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Impact of Agricultural Credit Guarantee Scheme Fund on Livestock Production in Nigeria: 1987-2021

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Abstract:

This work assesses the impact of the Agricultural Credit Guarantee Scheme Fund (ACGSF) on livestock production in Nigeria from 1987 to 2021. Time series data were gathered from the Central Bank of Nigeria (CBN) and from the World Bank. The Auto Regressive Distributed Lag (ARDL) method of analysis model was used to analyse data, while the Augmented Dickey-Fuller test and the Philip and Peron tests were used to ascertain the stationarity of data. The breakpoint unit root test was carried out in order to ascertain the order of integration. The result of the ARDL test reveals the f -statistic to be 7.10424. This is higher than the upper critical bounds at a 1 percent level of significance and confirms that there is a long-run relationship between the variables. Also, results show that the ACGSF credit to livestock had a positive and significant relationship with the GDP for the livestock subsector. Thus, a unit increase in ACGSF loan to the livestock subsector will lead to a 20% (0.20167) increase in GDP for the livestock sub-sector. Findings also show that the inflation rate has a negative relationship with GDP for the livestock sub-sector, with a coefficient value of -0.06218%. The R^2 is 0.82622, implying that 82% of variations in the model are explained by the explanatory variables. The study affirms that an increase in government investment in livestock production will propel and increase the sub-sector's capacity to earn more Gross Domestic Product.

Keywords: Agricultural credit, livestock production, gross domestic product, agricultural credit guarantee scheme fund

1. Introduction

Livestock generally refers to domesticated animals raised for the purpose of providing labour and for consumption of a variety of produce like meat, milk, eggs, leather, wool and fur. The term covers domesticated animals and birds. Livestock breeding is a major sub-sector of agriculture. In subsistence societies, farmers engage in livestock farming to provide the needed food, fertiliser, clothing and transportation for the family. Also, the sale of animals is a lucrative business during off-farm seasons.

The by-products of livestock make up a major source of key components in food required for healthy nutrition. For instance, protein, calcium and fat are important food nutrients derived from milk, meat and eggs. Furthermore, fur, hides, and skins derived from cattle and sheep are key raw materials for leather, which is a basic input for the production of shoes, bags and furniture, while horses, donkeys and camels are still important means of transportation in rural and desert communities. However, with increased development, livestock production has emerged as a profitable enterprise not just for individuals but for nations as well.

In Nigeria, livestock production is an important source of income for the economy. For instance, livestock share of GDP grew from ₦433.43 million in 1987 to ₦512.46 million, ₦809.16 million, ₦1,204.21 million and ₦1,240.22 million in 1997, 2007, 2017 and 2021, respectively (CBN, 2022). Moreover, with an increase in population, the need for livestock products has increased considerably over time, making it an important component of aggregate demand. Also, animal rearing is a source of gainful employment both in rural and urban areas. Notwithstanding its potential, the livestock sub-sector is rife with challenges, among which are disease prevalence due to inadequate feed supply and nutrition, lack of good storage facilities for livestock products leading to losses instead of profit, use of obsolete techniques of production, low investment potentials and inadequate capital. The most debilitating of these challenges is that of inadequate capital. This conclusion arises from the fact that banks are not favourably disposed to grant credit to livestock ventures because of their high-risk nature and their long gestation period. On their own part, farmers lack adequate savings to raise capital due

to their low income. Consequently, the capital needed to acquire the infrastructure to establish and run a viable livestock enterprise is largely lacking.

In order to redress the challenges of the non-availability of adequate capital to farmers, the Agricultural Credit Guarantee Scheme Fund (ACGSF) was established by the Federal Government of Nigeria in 1977. The purpose of the scheme is to ensure a guarantee for loans given by commercial banks for agriculture with the hope that credit to the agricultural sector will be boosted. The scope of the ACGSF loan guarantee covers food crops, cash crops, livestock, fisheries production and the development and maintenance of plantations. The agricultural finance department of the Central Bank of Nigeria (CBN) oversees the day-to-day activities of the ACGSF, while credit administration for farmers is managed by CBN branch offices. ACGSF loan duration ranges from short-term to medium-term and long-term, taking into cognisance the type of agricultural enterprise.

Generally, farmers require credit to acquire new and improved inputs that lead to increased output and also support farmers' financial needs during off-farm seasons. More specifically, livestock farmers need credit to acquire infrastructure such as cages, pens, barns, and feeders required for set-up, purchase of feed and drugs, and young animals, as well as for continuous management of animals during the gestation period until maturity. Hence, the importance of credit to the livestock sub-sector cannot be overstated. This paper studies the effect of Agricultural Credit Guarantee Scheme Fund on livestock production in Nigeria. The objective is to estimate the impact of ACGSF loans on livestock production in Nigeria. The paper is in five sections: the introduction, literature review, methodology, presentation and analysis of data, conclusion and recommendation.

2. Literature Review

2.1. Conceptual Issues

2.1.1. Credit

Generally, credit refers to the ability to purchase goods and services before payment based on the confidence that payment will be made in the future. According to Passi (2017), credit is a tool that eases business. Passi explains that credit is not just cash or money but any valuable asset useful in doing business. The major role of credit, as emphasised by Passi, is that it enables business firms to build a strong resource base as well as provide operational capital for large-scale production.

2.1.2. Agricultural Credit

Chen and James (2021) view agricultural credit as one of the tools used to finance agricultural enterprises. These tools include credit, cash, bills of exchange and bank acceptances. The authors assert that agricultural credit is adapted to the specific financial needs of agricultural entrepreneurs and enables them to purchase equipment, finance planting and harvesting season activities, market produce, and serve as working capital. Chen and James emphasise that it is important for credit to be available to farmers at competitive rates as this will enhance the profitability of their produce.

2.1.3. Livestock Production

Livestock production, otherwise known as animal husbandry, is that branch of agriculture that involves the rearing of animals for food and commercial purposes. Also, Dominguez and Grace (2019) noted that the by-products of livestock, such as meat, milk, eggs and cheese, are nutrient-rich products that boost poor diets. It has also been noted that livestock production is a key contribution to national economies, contributing between 15 to 80% of agricultural GDP (World Economic Forum, 2019).

According to Herrero, Delia, Njuki, Johnson, Enahoro, Silvestri and Rufino (2013), livestock production is a source of income and employment for producers, especially for women and pastoralists and a crucial asset and safety net for the poor.

2.1.4. Agricultural Credit Guarantee Scheme Fund

The Agricultural Credit Guarantee Scheme Fund (ACGSF) was established by the Federal Military Government of Nigeria in 1977 with the aim of boosting bank credit to the agricultural sector through the provision of guarantees in respect of loans given by any bank for agricultural purposes. CBN (2021) specifies that a loan guarantee by ACGSF covers the production of food crops, cash crops, establishment and management of plantations, animal husbandry and processing of agricultural output. The Central Bank of Nigeria manages the fund and serves as a secretariat. The scheme provides cover for loans granted to the agricultural sector by commercial and merchant banks. The guarantee covers pledges to pay 75% of outstanding default on behalf of beneficiaries provided that the security pledges have first been realised. The process of credit administration includes loan application, application for guarantee, loan recovery and enforcement of guarantee claims, among others. The duration of loans under the scheme varies from project to project. Loans could be short-term, medium-term or long-term term, depending on the nature of the project.

2.2. Theoretical Review

The sustainable livelihood theory proposed by Chamber and Cornwall (1991) was used in this study. It proposes that a rise in output is only achievable if the availability of capital resources is guaranteed. Hence, capital resources enhance the capacity of farmers to offset risks, ease stocks and manage unforeseen or unexpected needs. Adequate capital resources also increase the ability to acquire and maintain productive inputs over a long period. Implicitly, an increased

supply of capital resources to livestock farmers will ensure increased output, increased availability and affordability of livestock products, and create more capacity for livestock farmers to earn income.

In his agricultural-based development hypothesis, Wiggins (2006) stresses that institutional, technical and financial incentives must change for agriculture to receive a boost in output. According to this theory, agricultural financial schemes hold a double-edged sword to economic development: First, they make available increased purchasing power to farmers. Second, they provide resources to support industrial transformation. Thus, Wiggins postulates that institutional credit provides the foundation for sustainable development in agriculture and economic transformation in general.

2.3. Empirical Review

Jam, Isegba and Aondoakaa (2023) examined the impact of Agricultural Credit Guarantee Scheme Fund on agricultural productivity in Nigeria from 1981 to 2020. The study utilised secondary data obtained from the Central Bank of Nigeria. Data were analysed using Jaque Bera test and the Augmented Dickey-Fuller test. The Johansen co-integration test and Error correction model were also used to determine the nature of the relationship between the variables. Findings reveal there is a positive relationship between ACGSF funding and livestock, fishery and forestry output. Thus, an increase in funding will lead to an increase in agricultural output. The study recommends that the government dedicate more funding in both the long-run and short-run in order to improve output.

Ogbodo, John and Mmesoma (2022) analysed the impact of Agricultural Credit Guarantee Scheme Fund on output of the Nigerian agricultural sector from 2000 – 2020. Data for the study were analysed using the Augmented Dickey-Fuller test, Philip-Perron test, the Ordinary Least Square Regression analysis and the Granger causality test. The results of the regression analysis showed that 79% of variations in the model are explained by the explanatory variables. The coefficient of the Agricultural Credit Guarantee Scheme Fund is 0.03864, implying that ACGSF is significant and positively related to agricultural output within the period of study. The study recommends that the requirements and stringent measures for acquiring credit from the scheme be minimised to increase the contribution of the scheme to agricultural output.

Ogbonnaya, Nwachukwu and Uwazie (2022) examined the nexus between Nigeria's success in agricultural output and funding of agricultural credit between 1981 and 2021. The study assessed the impact of Agricultural Credit Guarantee Scheme Fund, commercial bank lending to agriculture, money supply and domestic credit to private sector on output of Nigeria's agricultural sector. The study used the ex-post-facto research approach, the multiple regression analysis and the vector auto-regression estimation technique to establish the relationship between the variables. Results showed that a 1% increase in Agricultural Credit Guarantee Scheme Fund and commercial bank lending to agriculture increased the output of the sector by 0.07% and 0.04%, respectively. Findings also showed that a unit increase in money supply increased agricultural performance by 2.8%, while an increase in domestic product to the private sector decreased agricultural output by 2%. The study recommends that policies should be directed towards boosting credit availability to farmers.

Babatunde, Ayodele and Daramola (2021) analyse the relationship between agricultural financing, food security and economic growth in Nigeria. Secondary data spanning from 1991 to 2020 were used for the study. Techniques of analysis include: Error correction model (ECM) and Granger causality test. Results reveal that bank loans to agriculture significantly impact food exports positively in the long run but are insignificant in the short run. Also, total government expenditure on agriculture has a significant impact on food export in the long run but an insignificant impact in the short run. The study concludes that agricultural financing has the capacity to positively affect food production in the long-run.

Sulaimon (2021) examines the impact of Agricultural Credit Guarantee Scheme Fund (ACGSF) on the performance of agriculture in Nigeria from 1981 to 2019. Secondary data for real agricultural GDP were gathered from the Central Bank of Nigeria (CBN) and the World Bank. Data were analysed using the threshold regression analysis. Results reveal a U-shape relationship between real agriculture GDP and ACGSF credit. Furthermore, ACGSF credit has a significant positive effect on real GDP at 1060389 (₦ 'thousand) and 5951809 (₦ 'thousand) thresholds. The study suggests that more smallholders should be included among credit beneficiaries as they dominate the agricultural production landscape in Nigeria. Although Babatunde et al. and Sulaimon analyse the effect of financing on agricultural output, they fail to isolate the impact of agricultural financing on livestock production.

Reuben, Nyam and Rukwe (2020) study Agricultural Credit Guarantee Scheme Fund and its effect on agricultural output in Nigeria. The study utilises secondary data from the Central Bank of Nigeria and National Bureau of Statistics. Data were analysed using descriptive and inferential statistics. The study found that the supply of funds to the agricultural sector was not consistent across the subsectors. While the supply of credit to the crop subsector increased only between 1998 and 1999, the supply of credit to the livestock subsector rose consistently over the period of the study. The regression results revealed the multiple coefficient of determination R^2 to be 0.8523 while the coefficient of ACGSF on crop, livestock and fisheries subsectors were 0.1607, 0.2320 and 0.2110, respectively, with positive signs and all significant at 1% and 5% levels. The study concludes that ACGSF has a significant and positive effect on agricultural output in Nigeria.

Khan, Kamal, Ramazan, Khan, Ali and Ahmed (2018) examined the impact of credit on livestock production. Their work assessed the effect of credit on livestock income in the district of Lasbela in Balochistan. Primary and secondary data were used to test the relationship between agricultural credit and livestock incomes. Results show that agricultural credit contributed positively to the livestock sector and enhanced the income of the farmers by 65%. Findings also revealed that the elasticity of agricultural credit is higher than the elasticity of family and education level at 11%, 0.09% and 0.05%. This implies that livestock incomes respond more to changes in credit than changes in family size and education.

In another study, Ayide, Akinsola, Luwabukumi and Ajibade (2018) examine the relationship between Agricultural Credit Guarantee Scheme Fund and productivity of livestock farmers. The study uses time series data obtained from Central Bank of Nigeria (CBN), National Bureau of Statistics (NBS) and the Food and Agricultural Organization (FAO).

Trend analysis and co-integration tests are used for data analysis. The result of trend analysis shows an increase in the productivity of livestock between 1978–1980 but a sharp decrease between 1980 and 1983. Production remained constant in 1990 and increased again between 2005–2014. The result of the cointegration test reveals a positive long-run relationship between livestock productivity and ACGSF loan, while a negative relationship exists between livestock productivity, rate of interest and exchange rate. It was recommended that the government increase the funding capacity of ACGSF and implement appropriate disbursement techniques so that loans can reach the targeted population.

Abu (2017) assessed the influence of Agricultural Credit Guarantee Scheme Fund (ACGSF) on livestock production in Nigeria taking evidence from historical data. Time series data covering the period of 33 years (1981 to 2014) were used. The Augmented Dickey-Fuller test, Johansen cointegration test, vector error correction model, Granger causality test and variance decomposition test are used for data analysis. Results reveal that ACGSF has a positive impact on the output of livestock at a 1 per cent level of significance with a coefficient of 0.271 at the first lag and a 5 per cent level of significance at the second and third lags with coefficients of 0.189 and 0.171, respectively. The variance decomposition test revealed that ACGSF contributed 31 percent to the increase of livestock production over time.

Orok and Ayim (2017) study the impact of Agricultural Credit Guarantee Scheme Fund on Agricultural Sector Development in Nigeria. Secondary data were sourced from the Central Bank of Nigeria Statistical Bulletin. The Multiple Linear Regression model was used to establish the relationship between ACGSF and the fisheries, food crops and livestock subsectors of agriculture. Findings reveal a positive and significant relationship between ACGSF and the agricultural sector in Nigeria. Specifically, findings show that a unit increase in ACGSF credit to cash crop will lead to a 14% increase in GDP, a unit increase in ACGSF loan to mixed crops will lead to a 3.3% increase in GDP, while a unit increase in ACGSF loan to food crops will lead to 41% increase in GDP of the crop subsector. Similarly, there was a 1% increase in guaranteed loans to 46%, 21.3% and 20.4% increase in GDP for livestock, respectively. Finally, a unit change in loans guaranteed to fishery will cause a 35.4% change in GDP. The study recommends that the government invest more in crop and livestock production to diversify the economy.

Ihegboro (2014) examine the influence of agricultural credit finance on the performance of agriculture in Nigeria. The work examines the impact of Agricultural Credit Guarantee Scheme Fund on production of crops, livestock and fisheries sub-sectors. Secondary data, SPSS statistical software, and the OLS regression model were used for data analysis. Findings reveal that ACGSF has a positive impact on crop, livestock and fisheries production. The study advocates greater commitment on the part of the scheme, especially with regard to the timely disbursement of loans to farmers for ACGSF to achieve its objectives.

All the studies reviewed corroborate the positive influence of credit on livestock output. The studies prove the fact that farmers need credit to facilitate the adoption of improved methods of production and finance recurrent expenditure on the farm.

2.4. Gap in Literature

Although all the studies reviewed corroborate the positive impact of credit on agricultural output in general and livestock output in particular, methodologies used for analysis raise questions of accuracy in the estimation of relationships between credit and livestock output. For instance, Orok and Ayim (2017) and Ihegboro (2014) utilise the OLS method. While using time series data, the OLS method presents the risk of obtaining spurious results occasioned by heteroscedasticity, non-linearity and multicollinearity, among others. These limitations reduce the accuracy of estimates (Gujarati, 2013). Furthermore, Abu (2017) assesses the impact of ACGSF on livestock production in Nigeria using the Vector Error Correction Model (VECM), although this is a more advanced model for analysis. Time series data, however, is not suitable for analysing data of a combination of order 1 (0) and 1(1) order of integration. According to Pesaran et al. (2001), the ARDL model is more robust and suitable for analysing small-size data of order 1(0) and 1(1) combination. Hence, this study adopts the ARDL model to analyse the relationship between ACGSF credit and livestock production.

3. Methodology

3.1. Sources of Data

The study utilised time series data spanning from 1987-2021. The data were selected based on the study's aims. The data were obtained from the World Development Indicators (WDI) database and the Central Bank of Nigeria (CBN). The variables on which the data were obtained are Gross Domestic Product for the Livestock subsector, ACGSF guaranteed loan to the livestock subsector, and inflation rate.

3.2. Method of Analysis

The Autoregressive Distributed Lag model (ARDL) was used in this study. The ARDL approach to co-integration provides a consistent estimate of the long-run coefficient for underlying regression that is of Order 1(0), 1(1) or mutually integrated. Thus, the study utilises the unit root test (the Augmented Dickey-Fuller test) to ensure the series' stationarity. This is to guard against spurious regression, an anomaly which is common with time series data.

3.3. Model Specification

The study uses three variables: Livestock production in Nigeria over the period of 1987 – 2021 (Dependent Variable), ACGSF loan to Livestock sub-sector and inflation rate in Nigeria.

The study digresses from the work of Abu (2017), who utilises the Vector Error Correction Model (VECM). This study employs the Auto Regressive Distributed Lag model (ARDL). The choice of the ARDL model is anchored on the fact that it is more robust and suitable for analysing small-size data of order 1(0) and 1(1) combination. Abu's model includes livestock production as the dependent variable and ACGSF loans to livestock as the independent variable. This study includes inflation as an independent variable, as inflation affects the value of loans over time.

Abu's model is stated as follows:

$$GDP_{LSP} = f(ACGSF_{LSP})$$

Where:

GDP_{LSP} = Output of livestock sub-sector.

$ACGSF_{LSP}$ = ACGSF loan to livestock sub-sector.

This study modifies Abu's model by including inflation. The relationship between livestock production and ACGSF loan to livestock is stated as follows:

$$GDP_{LSP} = f(ACGSF_{LSP}, INF) \quad (1)$$

The econometric form for the equation (1) is stated as:

$$GDP_{LSP} = \alpha_0 + \alpha_1 ACGSF_{LSP} + \alpha_2 INF + \mu_1 \quad (2)$$

Where:

GDP_{LSP} = Gross Domestic Product for Livestock sub-sector as the dependent variable.

$ACGSF_{LSP}$ = ACGSF guaranteed loan to livestock sub-sector.

INF = Inflation.

α_0 = Intercept.

$\alpha_1 - \alpha_2$ = Coefficient of variables.

μ_1 = Error term.

The ARDL model is stated as follows:

$$\delta_1(\ln GDP_{LSP})_{t-1} + \delta_2(\ln ACGSF_{LSP})_{t-1} + \delta_3(\ln INF)_{t-1} + \varepsilon_t \quad (3)$$

Where:

$\ln GDP_{LSP}$ = Logarithm of livestock production proxied by livestock GDP.

$\ln ACGSF_{LSP}$ = Logarithm of ACGSF loan to the livestock sub-sector.

$\ln INF$ = Logarithm of inflation.

ε_t = Error term.

Apriori, it is expected that the Agricultural Credit Guarantee Scheme Fund will be positive, the ACGSF credit to livestock will be positive, and inflation will be negative.

4. Findings

4.1. Result of Unit Root Test

ADF and PP test results are shown in table 1. There is consistency between the two tests in terms of the order of integration of the variables. GDP_{LSP} is integrated in order one (after the first difference), as indicated by the ADF and PP statistics, as they are both greater than the critical values at 5%. The unit root results for $ACGSF_{LSP}$ and INF were integrated at levels for both ADF and PP results. Characteristically, Dickey Fuller, Augmented Dickey-Fuller, and Philips and Perron tests are not very reliable in the presence of structural break and may confuse structural break effect for non-stationarity. Consequently, the breakpoint unit root test was conducted by employing an innovational outlier model to establish the order of integration of the variables to give grounds for the use of ARDL. The innovational outlier model estimates the unexpected changes in the series and also discusses the break date.

Variables	ADF Test		PP Test	
	T-stat	Order of Integration	T-Stat	Order of Integration
$\ln GDP_{LSP}$				
1 st difference	-3.780383**	I(1)	-5.889159**	I(1)
$\ln ACGSF_{LSP}$				
Level	-3.909585**	I(0)	-6.130150**	I(0)
$\ln INF$				
Level	-4.906549**	I(0)	-5.712981**	I(0)

Table 1: Unit Root Test Result

Source: E-views 9 (2023)

Note: *, **, *** Represent 10%, 5% and 1% Levels of Significance Respectively

Likewise, $\ln\text{GDP}_{\text{LSP}}$ is integrated in order 1, which is consistent with the results of the ADF and PP tests. $\ln\text{ACGSF}_{\text{LSP}}$ and $\ln\text{INF}$ are also consistent with the result of ADF and PP as they are also stationary at level. The break dates are consistent for intercept and trend.

4.2. Test for Co-integration

Dependent Variable	Function	F-Statistic
$\ln\text{GDP}_{\text{LSP}}$	$f(\ln\text{GDP}_{\text{LSP}}/\ln\text{ACGSF}_{\text{LSP}}, \ln\text{INF})$	7.10424*
Significance	I(0)	I(1)
1%	2.94	4.29
5%	2.58	3.98
10%	2.11	3.01

Table 2: ARDL-Bound Testing
Source: E-views 9 (2023)

The ARDL bounds testing to cointegration was utilised to test the prevalence of a long-run relationship between the variables. From table 2, it is noted that the calculated F-statistic (7.10424) is greater than the upper critical bounds at the 1% level. Implicitly, there is a long-run relationship between the variables. This confirms the existence of a cointegration relationship between the variables. Hence, it was imperative to estimate the relationship between the variables.

4.3. Findings of the ARDL Model

Long-Run Coefficients - Dependent Variable Is ($\ln\text{GDP}$)		
Variables	Coefficient	Prob.
LGDP_{LSP}	1.28367	0.0000
$\text{LACGSF}_{\text{LSP}}$	0.20167	0.0010
LINK	-0.06218	0.0821
F-Stat	7.10527	
R^2	0.82622	

Table 3: Long-Run Estimation Result
Source: E-Views 9 (2023)

Variables	Coefficient	Prob.
$D(\text{LACGSF}_{\text{LSP}})$	-0.03245	0.0004
$\text{ECT}(-1)$	-0.716570	0.0000

Table 4: Short-Run Dynamic and Error Correction Result
Source: E-Views 9 (2023)

Since the prevalence of a long-run relationship between the variables was proved, the ARDL model was estimated, and the results are presented in table 3. ACGSF-guaranteed loans to the livestock sub-sector had a positive and significant relationship with the Gross Domestic Product for the Livestock sub-sector as the dependent variable. This implies that investment in ACGSF-guaranteed loans to the livestock sub-sector encourages growth in the Gross Domestic Product for the Livestock sub-sector. A one percent increase in ACGSF-guaranteed loans to the livestock sub-sector will increase Gross Domestic Product for the Livestock sub-sector by 20 percent (0.20167). Findings also show that the inflation rate had a negative relationship with Gross Domestic Product for the Livestock sub-sector (-0.06218) and is statistically insignificant, as indicated by the probability value of (0.0821). This finding is in tandem with the submissions of Ayide, Akinsola, Luwabukumi and Ajibade (2018).

$\text{ACGSF}_{\text{LSP}}$ had a positive and significant relationship with the GDP_{LSP} . This implies that a unit increase in $\text{ACGSF}_{\text{LSP}}$ would increase GDP_{LSP} by 0.20167%. INF coefficient is negative (-0.06218) and not statistically significant. Implicitly, a unit increase in INF would decrease GDP_{LSP} by -0.06218%. In the short run, $\text{ACGSF}_{\text{LSP}}$ had a negative and statistically significant relationship with GDP_{LSP} . 1% increase in $\text{ACGSF}_{\text{LSP}}$ will reduce GDP_{LSP} by 0.03245%. The one-lagged error correction terms $\text{ECT}(-1)$ is negative and statistically significant, which reveals the adjustment from the short-run to the long-run. It is clear from the coefficient of the error correction term that 72% of the past deviation in GDP_{LSP} from equilibrium is rectified within one year. Hence, the rate of adjustment in the GDP_{LSP} from the short run towards the long-run equilibrium level is relatively high, given an average speed of 72%. The F-statistic (7.10527) shows that the coefficients of the explanatory variables are jointly significant and are capable of impacting GDP_{LSP} at a 1% level. Furthermore, the R^2 shows that all the predictor variables explain about 83% variation in the model.

5. Conclusion and Recommendations

The study probed the effect of agricultural credit guarantee scheme funds on livestock production in Nigeria spanning the period 1987 - 2021 using ARDL bounds testing cointegration. Its objective was to test for the prevalence of the short and long-term relationship between the variables and to single out the part of policy actions in stimulating

livestock production. ARDL model was found to be appropriate given the non-stationarity of the variables. After a series of tests and analysis of the data, the study shows that the Agricultural Credit Guarantee Scheme Fund and the inflation rate have a dynamic impact on livestock production in Nigeria (GDP_{LSP}). Also, ACGSF-guaranteed loans to the livestock sub-sector play an important part in bringing the Gross Domestic Product for the livestock sub-sector (GDP_{LSP}) to its stable equilibrium. 83% speed of adjustment annually. The bounds test and cointegration integration test indicate the existence of a long-run equilibrium relationship between ACGSF guaranteed loan to livestock ($ACGSF_{LSP}$) and the Gross Domestic Product for the Livestock sub-sector (GDP_{LSP}). The long-run estimation test reveals that $ACGSF_{LSP}$ has a positive and significant relationship with GDP_{LSP} in Nigeria.

Following the findings, the study endorses an increase in government investment in livestock production. Banks participating in agricultural credits should make more credit available at very low interest rates to livestock farmers as soon as it is due, as delay in accessing and disbursing credit to farmers could lead to misappropriation of funds for unproductive ventures. The government should increase awareness among the general population on the importance of the scheme and procedures for accessing the fund.

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