, as shown in economic growth and development. The research recommended that the government should take very serious the release of grants to farmers at regular intervals to support their activities. There should also be a deliberate action to raise the level and size of agricultural loans through the reduction of interest rates to allow for more economic development in the country.

Azad,Choudhury&Wadood (2023) show that credit disbursed in agriculture and fertilizer usage significantly increase agricultural production in the long run. Nonetheless, the findings disclose that agricultural employment has a negative longrun effect on agriculture production. Our findings suggest that credit disbursed in the agricultural sector facilities needs to be augmented to increase and sustain agricultural output.

Dimgba, Morris & Okuduwor (2023) verified the effect of agriculture financing such as the agricultural credit guarantee scheme fund, bank loans and advances to agriculture, to agriculture on livestock production. The estimated parameters show that increase in the current value of the agriculture credit guarantee scheme fund leads to increase in livestock output. Similarly, it was found that livestock output increased by 0.0183% following a 1% increase in the first-lag agriculture credit guarantee scheme fund. The findings highlight the significance of agriculture financing in boosting the growth of livestock production in Nigeria. The results further show that bank loans and advances, negatively and significantly affected livestock production. The error correction coefficient (-0.297) is negative and significant at the 5% level. Given the findings, this study recommends that policymakers ensure that agriculture financing prioritizes poultry production by allowing for adequate provisions of agriculture credit guarantee scheme funds to poultry farmers.
Adewale et al. (2022) examined the effect of farmer's credit on agricultural productivity from 1981 to 2016 using data from World Bank Development Index (WDI). The Ordinary Least Squares (OLS) estimation shows that agricultural bank credit exerts a significant positive effect on agricultural output. Analogously, Bank lending rate and foreign exchange rate both show an insignificant effect on agricultural output. The study recommended the need for government to stimulate savings and bank credit to farmers.

Mbelu & Ifionu (2022) interrogated the influence of agricultural financing on economic growth in Nigeria for the period 1981 to 2019. The study employed multi- methods; the stationary test, the co-integration test, the error correction model and the Granger causality model. The study found out that; in the long run, the agricultural credit guarantee scheme fund and commercial bank loan and community –micro-finance bank loan show a positive and significant influence on the gross domestic product in Nigeria. The study therefore concluded that all the variables interest sufficiently predict Nigeria's gross domestic product.

Ademiluyi (2022) determinants of rice farmers' revenue, found out that, number of times of credit access, credit amount accessed and the rice farmland size ,significantly determines rice farmers' revenue generated from rice production in the area.

Bosco and Gbanador (2022) examined macroeconomic instruments and cash crop production in Nigeria.the results revealed that in the long and short runs, all the employed policies' instruments positively and insignificantly impacted on cash crop production while banks' loans and advances impacted negatively in the short-run. It therefore becomes important to ensure increase in deposit money banks' credits for agricultural investment. Similarly, the enforcement of special low interest rate to stimulate investments in the sector is also imperative.

Yakubu , Emmanuel, Ahangba, Adam & Bashir.(2021) analyzed the effects of Agricultural Credit Guarantee Scheme Fund (ACGSF) on agricultural output in Nigeria in the selected subsectors of agricultural sector of the economy i.e crop, livestock and fishery subsectors Crop output, fishery output, livestock output and agricultural credit guarantee scheme fund for food crop, cash crop, fishery, cattle, sheep, poultry, and other livestock were used as the variables. Findings revealed that, ACGSF for food and cash crop sector has significance effect on crop output, Agricultural credit guarantee scheme fund for poultry, sheep, cattle and other livestock sector has significance effect on livestock output and Agricultural credit guarantee scheme fund for fishery sector has significance effect on fishery output in Nigeria. Thus, Government should show more commitment on livestock sector in order to boost the growth earnings of the economy and reduce her level of dependency on other nations.

Assouto & Houngbeme (2020) investigate the impact of access to credit on agricultural productivity in Benin. The data used were got from the statistical databases of National Institute of Agricultural Research of Benin (INRAB). The study employed the endogenous switching regression model to control for potential selection and unobserved heterogeneity issues related with this impact analysis. The findings reveal that education, the amount of fertilizer used, the adoption of improved seed varieties are factors that determine producers' access to credit. Similarly, Farmers' access to credit leads to an increasing of productivity.

Osabohien et al. (2020) examined how agricultural sector performance will be enhanced in Nigeria through access to credit. The study employed a time series data sourced from the Central Bank of Nigeria (CBN) statistical bulletin and the World Development Indicators (WDI) spanning the period 198–2018. It utilized the Autoregressive Distribution Lag (ARDL) model. The findings show that agricultural credit (agricultural credit guarantee scheme fund (ACGSF)) and commercial bank credit to agriculture significantly increased agricultural performance. The study recommended that farmers should be availed with sufficient access to credit which will improve their ability to purchase agricultural inputs required to increase productivity and growth.

Okunlola et al (2019) investigated the impact of guaranteed agricultural finance to oil palm, cocoa, groundnuts, fishery, poultry, cattle, roots, and tubers on the real gross domestic product of the country. Data was sourced from the Central Bank of Nigeria statistical bulletin of various issues for the period 1981 to 2017. The study employed Autoregressive Distributed Lag (ARDL) model for its analysis. Findings show that none of the guaranteed agricultural finance is statistically significant to real gross domestic product. The study, recommended increased

funding and deliberate efforts at determining which of the nominated agricultural spending has the most contributory impact on economic growth.

Ogbuabor & Nwosu (2017) examined the impact of deposit money bank agricultural credit on agricultural productivity in Nigeria, utilizing an error correction model. It deployed annual time series for the period 1981-2014. Their findings reveal that, an equilibrium relationship exists between the variables; that deposit money bank's agricultural credit impacts positively and significantly on agricultural productivity in the long-run; that agricultural land and labour force impact negatively on agricultural productivity both in the long-run and short-run. The study recommended policies that will enhance and sustain the availability of bank credits at affordable interest rates for the agricultural sector.

Owusu (2017) evaluated the **e**ffect of access to credit on agricultural productivity: evidence from cassava farmers in the Afigya-Kwabre District of Ghana. Primary data were collected from a random sample of 166 farm households who produce cassava. It deployed descriptive statistics, logit model and PSM to analyze the data. The study found out that access to credit was significantly influenced by sex, age, household size, farming experience, level of education, farm size, hired labour, extension service and farmer-lender distance. Similarly, credit has a positive and significant effect on cassava productivity. It therefore recommended that interventions to raise agricultural output in the study area should consider access to credits as a key component.

Mubaraq (2017) evaluated the thresholds of ACGSF on agricultural performance in Nigeria between 1981 and 2019. Annual time series data were obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin and the World Development Indicators (WDI). Data was analysed using threshold regression. Findings show U-shaped relationship between real agricultural GDP and ACGSF. In addition, ACGSF has significant positive effects on real agricultural GDP. The study concluded that sustained increase in the value of agricultural loans will translate into strong contribution of the scheme to agricultural performance in Nigeria.

Olorunsola et al (2017) investigated the relationship between credit to agriculture and agricultural output in Nigeria. They utilized the nonlinear autoregressive distributed lag (NARDL) model employing a time series data from 1992Q1 to 2015Q4. They found out, no evidence of asymmetry in the impact of credit to output growth in the agricultural sector in the short-run. However, equilibrium relationships exist in the long-run. Findings also reveal that agricultural output growth is mostly attracted by the impact of the positive changes in credit to agriculture. The study recommended the need for a policy on moratorium on credit administration to agricultural sector.

Akinbode (2013) studied access to credit: implication for sustainable rice production in Nigeria. He garnered data from a total of 208 rice farmers in Niger State, North-central Nigeria. Utilizing descriptive statistics, t-test of difference of two means, Logit regression model, the Ordinary Least Square Regression model and the Chow test; the study found out that Farmer

who had access to credit documented higher yield and higher profit which may support economic sustainability of the enterprise. The study recommended that, disbursement of loan meant for agricultural sectors should be monitored and such loans be made available to genuine rice farmers in order to achieve economically sustainable rice production in the country.

Theoretically, the following theories are linked to the discourse of access to credit and agricultural output.

Solow Model of Growth

The Solow growth model propounded by Robert Solow (1956) who goes to the neoclassical school of thought , that a sustained increase in capital investments increases the growth rate temporarily. This is because; the ratio of capital to labor goes up. Thus, the marginal product of additional units is assumed to decline and the economy eventually moves back to a long term growth-path with the real GDP growing at the same pace with the growth of the workforce plus a factor to reflect improving productivity.

Endogenous Growth Theory

The endogenous growth by Solow (1970) asserts that productivity or output improvements can be attributed directly to a faster rate of innovation and additional investment in human capital. They emphasized the need for government and private sector institutions to boost innovation and provide incentives for businesses to be inventive. The imperative of a central role of the accumulation of knowledge is a major determinant of growth.

Harrod- Domar Growth Model

Harrod-Domar (1926), opined that economic growth is achieved when more investment tips to more growth. The theory is based on a linear production function with output given by capital stock (K) multiplies a constant. Interestingly, investment according to the theory creates income and also augments the productive capability of the economy by increasing the capital stock. In as much as there is net investment, real income, and output continue to expand.

Credit Rationing Theory

The theory of credit rationing was popularized by Jaffee and Russell (1976) and Stiglitz and Weiss (1981). They opined that credit rationing is built on the basis of asymmetric information. One of the reasons for this considerable attention is the implication that credit rationing has for the transmission mechanism of monetary policy. Nevertheless, we are interested in the implications of credit rationing for the supply of credit. For Stiglitz and Weiss (1981) and Jaffe and Stiglitz (1990) credit rationing is of two types; Type 1 is pure credit rationing, this is when some individuals obtain loans, while apparently identical individuals, who are willing to borrow on precisely the same price and non-price terms, do not. Type 2 is when there are identifiable groups of individuals in the population who, with a given supply of credit, are unable to obtain loans at any interest rate, whereas with a larger supply of credit they would. The imperative of the theory is that when interest rates are controlled, banks automatically ration credit through non-price means (Gonzales-Vega, 1976). Thus the theory suggests that

limited access to credit restricts farmers' ability to invest in inputs like seeds, fertilizers, and equipment, leading to lower agricultural productivity. Credit rationing can occur due to high risk perceived by lenders.

Human Capital Theory

The Human Capital discusses individuals as rational, informed, and able to rank their preferences according to the costs and benefits that, is available. In other words, the perspective of human capital theory has as its central point the notion that enrollment in higher school will bring for the individual, more gains than an alternative variant in the long run. The reason is that the institution will provide him with a package of skills and abilities designed to help the individual in as many situations as possible, thus a general human capital based on transversal skills. The theory of human capital is relatively new in finance and economics. Financial access can improve human capital outcomes through a number of mechanisms. Thus, access to credit enables farmers to invest in education and training, improving their agricultural practices. Better-trained farmers can increase output by adopting modern techniques and technologies.

Risk Management Theory

Two exceptional scientists, Blaise Pascal and Pierre de Fermat, are considered to be the precursors in the field risk management which constitutes the mathematical basis of the conception of risk. Their findings, dating back to 1654, originally developed for purposes related to gambling, changed the narrative of uncertainty, risk and decision making.it actually became the basis for the further development of risk science (Ross, 2004). Over the years, mathematicians and economist have developed the theory of probability into a powerful tool used for information processing and decision making. Consequently, access to credit allows farmers to manage risks associated with farming, such as crop failures due to weather conditions. With credit, farmers can diversify their production or invest in insurance, eventually leading to more stable outputs.

Technology Adoption Theory

Adoption theory examines the individual and the choices an individual makes to accept or reject a particular innovation. In some models, adoption is not only the choice to accept an innovation but also the extent to which that innovation is integrated into the appropriate context. Adoption theory, then, is a micro perspective on change, focusing not on the whole but rather the pieces that make up the whole. Credit facilitates the adoption of new agricultural technologies and practices. Farmers with access to loans are more likely to experiment with improved seeds and sustainable practices, which can lead to higher yields.

3. Research Methodology

The research design is the structure and strategy for investigating the relationship between the variables of the study. The study made use of an ex-post facto research design. The focus is to reveal the possible relationship between Access to Credit and Agricultural output in Nigeria; using ARDL model while incorporating the dummy variable. Thus, the dependent variable is

agricultural contribution to GDP(AGDP) while the independent variables are total agricultural credit guarantee scheme fund to crop production (TFC), total agricultural credit guarantee scheme fund to livestock production (TLS), total agricultural credit guarantee scheme fund to forestry production (AFF) and total agricultural credit guarantee scheme fund to cash crop production (TCC). The data were garnered from the Central Bank of Nigeria (CBN) Statistical Bulletin of 2022 edition.

Model Specification

In this investigation the study adapted the model used in the study conducted by Nwokoro (2017) on the analysis of banks' credit and agricultural output in Nigeria where agricultural gross domestic product was the dependent variable while such factors like, banks' lending rate, investment in agriculture and banks credits to agriculture were the explanatory variables. Consequently, the model is of the form:

AGDP = f(AFF, TCC, TFC, TLS)……. 1

Econometrically, the linear function of the model becomes

$AGDP_t = b_0 + b_1 AFF_t + b_2 TCC_t + b_3 TFC_t + b_4 TLS_t + U_t$ ……2

Where:

AGDP =agricultural contribution to GDP

AFF = total agricultural credit guarantee scheme fund to forestry production

TCC = total agricultural credit guarantee scheme fund to cash crop production

TFC = total agricultural credit guarantee scheme fund to crop production

TLS = total agricultural credit guarantee scheme fund to livestock production

However, in order to smoothen the data, the logarithms of the series were used. Thus, the equation becomes,

$\ln AGDP_t = b_0 + b_1 \ln AFF_t + b_2 \ln TCC_t\ b_3 \ln TFC_t + b_4 \ln TLS_t + U_t$……...3

Modestly, this study tends to analyze access to credit and agricultural output in Nigeria; gauging ARDL model using dummy variable. The ARDL uses a combination of endogenous and exogenous variables, which is different from the VAR model that is strictly for endogenous variables. However, incorporating the dummy variable is to take care of the structural break anticipated in the agricultural sector productivity in Nigeria. Frankly, the ARDL model can only be specified on the condition that the variables are integrated of different order; implying that the model should have a combination of variables with I(0) and I(1) order of integration. The autoregressive features are emphasized here. Thus, the dependent variable is regressed on one or more of its past values.

Apriori Expectation

It is expected that the coefficient of each of the explanatory variables should be a positive function of the dependent variable. That is, $b_1 - b_4 > 0$

4. Estimation process, Presentation, Analysis and Discussion of Results

Augmented Dickey-Fuller Test

The study estimated the stationarity status of the variables using Augmented Dickey-Fuller Test (ADF) unit root testing for determining order of integration. Augmented Dickey-Fuller Test (ADF) is robust in ways it deals with serial correlation and heteroskedasticity problems. The summary of Augmented Dickey-Fuller Test is shown in table 1 below.

Table 1: Summary of Augmented Dickey Fuller (ADF) Unit Root Test.

Variable	Prob.	Order of Integration
AGDP	0.0222	First diff. [I(1)]
AFF	0.0000	Level [I(0)]
TCC	0.0400	First diff. [I(1)]
TFC	0.0300	First diff. [I(1)]
TLS	0.0200	First diff. [I(1)]

Source: E-views output 2024

Cursory examination of table 1 show that all the variables were stationary at first differencing except total agricultural credit guarantee scheme fund to forestry production which attained stationarity at levels.

Due to our suspicion of structural break necessitated by change in government policy in the financial and agricultural sectors in Nigeria, we plotted the graph of the agricultural contribution to GDP (AGDP).

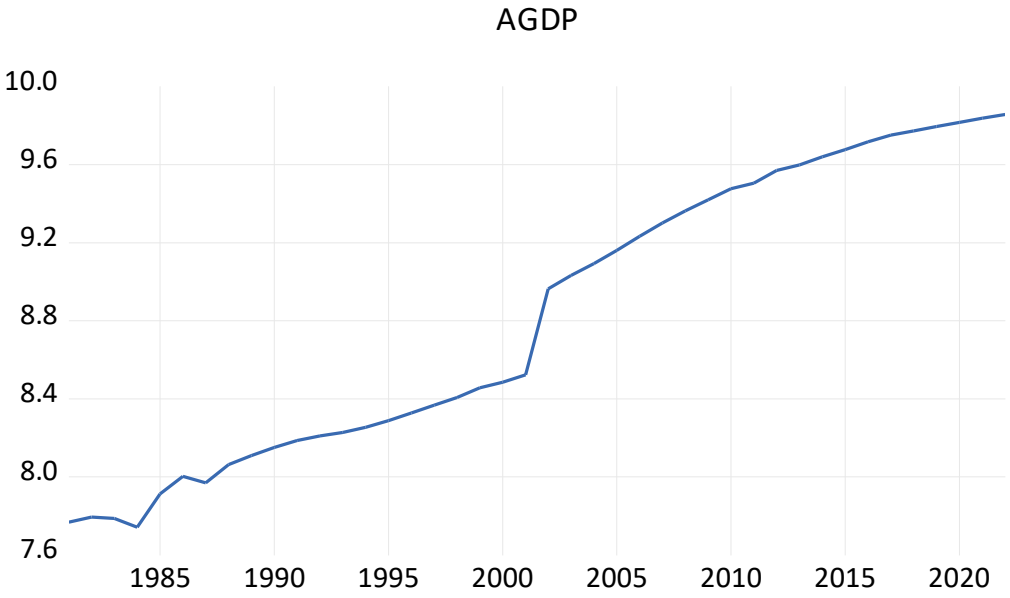

Fig1:Graph of AGDP

From fig 1 , we endogenously detected breaks in the series. Thus, there is a change in the mean of the series in 2005. This is also amplified by the Cusum of squares estimation.

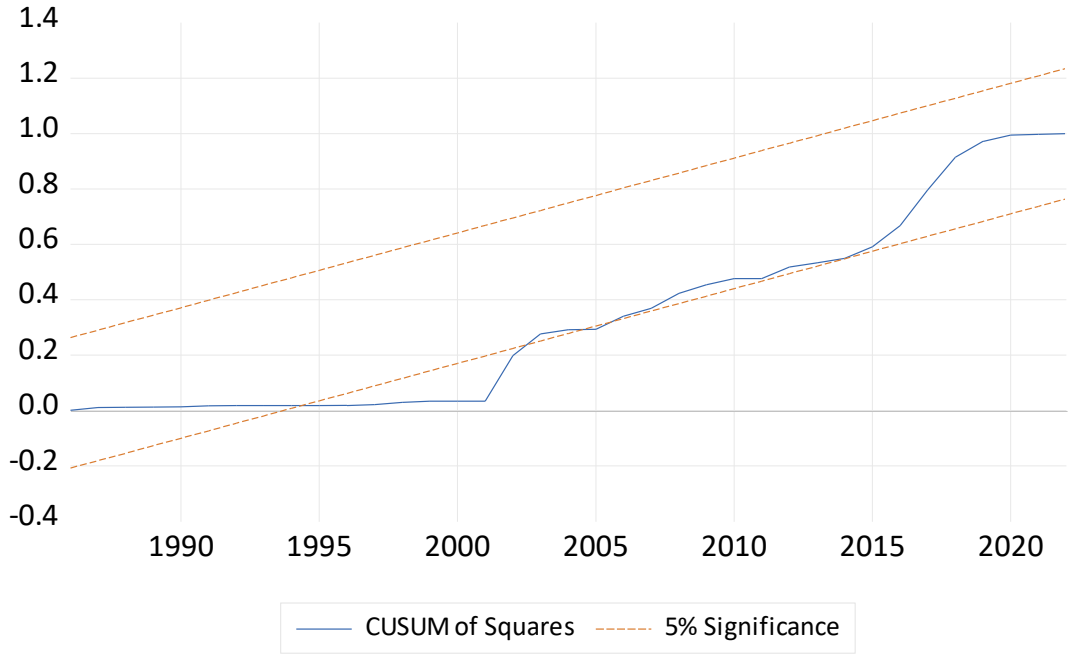

Fig2: Cusum of squares

From fig 2 , it is clear that the blue line crossed the red line which is indicative of break. This means that there is a structural break in the series. Therefore we cannot have a single equation.

Chow Breakpoint Test

Table 2: Chow Breakpoint Test

Chow Breakpoint Test: 2005
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1981 2022

F-statistic	12.04113	Prob. F(5,32)	0.0000
Log likelihood ratio	44.44799	Prob. Chi-Square(5)	0.0000
Wald Statistic	60.20564	Prob. Chi-Square(5)	0.0000

Source: E-views output 2024

In order to investigate the break point, we employed the Chow Breakpoint Test. Table 2 show that the prob. of F-statistic is 0.0000 which is less than 0.05; we therefore reject the null hypothesis of no structural break point and conclude that there is structural break. This phenomenon will enable us introduce the dummy variable in our series. The dummy variable is imperative in this study because it is crucial for modeling structural breaks. It also helps to capture sudden changes or shifts in the relationship between variables due to external events, policy changes, or other interventions that may affect the system. Thus, without a dummy variable to account for this break, the ARDL model may fail to capture the new relationship between the variables, leading to biased or inconsistent results.

Table 3: Ordinary Least square result showing the coefficient of the Dummy Variable

Dependent Variable: AGDP
Method: Least Squares
Sample: 1981 2022
Included observations: 42

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.412503	0.164970	50.99399	0.0000
AFF	0.153175	0.022267	6.879116	0.0000
TCC	0.013677	0.026326	0.519535	0.6066
TFC	0.050007	0.024471	2.043516	0.0484
TLS	0.071200	0.024060	2.959271	0.0054
DUMMY	0.237208	0.087278	2.717846	0.0100

R-squared	0.979592	Mean dependent var	8.824091
Adjusted R-squared	0.976757	S.D. dependent var	0.736539
S.E. of regression	0.112290	Akaike info criterion	-1.403902
Sum squared resid	0.453925	Schwarz criterion	-1.155664
Log likelihood	35.48195	Hannan-Quinn criter.	-1.312913
F-statistic	345.5962	Durbin-Watson stat	0.761179
Prob(F-statistic)	0.000000		

Source: E-views output 2024

In line with the task set, table 3 reveals that the coefficient of the dummy variable is significant; since it has the probability of 0.0100. The implication is that there is presence of structural break.

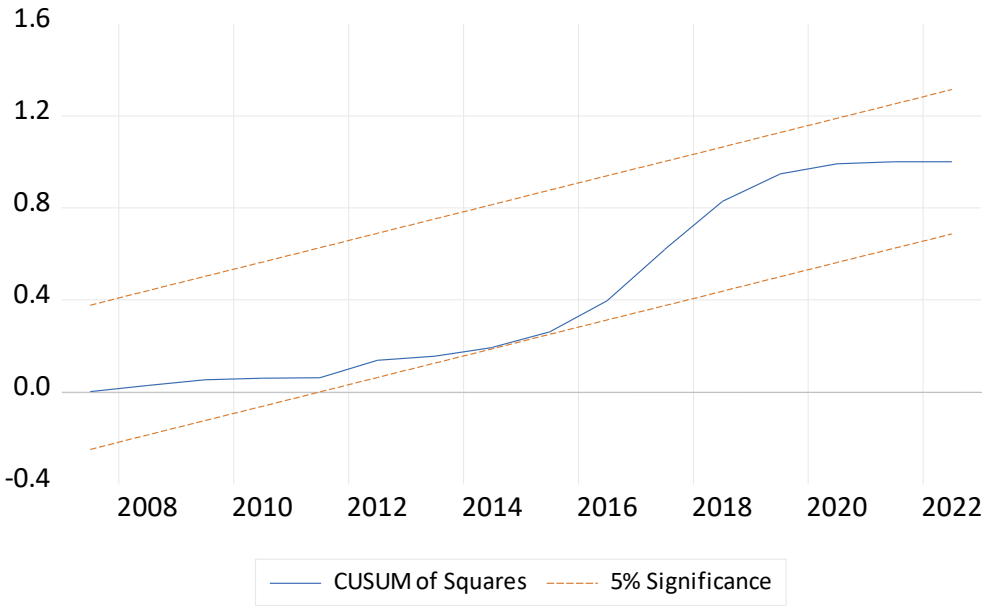

Fig 3: CUSUM of Square test result giving credence to dummy variable effect.

The CUSUM of Square test result of fig 3 show that the blue line is in-between the two red lines suggesting the effect of the dummy variable or giving credence to dummy variable.

Lag selection

The study proceeded to determine the optimum lag using the vector autoregression unrestricted lag selection criteria. A possible avoidance of serial correlation, autocorrelation and heteroskedasticity and making series conform to standardized stochastic term informed this approach .

Consequently, the optimal lag length for AGDP=1 , AFF=1,TCC=1,TFC=1 and TLS=1 . That is, lag(–1) is common to all lags selection criterion .

Breusch-Godfrey Serial Correlation LM Test

Table 4: Breusch-Godfrey Serial Correlation LM Test result

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

F-statistic	0.187092	Prob. F(2,30)	0.8303
Obs*R-squared	0.505084	Prob. Chi-Square(2)	0.7768

Test Equation:
Dependent Variable: RESID
Method: ARDL
Source: E-views output 2024

The study employed the ARDL of the series and found out that AGDP (-1) is significant. Thus, advanced with the Breusch-Godfrey Serial Correlation LM Test to check for Serial Correlation of the variables. From table 4, the probability of F-statistic is 0.8303, we therefore fail to reject the null hypothsis and conclude that there is no presence of serial correlation

Heteroskedasticity Test

Table 5: Heteroskedasticity Test Result
Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

F-statistic	1.230736	Prob. F(8,32)	0.3135
Obs*R-squared	9.646857	Prob. Chi-Square(8)	0.2907
Scaled explained SS	43.98667	Prob. Chi-Square(8)	0.0000

Source: E-views output 2024

Examination of table 5 reveals that F-statistic is 0.3135. Since the p-value is more than 0.05, we therefore fail to reject the null hypothesis and conclude that residuals are homoscedastic.

ARDL Long Run Form

Table 6: **ARDL short Run Form**

ARDL Long Run Form and Bounds Test
Dependent Variable: D(AGDP)
Selected Model: ARDL(1, 0, 1, 1, 0, 0)
Case 3: Unrestricted Constant and No Trend
Date: 11/01/24 Time: 18:00
Sample: 1981 2022
Included observations: 41

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.488318	0.895121	1.662701	0.1061
AGDP(-1)*	-0.175816	0.104015	-1.690291	0.1007
AFF**	0.029949	0.021196	1.412958	0.1673
TFC(-1)	0.031088	0.015137	2.053796	0.0482
TLS(-1)	0.013584	0.019545	0.695031	0.4921
TCC**	-0.011900	0.017243	-0.690121	0.4951
DUMMY**	0.001010	0.072271	0.013970	0.9889
D(TFC)	0.091357	0.043425	2.103797	0.0433
D(TLS)	-0.043260	0.033585	-1.288087	0.2070

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 3: Unrestricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AFF	0.170343	0.080849	2.106930	0.0431
TFC	0.176821	0.124035	1.425570	0.1637
TLS	0.077263	0.096942	0.797007	0.4313
TCC	-0.067682	0.113567	-0.595962	0.5554
DUMMY	0.005742	0.410345	0.013994	0.9889

EC = AGDP - (0.1703*AFF + 0.1768*TFC + 0.0773*TLS - 0.0677*TCC + 0.0057 *DUMMY)

Source: E-views output 2024

Table 6 above indicates the result of the Autoregressive distributed lag (ARDL) regression for the series in the short run estimate using lag (–1) as specified in the lag selection criterion. In all, the coefficients of lagged TFC(-1) (total agricultural credit guarantee scheme fund to crop production) and current changes in total agricultural credit guarantee scheme fund to crop production (D(TFC)) with the probability of 0.0482 and 0.0433 respectively are significant in the system. All other series shows no statistically significance individually in its short run as indicated by their respective probabilities. However, in the long-run, only total agricultural credit guarantee scheme fund to forestry production is statistically significant

Table 7: summary of the ARDL bounds Test Result

F-Bounds Test			Null Hypothesis: No levels relationship	
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	1.358812	10%	2.26	3.35
k	5	5%	2.62	3.79
		2.5%	2.96	4.18
		1%	3.41	4.68
			Finite Sample:	
Actual Sample Size	41		n=45	
		10%	2.458	3.647
		5%	2.922	4.268
		1%	4.03	5.598
			Finite Sample:	
			n=40	
		10%	2.483	3.708
		5%	2.962	4.338
		1%	4.045	5.898

t-Bounds Test			Null Hypothesis: No levels relationship	
Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-1.690291	10%	-2.57	-3.86
		5%	-2.86	-4.19
		2.5%	-3.13	-4.46
		1%	-3.43	-4.79

Source: E-views output 2024

The table above summarizes the ARDL Bounds test for co-integration. The criteria for decision is that the F-statistic must be greater than the 5% critical values at the I(0) and I(1) bounds. Therefore, since the F-statistic value of 1.358812 is less than 2.62 and 3.79 I(0) and I(1) bounds respectively, we cannot reject the null hypothesis, we then conclude that there is no long-run relationship between the dependent variable (AGDP) and the independent variables of AFF, TCC, TFC and TLS; indicating that the variables under consideration which are total agricultural credit guarantee scheme fund to forestry production, total agricultural credit guarantee scheme fund to cash crop production, total agricultural credit guarantee scheme fund to crop production and total agricultural credit guarantee scheme fund to livestock production have no long-run effect on the Nigerian economy as a result of changes in government policy regarding to the growth dynamics in the agricultural sector and the financial system.

Test of Hypothesis

Hypothesis 1

H_{01}: There is no positive significant relationship between total agricultural credit guarantee scheme fund to forestry production and agricultural contribution to GDP in Nigeria.

From table 6, the coefficient of total agricultural credit guarantee scheme fund to forestry production is 0.170343 with probability of 0.0431(less than 0.05 levels), we therefore reject the null hypothesis and conclude that there is a positive significant relationship between total agricultural credit guarantee scheme fund to forestry production and agricultural contribution to GDP in Nigeria.

Hypothesis 2

H_{02}: There is no positive significant relationship between total agricultural credit guarantee scheme fund to cash crop production and agricultural contribution to GDP in Nigeria

From table 6, the coefficient of total agricultural credit guarantee scheme fund to cash crop production is -0.067682 with probability of 0.5554 (greater than 0.05 levels), we therefore cannot reject the null hypothesis and conclude that there is no positive significant relationship

between total agricultural credit guarantee scheme fund to cash crop production and agricultural contribution to GDP in Nigeria.

Hypothesis 3

H_{03}: There is no positive significant relationship between total agricultural credit guarantee scheme fund to crop production and agricultural contribution to GDP in Nigeria.

From table 6, the coefficient of total agricultural credit guarantee scheme fund to crop production is 0.176821 with probability of 0.1637 (greater than 0.05 levels), we therefore cannot reject the null hypothesis and conclude that there is no positive significant relationship between total agricultural credit guarantee scheme fund to crop production and agricultural contribution to GDP in Nigeria.

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Hypothesis 4

H_{04}: There is no positive significant relationship between total agricultural credit guarantee scheme fund to livestock production and agricultural contribution to GDP in Nigeria.

From table 6, the coefficient of total agricultural credit guarantee scheme fund to livestock production is 0.077263 with probability of 0.4313 (greater than 0.05 levels), we therefore cannot reject the null hypothesis and conclude that there is no positive significant relationship between total agricultural credit guarantee scheme fund to livestock production and agricultural contribution to GDP in Nigeria.

Discussion of Results

From hypothesis one there is a positive significant relationship between total agricultural credit guarantee scheme fund to forestry production and agricultural contribution to GDP in Nigeria. A positive and significant relationship between credit schemes in forestry and agricultural GDP contribution highlights forestry's potential role in Nigeria's economic development. With proper implementation, such funding can promote sustainable growth, diversify the economy, and enhance rural livelihoods. However, the benefits hinge on effective monitoring, sustainable practices, and policies that protect local communities and ecosystems. This result is in tandem with the findings of Azad,Choudhury &Wadood (2023), which show that credit disbursed in agriculture and fertilizer usage significantly increase agricultural production in the long run. Consequently, credit disbursed in the agricultural sector facilities needs to be augmented to increase and sustain agricultural output.

From hypothesis two, there is no positive significant relationship between total agricultural credit guarantee scheme fund to cash crop production and agricultural contribution to GDP in Nigeria. This suggests that funds allocated to cash crop production may not be achieving the intended results in terms of GDP growth. This could indicate that either the funds are insufficient to make a meaningful difference, or they are not being used effectively within the cash crop sector. This result is in line with the findings of Nwagboso et al (2024), which suggest the need for tailored strategies in terms of more credit to support the adoption of improved

cowpea varieties in Nigeria to increase domestic production and sustainable agricultural productivity. Similarly, David et al (2024) opined that, policy efforts to improve cocoa farmers' access to credit could therefore enhance the productivity and profitability of cocoa production. They also found out that, with access to credit, cultivating more than one cocoa farm could make cocoa production more productive and profitable.

From hypothesis three, there is no positive significant relationship between total agricultural credit guarantee scheme fund to crop production and agricultural contribution to GDP in Nigeria. This finding has several implications, especially in the context of changing government policies, as it raises questions about the efficiency of agricultural credit schemes and the effectiveness of current approaches to achieving desired growth. Policymakers may need to reevaluate and restructure credit schemes to make them more effective. This could involve increasing the size of funds, refining eligibility criteria, or improving the allocation process to ensure that credit reaches farmers who can effectively contribute to GDP. The result here is in contrast to the findings of Ademiluyi (2022), which found out that, number of times of credit access, credit amount accessed and the rice farmland size, significantly determines rice farmers' revenue generated from rice production in the area. Awujola, Ezie & Kuzhe (2024),findings also revealed that agricultural credit guarantee scheme fund to crop production had significant positive effect on agricultural output in Nigeria.

From hypothesis four there is no positive significant relationship between total agricultural credit guarantee scheme fund to crop production and agricultural contribution to GDP in Nigeria. To this extent government may need to review credit policy to ensure funds reach productive livestock farmers and are used efficiently. For instance, credit schemes could be tailored to better meet the specific needs of livestock farmers or to target areas with high potential for economic returns. This result is in contrast with the findings of Dimgba, Morris & Okuduwor (2023), which findings highlight the significance of agriculture financing in boosting the growth of livestock production in Nigeria. The results further show that bank loans and advances, negatively and significantly affected livestock production. Therefore, policymakers should ensure that agriculture financing prioritizes poultry production by allowing for adequate provisions of agriculture credit guarantee scheme funds to poultry farmers. For Yakubu et al (2021), government should show more commitment on livestock sector in order to boost the growth earnings of the economy and reduce her level of dependency on other nations.

5. Concluding Remarks

This research examined access to credit and agricultural output in Nigeria; gauging ARDL model using dummy variable using time series data garnered for the period 1981 to 2022. It draws conclusion from the summary of findings. Thus, the summary of findings revealed the following;

i.)There is the presence and existence of structural breaks. It captured sudden changes or shifts in the relationship between variables due to external events, policy changes, and other interventions in the system. It gave credence to the efficacy of the dummy variable in the model.

(ii) There is no long-run relationship between the dependent variable (AGDP) and the independent variables of AFF, TCC, TFC and TLS.
(iii)That the coefficients of lagged TFC(-1) (total agricultural credit guarantee scheme fund to crop production) and current changes in total agricultural credit guarantee scheme fund to crop production (D(TFC)) were both significant in the short-run.
(iv) There is a positive significant relationship between total agricultural credit guarantee scheme fund to forestry production and agricultural contribution to GDP in Nigeria.
(v) There is negative and insignificant relationship between total agricultural credit guarantee scheme fund to cash crop production and agricultural contribution to GDP in Nigeria.
(vi) There is no positive significant relationship between total agricultural credit guarantee scheme fund to crop production and agricultural contribution to GDP in Nigeria.
(vii) There is no positive significant relationship between total agricultural credit guarantee scheme fund to livestock production and agricultural contribution to GDP in Nigeria.

Recommendations

The following recommendations are important for the study;

i) Due to the evidence of a structural break in the data, it indicates a significant shift in the relationship between variables at a specific point in time. The presence of a structural break justifies using an Autoregressive Distributed Lag (ARDL) model with dummy variables to account for this break. It recommends the incorporation of dummy variables to model structural breaks.This allows the model to reflect changes in the relationship between dependent and independent variables due to the structural break.
ii) Since funds allocated to forestry, crop, cash crop, and livestock production are not having a long-term impact, the current funding model may need reevaluation. Conduct a comprehensive review to ensure that funds are being allocated effectively, perhaps redirecting resources to initiatives with proven long-term impacts, such as infrastructure, technology adoption, or training.
iii) Given the significance of the lagged TFC, this suggests that previous investments in agricultural support programs (such as subsidies, research, and extension services) are still influential. It would be beneficial to maintain or increase support for ongoing programs, ensuring their continuity and effective implementation to sustain these positive impacts in the short run.
iv) In the finding of a positive significant relationship between total agricultural credits guarantee scheme fund to forestry production and agricultural contribution to GDP in Nigeria. Policymakers should focus on stabilizing credit support, aligning forestry policies with broader economic goals, implementing policy safeguards, and promoting sustainable forestry practices. By doing so, the forestry sector can continue to grow and contribute to a resilient and diversified economy.
v) In the case of negative and insignificant relationship between total agricultural credits guarantee scheme fund to cash crop production and agricultural contribution to GDP in Nigeria. Policymakers should focus on refining the credit structure, enhancing market access, promoting value addition, and safeguarding the sector from policy shocks. By adopting these measures,

Nigeria can help cash crops play a stronger role in economic growth and increase the sector's resilience to policy and economic changes.

vi) With respect to no positive significant relationship between total agricultural credits guarantee scheme fund to crop production and agricultural contribution to GDP in Nigeria. Policymakers should focus on increasing credit access, improving supporting infrastructure, promoting market stability, and supporting climate resilience to make food crop production more impactful. By strengthening these areas, Nigeria can better harness the potential of food crop production to enhance food security, improve rural incomes, and contribute more substantially to GDP, even amid policy shifts or economic shocks.

vii) In the place of no positive significant relationship between total agricultural credits guarantee scheme fund to livestock production and agricultural contribution to GDP in Nigeria. Policymakers should consider adjusting credit amounts, making loans more accessible, and providing more flexible terms for livestock farmers. Smallholder livestock farmers, who may face the greatest barriers to credit, should be prioritized to ensure credit reaches those who could benefit most.

Reference

Ademiluyi, I.O (2022), Determinants of rice farmers' revenue in north –central, Nigeria. KIU Interdisciplinary Journal of Humanities and Social Sciences, 3(3), 120-127.

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.

Agbaeze, E.K & Ukoha, K(2018),Oil a Blessing or a Curse: The Nigerian Experience ,European Journal of Social Sciences ISSN 1450-2267 Vol. 56 No 3 April-May, 2018, pp.262-270 http://www.europeanjournalofsocialsciences.com.

Akinbode S O (2013), Access to Credit: Implication for Sustainable Rice Production in Nigeria. Journal of Sustainable Development in Africa (Volume 15, No.1, 2013) ISSN: 1520-5509 Clarion University of Pennsylvania, Clarion, Pennsylvania.

Anugwom Chinenye Georgina (2024), Agricultural Sector Output and Economic Growth Sustainability in Nigeria. Research Journal of Agricultural Economics and Development 3(1), 30-51. DOI: 10.52589/RJAEDOE05P3AI.

Awujola A, Ezie O & Kuzhe, D M (2024),Impact of Agricultural Credit Guarantee Scheme Fund on Agricultural Output in Nigeria: 1999-2021,International Journal of Humanities Social Science and Management (IJHSSM)Volume 4, Issue 1, Jan.-Feb., , pp: 436-447 www.ijhssm.org.

Assouto A B (2020), Access to Credit and Agricultural Productivity: Evidence from Maize Producers in Benin. AERC Biannual Workshop, 23-30 November.

Azad, A. K Choudhury, N. N and Wadood, S N (2022), Impact of Agricultural Credit on Agricultural Production: Evidence from Bangladesh, Munich Personal RePEc Archive, https://mpra.ub.uni-muenchen.de/118990/.

Bosco, I.E. and Gbanador, C.A. (2022), Macroeconomic Policies and Cash Crop Production in Nigeria Journal Of Humanities And Social Science (IOSR-JHSS)Volume 27, Issue 1, Series 10-22 e-ISSN: 2279-0837, p-ISSN: 2279-0845.www.iosrjournals.org.

David B, Michael G, Stephen N, Enoch K T, Fred A, Richmond F, Albert G & Charles B G (2024),Impact of agricultural credit on productivity, cost and returns from cocoa production in Ghana, Cogent Economics & Finance, 12:1, 2402035, DOI: 10.1080/23322039.2024.2402035.

Dimgba E, Morris R & Adibe A. O(2023), Agriculture Financing for Output Growth: A Focus on Livestock Production in Nigeria,IIARD International Journal of Economics and Business Management.E-ISSN 2489-0065 P-ISSN 2695-186X Vol 9. No. 7 2023 www.iiardjournals.org.

Eboh, A., Moses, O. & Nwosu, E. (2012), The mechanics of agricultural productivity and economic growth. Journal of Farm Economics, 46(5), 1051-1061.

Farman U K, Muhammad N, Lucia N, Junaid A, Laura M C & Muhammad F S (2024) Constraints to agricultural finance in underdeveloped and developing countries: a systematic literature review, International Journal of Agricultural Sustainability, 22:1, 2329388, DOI: 10.1080/14735903.2024.2329388 To link to this article: https://doi.org/10.1080/14735903.2024.2329388.

Fulginiti, C. K. & Perrin, G.P (2014), Disaggregated government spending on infrastructure and poverty reduction in Nigeria. Global Journal of Human-Social Science Research, 14(5), 1118-1124.

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. DOI: 10.52589/AJAFR-VV0CKXM8.

Mubaraq S (2021), Agricultural Credit Guarantee Scheme Fund (ACGSF) and Agricultural Performance in Nigeria: A Threshold Regression Analysis. Munich Personal RePEc Archive. https://mpra.ub.uni-muenchen.de/105564/.

National Bureau of Statistics (2018), Consumer price index September 2018. Abuja, Nigeria:NBS.

Ndem, B. E., Walter, M. H., Ovat, O. O., Henry, J. T., & Peter, L. M. (2023), Agricultural

financing and economic performance in the Obudu local government area of cross River State, Nigeria. Asian Journal of Agriculture and Rural Development, 13(1), 39–48. 10.55493/5005.v13i1.4754.

Nwagboso C, Andam K. S, Amare M, Bamiwuye T& Fasoranti A (2024),The Economic Importance of Cowpea in Nigeria Trends and Implications for Achieving Agri-Food System Transformation ,IFPRI Discussion Paper 02241.

OECD (2020), "Boosting access to credit and ensuring financial inclusion for all", in OECD Economic Surveys: Costa Rica 2020, OECD Publishing, Paris. DOI: https://doi.org/10.1787/eb28eb26-en.

Okunlola F A, Osuma G O & Omankhanlen E A (2019), Agricultural Finance and Economic Growth: Evidence from Nigeria. Verslas: Business: Theory and Practice ISSN 1648-0627 / eISSN 1822-4202.

Olorunsola E. O, Adeyemi A. A, Valli T. A, Kufre J. B & Ochoche A(2017), Agricultural Sector Credit and Output Relationship in Nigeria: Evidence from Nonlinear ARDL,CBN Journal of Applied Statistics Vol. 8 No. 1.

Oluwatoyese, O. P., and Applanaidu, S. D. (2019). Effect of agricultural sector determinants on economic growth proceedings book of ICETSR, 2014, Malaysia Handbook on the Emerging Trends in Scientific Research.

Osabohien R, Mordi A & Ogundipe A(2020), Access to credit and agricultural sector performance in Nigeria,African Journal of Science, Technology, Innovation and Development, https://doi.org/10.1080/20421338.2020.1799537.

Owusu, S (2017), Effect Of Access To Credit On Agricultural Productivity: Evidence From Cassava Farmers In The Afigya-Kwabre District Of Ghana, International Journal Of Innovative Research In Social Sciences & Strategic Management Techniques | Ijirsssmt Vol. 4, No. 2.

Ross, J. F. (2004),Pascal's legacy. EMBO Reports, 5, 7–10.

Solow, R.M (1957), A contribution to the theory of economic growth. Statistical analysis of Cointegration vectors. Journal of Economic Dynamics and Control, 12, 231 254.

Stiglitz, J. E., & Weiss, A. (1981), Credit rationing in markets with imperfect information. American Economic Review, 71(3), 393-410.

Waugh E (2024), What Is Credit?

https://www.experian.com/blogs/ask-experian/credit-education/faqs/what-is-credit/.

World Economic Forum (2024), Access to credit: The silent issue hampering growth and development in emerging economies. https://www.weforum.org/stories/2024/08/access-to-credit-slowing-growth-and-development/.

Yakubu S., Emmanuel, D. Ahangba, A.A., Adam, S. And Bashir, A (2021), Assessment of The Effects of Agricultural Credit Guarantee Scheme Fund (ACGSF) on Agricultural Output inNigeria.JABU International Journal of Agriculture and Food Science (IJAFS) Volume 11.

Zabatantou L H , Bouity, C & Owonda, F. (2023), Impact of Agricultural Credit on Productivity. Theoretical Economics Letters, **13**, 1434-1462. doi: 10.4236/tel.2023.136081.