

Impact of Agricultural Credit Guarantee Scheme Fund (ACGSF) On Agricultural Output in Nigeria from 2000-2020

Uche, R.O.K.¹, Obasikene A.C.², Uche Nkechi³ and N. Nte Ikechukwu⁴

¹*Department of Banking and Finance, Faculty of Management Sciences, Enugu State University of Science and Technology (ESUT), Enugu, Nigeria*

²*Department Of Banking And Finance,
Enugu State University Of Science Vand Technology (ESUT)
Tel: +2348131263954*

³*Department of Agricultural Technology Akanu Ibiam Federal Polytechnic,
Unwana, Ebonyi, Nigeria*

⁴*Department of Agricultural Economics and Extension,
Ebonyi State University, Ebonyi, Nigeria
E-mail: ucherayok@yahoo.com Tel: +2349037892339
E-mail: ikechukwu779@gmail.com Tel: +2347038792444*

Abstract

This study analysed the impact of agricultural credit guarantee scheme fund on the contribution of agric-based small and medium enterprises to GDP in Nigeria from 2000-2020 using secondary data collected from CBN statistics and National Bureau of Statistics reports. Data collected were analysed using Augmented Dickey-Fuller (ADF) test, Phillips-Perron (PP) test, Johansen co-integration test, OLS, VAR Granger causality test and impulse responses. Results showed that Agricultural based SMEs gross domestic product positively accounted for 98% changes in national gross domestic products. Agricultural credit guarantee scheme fund (ACGSF) to SMEs positively impacted on the output of agricultural based SMEs in terms of agricultural gross domestic product and accounted for 85% variations in agricultural GDP. Johansen co-integration results revealed a long run relationship between agricultural GDP and ACGSF as well as national GDP. The VAR Granger Causality Test showed the existence of causality between ACGSF to agric-SMEs and agricultural GDP. The VAR Granger Causality tests results also showed that there exist causality between agricultural GDP and national GDP indicating the existence of feedback effects. The impulse responses result indicated shocks between the variables (AGDP, ACGSF, INFR and

NGDP). It was concluded that agricultural credit guarantee scheme fund (ACGSF) to agricultural based SMEs positively impacted on the agricultural gross domestic product as well as national gross domestic product. The study therefore, recommends ease of the stringent measures on ACGSF for agricultural SMEs in order to achieve greater inclusiveness and sustained increase in agricultural contribution to GDP.

Keyword: Agriculture, Output, Credit, Guarantee scheme, Impact, Enterprises

INTRODUCTION

In Nigeria, agriculture is broadly segmented into four sectors namely: crop, fishery, livestock, and forestry. These sub-sectors such as crop production account for 88% of total agricultural output, fisheries account for 3%, livestock 8%, and forestry 1%. The agricultural sector in Nigeria accounted for an average of 24% to the GDP between 2013 and 2019 and employs more than 36% of country's labour force positioning the sector as the largest employer of labour in Nigeria. However, with a population of 200 million people, the nation's agricultural output is inadequate in meeting the food sufficiency of her growing population, thus widening the supply gap. Again, the agricultural sector in Nigeria has been grappling with lack of access to finance.

Finance has been identified as a major constraint to farmers and their contributions to the economic development of any nation. OECD, (2010) commercial banks often have difficulty in assessing risks in agriculture due to lack of information and this development makes financing one of the main constraints. Therefore, to tackle the challenge of funding, World Bank (2015) states that Public Credit Guarantee Schemes in the form of government intervention is imperative to agricultural financing. Gudger (1998) suggests government loan guarantees as substitute to unlocking loan securities. Credit guarantees are schemes by which the government guarantees a portion or ratio of a loan provided by a bank to farmers (Yoshino and Taghizadeh-Hesary 2019). According to Vienna Initiative (2014), governments provide guarantees on loans to borrowers by covering a share of the default risk, or a partial transfer of the credit risk stemming from a loan or portfolio of loans.

In Nigeria, the Agricultural Credit Guarantee Scheme fund (AGGSF) was established to provide guarantees on loans advanced to farmers to cover a portion of the risk of default by farmers. The scheme has the objectives of lowering the cost of agricultural production, generate excess for export to boost foreign earnings as well as ensure food self-sufficiency and boost revenue base. ACGSF loans are disbursed to farmers and agro-allied enterprises at a single digit of 8 percent.

In Europe internal guarantee associations are the predominant organizations administering credit guarantees which are largely successful and they impacted revival in the reconstruction period after the World II. However, there are differences between schemes operating in North Africa where the schemes are fairly successful than in sub-Saharan Africa where countries have experienced setbacks. Therefore, in Nigeria the ACGSF scheme is expected to have performed creditably well in the

economic diversification through the agricultural sector despite challenges, hence the need for this study. Although the challenges of agriculture in the country is multifaceted and ACGSF is one vital institutional credit schemes on which government have mobilized credit to boost agricultural production, the substantial decline in agricultural output is an indication of a gap in resource (ACGSF) allocation to agricultural sector given the anticipated increase in output from the sector. This therefore raises curiosity as to whether increased support of ACGSF has positive impact on agricultural production in the country.

In this regard, availability of evidence-based, up-to-date information on the impacts of ACGSF on agricultural production merits investigation. It is on these backgrounds that the study seeks to examine the impact of agricultural credit guarantee scheme fund (ACGSF) on agricultural output in Nigeria from 2000-2020. Therefore, the main objective of the study is to examine the impact of agricultural credit guarantee scheme fund (ACGSF) on agricultural output in Nigeria from 2000-2020. The specific objectives of the study were to: determine the impact of ACGSF on agricultural output in Nigeria and ascertain causal relationship between ACGSF and agricultural output in Nigeria. This study also tested the hypotheses which stated that ACGSF has no positive and significant impact on agricultural output in Nigeria and that there is no causality between ACGSF and agricultural output in Nigeria;

REVIEW OF RELATED LITERATURE

The Agricultural Credit Guaranteed Scheme Fund (ACGSF)

The ACGSF was established by Decree Number 20 of 1977 and the Scheme became operational in April 1978. The initial share capital was N100 million with N85.6 million as the paid-up capital. The federal government of Nigeria holds 60 percent while the Central Bank of Nigeria holds 40 percent of the shares. The capital base of ACGSF which was increased to N3 billion in 2001 now stands at N50 billion.

The increase in share capital is expected to engender self-sufficiency in food production (the Scheme covers the cultivation of major agricultural crops such as rice, cassava, cotton, oil palm, wheat, rubber, sugar cane, fruits and vegetables), livestock (dairy, poultry and piggery) and fisheries. Other objectives of the Scheme are: to create more jobs opportunities and cushion the adverse effects of exchange rate movements on the prices of local goods, on imported agricultural inputs, equipment and machineries as well as impact on agriculture. The cumulative number of loans guaranteed from inception in 1977 to year 2020 stood at 1,180,000 and valued at N122.1 billion and the scheme guarantees credit facilities extended to beneficiaries up to 75 percent of the amount in default net of any security realized. The maximum amount for loans without collateral is N100, 000.00 while the maximum loans for loans with collateral is N50million. As amended, the fund allows for agricultural value chain financing such as production of farm machinery, implements and equipment for production, processing, storage, and transportation.

Generally, credit guarantee enhances the prospect for debt financing, improves greater debt capacity for firms as well boosts confidence of stakeholders. Guarantee schemes also address the issue of collateral constraints while reducing the risk of lending and

the problem of information asymmetry (Eyo *et al.*, 2020). They added that the intervention of guarantee scheme gives lenders the right to give credit, and to farmers the right to obtain credit as a result, the ACGSF is a financial product that a Nigerian farmer can acquire as a substitute for collateral. The functional implication of the ACGSF is a sustained increase in the gross domestic product (GDP) for a long time (Nadira *et al.*, 2014).

Agricultural Development in Nigeria

Nigeria, a sub-Saharan country, is a nation with an enormous agricultural potential which is the dominant sector of the economy contributing about 64 percent to the gross domestic product (GDP) at independence in 1960 therefore being the mainstay of the economy. Like in most developing countries, agriculture is the largest employer of labour, employing about 70% of the rural populace in Nigeria, the main source of food for the country, the major source of industrial raw materials, and a key foreign exchange earner. To buttress the importance of agriculture, according to Sertoglu *et al.*, (2017) the agricultural sector in Nigeria is part of the Millennium Development Goals (MDGs) program for poverty reduction.

However, there has been a downward trend in agricultural output as a result of the discovery of oil in Nigeria in commercial quantity in the late 1960s which brought about oil boom. The role of agriculture as the engine of economic growth and development has, as a result, declined considerably over time such that by 2020 the contribution of the agricultural sector to the GDP was about 24 percent. Nigeria now imports major staple foods such as rice, wheat, sugar, and fish to augment local supplies thereby spending substantial amount of foreign reserves from oil on the importation of staple foods (Nwankpa, 2017). In addition to food importation, the oil earnings are utilized in developing social and economic infrastructure in urban areas to the neglect of the rural areas resulting in massive migration from rural to urban areas thereby exacerbating the decline in agricultural output in Nigeria.

Nevertheless, Nigeria is still an agrarian economy that has huge agricultural potentials given her massive agricultural land of about 98 million hectares of which only 34 million hectares or 48 percent has been cultivated leaving about 52 percent untapped. Over time, successive governments have introduced various intervention policies to harness the potentials of the agricultural sector in Nigeria. One of such policies is the ACGSF designed to address the challenge of funding in the agricultural sector. Access to credit for farmers is limited (Nwankpa, 2017) as banks are not enthusiastic about agricultural financing. According to Okon and Nkang (2008) credit guarantee schemes reduce lenders reluctance and the high-risk perception of the agricultural sector.

Gross Domestic Product (GDP)

Gross domestic product (GDP) is the total monetary or market value of all the finished goods and services produced within a country in a specific period of time, mostly a year. As a broad measure of overall domestic production, it functions as a comprehensive scorecard of a given country's economic health. Economists define GDP in terms of output or as a measure of a country's well being, that is, the standard

of health, happiness, security, and material comfort of an individual, a group of people, or a nation. GDP definitions differ among different nations and international economic organizations. The Organisation for Economic Co-operation and Development (OECD) defines GDP as the aggregate measure of production equal to the sum of the gross value added of all resident and institutional units engaged in production and services (plus any taxes, and minus any subsidies, on products not included in the value of their outputs). However, GDP as a measure of economic growth, and like any other economic quantity, must be expressed in real terms, that is, it must be adjusted for the effects of inflations to provide a meaningful measure of growth over time (Nadira et al., 2014)

Agricultural Gross Domestic Product (AGDP)

Agriculture is the science or practice of farming, including cultivation of the soil for the growing of crops, the rearing of animals to provide food, and the preparation and marketing of agricultural and agro allied products. Agricultural output is the value of agricultural products which, free of intra-branch consumption, are produced during the accounting period and before processing, are available for export and consumption. Agricultural gross domestic product (AGDP) therefore, is the aggregate output from all agricultural activities in an economy in a given period. The AGDP includes the returns on factors of production used in agricultural activities including cost of capital such as depreciation in the given period. AGDP as a performance indicator can be evaluated relative to income generated in terms of the difference in value of sales of agricultural products and the cost of other inputs. According to Paz *et al.*, (2009) AGDP is an important indicator of growth in the volume of output or production.

Inflation

Inflation is the rate at which there is a general increase in the prices of goods and services resulting from a fall or decrease in the purchasing power or value of a currency. Raddy *et al.*, (2017) defines inflation as a persistent and appreciable rise in the general price level in an economy. Therefore, inflation relates to when the supply of goods and services is unresponsive to increasing changes in money supply thereby resulting to too much money chasing too few goods and services.

Some of the causes of inflation include: increase in money supply; increase in salaries and wages; population explosion and the country's aggregate spending on consumption and rise in investment on goods and services (Raddy *et al.*, 2017). Inflation is caused by different factors which translate to types: currency inflation which may be caused by credit expansion; deficit-induced inflation: this is caused when a government pursues deficit budget policy whereby expenditure exceeds revenue and the central bank of such country is mandated to print additional money; which also causes currency inflation and demand-pull inflation which is when an increase in aggregate demand exceeds output leading to rise in price level.

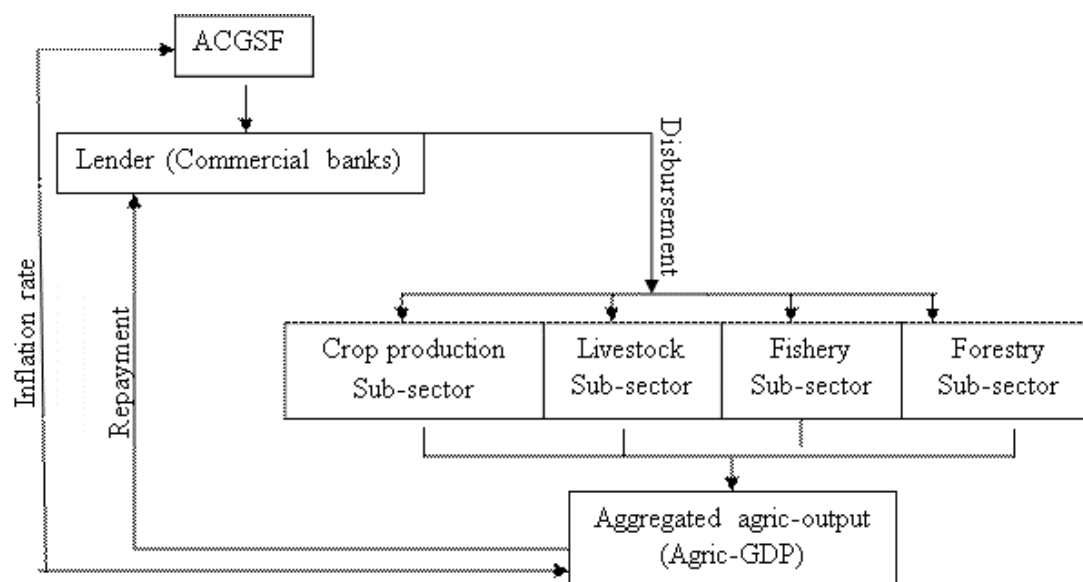


Figure 2.1: Conceptual Framework of the Study
Source: Author's Conceptualisation, 2021

Theoretical Framework

The Theory of Credit Creation:

The Credit Creation theory which was propounded by Professor Richard A Werner in 1992 is a recast of the Quantity Theory of Money. Werner argues that to create credit, banks neither need to receive new deposits nor draw from any fund in their books. The borrower's account is simply credited with the amount of the loan: the bank loan creates the new deposit for economic growth. According to Werner, where the newly created money goes is the more important question. The bank's balance sheet lengthens as a result of the extension of the new loan.

Using a topology of these banking theories: the financial intermediation theory, and the fractional reserve theory, Werner argues that in financial intermediation, banks play no fundamental role in the economy as they simply play the role of middle-men between people who have surplus fund and people who need credit. Without deposits banks cannot lend, they are merely financial institutions not different from other non-financial institutions. The loan contract shows an increase in assets but the loan drawdown is against funds such as reserves which is a corresponding depletion of assets. The balance sheet does not lengthen as a result of the loan.

In the fractional reserve theory Werner points out that banks keep only a fraction of deposits collected from customers as reserve and give out the balance as loans. The bank's balance sheet would first show an increase in deposit large enough to accommodate the loan and the reserve requirement. The balance sheet is lengthened not as a result of the loan but because of the receipt of the new deposit.

Empirical Review

ACGSF and Economic Growth

Efobi and Osabuohien (2011) used secondary data of 1978 to 2007 to assess the role of agricultural credit guarantee scheme fund in promoting non-oil export in Nigeria. Data collected were analyzed using OLS regression. Results reveal that loan from commercial banks to the agricultural sector had a minute magnitude compared to the total loan of commercial banks.

Nadira and Fagge (2014) analysed the impact of agricultural credit on economic growth with emphasis on the Agricultural Credit Guarantee Scheme fund (ACGSF). Secondary data were solely used in the study from 1978-2011. The study used vector autoregressive (VAR) model to evaluate the interrelationship among the variables of interest; Gross Domestic Product (GDP), Inflation (INF), Loan to cash crop (LCC), and Loan to livestock (LLS). The results showed that higher productivity and increased economic growth need improved and efficient credit programs.

Akinrinola and Okunola (2020) examined the performance of ACGSF in Nigeria. Data were analysed using the time series, ARDL (Bound test) approach and co-integration to investigate both the long and short-run dynamics of ACGSF and agricultural growth. Results showed a long run relationship among the total volume of loan, total number of loans and agricultural productivity. Thus, a positive and significant relationship exists between total number of loans issued and productivity.

ACGSF and Agricultural Output

Kareen *et al.*, (2013) assessed the factors that determine agricultural output in Nigeria from the socio-economic perspectives adopting regression analysis, descriptive statistics and the Granger causality tests on the macroeconomic variables such as interest rates, GDP growth rates, and commercial bank loans to agriculture to determine if there be significant relationship between the variables. Results showed that the variables had positive relationship with agricultural output.

Obasi (2015) assessed the performance of agricultural lending scheme in Nigeria from 2009 to 2019 in Ogun, Kaduna, Abia, Kwara, Rivers, Benue, and Anambra States. About 185 borrowers registered with their States were selected for the purpose of the objective. Data collected were analysed using frequencies, percentages, means and multiple linear regressions. The result showed that loans granted to borrowers impacted positively on borrower's income, increased national output but with a repayment rate of 41% and a default rate of 51% with the credit gap widened.

Akerele *et al.*, (2017) examined the effects of Agricultural Credit Guarantee Scheme Fund on agricultural outputs in three different agricultural subsectors in Nigeria. Data on the value of output of crop, livestock and fishery subsectors of agriculture, and the amounts of the fund allocated to each subsector from 1982 to 2013 were subjected to econometrics (time series) analysis. Results established positive and statistically significant influence of the amount of fund apportioned to crop ($p < 0.01$) and livestock ($p < 0.05$) subsectors on output growth in the respective subsectors.

Okafor (2020) examined the effect of commercial banks credit on agricultural development in Nigeria using Augmented Dickey Fuller test, Phillip-Perron test and OLS technique. The results revealed that banks credit to agriculture and ACGSF have

significant positive effects on agricultural output

Reuben *et al.*, (2020) assessed the impact of ACGSF on agricultural output in Nigeria from 1998 to 2017 using OLS technique. The results showed that ACGSF has significant positive effect on agricultural output.

Eyo *et al.* (2020) analyzed the effect of agricultural credit guarantee scheme (ACGSF) on agricultural output in Nigeria using OLS technique. The findings showed significant positive impact of ACGSF on agricultural output.

Anh *et al.*, (2020) examined the impact of credit on agriculture performance in Vietnam from 2004Q4 to 2016Q4 using Indicator Saturation (IS) break test, ARDL bounds test and Toda-Yamamoto Granger causality test. The findings showed that agricultural credit has significant positive influence on agricultural output in both short-run and long-run. Also, a unidirectional causality exists running from agricultural credit to agricultural output.

Orji *et al.*, (2020) examined causality between agricultural financing and agricultural output in Nigeria using Pairwise Granger causality test. The findings showed no causal linkage between agricultural financing and agricultural output within the period under review.

ACGSF and Food Production

Saheed (2014) assessed the impact of ACGSF on domestic food production in Nigeria during the period of 1988 to 2011 using secondary data. Data collected were analysed using OLS. Result showed that the impact of ACGSF on domestic food production is statistically significant and that changes in agricultural credit guarantee scheme fund to farmers has significant impact on domestic food supply

Osabohien, *et al.*, (2020) assessed the effect of agro-financing on food production in Nigeria from 1981 to 2018 using Johansen and Canonical co-integration tests. The findings showed significant positive effect of agro-financing (proxy with ACGSF) on food production

Inflation and Economic Growth

Babalola *et al.*, (2015) examined the effect of inflation and interest rate on economic growth in Nigeria from 1981 to 2014. Data collected were analysed using OLS, Johansen co-integration test and ADF test. Results showed that inflation and interest rates have negative effects on economic growth in Nigeria.

Gap in Empirical Review

There seems not to be current empirical evidence on ACGSF impact on agricultural output in Nigeria as previous studies ended in 2017. The topic, impact of agricultural credit guarantee scheme fund on agricultural output is still largely unexplored. The previous studies did not ascertain causal relationship between ACGSF and agricultural output. This study therefore would ascertain the causal relationship between the impact of ACGSF and agricultural output in Nigeria by using the granger causality test in addition to multiple regressions analysis.

MATERIALS AND METHODS

The study was conducted in Nigeria. An ex-post facto research design was adopted in estimating the impact of agricultural credit guarantee scheme fund on agricultural output in Nigeria, for a period of twenty-one years, i.e from 2000 to 2020. The data for the study were basically time series data covering 2000 to 2020 that is twenty-one (21) years. The data were secondary data collected from Central Bank of Nigeria (CBN) statistical reports and National Bureau of Statistics (NBS).

Prior to estimation, unit root test was conducted on the data collected. The essence of the unit roots test is to test for stationarity and also to determine the order of integration in the series. For the purpose of this study, the Augmented Dickey-Fuller (ADF) test and the Phillips-Perron test for unit root were adopted.

Augmented Dickey-Fuller (ADF) Test for Unit Roots

The ADF procedure includes extra lagged terms of the dependent variable in order to eliminate autocorrelation. The lag length is either determined by the Akaike Information Criterion (AIC) or Schwartz Bayesian Criterion (SBC). The possible forms of ADF are:

$$\Delta y_t = \gamma y_{t-1} + \sum \beta_i \Delta y_{t-1} + \mu_t \quad (1)$$

$$\Delta y_t = \beta_0 + \gamma y_{t-1} + \sum \beta_i \Delta y_{t-1} + \mu_t \quad (2)$$

The difference between the two equations concerns the presence of the deterministic element β_0 , β_1 and β_2 .

Phillips-Perron (PP) test

The theory supporting the Dickey-Fuller test is based on the assumption that the error terms are statistically independent and with a constant variance. Thus, the error terms should be uncorrelated. However, Phillips and Perron (1988) generalized the ADF test with mild assumptions regarding the distribution errors. The PP test is an AR (1) process given as;

$$\Delta \text{LogAGDP}_t = \beta_0 + \Delta \text{LogAGDP}_{t-1} + \mu_t \quad (3)$$

Ordinary Least Square Regression Analysis

In estimating the impact of agricultural credit guarantee scheme fund on agricultural outputs in Nigeria. The functional model that related agricultural output to agricultural credit guarantee scheme fund was specified as:

$$\text{AGDP} = f(\text{ACGSF}, \text{INFR}) \quad (4)$$

Where:

AGDP = Agricultural output (N'B)

ACGSF = agricultural credit guarantee scheme fund (N'B)

INFR = Inflation rate (%)

The logarithmically transformed models for ensuring equal numerical base, easy interpretation of coefficients and preventing the impact of any outlier, the log linearised models was explicitly stated as:

$$\text{LogAGDP} = \beta_0 + \beta_1 \log \text{ACGSF} + \beta_2 \log \text{INFR} + \text{et} \quad (5)$$

Where:

LogAGDP = logarithm of agricultural output,

β_0 = Intercepts,

$\beta_1 - \beta_2$ = Parameter Estimates,

et = Random Disturbances

Granger Causality Test

The test defined causality that a variable is said to Granger-cause, if it can be predicted with greater accuracy by using past Values of variable rather than not using such past values, all other terms remaining unchanged. The Granger test involved in the estimation model was;

$$Y_t = \beta_0 + \beta_1 \sum_{j=1}^m X_{t-j} + \beta_2 \sum_{j=1}^m Y_{t-j} + \text{et} \quad (6)$$

Where:

Y = Effect variable (variable whose causation is being appraised)

Y_{t-1} = lagged values of the variable

X = Causal variable (the variable that was caused)

et = Error term

Description of Variables

- i. **AGDP** is the natural logarithm of agricultural output measured in billions of naira at current basic prices on annual basis within the period under study
- ii. **ACGSF** is the natural logarithm of the value of aggregate loan granted to agriculture under the agricultural credit guarantee scheme measured in billions of naira on annual basis within the period under study
- iii. **INF** is the natural logarithm of annual inflation rates which is the percentage change in the prices of market basket of goods and services and was used as control variable within the period under study

Method of Data Analysis

The Augmented Dick-Fuller and the Philip-Perron Unit Root tests, the Ordinary Least Square Regression Analysis, and the Granger Causality Test were used in analyzing the data collected for the study, and the analyses were in line with the specific objectives I and 11.

RESULTS AND DISCUSSION

Unit Root Test

Table 1: ADF Test Result at Level: Constant with Trend and at first difference Constant without Trend

Variables	Test Statistic	Critical Value at 1%	Critical Value at 5%	Remark	Test Statistic	Critical Value at 1%	Critical Value at 5%	Remark
At Level: Constant with Trend					At first difference: Constant without Trend			
AGDP	-2.87394	-4.61620	-3.71048	Not Stationary	-5.13403	-3.92035	-3.06558	Stationary
ACGSF	-1.84807	-4.49830	-3.65844	Not Stationary	-4.25550	-3.83151	-3.02997	Stationary
INFR	-3.27595	-4.53259	3.67361	Not Stationary	-3.95938	-3.88675	-3.05216	Stationary

Source: Survey, 2021.

Table 2: PP Test Result at level: Constant with Trend and at first difference: Constant without Trend

Variables	Test Statistic	Critical Value at 1%	Critical Value at 5%	Remark	Test Statistic	Critical Value at 1%	Critical Value at 5%	Remark
At Level: Constant with Trend					At first difference: Constant without Trend			
AGDP	-1.04146	-4.49831	-3.65845	Not Stationary	-3.98012	-3.83151	-3.02997	Stationary
ACGSF	-2.42861	-4.49831	-3.65845	Not Stationary	-4.26317	-3.83151	-3.02997	Stationary
INFR	-2.55293	-4.49831	-3.65845	Not Stationary	-11.7814	-3.83151	-3.02997	Stationary

Source: Survey, 2021.

The Augmented Dickey-Fuller (ADF) and the Phillips-Perron (PP) test for unit roots were conducted on the following variables: Agricultural output, Agricultural Credit Guarantee Scheme Fund (ACGSF) and Inflation Rate (INFR). The stationarity of the variables was performed at level and at first difference at constant with trend and without trend, respectively. The result of the ADF test at constant with trend revealed that all the variables are not stationary at level form. The unit root result at constant without trend of first difference showed that the ADF test statistic for all the variables are stationary at first difference at the 5% level of significance and integrated at order one i.e., 1(1).

The Phillip Perron (PP) test depicted the result of the level form at constant with trend and at first difference form at constant without trend. Result showed that stationarity

would not be achieved for all the variables at level form thus, rechecking at first difference indicated that all the variable are stationary at first difference. Therefore, the result of the unit root test through ADF and PP tests showed that stationarity of all the variables were achieved at first difference.

Descriptive Properties of Variables

Table 3: Descriptive Properties of Variables

Parameters	AGDP(₦'B)	ACGSF (₦'B)	INFR (%)
Mean	14308.95	5398483.	11.89810
Median	13048.89	5301695.	12.10000
Maximum	37241.61	10254333	17.62000
Minimum	1508.410	336811.0	3.290000
Std. Deviation	9936.853	3238416.	3.624786
Skewness	0.696971	0.122285	0.507957
Kurtosis	2.685932	1.652619	2.898376
Jarque-Bera	1.786501	1.640845	0.912108
Probability	0.409323	0.440246	0.633780
Sum	300487.9	1.13E+08	249.8600
Sum Sq. Dev.	1.97E+09	2.10E+14	262.7815
Observations	21	21	21

Source: Survey, 2021. AGDP= Agricultural Gross Domestic Product, ACGSF= Agricultural Credit Guarantee scheme fund, INFR= inflation rate and (₦'B)= billions of Naira

Table 4.2.2 showed the descriptive properties of the variables used in this study analysis. The means were found to be 14308.95 for AGDP (₦'B), 5398483 for ACGSF (₦'B, 11.89810for INFR (%), Similarly, AGDP, ACGSF, and INFR showed the median of 13048.89, 5301695 and 12.10000, respectively. The maximum values were observed to be 37241.61 for AGDP, 10254333 for ACGSF, and 17.62000 for INFR while the minimum values showed 1508.410, 336811.0, and 3.290000 for AGDP, ACGSF, and INFR, respectively. The standard deviation of the data series was 9936.853, 3238416 and 3.624786 for AGDP, ACGSF, and INFR, respectively. The data were all positively skewed towards normality as shown by the positive values of the skewness statistic. The Kurtosis value showed that AGDP, ACGSF, and INFR were leptokurtic in nature since they recorded positive Kurtosis statistic. The Jarque-Bera indicated that AGDP, ACGSF, and INFR are not normally distributed as the p-values are insignificant at 5% probability level. The 21 number of observations showed uniform sample size of the variables used for the analysis.

Test of Hypotheses

H_0 : ACGSF has no positive and significant impact on agricultural output in Nigeria

The impact of ACGSF on agricultural output was analysed and results presented in Table

Table 4: OLS Regression Result for AGDP, ACGSF and INFR)

Variable	Coefficient	Std Error	t-value	Prob
C	7342.372	902.335	8.137080	0.0028
ACGSF	0.03864	0.000700	55.234216	0.0000
INFR	193.4020	625.5784	0.309157	0.7608
R-squared	0.790546	Mean dependent var		14308.95
Adjusted R-squared	0.723282	S.D. dependent var		9936.853
S.E. of regression	10051.86	Akaike info criterion		21.40047
Sum squared resid	1.82E+09	Schwarz criterion		21.54968
Log likelihood	-221.7049	Hannan-Quinn criter		21.43285
F-statistic	342.7724	Durbin-Watson stat		1.8399
Prob (F-statistic)	0.000000	Observation		21

Source: Survey, 2021

From Table 4.3.1, result of showed that the model recorded R-squared value of 0.790546 which implied that 79% of the variations in the agricultural output was accounted for by the explanatory variables included in the model. Again, the F-statistic value of 342.7724 which is significant at 1% level indicated that the coefficient of the explanatory variables were significantly different from zero. The Durbin-Watson statistic value of 1.8399 which was approximately 2.0 showed the absence of serial correlation. Specifically, agricultural credit guarantee scheme fund to agriculture (0.03864) was significant and positively related to agricultural output in Nigeria.

From the point of view of significant f-statistic at 1% level in Table 4.3.1, the null hypothesis which stated that agricultural credit guarantee scheme fund has no positive and significant impact on agricultural output in Nigeria was rejected and the alternative hypothesis accepted. It was therefore concluded that agricultural credit guarantee scheme fund had positive and significant impact on agricultural output in Nigeria.

From Table 4.3.1 result, agricultural credit guarantee scheme fund was positively related to agricultural output implying that increase in ACGSF loan to agriculture would translate to increase in agricultural output. This agreed with the findings of Eyo *et al.* (2020) who reported positive impact of ACGSF on agricultural output in Nigeria. Imoughelu *et al.*, (2014) also reported positive and significant impact of ACGSF credit on agricultural gross domestic product in Nigeria. Again, the findings were also consistent with the findings of Orok and Ayim (2017) who reported a significant positive relationship between ACGSF and agricultural GDP in Nigeria and

Olowofeso, *et al.*, (2017) and Osabohien, *et al.*, (2020) who reported positive effect of ACGSF credit on agricultural output

4.3.2: H_0 There is no causality between ACGSF and agricultural output in Nigeria

Table 5: Granger Causality test for AGDP, ACGSF, and INFR

Null Hypothesis	Obs	F-Statistic	Prob
ACGSF does not Granger Cause AGDP	19	7.12599	0.0014
AGDP does not Granger Cause ACGSF		1.65657	0.2261
INF does not Granger Cause AGDP	19	1.09426	0.3618
AGDP does not Granger Cause INF		0.08823	0.9161
INF does not Granger Cause ACGSF	19	0.47363	0.6324
ACGSF does not Granger Cause INF		1.49632	0.2577

Source: Survey, 2021.

The test for the direction of causality is the ability of a variable to predict or cause another variable. The Granger causality tests are used when there is co-integration relationship. However, causality exists if the probability value is less than 0.05 (Table 4.3.2). From Table 4.3.2, result showed that there exists causality between agricultural credit guarantee scheme loan and agricultural output in Nigeria which means that in the long run, the level of ACGSF loan to agriculture would have strong positive impact on output thus. a unidirectional causality between ACGSF and AGDP, that is, there is feedback effect. Therefore, the null hypothesis which stated that there is no causality between ACGSF and agricultural output in Nigeria was rejected and the alternative accepted that there was causality between ACGSF and agricultural output

The Granger Causality Test showed that there exists causality between agricultural credit guarantee scheme fund and agricultural output in Nigeria which means that in the long run, the level of ACGSF would have strong positive effect on output. This corroborated with Olowofeso, *et al.*, (2017) who reported positive effect of credit on agricultural output in the short-run, but different equilibrium relationships exist in the long-run. More so, agricultural output is mostly attracted by the impact of the positive changes in credit to agriculture. This also agreed with Reuben *et al.*, (2020) who reported positive and long run relationship between ACGSF and agricultural output in Nigeria

Conclusion

From the findings, it was concluded that agricultural credit guarantee scheme fund (ACGSF) had positively and significantly impacted on agricultural output in Nigeria within the period of this study.

Recommendations

Based on the findings, the following recommendations were made:

- i. Reduce the requirements of the stringent measures on credit scheme for agricultural lending in order to achieve greater inclusiveness and better contribution to agricultural output in Nigeria.
- ii. The government should implement agricultural transformation policies such as agricultural transformation agenda for increased diversification of the sector and the long run feedback effects on agricultural output from ACGSF.

REFERENCES

- [1] Akerele, D., O.F. Ashaolu, and A. Egbetade. (2017). Analysis of partial effects of ACGSF on agricultural subsectors outputs in Nigeria. *Journal of Agriculture*, 33(4): 630-638.
- [2] Akinrinola, O. O. and Okunola, A. M. (2020). Performance analysis of Nigerian agricultural credit guarantee scheme: Bounds test approach to cointegration. *Journal of Development and Agricultural Economics*, 12(2):75-83,
- [3] Anh, N. T., Gan, C. and Anh, D. L. T (2020). Does credit boost agricultural performance? Evidence from Vietnam. *International Journal of Social Economics*. 1(2): 45-52
- [4] Babalola, O.O., Danladi, J.D., Akomolafe, K.J., Ajiboye, O.P. (2015), Inflation, interest rates and economic growth in Nigeria. *European Journal of Business and Management*, 7(30), 91-102.
- [5] Efobi, U. R. and Osabuohien, E. S. (2011), Assessment of The Role of ACGSF in Promoting Non-Oil Export in Nigeria. *International Conference on Economic Development in Africa*, Oxford University, United Kingdom. P 56
- [6] Eyo, E. O., Nwaogu, M. A., and Agenson, M. E. (2020). Agricultural credit guarantee in Nigeria and the uncertainties of the macroeconomic environment. *International Journal of Economics and Financial Issues*, 10(20):20-29.
- [7] Gudger, M. (1998), Credit Guarantees: An Assessment of the State of Knowledge and New Avenue of Research. *Agricultural Services Bulletin*. 3(1): 23-29
- [8] Imoughelu, L. E. Iwedi A.C and Ismaila, M. (2014). The impact of commercial bank credit on the growth of SMEs: An econometric analysis from Nigeria 1986-2012. *Journal of Educational Policy and Entrepreneurial Research*, 1(2), 16-23
- [9] Kareem, K.R.O., Bakare, H.A., Raheem, K.A., Olagumela, S.E., Alawode, O.O., Ademoyewa, G.R. (2013), Analysis of factors influencing agricultural output in Nigeria: Macro-economic perspectives. *American Journal of Business, Economics and Management*, 1(1), 9-15.

- [10] Nadira M.I and Fagge A.M (2014) Impact of Agricultural Credit Guarantee Scheme Fund (ACGSF) on Economic Growth in Nigeria (1978-2011). *International Journal of Business and Law Research* 2(4):111-122,
- [11] Nwankpa N. N (2017). Sustainable agricultural development in Nigeria: a wayout hunger and poverty. *European Journal of sustainable development*, 6(4): 175-184
- [12] Obasi, P.C. (2015), Evaluation of the performance of agricultural lending schemes in Nigeria. *European Journal of Agriculture and Forestry Research*, 3(2), 52-63.
- [13] OECD, (2010) Facilitating access to Finance, Discussion Paper on Credit Guarantee Schemes., s.l.: <http://www.oecd.org/daf/psd/45324327.pdf> (22/11/2020).
- [14] Okafor, C. A. (2020). Commercial banks credit and agricultural development in Nigeria. *International Journal of Business & Law Research*, 8(3), 89 – 99.
- [15] Okon X. A. and Nkang, N. M. (2008) An Assessment of Nigeria's Agricultural Credit Guarantee Scheme Fund: Evidence from Time-Series Analysis. *Global journal of agricultural sciences*, 8(2): 133-145
- [16] Olowofeso, Adeboye, Adejo, Bassey and Abraham (2017). Agricultural sector credit and output relationship in Nigeria. *Journal of Applied Statistics*, 8(1):101-122.
- [17] Orji, A., Ogbuabor, J. E., Anthony, O. I. and Alisigwe, J. N. (2020). Agricultural financing and agricultural output growth in developing economies: Any causal linkage in Nigeria? *International Journal of Finance and Risk Management*, 2: 34-43.
- [18] Osabohien, R., Adeleye, N. and Alwis, T. D. (2020). Agro-financing and food production in Nigeria. *Heliyon*, 6, 1-8.
- [19] Raddy G. O., Ikpi A. E., Okoruwa V. O. and Akinyosoye V. O. (2017). Preferences of Micro, Small and Medium Scale Enterprises to Financial Products in Nigeria. *Journal of Agricultural Economics and Development*, 1(4), 80-98.
- [20] Reuben, J., Nyam, C. M. and Rukwe, D. T. (2020). Agricultural credit guarantee scheme fund and its effect on agriculture output in Nigeria. *Review of Agricultural and Applied Economics*, 23(2):102-111.
- [21] Saheed, S.Z. (2014), Impact of agricultural credit gurantee scheme fund (ACGSF) on domestic food supply in Nigeria. *British Journal of Economics, Management and Trade*, 4(8), 1273-1284.
- [22] Sertoğlu K, Ugural S and Bekun F V (2017). The Contribution of Agricultural Sector on Economic Growth of Nigeria. *International Journal of Economics and Financial Issues*, 7(1), 547-552

- [23] Vienna Initiative (2014). Micro-entrepreneurship in a hostile environment: evidence from Indonesia. *Bulletin of Indonesian Economic Studies*, 47(2), 233–262.
- [24] World Bank (2015). The Typology of Partial Credit Guarantee Funds around the World. *Policy Research Working Paper* 4771
- [25] Yoshinco, N., Taghizadeh-Hesary, F. (2019). Optimal credit guarantee ratio for SMEs financing evidence from Asia. *Economic Analysis and Policy*, 62, 342-356.

