

## **ASSESSMENT OF THE EFFECTS OF AGRICULTURAL CREDIT GUARANTEE SCHEME FUND (ACGSF) ON AGRICULTURAL OUTPUT IN NIGERIA.**

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### **Abstract**

*The study aimed at assessing 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. The study made use of time series data which covered the period of 1989-2019. Specific objectives were to examine the effect of ACGSF on the crop output, to determine the effect of ACGSF on the livestock output and, to examine the effect of ACGSF on the fishery output measured by respective gross domestic product (GDP). Secondary data were source from Central Bank of Nigeria. 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. Preliminaries tests were also carried out, using Augmented Dickey Fuller (ADF) Unit Root and Engle-Granger co-integration test to determine the level of stationary and cointegration of the variables. Fully-Modified Ordinary Least Square (FMOLS) estimation technique was adopted using E-view statistics to test the hypotheses. 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. The study therefore, recommend that 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.*

**Keywords:** Agricultural Credit Scheme; Engle-Granger, GDP, Dependency ratio, farm output

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### **Introduction**

Agricultural Production in Nigeria is progressively on the decline in terms of its contribution to the Gross Domestic Product (GDP) as well as satisfying the country's food requirement, despite the fact that about 70 percent of the population engage in agriculture, thus Nigeria Agricultural sector is unable to fulfil its most basic and traditional role of being the source of food for the nation, therefore the food import has continued to rise (Odigbo, 2000). There is a Growing recognition by the Nigerian farmers of the effect of improved inputs and new technologies on agricultural yield. The use of these inputs and the adoption of high yielding techniques have given rise to an increased need for agricultural credit since majority of Nigerian farmers are small-scale farmers and are often limited by unfavourable economic, social, cultural and institutional conditions (Olubiyo and Hill, 2000). Insufficiency of capital has been a major constraint to agricultural development (Agu, 1998) in order to improve agricultural production modern farm inputs such as fertilizers, improved seed, feeds and plant protection chemicals and agricultural machineries are needed over the hoe and machete technology. Most of these technologies have to be purchased, yet very few farmers have the financial resources to finance such purchases (Adeniji and Joshua, 2008).

Agriculture contributes immensely to the Nigerian economy in various ways, namely, in the provision of food for the increasing population; supply of adequate raw materials (and labour input) to a growing industrial sector; a major source of employment; generation of foreign exchange earnings; and, provision of a market for the products of the industrial sector (Okumadewa, 1997; World Bank, 1998; Winters et al., 1998; FAO, 2006).

The delivery of credit to the agricultural sector has been seen to be a major input in the growth of agriculture and the whole economy (Olomola, 1990). Agricultural finance over the years has been identified to be a major contributor to the GDP and growth of the economy. The fall in the contribution of agricultural sector to Nigeria economy has been censure on the lack of a former National Credit Policy and dearth of credit institution which can be advantageous to farmers and also small and new business operators who are engaged in agriculture and agro-allied businesses (Rahji and Adeoti, 2010). The development of the agricultural sector in Nigeria is invariably associated with the extent of the growth and development of agricultural credit in order to increase production. The fact that only few farmers are buoyant enough to finance the new practices, the federal government at different period have established credit policies, institutions and schemes to facilitate the flow of agricultural credit to farmers. One of such commendable schemes has been the Agricultural Credit Guarantee Scheme Fund (ACGSF).

The Agricultural Credit Guarantee Scheme (AGCSF) is an economic policy instrument employed by the Central Bank of Nigeria (CBN) through financial institutions, the financial institutions are to provide adequate credit to the small and medium scale farmers in Nigeria for improving agricultural production, and to revive, revamp and boost the agricultural sector Growth and development, consequently to enable economic growth and development in Nigeria (Dori, 2006). Agricultural Credit Guarantee Scheme Fund (ACGSF) is one of the current agricultural financing schemes in Nigeria which has been in activity as a specific development finance scheme since 1978 till date (Onuselogu, 2014). The primary reason for this scheme is to urge banks to loan to those involve in agricultural production and agro-handling exercises. Thus, the fundamental point of the scheme is the motivation of total agricultural production for both domestic consumption and exportation, and urging financial institutions to contribute towards developing the Nigeria agricultural productive capacity through capital loaning.

The scheme is expected to provide guarantee or loans granted by financial institutions to farmers. The cover pledges to pay to the banks, 75% of the amount in default net of any amount realised by the lending bank from the sale of the security pledged by the borrower (Nwosu, Oguoma, Ben-chendo and Henri-Ukoha 2010). Nigeria of today is a country where agriculture is still greatly and relatively undermined, and or even over-looked as a mere “backyard business”. Some Nigeria youth even regard farming as “an odd job that is meant only for the illiterate rural people” Reports show, agriculture account for 40% of the GDP of our country but still, it is being given only 1% of the total commercial bank loan and this shows the character of financial negligence and insufficient fund for the agricultural sector (Dori, 2016). It also been estimated that only 5% of the farmers in Nigeria have had access to formal credit; and on an average across developing countries 5% of the borrowers have received 80% of the credit (Ranjula, 2001). Obviously, inadequate financial support to the agricultural sector has retarded the growth of the economy bringing about perpetual crises such as poverty, diseases, unemployment, hunger, declination in the country’s exportation.

The ACGSF was established to resolve the major challenges in agricultural sector i.e. Provide finance by increasing the level of bank credit to the SMEs in the agricultural sector and even without collateral unlike other financial institutions. Therefore, this study seeks to determine to what extent has ACGSF gone in achieving the purpose for which it was established via loans guaranteed by it to three selected sub-sectors of agriculture in Nigeria (crops, livestock and fishery) in relation to their

output. Each of these sectors were considered separately in order to determine their effect on the Nigeria's agricultural output from 1989-2019.

The main objective of this study is to investigate the effect of Agricultural Credit Guarantee Scheme Fund (ACGSF) on agricultural output in Nigeria. The specific objectives are:

- i. to examine the effect of Agricultural Credit Guarantee Scheme Fund (ACGSF) on crop (cash and food crops) output in Nigeria;
- ii. to determine the effect of Agricultural Credit Guarantee Scheme Fund (ACGSF) on livestock (cattle, sheep, poultry and other livestock) output in Nigeria; and
- iii. to examine the effect of Agricultural Credit Guarantee Scheme Fund (ACGSF) on fish output in Nigeria.

H<sub>01</sub>: Agricultural Credit Guarantee Scheme Fund (ACGSF) does not significantly influence Crop output in Nigeria;

H<sub>02</sub>: Agricultural Credit Guarantee Scheme Fund (ACGSF) has no empirical relationship with livestock output in Nigeria

H<sub>03</sub>: Agricultural Credit Guarantee Scheme Fund (ACGSF) does not influence the output of the Fishery sector in Nigeria.

### **Theoretical Review**

The Monetary Circuit Theory (MCT) is a theory of Monetary Economics, particularly money creation which was developed by Nicholas Johansen in 1903, Augusto Graziani in the year 1989 and which was later extended and made popular by Cantillon (1992), Quesnay (1994) and Jevons (1994). More recently, this theory has been systematically developed by Keen (1995, 2001, 2013, 2014) and others. The MCT, which is also, referred to as Circuitism or The Circulation Approach holds that money is being created by the banking sector internally rather than externally by the government agent through the Central bank's lending (Graziani, 1989). The theory provides the framework for specifying how money lubricates and facilitates production and consumption cycles in society (Keen, 2009).

The structural change theory formulated by Nobel laureate and Arthur Lewis in the mid-1950s which was later modified and extended by John C.H. Fei and Gustav Ranis stressed on the mechanism by which developing economies can transform their domestic structure from a heavy dependence on traditional subsistence agricultural to a more modern and advance agricultural practices through sufficient financial support. An all-inclusive version of this theory added that the fall of agricultural development cannot be realized unless government builds a supporting system which creates and provides the necessary incentives, opportunities and most importantly Productivity in the agricultural sector. The model also focusses on the process of surplus labour transfer from the traditional sector which leads to the growth of output and employment in the modern sector.

The classical theory of political economy and development in an attempt to understand the relationship between agricultural finance and agricultural development. The famous scholars driving this theory are Adam Smith (1776) expanded by David Ricardo (1820) and modified by Thomas Malthus (1903) and others. The theory believes that the banking sector plays a critical role in channelling finance and investment to the productive agents like agriculture and industry within the economy and in this manner goes about as an impetus of economic growth and development.

### **Empirical Review**

Finance plays a fundamental role in the process of agricultural development thus access to development, finance is not just a *sine qua non* but rather a pre-requisite and an inevitable motivator that enhances the performance of the Agricultural Sector. Agricultural credit can be defined as the mobilization of resources at all levels in order to increase production and productivity in Agriculture and to enhance the productive capacity. Agricultural credit scheme was government platform to

provide sustainable Agricultural financing which has been widely acknowledged globally as the bed rock for economic development (Omosebi and Saheed, 2016).

Atagana and kalu (2014) worked on Evaluation of agricultural credit guarantee scheme in Nigeria: A tool for economic growth and development. A linear model and ordinary least square method were employed for the analysis, while time series data was used and the study covered from 1973 to 2003. The findings opined that there is a positive and significant impact on the loans guaranteed by ACGSF to the farmers has increase the GDP of the economy.

Zakaree (2014) worked on Impact of agricultural credit guarantee scheme fund (ACGSF) on domestic food supply in Nigeria. A linear model and ordinary least-square (OLS) method techniques were used for the study, while time series data was employed and the study covered period of 1988-2011. The empirical findings revealed that there has been increase in the trend of agricultural credit guarantee funds to the farmers.

Dori (2016) studied on the impact of central bank of Nigeria agricultural credit guarantee scheme fund on agricultural and economy development of Nigeria. Qualitative method of analysis and time series data were adopted, while the study covered 1981- 2011. The findings reveal that ACGSF have a positive impact on the economy to facilitate agricultural and economic development in Nigeria.

Enenche, Ohen, and Umeze (2014) studied the effect of agricultural credit guarantee scheme fund (ACG SF) on production efficiency of rural farmers. A qualitative method of analysis was used, while questionnaire schedule was adopted and the study covered 1996-2013. The findings reveal that inefficiency effect makes significant contribution to the technical inefficiencies of ACGSF beneficiaries in Nigeria.

Adetiloye (2012) worked on assessment of agricultural credit guarantee scheme for food security in Nigeria. T-test and paired T-test method of analysis were adopted, while time series data was used and the study covered the period of 1978-2006. The findings observed that though credit to the credit sector is significant, but it has not been growing relative to the economy.

Ayegba and Ikani (2013) studied on the impact assessment of agricultural credit on rural farmers in Nigeria. A qualitative method of analysis was adopted, while qualitative data was used and the study covered 1978-2011. The findings indicate that unregulated private money lenders constitute the major source of credit to the sector which is not healthy for an economy that is struggling to grow. They also established that the concentration of banks in urban area has left rural farmers without formal source of credit, while according to Odoemenem and Obinne (2010), output of the sector is hindered by non-availability of funding in terms of loans and advances from organised financial institutions. Nasir (2016) examined the Impact of Central Bank of Nigeria: Agricultural Credit Guarantee Scheme Fund on Agricultural and Economic Development of Nigeria. A descriptive method of techniques was adopted for the analysis, while qualitative data was used and the study covered the period of 1979-2015. The empirical findings reveal that the scheme have increased the inflow of credit to the Nigerian farmers which ultimately affected the entire economic well-being of the beneficiaries.

Okonkwo et al (2017) worked on Sustainable Agricultural Financing in Nigeria: Agricultural Credit Guarantee Scheme Fund (ACGSF) in Perspective. A multiple linear regression model and ordinary least square technique of analysis were adopted, while time series data was used and the study covered 1989-2015. The findings shown that ACGSF has not contributed significantly to economic development of Nigeria and that the distribution of the number of loans guaranteed by the scheme tends lopsided in favour of North West political zone of Nigeria.

Nwosu et al (2010) worked on the Agricultural Credit Guarantee Scheme: Its roles, problems and prospects in Nigeria's Quest for Agricultural Development. A multiple linear regression model and ordinary least square techniques were adopted for the analysis, while time series data was used and the study covered the period of 1987-2008. The empirical findings suggested that the three tiers of government should give the scheme the required support and publicity so that farmers (particularly small farmers) can benefit from its laudable objectives which will go a long way to ameliorate the seeming dismal output of our farmers.

Ijaiya et al (2009) examined the impact of Agricultural Credit Guarantee Scheme on Food Security in Nigeria applying a time subscript and a different-in-difference estimator that describes the changes in food as a function of a change in food crops as a function of changes in agricultural credit guarantee scheme fund, while the study covered 1973-2007. The findings show that only the initial level of ACGSF on food security has helped improve food security more than the changes in subsequent years.

Olagunju and Ajiboye (2010) worked on Agricultural Lending Decision: Autoregressive model and Tobit regression method of Analysis were adopted, while primary data was used and the study covered from 1987-2006. The findings observed that lack of a formal national credit policy and inadequate number of credit institutions in Nigeria is a major cause for the decline in the contribution of Agriculture to the economy, and made a case for the ACGSF.

Adams and Mortimore (1997) worked on Agricultural Intensification and Flexibility in the Nigerian Sahel. A linear regression model and Ordinary Least Square (OLS) method of analysis were employed, while primary data was used in the analysis and the study covered from 1979-1996. The empirical investigation discovers that access to finance increases the average inputs of labour and capital which has positive effects on production output. They argued that early development theories especially the classical economists considered agriculture as an indispensable source of raw materials to finance the development of the industrial economy. As a result, Agricultural production serves as an engine that propels and sustains the real economy.

Kehinde (2012) examined the Impact of Central Bank of Nigeria: Agricultural Credit Guarantee Scheme Fund on Agricultural and Economic Development of Nigeria. T-test and paired t-test, granger causality test and descriptive method of analysis were adopted, while time series data was used and the study covered the period of 1978-2006. The findings revealed that settled claims are negatively significant and the tardiness is observed in the claims process, which implies that Nigeria is food insecure because of high import bills that is growing daily.

Nwosu et al (2014) worked on Loan Accessibility and Repayment Performance of Livestock Farmers under the Agricultural Credit Guarantee Scheme Fund in Southeast, Nigeria. A logistic regression model, descriptive and quantitative techniques were employed in analysing the data, while primary data was used and the study covered southeast states with 195 respondents. The finding shows that inadequate access to credit limits agricultural output and by extension the farmers' income. This study, also investigated livestock farmers' accessibility and repayment performance of credit loans obtained from financial institutions under guarantee by the Agricultural Credit Guarantee Scheme Fund (ACGSF).

Obansa and Maduekwe (2013) examined the impact of Agricultural financing on economy growth in Nigeria. Ordinary least square method of analysis was adopted, while time series data was used and the study covered the period of 1973- 2011. The findings revealed that there is bidirectional causality between economic growth and agricultural financing; and there is bidirectional causality between economic growth and agricultural growth.



Ojeka, Effiong *et al* (2016) studied on Constraint to agricultural development in Nigeria. Error correction model (ECM) was employed as a method of analysis, while time series data was used and the study covered from 1970-2010. The findings opined that rainfall exchange rate and food export (lag one) are the most significant positive determinant of agricultural output in Nigeria

Omorogbe *et al* (2014) studied on the role of agriculture in the economic development of Nigeria. Trend analysis and Qualitative analysis were employed, while time series data was used and the study covered from 1979-2011. The empirical findings suggest that in-depth research on the development of the agricultural sector is essential to the progress of the country's economy growth. Eze *et al* (2010) studied on Agricultural financing policies and rural development in Nigeria. Ordinary least square method of analysis was adopted for the study, while time series data was employed and the study covered from 1992-2009. The findings reveal that though the government has made serious efforts at making good agricultural policies through schemes, programmes and institutions .it has been able to back them up with adequate budgetary allocation and financing coupled with corruption in the execution of the policies.

Trzeciak (2003) examined the impact of Agricultural Financing on Agricultural Development in Nigeria. A multiple linear regression model and ordinary least square method of analysis were adopted, while time series data was used in the analysis and the study covered from 1973-2000. The empirical findings reveal that agriculture like any other sector of the economy needs credit for increase output and development. He suggested that through government channelling of fund to the agricultural sector by it policy, agriculture could be more profitable.

Rahji and Fakayode (2009) studied on the Role of Agricultural Financing on Agricultural output in Nigeria. Ordinary least square method analysis was employed, while time series data was used and the study covered the period of 1972-2005. The findings held that agriculture play a compelling role in the nation's development that is remarkable being a dominant contributor to Nigeria's gross domestic product. They acknowledged that the performance of small and medium scale farmers maintained significant part of this contribution to GDP. Hazell (2003) ascertained that agricultural loan able funds play a fundamental role in determining access to the needed inputs that facilities farming and other extensive agricultural practices which ultimately transfers into increased output.

## **Research Methodology**

### ***Nature and Sources of Data***

Secondary data in form of time series data was obtained from the Central Bank of Nigeria annual statistical bulletin 2019.

### ***Model Specification***

The study adopted and modified Aduralere (2019) model to measure the long run relationship between ACGSF and Agricultural Output in Nigeria from 1989-2019.

$$AGO = f(ACGSFCRP, ACGSFLSP, ACGSFFSP).....(3.4)$$

Where:

*AGO* = Agricultural Output

*ACGSFCRP* = Total ACGSF Loan to Crop production

*ACGSFLSP* = Total ACGSF Loan to Livestock production

*ACGSFAFP* = Total ACGSF Loan to Aquaculture fish production

*U* = Error Time

*t* = Time Trend

*Ln* = Natural Logarithmic

The model in its explicit form can be expressed as:

$$AGO = \beta_0 + \beta_1 ACGSFCRP + \beta_2 ACGSFLSP + \beta_3 ACGSFAFP + U \dots \dots \dots (3.5)$$

To reduce the problems of heteroscedascity, serial correlation, and other regression problems associated with the time series data, the transformation of equation into natural logarithmic form provide the better result when compared to functional form linear equation

$$Ln(AGO) = \beta_0 + \beta_1 \ln(ACGSFCRP)_t + \beta_2 \ln(ACGSFLSP)_t + \beta_3 \ln(ACGSFAFP)_t + U \dots \dots \dots (3.6)$$

**Data Analysis**

According to zikmund (2003), data analysis is the application of reasoning to understand and interpret the data that has been collected. This analysis was carried out through employing statistical tool of regression. Fully Modified Ordinary least- square (FMOLS) of multiple linear regression technique was used to establish the relationships between the variables. Using E-view software for the hypotheses. The signs and significance of the regression coefficients was relied upon in explaining the nature and effects of the independent and dependent variables as to determine both magnitude and direction of effects. The form of FMOLS model implies that there is a one-way causation between the dependent and independent variables. The signs of the coefficient and the p-value were used to explain the direction and magnitude of the effects of the independent variables on the dependent variables.

**Test for Stationarity**

Before estimation, Data were processed through several preliminary test such as unit root, error correction model, cointegrated and normality test in order to determine whether the variables are stationary or not. This was used to determine the underlying properties of process that generate our time series data.

**Augmented Dickey Fuller Test (Unit Root)**

The study employed Augmented Dickey-Fuller (ADF) to examine the stationarity of the variables under consideration in order to avoid having spurious result, and to determine the co-integration properties of all the variables involved in this research. The unit root property requires all variables to be stationary in levels or first differences. In carrying out the ADF test, the following model was estimated.

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \Delta Y_{t-1} + U_t \dots \dots \dots (3.7)$$

Where:

$Y_t$  = variable under investigation;

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

$U_t$  = pure white noise error term

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

**Johansen Co-integration Test**

The co-integration property requires all variable to converge in the long run. To carry out the co-integration test, Johansen co-integration method was employed. Using this method, the null hypothesis of no co-integration will be rejected if the calculated value is greater than the tabular value (at a considered relevant significance level), or otherwise.

Below is the formula for Johansen co-integration test

$$\Delta Y_t = \Gamma_1 \Delta X_{t-1} + \dots + \Gamma_{K-1} \Delta X_{t-K+1} + \Pi X_{t-K} + \mu + e_t \dots \dots \dots (3.8)$$

## Results and Discussion

In this section, the results of the analysis are presented and discussed

### *Unit Root test for variable use in the analysis*

This study carried out a unit root test to examine the stationary nature of the variables employed in the analysis. This is important in order to avoid having a spurious regression result. The unit root test employed here follows the augmented Dickey-Fuller (ADF) procedure.

**Table 1.0: Augmented Dickey Fully Test Results (Unit Root)**

S/N	Variable	Level		First Difference		Order of Integration
		ADF	Crit. Value	ADF	Crit. Value	
1	Cropoutput	-0.90	-3.58	-4.46	-3.58	I(1)
2	Fishoutput	-0.71	-3.58	-6.00	-3.58	I(1)
3	Livestockoutput	-2.35	-3.58	-4.41	-3.58	I(1)
4	Acgcrop	-1.25	-3.58	-4.87	-3.58	I(1)
5	Acgfishery	-3.16	-3.58	-7.53	-3.58	I(1)
6	Acglivestock	-1.55	-3.58	-4.98	-3.58	I(1)
7	Acgfoodcrp	-1.05	-3.58	-4.79	-3.58	I(1)
8	acgsfcashcrp	-4.25	-3.58	-4.89	-3.58	I(1)
9	Acgcattle	-2.13	-3.58	-5.98	-3.58	I(1)
10	Acgpoultry	-1.71	-3.58	-5.44	-3.58	I(1)
11	Acgsheep	-1.09	-3.58	-4.89	-3.58	I(1)
12	Acgotherlst	-1.02	-3.58	-3.72	-3.58	I(1)

Source: Author's Computation, 2020.

The ADF results presented in Table 1.0 revealed that all the variables upon which the unit root test was carried out are not stationary at their level series. This was verified by their respective ADF statistic values being less than the test's critical values at the 5% level of significance. However, Table 1 also revealed that each of these variables became stationary at first difference (i.e. when each of them was differenced once). Showing that each of the ADF statistic values are now greater than the critical values, suggesting the rejection of null hypothesis that there is unit root in their differenced series and accepting the alternative that there is no unit root. This indicates that the variables are stationary at first difference, hence, regarded as I(1) series, in other words, integrated of order one.

### *Results for Cointegration Test*

The cointegration test was carry out to verify if these non-stationary variables together have long run relationship. Given that all variables are I(1) series, the cointegration test was carried out following the Engle-Granger cointegration procedure which are presented in Table 4.5. The test was carried out for each of the models of this study.

**Table 1.2: Johansen Cointegration Test Results**

Test Statistic	Crop Agric	Fishery Agric	Livestock Agric
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		Value	p-value	Value	p-value	Value	p-value
Engle-Granger statistic	tau-	10.76	0.033	-2.68	0.243	-13.18	0.040
Engle-Granger statistic	z-	-29.21	0.016	-65.44	0.000	-31.48	0.021

Source: Author's Computation, 2020.

The cointegration test result presented in Table 1.2 revealed from both the tau and z-statistic that the model for crop agricultural output and livestock agricultural output are cointegrated, indicating that the variables of this models have long run relationship. This was verified by the low p-value (i.e. lower than 0.05), which indicates a rejection of null hypothesis that the variables are not cointegrated and acceptance of the alternative that the variables are cointegrated. This signifies that long run estimates of this model are not spurious. The cointegration test result for fishery agricultural output shows that only the z-statistic has a significant value while the tau-statistic has an insignificant value. Since one of this statistic is significant, it also indicates that there is cointegration in the model. With each of these models being cointegrated, it implies that estimation of long run model is plausible and appropriate for them. This led to the estimation of the parameters of these models with the fully-modified OLS cointegrating regression model which are presented in Tables 1.3, 1.5 and 1.6 respectively.

**Table 1.3: FMOLS Result for Crop Output**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGACGFOODCROP	0.792912	0.203257	3.901024	0.0006
LOGACGSFCASHCROP	0.141595	0.203803	0.694762	0.4936
C	1.925477	0.805855	2.389357	0.0247
R-squared	0.908116	F-statistic		62.72
Adjusted R-squared	0.900766	p-value		0.0000

Source: Author's Computation, 2020.

The FMOLS result for crop output shows that agricultural credit for food crop and cash crop are included as explanatory variables in the model. All these agricultural credits, as well as crop output are in logarithm transformation in other to linearize the model and for easier interpretations of the coefficients. The reported R-squared and adjusted R-squared of the model show values of 0.908116 and 0.900766 respectively, which indicates that about 90.81% (90.07% after adjustment for loss of degree of freedom) of the variations in crop output are accounted for by agricultural credit scheme to food crop and cash crop. The F-statistic shows a value of 62.72 and p-value of 0.000, which indicates that the overall model is statistically significant and in good fit.

As to the performance of each independent variable, the result shows that agricultural credit for cash crop farming does not have significant effect on crop output. This was shown by the p-value being greater than 0.05 level of significance. On the other hand, agricultural credit to food crop has significant effect on crop output. This was shown by its p-value being less than 0.05 significance level. This implies that only the agricultural credit to food crop affects the crop output in Nigeria while agricultural credit to cash crop does not affect crop output. Agricultural credit to food crop has a positive coefficient. Its positive coefficient indicates that a percent increase in the amount of agricultural credit made available for food crop farming will lead to a rise in crop output by approximately 0.793 percent.

**Table 1.4: Variance Inflation Factor (VIF) Result**

Variable	Coefficient Variance	Centered VIF
LOGACGFOODCRP	0.041314	2.073371
LOGACGSFCASHCRP	0.041536	2.073371
C	0.649403	NA

Source: Author's Computation, 2020.

As to the estimation diagnostic of the result for crop output in terms of multicollinearity, table 1.4 presents the result of variance inflation factor to verify if the model is free from multicollinearity. The result shows that the centred VIF values of the coefficients of the model are below the threshold value of 4, beyond which the model can be adjudged to suffer from multicollinearity problem. This implies that this model is free from multicollinearity problem.

**Table 1.5: FMOLS Result for Fishery Output**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGACGFISHERY	0.605543	0.072960	8.299605	0.0000
C	2.096709	0.306016	6.851634	0.0000
R-squared	0.818714	F-statistic		68.88
Adjusted R-squared	0.811742	p-value		0.0000

Source: Author's Computation, 2020.

The FMOLS result for fishery output shows that agricultural credit for fishery is included as explanatory variable in the model. Both the agricultural credit and fishery output are in logarithm transformation in order to linearize the model and for easier interpretations of the coefficients. The reported R-squared and adjusted R-squared of the model show values of 0.818714 and 0.811742 respectively, which indicates that about 81.87% (81.17% after adjustment for loss of degree of freedom) of the variations in fishery output are accounted for by agricultural credit scheme to fishery. The F-statistic shows a value of 68.88 and p-value of 0.000, which indicates that the overall model is statistically significant and in good fit. As to the performance of the independent variable, the result shows that agricultural credit for fishery has significant effect on fishery output. This was shown by its p-value being less than 0.05 significance level. This implies that agricultural credit to fishery affect the fishery output in Nigeria.

Agricultural credit to fishery has a positive coefficient. Its positive coefficient indicates that a percent increase in the amount of agricultural credit made available for fishery will lead to a rise in fishery output by approximately 0.605 percent. As to the estimation diagnostic of the result for fishery output in terms of multicollinearity, no test was carried out for this model, since there is only one independent variable in the model and multicollinearity problem can only arise with more than one independent variable in the model.

**Table 1.6: FMOLS Result for Livestock Output**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGACGCATTLE	-0.096566	0.136725	-0.706281	0.4871
LOGACGPOULTRY	0.482881	0.240557	2.007343	0.0466
LOGACGSHEEP	0.108746	0.104874	1.036918	0.3106
LOGACGOTHERLST	0.090777	0.210977	0.430271	0.6710
C	3.411439	0.570833	5.976251	0.0000
R-squared	0.908513	F-statistic		40.41
Adjusted R-squared	0.892602	p-value		0.0000

Source: Author's Computation, 2020.

The FMOLS result for livestock output shows that agricultural credit for cattle farming, poultry farming, sheep farming and other livestock farming are included as explanatory variables in the model. All these agricultural credits, as well as livestock output are in logarithm transformation in order to linearize the model and for easier interpretations of the coefficients. The reported R-squared and adjusted R-squared of the model show values of 0.908513 and 0.892602 respectively, which indicates that about 90.85% (89.26% after adjustment for loss of degree of freedom) of the variations in livestock output are accounted for by agricultural credit scheme to cattle, poultry, sheep, other livestock. The F-statistic shows a value of 40.41 and p-value of 0.000, which indicates that the overall model is statistically significant and in good fit.

As to the performance of each independent variable, the result shows that agricultural credits to cattle farming, sheep and other livestock farming do not have significant effect on livestock output. This was shown by each of their p-values being greater than 0.05 level of significance. On the other hand, agricultural credit to poultry have significant effect on livestock output. This was shown by its p-value being less than 0.05 significance level. This implies that only the agricultural credit to poultry affect the livestock output in Nigeria. Agricultural credit to livestock has a positive coefficient. The positive coefficient of agricultural credit to livestock indicates that a percent increase in the amount of agricultural credit made available to livestock activities will lead to a rise in livestock output by approximately 0.483 percent.

**Table 1.7: Variance Inflation Factor (VIF) Result**

Variable	Coefficient Variance	Centred VIF
LOGACGCATTLE	0.018694	3.658687
LOGACGPOULTRY	0.057868	2.899090
LOGACGSHEEP	0.010999	3.557645
LOGACGOTHERLST	0.044511	2.290670
C	0.325850	NA

Source: Author's Computation, 2020.

As to the estimation diagnostic of the result for livestock output in terms of multicollinearity, Table 1.7 presents the result of variance inflation factor to verify if the model is free from multicollinearity. The result shows that the centred VIF values of the coefficients of the model are below the threshold value of 4, beyond which the model can be adjudged to suffer from multicollinearity problem. This implies that this model is free from multicollinearity problem.

### Test of Hypothesis

#### Decision Rule for test of hypotheses

The decision rule is to reject  $H_0$  (null hypothesis) if P-value calculated is greater than P-value tabulated, otherwise accept the  $H_0$ .

**$H_{01}$ :** Agricultural Credit Guarantee Scheme Fund (ACGSF) does not significantly influence Crop output in Nigeria;

#### Results at 5% level of significance

From P- value calculated for ACGCRP of 0.000 and P-value tabulated of 0.05, we reject the null that ACGSF does not significantly influence crop output in Nigeria and concluded that Agriculture credit guarantee scheme fund has a significant influence on crop output in Nigeria.

**$H_{02}$ :** Agricultural Credit Guarantee Scheme Fund (ACGSF) does not influence the output of the Fishery sector in Nigeria.

#### Results at 5% level of significance

Based on the calculated P-value for ACGSFSH of 0.000 against tabulated P-value of 0.05, and considering our decision rules we uphold the alternative hypothesis and concluded that Agricultural Credit Guarantee Scheme Fund (ACGSF) significantly influence fishery output in Nigeria

**H<sub>03</sub>:** Agricultural Credit Guarantee Scheme Fund (ACGSF) has no empirical relationship with livestock output in Nigeria

**Results at 5% level of significance**

With P-value calculated for ACGSFLST of 0.000 and P-value tabulated of 0.05, and in line with our decision rule we accept alternate hypothesis and concluded that ACGSFLST has empirical relationship with livestock output in Nigeria.

**Conclusion**

Resulting from the above findings, the study thereby concludes that ACGSF has a positive effect on the total agricultural output, crop, livestock and fishery output, and Agricultural development in Nigeria. from the analysis conducted on the time series data covering the period of 1989- 2019 revealed that the scheme has experienced increase in the trend of agricultural credit guarantee scheme to the agricultural sector and it also have been observed that ACGSF is measured to be an important factor to the development of agriculture in Nigeria.

**Recommendations**

The following are recommendations set onward from the findings and conclusion above

- i. 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.
- ii. The participating banks should made fund available for fishery sector in order to boost production to bridge the demand and supply gap in the nation.
- iii. Government should guarantee more loans to food crop in order to increase her agricultural output level and reduce food scarcity in the nation
- iv. The Government and Management of the scheme should review the maximum amount available for individual farmer's e.g Fish, Cattle and Poultry Farmer.
- v. Participating banks should avoid the late disbursement of loan to qualify famer in order to evade diversion of the fund for other purposes.
- vi. There is also need to include absolute ban on the import of crop, livestock and fish products so that indigenous producers will grow.

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