

# Agricultural Credit Guarantee Scheme Fund, Government Expenditure on Agriculture and Agricultural Output in Nigeria 1990 - 2020

Dr Christopher Mmaduabuchukwu Okpala<sup>1</sup>, Dr Felix Nwaolisa Echekeba<sup>2</sup> and Amalachukwu Chijindu Ananwude<sup>2\*</sup>

<sup>1</sup>*Department of Banking and Finance, Federal Polytechnic, Oko, Anambra State, Nigeria*

<sup>2</sup>*Department of Banking and Finance, Nnamdi Azikiwe University, Anambra State, PMB 5025, Awka, Nigeria*

*\* Corresponding author*

**Abstract:** The effect of agricultural credit guarantee scheme fund and government total expenditure on agriculture on agricultural sector's contribution to real gross domestic product was evaluated in this study. The Central Bank of Nigeria (CBN) statistical bulletin serves as the data bank for the time series data from 1990 to 2020. The Ordinary Least Square (OLS) technique was employed in estimating the models. The OLS result revealed that agricultural credit guarantee scheme fund has a positive significant effect on agricultural sector's contribution to real gross domestic product. On the other hand, the effect of government expenditure on agriculture on agricultural sector's contribution to real gross domestic product is positive but not significant. There is the need for the government to inject more funds into agricultural financing schemes, especially the agricultural credit guarantee scheme fund and also ensure that the funds are effectively disbursed for agricultural activities. Government expenditure on agriculture should be increased to reflect the importance of this sector to the economic development and growth of the country. The budgetary allocation of the government on agricultural sector should not only be increased but measures should be taken to ensure that the budget is released and implemented as at when due.

**Keywords:** Agricultural credit guarantee scheme fund; government agricultural expenditure

## I. INTRODUCTION

It is obvious that no aspect of Nigerian economy will grow well without proper financing with a good financing policies from the financial system of the economy. Agricultural sector cannot be left behind because of its contribution to the growth of economy. The Nigeria government have attempt to overcome the problem of financing agriculture by subsidizing credit, setting up credit guarantee fund schemes, establishing programmes and stimulating institutional innovations that can help to develop agricultural sector contribution to Gross Domestic Product (GDP). This is because, many banks perceived agricultural credit as risky and seek to channel credit to other sectors like general commerce, oil and gas. Agricultural financing policies such as schemes, programmes and institutions have not really fulfilled the expectations on them. It is expected that with these policies aimed at adequate financial provision/funding for agricultural development, the problem of inadequate loan to agricultural sector, especially the

rural small and medium scale farmers would have been resolved. This has not been so since the inability to access funding remains a major constraint to agricultural development in Nigeria. Efobi and Osabvohien (2011) state that the agricultural financing policies like schemes has lofty aims, especially the need to make the agricultural sector lucrative but it has not lived up to its expectation. Agricultural financing policies are crucial to the development and growth of agricultural sector in particular and to the growth of Nigerian economy in general, especially as it concerns rural unemployment, rural poverty and distortion of production and liquidation of assets.

There are controversies in theoretical and empirical literature on the nexus between financing policies and agricultural sector productivity both in developing and developed countries. The empirical studies of Famogbiele (2014), Kiragu (2015) and Jamila (2012) established that financing policies has significant effect on agricultural sector contribution to national output. On the contrary, the works Eze, Ugochukwu, Eze, Awulonu and Okon (2010), Olajide, Akinlabi and Tijani (2012), Adetiloye (2012), Obansa and Maduekwe (2013), Okosodo, (2016), Egwu, (2016) and Ayeomoni and Aladejana (2016) found only the existence of a positive relationship between financing policies and agricultural sector performance but would not validate the significance influence of various finance policies on agricultural productivity in Nigeria. This lack of consensus in theoretical and empirical literatures on the alleged connection between financing policies and agricultural sector productivity is a call for concern and necessitates the need for empirical investigation in a bid to resolve the bone of contention. Nigeria which has come out of recession based on the National Bureau of Statistic economic report of the second quarter of 2017 as released on 17th September, 2017, offers an idyllic environment to further re-ascertain the effects of various financing policies such as scheme (Agricultural Credit Guarantee Scheme Fund (ACGSF) and programmes (implemented via government expenditure towards agricultural development) on agricultural sector output and contribute to existing literature in this regard.

The introduction section gives the background to the study; sections two reviews relevant literature; section three categorically states the methodology applied; section four features conclusion and recommendations.

## II. LITERATURE REVIEW

### *Conceptual Issues*

The Agricultural Credit Guarantee Scheme Fund (ACGSF) is founded on the principle of guarantee, aimed at sharing risk so as to overcome the resistance of financial institutions to lending to targeted borrowers. A guarantee programme insures repayment of loans, in full or in part, in order to motivate lenders to lend to groups, such as small farmers, small and medium enterprises, women and the poor, who would not have access to credit under normal circumstances (Navajas, 2001). Formal financial institutions are averse to lending to these groups of people they consider as “risky” because of stagnant agricultural markets, high production risk and perceived low profitability of farming, lack of collateral, and their poor financial recording systems (FAO, 2006). These guarantees are aimed at stimulating lending to credit-worthy borrowers with feasible projects, but lack sufficient assets to offer as collaterals (Reichmuth, 1997). In this arrangement, the parties have specific obligations – the lender making more and more loans, albeit with due diligence, the borrower diligently repaying same, and the guarantor promptly bearing some of the costs and losses. The Central Bank of Barbados enumerates the advantages of a guarantee scheme to the borrower to include reduced collateral constraints; increased working capital; expansion of fixed assets, machinery and equipment; increased cash flow; increased sales and profit; borrowing at lowered interest rates and sometimes at longer terms; expansion, diversification and improvement of operations; job creation; new technology; new skills and new products. Aside other incentives, these should translate into farm investments that raise output, productivity, income and standard of living.

For the lender, the benefits may include reduced transactions costs and risks; added protection for loans; lower losses from loan defaults; larger loan volumes; better working relationships with small clients; opportunity to provide advisory services; additional businesses from existing clients; and new clients who may also buy into some of its other products. The guarantor would have succeeded in widening and easing access to credit among the target beneficiaries, thereby earning goodwill, among others. The medium to long-term goals would be poverty eradication or alleviation and the attainment of economic growth and development. Guarantee schemes, leverage additional funds from the financial system because lenders make loans that otherwise would not have been made (Hollinger, 2004). Failure or limited success of these schemes is traced to paucity of capital to sustain the scheme operations (especially default in claims settlement by the guarantor and/or supervising agent); expensive, complicated and time-consuming administrative arrangements that discourage lenders; over-dependence on subsidies, such that some schemes

were merely disguised credit subsidies (Hollinger, 2004). From another perspective, poor loan monitoring and supervision or the lack of it, either due to complacency or inadequacy of operational finance, is another major factor. Again, moral hazard is heavily entrenched in guarantee schemes, as the borrower is aware that the guarantor will make good some (or all) of his default to the lender.

The core objective of a guarantee scheme was less to correct a credit market imperfection, and more, as a Keynesian spending device, to stimulate growth in an economy where resources are not fully employed, through lending to small scale firms. In which case evaluation of the scheme would be based on whether firms of guaranteed borrowers actually grow faster than those of nonguaranteed borrowers. Broadly, though, an analysis of the overall impact of a guarantee programme must take into account the impact on each of the guarantor, the lender and the borrower. Meyer and Nagarajan (1996) present an extensive discussion of this issue in respect of developing countries. For the guarantor, the impact depends on the objective of the scheme, its design, management and the extent to which it is used as a political tool. This throws up the desirable feature of creditworthiness which is essential for the survival of a guarantee scheme. For the lender, the impact goes beyond a matter of sustainability. Lenders should come to appreciate that there are good clients in the target group and begin to lend to them with softer terms. Also, a poorly designed fund may impact negatively on the lender, provoking adverse selection and negligence both in allocation and collection of loans. On the part of the borrower, additionality matters. It involves a pre- and post-guarantee situation analysis of access to loan, size of loan and farm performance, as well as a comparison with non-guaranteed borrowers.

The study adopted the Supply Leading Hypothesis. Supply Leading Hypothesis otherwise called the Financial Growth Theory was developed by pioneered by Schmpeter Joseph in 1912 and was used by Adetiloye (2012); Jamila (2012); Obansa and Maduekwe (2013); Kiragu (2015) and Ayeomoni and Aladejana (2016) in both developed and developing countries. This theory was anchored on the small businesses financing which agricultural sector is inclusive. The theory states that the financial needs and financing options change as the business grows and it becomes more experienced and less informative. They further suggest that firms in their infancy stage must rely on initial insider finance, trade credit and/or agricultural financing policies. This is because the size of the loan and lack of information on the quality of operation of agricultural sector force lenders to protect their investment by demanding higher rates of return, which come in the form of high interest rate and high cost of capital for agricultural sector.

### *Empirical Studies*

#### *Agricultural Credit Guarantee Scheme Fund and Agricultural Output*

Empirically, Ozoali and Madueme (2018) conducted a 14 year impact analysis of this agricultural credit guarantee scheme fund on food crop production by smallholder farmers in Southern Nigeria. The study specified a model based on the Cobb-Douglas production function with three explanatory variables. Data were generated from the Central Bank of Nigeria Statistical bulletin and National Bureau of Statistics (NBS). The results were analysed using fixed effects panel data analysis. The results revealed that agricultural credit guarantee has a positive significant impact on food crop production of smallholder farmers in Southern Nigeria.

Ojo and Oluwaseun (2015) appraised the roles, duties and functions of the ACGSF and the impacts its activities have in stimulating economic development in Nigeria. It examines factors militating against its effectiveness and makes recommendations on how its management can be improved upon. Questionnaire was administered on 125 farmers randomly selected from the South Western part of Nigeria to evaluate and assess the level of their awareness on the governmental agricultural financing activities of the ACGSF. Their views on credit potential benefits to the farmers were also sought. This is with the main aim of deciphering if the option is capable of providing the breathing space and the leeway for the much needed long term financing, capable of accelerated agricultural development. With 104 respondents returning the questionnaire, the data is analysed with the chi square statistical tool. With the expected value remaining significant at a critical value of 99%, the study proves that Agricultural Financing Scheme such as ACGSF, has the tendency of enhancing macro-economic development when properly managed and harnessed.

Agbada (2015) empirically analysed Agricultural financing and optimising Output for sustainable economic development in Nigeria. Agricultural financing is proxied by the endogenous components of government secured Agricultural Credit Guarantee Scheme (ACGS) loans and Output is proxied by Gross Domestic Product (GDP). Data were sourced from CBN statistical bulletin, 2012 and analysed using Multiple Regression techniques. Research findings indicate that though there is a positive relationship between ACGS funds and Output growth in Nigeria.

Adetiloye (2012) examined the provision of credit to agricultural sector along with the performance of the ACGSF while at the same time evaluating the food security status of Nigeria. It adopts the available data for the period 1978 to 2006 because of data uniformity. It finds out that though credit to the agricultural sector is significant it has not been growing relative to the economy. The ACGSF settled claims are negatively significant and the tardiness is observed in the claims process. The food security aspect shows that Nigeria is food insecure as the import of food is on the rise as the tests show.

Ojiegbe and Duruechi (2015) evaluated the impact of agricultural loans on food production, the problems and prospects. Data for the study were sourced through secondary means and hypotheses formulated in order to attain the objective of the research. The data were analysed with SPSS

(multiple regression) and formulated hypotheses tested with F-ratio and student t-test. Findings revealed that agricultural loans have significant and positive impact on food production in Nigeria. Hence, there is need to increase and sustain the amount of credits disbursed to the sector if the rate of food production is to meet with the pace at which the population is growing.

The volume by number and value of loans guaranteed and repaid, with the addition of a credit-determining policy instrument, were modelled by Okon and Nkang (2009) using vector autoregression (VAR) methodology to evaluate the economic information they contain and their relevance in terms of policy analysis. The value of loans guaranteed was identified to be positively related to the number of loans guaranteed and the number and value of loans repaid, and inversely related to the policy instrument. In this light, the managers of the scheme need to step up and encourage vigorous repayment of loans under the guarantee and develop capacity to process and approve guarantees and default claims on-line.

Ammani (2012) investigated the relationship between agricultural production and formal credit supply in Nigeria. The methodology employed in the study involved the development and estimation of three simple regression models relating agricultural output with formal credit while holding other explanatory variables constant. Findings of the paper indicates that formal credit is positively and significantly related to the productivity of the crop, livestock and fishing sectors of Nigerian agriculture.

Dare, Fowowe, Akintayo and Adedolapo (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. Likewise, the amount of the fund allocated to fishery subsector on fish output has positive influence on fish output but significant only at 10% level. While increases in the amount of the fund in a given year may substantially raise crop and fish production in that same year, it may take up to 2 years to experience a significant output expansion in livestock.

Isiorhovoja (2017) reviewed the activities of the Agricultural Credit Guarantee Scheme Fund (ACGSF) in the Niger Delta Development Commission (NDDC) covered states for the period 1991 to 2011. The objectives were to compare variation in the number and value of loans guaranteed to these states and to determine the stability or otherwise of the relationship between number of loan beneficiaries and the value of loans guaranteed to beneficiaries with the introduction of the NDDC in 2000. Time series data were obtained from the Statistical bulletin of the Central Bank of Nigeria (CBN, 2011) for the period 1991 to 2011 on the total number and value of loans guaranteed. They were analysed using descriptive

statistics and inferential statistics, namely; ANOVA and Chow test. Among the findings were: that there was no significant variation in the number and value of loans guaranteed among the nine states in the period under review; that CV were particularly high in value of loans guaranteed for all the states and in both variables for Delta State; that number of loans guaranteed were under 1000 units for all the states in the period reviewed but the value of loan increased dramatically since 2004, thus farmers coverage was low and static; that the null hypothesis of no structural break was accepted for Akwa Ibom, Delta, Imo and Rivers States but rejected for Abia, Cross River, Edo and Ondo States. The conclusion was that ACGSF can do better.

Tiamiyu, Bwala and Alawode (2017) provided information on how best to explore and exploit the potential of Agricultural Credit Guarantee Scheme Fund in revitalizing the Nigeria economy that is currently under recession. The relationship among Agricultural Credit Guarantee Scheme Fund, Commercial Banks loan supplied to agriculture and Agriculture share of Gross Domestic Product was determined using secondary data obtained from the website of the Central Bank of Nigeria. Annual values of Agricultural Credit Guarantee Scheme Fund, Commercial Banks loans to Agriculture and Agricultural share of Gross Domestic Products for a period of thirty three years (1981-2013) were collected and analysed using Correlation Matrix and Ordinary Least Square (OLS) regression. Results showed that no negative relationship exists among the three variables. The Credit Guarantee Scheme Fund also impacted positively and significantly on agriculture share of Gross Domestic Product (GDP) during the period.

Akpan, Akpan and Essien (2012) established the relationship between amount of loan guaranteed by the Agricultural Credit Guarantee Scheme Fund (ACGSF) and some key macroeconomic variables in Nigeria. Augmented Dickey-Fuller unit root test and improved ADF-GLS unit root test conducted on the specified time series showed that all series were integrated of order one. The short-run and long-run elasticities of amount of loans guaranteed by ACGSF with respect to some key macro-economic fundamentals were determined using the techniques of co-integration and error correction models. The empirical results revealed that in the long run, the coefficients of interest rate charged by commercial banks and value of oil revenue has a significant negative and positive relationship respectively with the amount of loan guaranteed by the ACGSF in the country. Whereas in the short run, the coefficients of the previous amount of loan guaranteed and value of oil revenue as well as the real GDP has a positive association with the current amount of loan guaranteed by ACGSF while the external debt has a negative association.

Zakaree (2014) examined the effect of Agricultural Credit Guarantee Scheme Fund (ACGSF) on domestic food supply in Nigeria. The study was carried out in Nigeria, between the period of 1988 and 2011. The study used secondary data which include annual agriculture credits

guarantee funds and the total domestic food output obtained from CBN's statistical bulletin; the rural population data, obtained from the NBS's reports; and the average annual rainfall for the country, calculated from the annual rainfall in each state of the federation obtained from the Nigerian Meteorological Agency. The data were analysed using Ordinary Least Square (OLS) approach. It was observed that there has been an increase in the trend of agricultural credits guarantee funds to the farmers within the period of observation, with an average growth of 573.8 percent compared to the average growth of 59.25 percent in the domestic food supply in Nigeria, and the changes in the agricultural credit guarantee fund to the farmers has a significant impact on the domestic food supply.

Egwu (2016) examined the impact of agricultural financing on agricultural output, economic growth and poverty alleviation in Nigeria. In an attempt to do this, Ordinary Least Square (OLS) regression technique was employed in which T-test, R-Square, Standard Error Test and Durbin Watson test ADF/PP unit root and co-integration test were used in the data analysis. The research findings revealed that Commercial Bank Credit to Agricultural sector (CBCA) and Agricultural Credit Guarantee Scheme Fund Loan to Nigeria's Agricultural sector (ACGSF) were significant to Agricultural sector output percentage to Gross Domestic Product (ASOGDP) the dependent variable, thereby alleviated the poverty rate and induced to economic growth in Nigeria, that there exist a long-run relationship among the variables in Nigeria under the study period.

Oparinde, Amos and Adeselu (2016) studied the influence of Agricultural Credit Guarantee Scheme Fund on fishery development in Nigeria. Secondary data between 1981 and 2012 were collected on relevant variables and analysed using Descriptive statistics, Growth function and Regression analysis. The results of the analysis showed that fishery sub-sector was the least financed in the agricultural sector of the economy. This is reflected in low contribution of fishery sub-sector to Gross Domestic Product (GDP) due to the fact that the required importance is not given to the sub-sector as it is poorly financed by ACGSF. Also, growth rate of fishery contribution to GDP was 10.63% and the proportion of GDP from fishery to total GDP from Agriculture was 0.005%. The results further showed that volume of ACGSF loan to fishery sub-sector and agricultural sector had significant influence on the GDP contribution from fishery sub-sector.

Enenche, Ohen and Umeze (2014) examined the effect of ACGSF on income generation and poverty alleviation among rural farmers in Benue state. Results of the Stochastic frontier and the inefficiency model showed that the variance parameters for  $\sigma^2$  and  $\gamma$  were 0.2237 and 0.5209 which was significant at 1 percent level. The sigma squared indicated the goodness of fit and correctness of the distributional form assumed for the composite error term while the gamma  $\gamma$  indicates that the systematic influences that are unexplained by the Production Function and the dominant sources of random

errors. This showed that the inefficiency effects makes significant contribution to the technical inefficiencies of ACGSF beneficiaries.

Orok and Ayim (2017) portrayed the impact of Agricultural credit Guarantee scheme fund (ACGSF) on Agricultural Sector Development in Nigeria. Secondary data were sourced from Central Bank of Nigeria Publications and Statistical Bulletin. Multiple linear regression of ordinary least square (OLS) model was adopted to establish the relationship between dependent and independent variables. Findings revealed a positive and significant relationship between ACGSF and the agricultural sector development evaluated by the sustained rise in its contribution to GDP. The study also revealed that the scheme had given more funds and impacted more on the crop sector over the livestock and fishery sectors.

#### *Government Expenditure and Agricultural Output*

Okpara (2017) examined Government expenditure on agriculture and agricultural output on Nigeria economic growth for the period of 1980 – 2014. The study adopted time series econometrics analysis to determine Government expenditure on agriculture and agricultural output on Nigeria economic growth. For purpose of clarity, models were specified as (GDP) dependent variable, (GEXPA) and (AGO) as independent variables. In order to avoid spurious result, some standard econometric tests were conducted. The result reveals that two of the variables: Gross Domestic Products (GDP) and government expenditure on agriculture (GEXPA) were integrated of order  $I(0)$ , while the remaining variable: agricultural output (AGO) was integrated of order  $I(1)$ , given the period under study. The result further reveals that the variables have long run relationship because of evidence of two co-integrating equations while the speed of adjustment of the ECM result is 90.9% per annum. Lawal (2011) examined the level of government spending on the agricultural sector and the consequential effect on the GDP. The result obtained shows that such spending does not follow a regular pattern and that the contribution of the agricultural sector to the GDP is in direct relationship with government funding to the sector.

Idowu (2014) examined empirically the relationship between agricultural output and federal government recurrent expenditure on agriculture from 1981 to 2010. The data were obtained from the Central Bank of Nigeria Statistical Bulletin of 2010, and were subjected to analysis using regression, unit root test and co-integration test of E-view 7 statistical software. The results show that there is a positive relationship between agricultural output and federal government recurrent expenditure on agriculture as well as a long-run relationship.

Okoh (2015) examined the impact of fiscal policy on the growth of agricultural sector in Nigeria between 1981 and 2013 using Error Correction Model (ECM). The co-integration results showed that long run equilibrium relationship exists among the variables. The total government expenditures on agricultural sector were found to have negatively influenced agricultural growth in Nigeria. It showed that the amount of

government expenditures towards the growth of the sector has not been favourable. Government capital allocation and expenditure to agriculture is relatively low and the actual expenditure falls short of budgeting expenditure.

Uremadu, Ariwa and Uremadu (2018) examined effect of government agricultural expenditure on agricultural output in Nigeria using time series data from 1981 to 2014. Having analysed data using unit root test, co-integration test and vector error correction model, results of unit root test showed that all the variables were integrated at the first order difference. On the other hand, the Johansen co-integration tests revealed that a long-run relationship existed between agricultural output and government agricultural expenditure. Going through the vector error correction model results indicated that agricultural output adjusted rapidly to changes in total government agricultural expenditure, real exchange rate, banking system credit to agriculture, average annual rainfall and population growth rate. With respect to individual variables, average annual rainfall and domestic population growth rate were significant at 1 percent levels in affecting agricultural output in Nigeria. While domestic population growth rate lead agricultural output in Nigeria, average annual rainfall followed and then government expenditure, and finally, real exchange rate in their descending order of magnitude.

Olarinde and Abdullahi (2014) investigated the impact of macroeconomic policies on agricultural output specifically on crop production in Nigeria over the period of 1978-2011. The study finds a co-integrating relationship among agricultural output, government expenditure, agricultural credit, inflation, interest and exchange rates. The findings showed that in the long run, agricultural output is responsive to changes in government spending, agricultural credit, inflation rate, interest rate and exchange rate. The results of impulse response functions suggested that one standard deviation innovation on government expenditure and interest rate reduces the agricultural output thus threatening food security in the short, medium and long term. While results of the variance decomposition indicate that, a significant variation in Nigeria's agricultural food output is due to changes in exchange rate and government expenditure movements.

Oluleye and Toba (2018) determined how private and public investments in agricultural sector have contributed to the growth of the sector in Nigeria. To achieve the objective, data on public spending on agriculture, banking sector lending to agriculture, Foreign Direct Investment (FDI) inflow to agriculture and interest rate on credit to agriculture were sourced from 1981-2016. Descriptive and inferential statistical as well as econometric techniques were applied to analyse the collected data. The study found that a negative relationship exists between public investment in agriculture and performance of the agricultural sector and a positive relationship between banking sector credit and the performance of agricultural sector. Findings also revealed a negative and insignificant relationship between foreign direct investment in

agriculture and the performance of the sector while interest rate was found to be negatively related to the sector performance.

Kumar and Dkhar (2018) examined the short and long run relationship between government expenditure on agriculture and its allied sector and agricultural output of Meghalaya. The study is based on a time series data of 30 years from 1984-85 to 2013-14 using the ARDL approach to co integration. The result of the Bounds test indicated the presence of a long-run co integrating relationship between the variables in the study. The results revealed that in the long run, the effect of public expenditure through agriculture and allied activities, on agricultural output is significantly negative, while expenditures on education and transport on agricultural output are significantly positive.

Olawumi and Oyewole (2018) evaluated the nexus between public spending on agriculture and Nigerian output growth. The study employed secondary data from 1981 through 2016. The study examined stochastic characteristics of each time series by correlation LM test, Heteroskedasticity Test. Then, the relationship between growth rate of real GDP and public spending on agriculture was examined using Ordinary Least Square (OLS) method of analysis. The findings showed that agricultural development in Nigeria has positive impact on the economic growth in Nigeria and that all the variables in the model proved significant, which showed that agricultural sector output has positively impact on the economic growth in Nigeria over the period under study.

Ewubare and. Eyitope (2015) assessed the effects of government spending on the agricultural sector in Nigeria using quasi-experimental research design. Data adopted in the study were generated from the Central Bank of Nigeria annual statistical bulletin 2013 and National Bureau of Statistics bulletin 2013. The Ordinary Least Square (OLS) of multiple regression, the Johansen co-integration techniques, and the error correction model were used for the analysis. The results showed that the coefficient of determination is 0.9468 and the coefficient of the ECM appeared with negative sign and statistically significant. Durbin/Watson value is 1.954 and the f-statistics of 33.84 is significant at 5% level. The lag two and three forms of the explanatory variables GEA were positive and statistically significant. The DBA was positive but statically not significant at 5% level. The coefficient of GCF for the lag two and three periods were rightly signed and statistically significant at 5% level.

Iganiga and Unemhilin (2011) evaluated the effect of Federal government agricultural expenditure on the value of agricultural output. In the process, other determinants of agricultural output were examined. Co-integration and Error Correction methodology were employed to draw out both long-run and short- run dynamic impacts of these variables on the value of agricultural output. Federal government capital expenditure was found to be positively related to agricultural output. With a one-year lag period, it shows that the impact of government expenditure on agriculture is not instantaneous.

Uger (2013) ascertained the impact of Federal Government's expenditure on agricultural sector. The data used is sourced from the Central Bank of Nigeria Statistical bulletin. Simple regression is used with a view to analyse the data which indicates impact of agricultural expenditure on its output from 1991 to 2010. The R2 is 1% indicating a weak relationship between the variables are as a result of inadequate funding.

Abula and Mordecai (2016) investigated the impact of public agricultural expenditure on agricultural output in Nigeria for the period 1981 to 2014. The Augmented Dickey-Fuller test, Johansen Co-integration test, Error Correction Method (ECM) and Granger Causality test were employed as analytical tools in the course of the study. Agricultural output was explained by public agricultural expenditure, commercial bank loans to the agricultural sector and interest rates. The Johansen Co-integration test revealed that there exists a long-run relationship between agricultural output, public agricultural expenditure, commercial banks loans to the agricultural sector and interest rates in Nigeria. The results of the parsimonious ECM model showed that public agricultural expenditure has a significant negative impact on agricultural output while commercial banks loans to the agricultural sector and interest rate have insignificant positive impacts on agricultural output in Nigeria.

### III. METHODOLOGY

This study adopted an ex post facto research design to ascertain the effect of agricultural credit guarantee scheme fund, government expenditure on agriculture on agricultural output in Nigeria. The Central Bank of Nigeria (CBN) statistical bulletin serves as the data bank for time series data from 1990 to 2020. The Ordinary Least Square (OLS) technique was employed in estimating the models. The dependent variable is agricultural output measured by Agricultural Sector Contribution to Real Gross Domestic Product (ASCRGDP), while Agricultural Credit Guarantee Scheme Fund (ACGSF) and Government Total Expenditure on Agriculture (GEXPAG) were utilized as the independent variables. The study adopted and modified the model of Udeorah and Vincent (2018) which was stated as:

$$agric = (acgsf, govtexp, bankcredit)$$

Where:

*agric* = Agricultural contribution to real gross domestic product

*acgsf* = Agricultural credit guarantee scheme fund

*govtexp* = Government recurrent expenditure on agriculture

*bankcredit* = Commercial banks credit to agriculture

We modified the model by replacing removing commercial banks credit to agriculture, whereas government total

expenditure on agriculture substituted government recurrent expenditure on agriculture, and as thus:

$$ASCRGDP = (ACGSF, GEXPAG) \quad (2)$$

The econometric function of equ. 2 is expressed as:

$$\begin{aligned} \text{Log}ASCRGDP_t &= a_0 + a_1 \text{Log}ACGSF \\ &= F_t + a_2 \text{Log}GEXPAG_t \\ &+ \varepsilon_t \quad (3) \end{aligned}$$

Where:

*ASCRGDP* = Agricultural sector contribution to real gross domestic product

*ACGSF* = Agricultural credit guarantee scheme fund

*GEXPAG* = Government total expenditure on agriculture

*a*<sub>0</sub> = a constant term

*a*<sub>1</sub> and *a*<sub>2</sub> are the coefficients of the regression equation

*ε* = the error term

#### IV. DATA ANALYSIS AND RESULTS

The data analysis of this study stated by first determining the stationarity properties of the data which was done by the use of the Augmented Dickey-Fuller (ADF), Phillips Perron (PP) and Kwiatkowski-Phillips-Schmidt-Shin (KPSS). The results of the stationarity test presented in Tables 1 – 3 which provide evidence of the stationarity of the data. Consequently, the regression result will be not be affected by any issue related to stationarity defect.

Table 1: Result of ADF Test at First Difference

Variables	Intercept	Trend & Intercept	None	Inference
ASCRGDP	-4.516959 (0.00)*	-4.798348 (0.00)*	-2.700492 (0.00)*	Stationary
ACGSF	-5.937248 (0.00)*	-5.904234 (0.00)*	-6.010973 (0.00)*	Stationary
GEXPAG	-5.969828 (0.00)*	-5.895145 (0.00)*	-6.086430 (0.00)*	Stationary

Source: Data output via E-views 10.0

Note: The optimal lag for ADF test is selected based on the Akaike Info Criteria (AIC), p-values are in parentheses where (\*) & (\*\*) denote significance at 1% and 5% respectively.

Table 2: Result of PP Test at First Difference

Variables	Intercept	Trend & Intercept	None	Inference
ASCRGDP	-4.516959 (0.00)*	-4.798348 (0.00)*	-2.541248 (0.01)*	Stationary
ACGSF	-6.026756 (0.00)*	-5.996568 (0.00)*	-6.094299 (0.00)*	Stationary
GEXPAG	-6.135340 (0.00)*	-6.283046 (0.00)*	-6.263270 (0.00)*	Stationary

Source: Data output via E-views 10.0

Note: Spectral estimation methods are Bartlett kernel and Newey-West method for Bandwidth, p-values are in parentheses where (\*) & (\*\*) denotes significance at 1% and 5% respectively.

Table 3: Result of KPSS Test at Level

Variables	Intercept	Trend & Intercept	Inference
ASCRGDP	0.669330 (0.00)*	0.141652 (0.00)*	Stationary
ACGSF	0.558871 (0.00)*	0.103446 (0.00)*	Stationary
GEXPAG	0.362531 (0.01)*	0.084093 (0.00)*	Stationary

Source: Data output via E-views 10.0

Note: The optimal lag for ADF test is selected based on the Akaike Info Criteria (AIC), p-values are in parentheses where (\*) & (\*\*) denote significance at 1% and 5% respectively

With respect to the descriptive properties of the data, Table 4 reveals the mean of the variables as ₦9655013 for ASCRGDP, ₦4336262 for ACGSF and ₦115403.2 for GEXPAG. The median for the data were shown to be ₦9516990, ₦4087448, and ₦44803.80 respectively for ASCRGDP, ACGSF, and GEXPAG. The maximum and minimum values are ₦17544150 and ₦3674790 for ASCRGDP, ₦12456251 and ₦80846.00 for ACGSF and ₦505770.0 and ₦924.50 for GEXPAG. The standard deviation for the data are ₦4898278, ₦4190895, and 159870.6 accordingly for ASCRGDP, ACGSF and GEXPAG. The data were positively skewed to normality as evidenced by the positive coefficient of the skewness for all the data. The kurtosis for all the variables were positive, while the p-value of the Jarque-Bera statistics (significant at 5% level of significance) suggests that the data passed the test of normality and are free from any outlier that might affect the regression result.

Table 4: Descriptive Properties of the Data

	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	P-value	Obs
ASCRGDP	9655013	9516990	17544150	3674790	4898278	0.148627	1.552971	6.455034	0.033019	29
ACGSF	4336262	4087448	12456251	80846.00	4190895	0.407241	1.646478	8.807329	0.025695	29
GEXPAG	115403.2	44803.80	505770.0	924.5000	159870.6	1.518893	3.826471	11.15009	0.003791	29

Source: Output Data from E-views 10.0

The OLS formed the basis for the determination of the nature of relationship between agricultural credit guarantee scheme fund, government total expenditure on agriculture and agricultural sector contribution to RGDP. The result in Table 5 reveals that there is a significant positive relationship between agricultural credit guarantee scheme fund and agricultural sector contribution to RGDP. Similarly, there is a positive but insignificant relationship between and government expenditure on agriculture and agricultural sector contribution to RGDP. Holding agricultural credit guarantee scheme fund and government expenditure on agriculture constant would result in

₦4,686,469 million value in agricultural sector contribution to RGDP. A unit rise in agricultural credit guarantee scheme fund and government expenditure on agriculture lead to, ₦34.62 million and ₦45.60 million appreciation in agricultural sector contribution to RGDP. The adjusted R-square reveals that 90.54% changes in agricultural sector contribution to Real Gross Domestic Product was as a result of fluctuations in agricultural credit guarantee scheme fund and government expenditure on agriculture). This is statistically significant with respect to the p-value (0.00) and f-statistic (63.25). The Durbin Watson coefficient of 1.55 does not portray the presence of autocorrelation in the model.

Table 5: OLS Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4686469.	432102.5	10.84573	0.0000
ACGSF	0.346195	0.132145	2.619803	0.0156
GEXPAG	4.559737	2.663212	1.712120	0.1009
R-squared	0.919995	Mean dependent var		9655013.
Adjusted R-squared	0.905449	S.D. dependent var		4898278.
S.E. of regression	1506180.	Akaike info criterion		31.45363
Sum squared resid	4.99E+13	Schwarz criterion		31.69360
Log likelihood	-419.6240	Hannan-Quinn criter.		31.52498
F-statistic	63.24585	Durbin-Watson stat		1.559132
Prob (F-statistic)	0.000000			

Source: Data output via E-views 10.0

The agricultural credit guarantee scheme fund has a positive significant effect on agricultural sector contribution to Real Gross Domestic Product. The coefficient of ACGSF is positive (0.346195) but the p-value (0.0156) is significant as it is lower than 0.10 (10% level of significance). This lays credence to the rationale behind the establishing of the scheme by the government which is the need to extend credit to agricultural activities at low rate than could be obtained from commercial and microfinance banks. This result is in unison with Ammani (2012), Dare, Fowowe, Akintayo and Adedolapo (2017), Egwu (2016), Tiemiya, Bwala and Alawode (2017) and Ojiegbe and Duruechi (2015). The amount of loan granted under the agricultural credit guarantee scheme fund has been on the rise as well as the number of beneficiary of the scheme in the country. There is no doubt that the scheme fund has to a certain extent achieved its aim. However, there are still some challenges, especially on the number of people that failed to repay their loan. The expenditure of the government on agriculture was found to be positively linked with agricultural sector contribution to Real Gross Domestic Product. The effect of government on agriculture agricultural sector contribution to Real Gross Domestic Product is positive but not significant. Coefficient of expenditure of the government on agriculture is positive (4.559737) however, this is not statistically significant at 10% significance level as the p-value of (0.1009) is greater

than 0.10. A percentage increase in government expenditure on agriculture has the potential of increasing agricultural productivity by the tune of ₦45.60 million. This is an indication that the programmes of the government towards the promotion of agriculture is crucial to the sector's contribution to the growth and national output. The finding on the positive relationship between government spending on agriculture and agricultural sector contribution to Real Gross Domestic Product is in affirmation to the researches of Uremadu, Ariwa and Uremadu (2018), Lawal (2011), Okpara (2017) and Idowu (2014).

## V. CONCLUSION AND POLICY IMPLICATION

The effect of agricultural credit guarantee scheme fund and government total expenditure on agriculture on agricultural sector contribution to Real Gross Domestic Product was evaluated in this study. The Central Bank of Nigeria (CBN) statistical bulletin serves as the data bank for time series data from 1990 to 2020. The Ordinary Least Square (OLS) technique was employed in estimating the models. The OLS result revealed that agricultural credit guarantee scheme fund has a positive significant effect on agricultural sector contribution to Real Gross Domestic Product. On the other hand, the effect of government on agriculture agricultural sector contribution to Real Gross Domestic Product is positive but not significant.

There is the need for the government to inject more funds into Agricultural financing Schemes especially the Agricultural Credit Guarantee Scheme fund and also ensure that the funds are effectively disbursed for agricultural activities. Government expenditure on agriculture should be increased to reflect the importance of this sector to the economic development and growth of the country. The budgetary allocation of the government to agricultural sector should not only be increased but measures should be taken to ensure that the budget is released and implemented.

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