Agricultural Credit Guarantee Scheme Funds and Agricultural Performance in Nigeria

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Abstract

This study examines the significance of the Agricultural Credit Guarantee Scheme (ACGS) funds in improving agricultural performance in Nigeria. The study uses descriptive statistics and trend analysis to analyze the relationship between ACGS funds and agricultural output in Nigeria, assessing its impact on crop production, livestock, and fishery sectors. The study utilized a quantitative research design to investigate the effect of agricultural credit guarantee scheme funds on agrarian performance in Nigeria. Time series data spanning a period of 41 years (1981-2021) was collected from secondary sources, specifically the National Bureau of Statistics (NBS) and the Central Bank of Nigeria (CBN). The data collected included variables such as gross domestic product (GDP) as a proxy for agricultural performance and the total volume and number of loans issued for cash crops, food crops, and mixed farming as proxies for ACGSF disbursements. This study's findings revealed that Nigeria's Agricultural Credit Guarantee Scheme Fund (ACGSF) has had a significant impact on the agriculture sector, particularly in livestock, crops, and fisheries. The fund experienced a low level of funding before 1999 but increased significantly after the advent of democracy, focusing on agriculture. Livestock and crop production had the highest loan guarantee funding in 2014, while fisheries peaked in 2009. Using the Augmented Dickey-Fuller approach, all variables were found to be stationary at the levels, and some were found to be stationary at the first difference. None of the variables were stationary at the second difference. The estimated F-ratios for Livestock, Crop, and Fishery were 49.71, 190.38, and 122.45, respectively, indicating that the agricultural credit guarantee significantly influences all sectors' output. The adjusted R^2 values for Livestock, Crop, and Fishery were 82.97%, 94.67%, and 75.69%, respectively, indicating a good fit for the regression models. The regression results reveal a positive relationship between the GDP of Livestock and cattle and other livestock, with other livestock being significant at the 1% level. The GDP of Fishery also shows a positive significant relationship with ACGSF Fishery. The recommendation is to increase investment in livestock, crop, and fishery sectors

to diversify the economy, improve GDP, and reduce dependency on other countries. Loans should be available to qualified individuals as soon as due by participating banks, and more funds should be made available to cash crops and other sectors to earn more foreign exchange. Increased publicity about the scheme is recommended.

Keywords: Agricultural Credit, ACGSF, Agricultural Performance, Crop production, Livestock sector, Nigeria

Introduction

Every nation needs agriculture as a vital industry, and to fulfill the food demands of the expanding population, an increase in agricultural output is necessary. Apart from satisfying the nation's food needs, agriculture plays a crucial role in the economy by supplying inputs to other industries and creating jobs. Investigating the relevance of agricultural output and the variables influencing it is essential in this regard (Bahşi & Cetin 2020). Agricultural credit is a significant aspect of the growth of the agricultural sector's production and investment structures in both developed and developing nations, and it is also a tool for agricultural development (Adanacioglu *et al.,* 2017). Similarly, agricultural credit plays a crucial role in agricultural productivity because it eliminates financial barriers to cash inputs, boosts farmers' technical proficiency, and improves resource allocation and profitability (Sial *et al.,* 2011).

The demand for financing to expand the agricultural sector of the economy has increased in recent years. This is because credit, particularly in developing nations like Nigeria, plays a crucial role and is the lifeline for economic growth and stagnation in any financial system. Sulaimon (2022) reiterated that credit finance is one of the critical components of achieving sustainable economic activity in any nation. As a result of having access to essential inputs like fertilizer, land, better seedlings, machinery, storage facilities to prevent postharvest waste, and irrigation infrastructure for dry season farming, agriculture would be more productive. More importantly, finance availability can stimulate new farmers and remove entry barriers, raising overall agricultural output.

Farmers depend on timely access to financing and availability to purchase the equipment and inputs they need to run their farms. Thus, the main issue that farmers deal with is restricted access to finance facilities, making it difficult to implement more contemporary and efficient technology in their farming operations. Insufficient resources limit opportunities for enhanced productivity and impede the ability to consume smoothly (Saqib *et al.,* 2018). Also, the decline in Nigeria's agricultural sector's GDP contribution has been ascribed to a lack of agricultural financing (Mallum, 2016). Hence, commodity price volatility, disease outbreaks, and climate change make agricultural activities risky and less attractive to banks. Nigeria's smallholder farmers and rural dwellers lack sufficient collateral facilities to obtain credit in formal financial institutions (Sulaimon, 2022).

Table 1: Commercial banks' sectorial preferences for credit facilities.

Year	Sector		
	Agriculture	Manufacturing	Oil and Gas
2014	3.716	12.781	15.883
2015	3.433	13.267	17.368
2016	3.263	13.748	22.261
2017	3.356	13.795	22.720
2018	3.611	13.738	22.738
2019	4.265	15.266	21.361

Source: **Sulaimon, (2022)**

The federal government established Agricultural Credit Guarantee Scheme Fund (ACGSF) to address agriculture issues and ensure food security 1977 (Eyo, Nwaogu & Agenson, 2020). Within this program, 75% of bank loans to farmers are guaranteed in the event of failure, with the CBN as guarantor (Nwosu *et al.,* 2010). This lowers the value at risk and motivates banks to extend and grow their credit to the agricultural sector. Since the scheme's inception in 1978, several changes have been implemented to enhance and maintain banks' lending to agriculture, including interest drawback, trust fund models, and linkage banking amongst self-help groups. Awotide *et al.* (2015) observed that despite introducing the Agricultural Credit Guarantee Scheme Fund, smallholders and rural farmers struggle to obtain credit from formal financial institutions, and the macroeconomic environment is not favorable for loan-guaranteed performance. Furthermore, less than 5% of all loans from commercial banks were given to Nigeria's agriculture industry between 2014 and 2019, despite being the largest employer of workforce in the nation. A detailed breakdown of commercial banks' sectorial preferences for credit facilities may be found in Table 1.

Agricultural credit facilities are generally provided to farmers in the form of loans or overdrafts, among several other forms, to help them increase their productive capacity and, consequently, their earnings; this lowers socio-economic risks, vulnerability, poverty, and deprivation (Croppenstedt *et al.,* 2017).

Credit for the agricultural sector might originate from official sources like commercial banks and unofficial ones like brokers, neighborhood dealers, unofficial credit groups, families, or friends (Haryanto *et al.,* 2023). Although there are several obstacles in farming households obtaining credit from financial institutions, credit access is a helpful instrument for improving agricultural efficiency (Chandio *et al.,* 2020). Banks will not grant loans without appropriate, steady income or sufficient collateral (Linh *et al.,* 2020). To address this issue, farmers turn to unofficial lending sources, which have less stringent requirements for collateral and provide cheaper interest rates and processing fees (Ullah *et al.,* 2020). Empirical research has shown that the socio-demographic characteristics of families, such as gender, age, education, experience in farming, household income, the presence of credit groups, dependence ratio, the

amount of agricultural land owned, and ownership certificates, influence credit eligibility, both official and unofficial (Chandio *et al.,* 2021; Linh *et al.,* 2020; Zulfiqar *et al.,* 2021). A farmer's likelihood of obtaining credit increases with the size of their property since they are thought to be more creditworthy (Sekyi *et al.,* 2020). Agricultural land is frequently utilized as security if repayment is not made. Thus, more vital financial availability corresponds with more significant land (Alhassan *et al.,* 2020).

Thus, this study examines the significance of the Agricultural Credit Guarantee Scheme funds in improving agricultural performance in Nigeria. The importance of this study lies in its contribution to filling the existing research gap regarding the relationship between the Agricultural Credit Scheme (ACGS) funds and agricultural performance in Nigeria. Despite its establishment, there is limited empirical research on its effectiveness and impact on agricultural outcomes. This study aims to fill the research gap by examining the impact of Agricultural Credit Guarantee Scheme (ACGS) funds on agricultural performance in Nigeria. The findings will be of significant policy relevance to the Nigerian government and agricultural sector policymakers. By determining the impact of ACGS funds on agricultural output, policymakers can gain insights into the effectiveness of the scheme and design targeted interventions to improve its effects. The study will conduct descriptive statistics and trend analysis to provide a comprehensive understanding of the relationship between ACGS funds and agricultural output. It will also assess the impact of ACGS funds on crop production, assessing whether the availability of credit through the scheme significantly influences crop yields and overall agricultural productivity. The study will also examine the impact of ACGS funds on the livestock and fishery sectors, providing insights into the effectiveness of the scheme in promoting growth and development in these sectors. The findings can inform policy decisions and interventions aimed at improving agricultural financing and overall performance in Nigeria.

Research Objective:

The research objectives are to:

The main objective of this research is to determine the impact of Agricultural Credit Guarantee Scheme (ACGS) on Agricultural Performance in Nigeria. The specific objectives of this research are to:

i.   Examine the descriptive statistics and the trend analyses of the variables.

ii.   Determine the impact of ACGSF on crop production output in Nigeria.

iii.   Examine the impact of ACGSF on the output of the livestock sector in Nigeria.

iv.   Ascertain the relationship between ACGSF and the fishery sector output in Nigeria.

Research Methods

Research Design

A quantitative research design was adopted to investigate the impact of agricultural credit guarantee scheme funds on agricultural performance in Nigeria. The research used time series data spanning 41 years (1981 – 2021).

Population

The population of this study consists of 41 observations. All agricultural stakeholders, including farmers, financial institutions, and government agencies, are involved in the administration of ACGSF. The study was conducted in Nigeria, a sub-Saharan African (SSA) country in the western part of Africa. Nigeria lies between latitudes 40 and 140 N and longitudes 20 and 150 E. It has a total landmass of 923,768sq.km. The population of Nigeria is 140,003,542, as estimated by the National Population Commission (NPC) in 2006 (FRN, 2007).
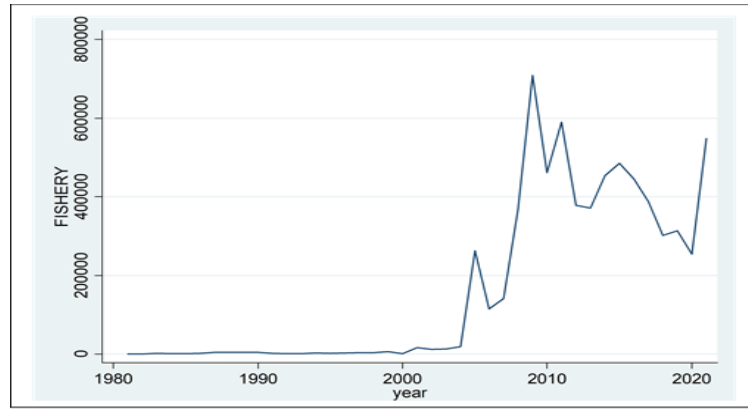
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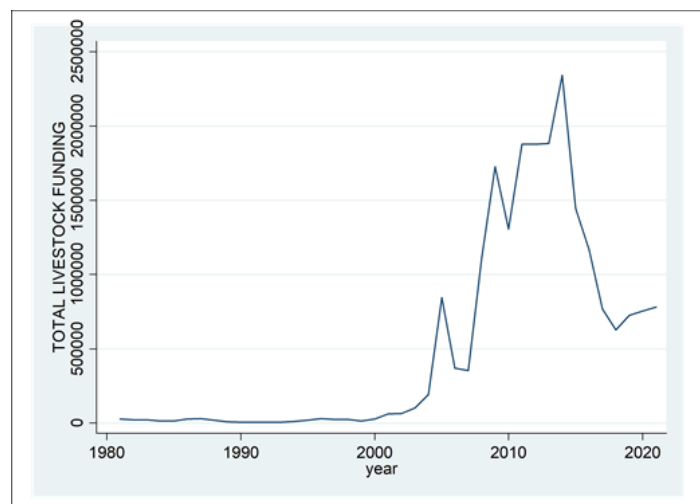
Figure 1: Total Livestock Funding Result from CBN Statistical Bulletin and Database 1981 – 2021
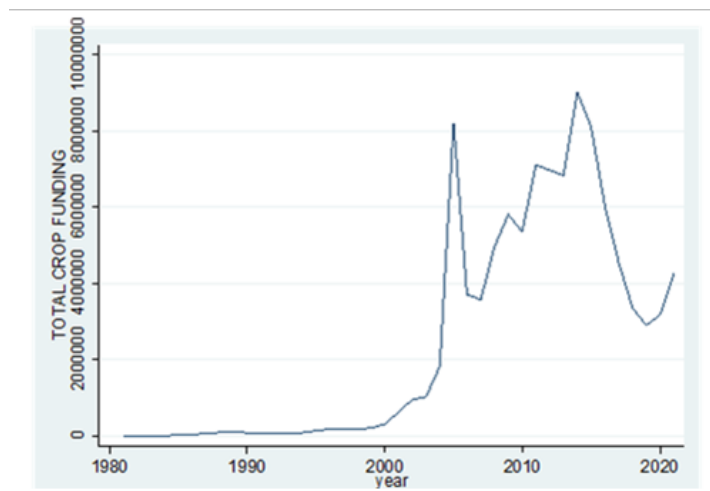
Figure 2: Total crop Funding Result from CBN Statistical Bulletin and NBS Database 1981 – 2021

Figure 3: Fishery Result from CBN Statistical Bulletin and NBS Database 1981 – 2021

A secondary source of data was used for the study. The time series data covering the period of (1981 – 2021) was sourced from National Bureau of Statistics (NBS) and Central Bank of Nigeria (CBN). Gross Domestic Product was used as a proxy for Agricultural performance, which represents the dependent variable, while the total volume of loans given in naira (₦) and total number of loans issued for (CASH CROP, FOOD CROP, and MIXED FARMING) was used as a proxy for Agricultural Credit Guarantee Scheme Funds which represent the independent variables.

Method of Data Analysis

Descriptive statistics, such as mean and standard deviation, were used to examine variables, including ACGSF disbursements, agricultural output (crop production, livestock sector output, fishery sector output), and other relevant variables. Time-series analysis examined the trends in ACGSF disbursements and agricultural performance indicators over the study period. This can involve graphical representation (e.g., line graphs) and statistical tests for trend significance. The study employs regression analysis and econometric techniques to examine the relationship between ACGSF and crop production, livestock sector output, and fishery sector output.

Result /Findings

Table 2: Mean and Standard Deviation of the variables

Variables	Observation	Mean	Std Deviation
GDP LIVESTOCK	41	710.05	302.94
ACGSF POULTRY	41	370134.00	500966.20
ACGSF CATTLE	41	61797.87	124158.50
ACGSF SHEEP	41	10545.75	19921.39
ACGSF OTHER LIVESTOCK	41	62680.00	84196.45
GDP CROP	41	7470.82	5250.37

ACGSF CASHCROP	41	132681.10	188408.60
ACGSF FOODCROP	41	2126052.00	2553496.00
ACGSF MIXED FARMING	41	189830.30	360330.80
GDP FISHERY	41	181.49	114.07
ACGSF FISHERY	41	163086.50	214107.10

Source: Authors calculations from CBN Statistical Bulletin and NBS Database 1981 – 2021

The study analyzed the government's agricultural sector financing from 1981 to 2021, revealing a well-defined pattern. From Table 1, the mean of GDP Livestock, ACGSF Poultry, ACGSF CATTLE, ACGSF SHEEP, and ACGSF OF OTHER LIVESTOCK was 710.05, 370134, 61797.87, 10545.75, and 62680.00, respectively, with corresponding standard deviations of 302.94, 500966.20, 124158.50, 19921.39, and 84196.45. The mean of GDP Crop, ACGSF Cash Crop, ACGSF Food Crop, and ACGSF Mixed Farming was 7470.82, 132681.10, 2126052.00, and 189830.30, with corresponding standard deviations of 5250.37, 188408.60, 2553496.00, and 360330.80. For Fishery, the mean and standard deviation of GDP Fishery and ACGSF Fishery were 181.49, 163086.50, 114.07, and 214107.10, respectively. The study reveals a clear pattern in government financing for the agricultural sector from 1981 to 2021. There was an increase in credit facilities for farmers, particularly in livestock, crops, and fisheries. Before 2000, funding for poultry farming was low, but it increased between 2008 and 2016. Crop funding peaked in 2014, with notable financing in 2005 and 2015. Fishery funding started growing in 2005 but reached its peak in 2009. Before 1999, agricultural funding was generally low but dwindled, accounting for only a tiny fraction of the government's yearly budget.

Result of unit root testing

Table 3: Unit Root Testing

Variables	ADF Level with constant only			ADF First Difference with constant only		ADF Second Difference with constant only	
	5% Test critical values	T. statistic	Prob.	T. statistic	Prob.	T. statistic	Prob.
TEST FOR LIVESTOCK							
GDPLIVSTOCK	-2.961	0.516	0.9854	-2.668	0.0798	-5.353	0.0000
POULTRY	-2.969	-1.552	0.5077	-2.702	0.0737	-3.480	0.0085
CATTLE	-2.972	-2.110	0.2404	-2.270	0.1818	-3.632	0.0052
SHEEP	-2.964	-1.569	0.4994	-3.378	0.0117	-6.199	0.0000
OTHER LIVEST	-2.964	-0.607	0.8693	-4.694	0.0001	-6.953	0.0000
TEST FOR CROP PRODUCTION							

GDP CROP	-2.961	1.374	0.9970	-3.499	0.0080	-7.437	0.0000
CASH CROPS	-2.966	0.947	0.9937	-3.018	0.0332	-7.094	0.0000
FOOD CROPS	-2.961	-1.456	0.5552	-5.714	0.0000	-8.824	0.0000
MIXED FARM	-2.964	-1.054	0.7330	-3.441	0.0096	-4.662	0.0001
TEST FOR FISHERY							
GDP FISHERY	-2.964	0.492	0.9846	-3.385	0.0115	-3.655	0.0048
FISHERY	-2.961	-0.900	0.7881	-4.679	0.0001	-6.653	0.0000

Source: Authors calculations from CBN Statistical Bulletin and NBS Database 1981 – 2021 data

Table 3 shows the stationarity for livestock, crop production, and fisheries under the Augmented Dickey-Fuller approach, where all variables were stationary at levels, and few were different. At the same time, none were stationary at 2nd difference.

Regression Analyses Result

Regression Analysis for the Livestock Sector

Table 4: Regression Analysis for Livestock Sector

Dependent Variable: GDP LIVESTOCK

Variables	Coefficient	Standard Error	t-value	Prob
Constant	504.1224	24.7792	20.34	0.000***
POULTRY	-2.34e-06	0.0001	-0.02	0.982
CATTLE	0.0002	0.0003	1.00	0.325
SHEEP	-0.0043	0.0019	-2.27	0.029**
OTHER LIVESTOCK	0.0037	0.0005	7.34	0.000***
F (4, 36) 49.71***				
R-SQUARE 0.8467				
ADJ. R-SQUARE 0.8297				

*= Significant at 1%, **= Significant at 5%,   ***= Significant at 10%,

Sources: Authors field work

Table 4 revealed that the estimated model indicates that agricultural credit guarantee significantly influences the livestock sector's output. The F-ratio of 49.71 with a 1% significance level suggests a strong relationship. The regression model has a commendable explanatory power, with an adjusted R^2 of 0.8467, indicating that the agricultural loan

guarantee to the sector can explain 84.67% of the GDP for livestock. The remaining 15.33% is attributed to variables not included in the model.

The regression results reveal a positive relationship between the GDP of Livestock (dependent variable) and cattle and other livestock, with other livestock being significant at the 1% level. However, poultry and sheep show a negative relationship with the dependent variable. Specifically, a unit increase in the loan guarantee to cattle and other livestock leads to a 0.0002 and 0.0037 increase in the GDP of Livestock production, respectively. On the other hand, a unit increase in ACGSF loans to poultry and sheep results in a decrease of 0.00000234 and 0.0043 in the GDP of livestock, respectively.

Regression Analysis for Crop Production Sector

Table 5: Regression Analysis for Crop Production Sector

Dependent Variable: LNGDP CROP

Variables	Coefficient	Standard Error	t-value	Prob
Constant	4.8918	0.1883	25.97	**0.000***
LNCASH CROP	0.0890	0.0470	1.90	**0.068***
LNFOOD CROP	0.1819	0.0377	4.83	**0.000***
LNMIXED FARM	0.0561	0.0186	3.02	**0.005***
	F (3, 29) 190.38***			
	R-SQUARE 0.9517			
	ADJ. R-SQUARE 0.9467			

*= Significant at 1%, **= Significant at 5%,   ***= Significant at 10%,

Sources: Authors field work

The results below showed a positive relationship between the dependent variable (GDPCROP) and the independent variables (CASHCROP, FOOD CROP, and MIXED FARMING). It shows that a unit change in loan guarantee to the Cash Crop production will result in a 0.089 increase in GDP for the crop sector, keeping other variables constant. It is significant at a 10% level of significance. Also, a unit increase in loan guarantee to food crops translated to a 0.1819 change in the GDP for the Crop Sector at a 1% level of significance, while the rise in mixed farming also resulted in 0.0561 increases in the GDP of the Crop Sector at 1%. The estimated model shows an F- ratio of 190.38, which implies that agricultural credit guarantee for the period of analysis has a significant influence on output. The explanatory power of the regression model with an adjusted R^2 of 0.9467 is commendable. This means that the agricultural loan guarantee to the sector explains 95 percent of GDP for crop production in Nigeria within the period of the study. Variables outside this model explain the remaining 5

percent. The results show that this model's standard errors are statistically significant at 5%. The F-statistics will be used to test for statistical significance of the parameter.

Regression Analysis for Fish Production Sector

Table 6: Regression Analysis for Fish Production Sector

Dependent Variable: LNGDP FISHERY

Variables	Coefficient	Standard Error	t-value	Prob
Constant	2.8593	0.2009	14.23	0.000***
LNFISHERY	0.2168	0.0195	11.07	0.000***
F (1, 38)	122.45***			
R-SQUARE	0.7632			
ADJ. R-SQUARE	0.7569			

*= Significant at 1%, **= Significant at 5%,   ***= Significant at 10%,

Sources: Authors field work

The regression results show a positive relationship between the dependent variable (GDPFISH) and the independent variable (ACGFISHERY). A unit change in loan guarantee to the Fishery sector will cause a 21.68 percent change in GDP for fishery sector at a 1% significance level. The estimated model shows an F- ratio of 122.45 with 1% significance level. This implies that agricultural credit guarantee for the analysis period significantly influences the fishery sector's output. The explanatory power of the regression model with an adjusted R^2 of 0.7569 satisfactorily implies that the agricultural loan guarantee to the sector explains 76 percent of GDP for livestock. Variables outside this model explain the remaining 24 percent.

Result of hypotheses testing

The results at the 1% level of significance lead to the acceptance of the alternate hypotheses, indicating that ACGSF significantly influences the Livestock, Crop, and Fishery sectors in Nigeria.

Ho_1: ACGSF LIVESTOCK significantly influences GDP Livestock in Nigeria, as indicated by a T-calculated value of 49.71, exceeding the T-tabulated value of 5.75.

Ho_2: ACGSF CROP significantly influences crop production in Nigeria, as evidenced by an F-calculated value of 190.38, surpassing the F-tabulated value of 5.75.

Ho_3: ACGSF FISHERY significantly influences the GDP of the fishery sector in Nigeria, with a T-calculated value of 122.45, surpassing the T-tabulated value of 5.75.

Conclusion

The variables (Livestock, Crop, and Fishery) have different means and standard deviations. The Agricultural Credit Guarantee Scheme Fund (ACGSF) experienced a low level of funding before 1999 but increased significantly after the advent of democracy with a focus on agriculture. Livestock and crop production had the highest loan guarantee funding in 2014, while fisheries peaked in 2009. Using the Augmented Dickey-Fuller approach, all variables were found to be stationary at the levels, and some were found to be stationary at the first difference. None of the variables were stationary at the second difference. The estimated F-ratios for livestock, crop, and fisheries were 49.71, 190.38, and 122.45, respectively, which was significant at the 1% level. This indicates that agricultural credit guarantee substantially influences the output of all sectors. The adjusted R^2 values for Livestock, Crop, and Fishery were 82.97%, 94.67%, and 75.69%, respectively, indicating a good fit for the regression models. The regression results reveal a positive relationship between the GDP of Livestock and cattle and other livestock, with other livestock being significant at the 1% level. Poultry and sheep, however, have a negative relationship with the dependent variable. Similarly, there is a positive significant relationship between GDPCROP and CASHCROP, FOOD CROP, and MIXED FARMING at different significance levels. The GDP of Fishery also shows a positive significant relationship with ACGSF Fishery.

In summary, the agricultural credit guarantee significantly influences Livestock, Crop, and Fishery sectors, with specific positive relationships observed between the dependent variables and relevant independent variables. The Agricultural Credit Guarantee Scheme Fund (ACGSF) has positively impacted Nigeria's agriculture sector, particularly in livestock, crop, and fisheries. The study, which analyzed data from 1981 to 2021, found an increase in the ACGSF's trend across various sub-sectors of agriculture. This is consistent with previous research by Orok and Ayim (2017) and Rahji and Fakayode (2009), which emphasize the importance of agriculture in Nigeria's economy and its significant contribution to the country's gross domestic product.

Recommendations

The recommendation is to increase investment in the agricultural sector's livestock, crop, and fishery sectors to diversify the economy, improve GDP, and reduce dependency on other countries. Loans should be available to qualified individuals as soon as due by participating banks, as late disbursement could lead to loan diversion to non-agricultural purposes. More funds should be available to cash crops and other sectors to earn more foreign exchange, and increased publicity about the scheme is recommended.

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