Public Sector Expenditure to Agriculture, Bank Credits, and Aggregate Output: A Causality Analysis of the Nigerian Evidence

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This paper investigates the existence or otherwise of causal relationships between direct budgetary government expenditure on agriculture, indirect government funding through credit guarantees, and straight-bank-loans-and-advances to the agricultural sector, on one part, and the gross domestic product of the economy, on the other. It utilized descriptive statistical tools, regression analysis, diagnostic tests, and pairwise Granger causality technique against annual time-series Nigerian data from 1981 through 2019. The results indicates that agricultural credit guaranteed funding and direct credits from such banks like bank of industry and the commercial banks positively and significantly cause, as in affecting and boosting, the country's GDP. Quite surprisingly, direct government budgetary expenditure on agriculture was revealed to cause and affect GDP, but negatively. The recommendations favor encouraging and increasing the indirect guaranteed funding and straight loans and advances by relevant banks in the country.

Keywords: government expenditure, bank credit, gross domestic product, causality, Nigeria

INTRODUCTION

Agriculture has always remained a foremost preferred sector and commanding height of the Nigerian economy. Respective governments over the years have devoted considerable attention and resources in a bid to develop and sustain the sector so as to reap the anticipated benefits of boosting real aggregate output of the country. Both theory and empirical enquiries seem to be in agreement that agricultural output

associates and significantly relates with aggregate national output, more or less. Thus, it has been a policy reasoning that the sector holds ample promise and potentials to drive and 'catapult' the economy to its zenith of glory (Obansa & Maduekwe, 2013; Oyakhilomen & Zibah, 2014).

Agriculture is said to serve as catalyst to economic growth through provision of raw materials, food, jobs and increased financial stability; and these make agricultural funding a veritable tool of economic policy for a developing country like Nigeria. It is important to note the submission of Isibor, Olokoyo, Arogundade, Osuma, & Ndigwe (2018) that, for Nigeria, the agricultural sector's contribution to the GDP has been on the increase from the year 2000 to 2007. For instance, the Nigerian agricultural sector accounted for 7.4 percent of the country's GDP; but significantly increased to 23.96 percent in the fourth quarter (Q4) of 2014, and also to 24.18 percent in the fourth month of 2016. Adesina, Graham & Olukoshi (2006) documented that "agricultural finance promotes a sustainable economy, reduces poverty, increases business opportunities and leads to economic growth that improves the standard of living of the people". Agricultural funding is devoted to such needs like land purchase, building constructions, machinery and equipment acquisitions, labor hiring, irrigation activities and farm-consumables' purchase, and in some cases, to purchase new and appropriate technologies.

Public sector policies have always revolved around governmental spending to encourage farmers and other agriculturalist to produce their best. This spending may take the form of direct advances to the farmers, subsidies, equipment purchase to engineer their mechanized activities. The government has always mandated banks such as the Bank of Agriculture and commercial banks to lend graciously to needy farmers. For a long time, the government has been granting indirect loans to the agricultural sector by way of guaranteed loans. Through commercial banks, the farmers access government guaranteed loans at low interest rates. This facility has thrived under the nomenclature of Agricultural credit guaranteed scheme. Even in its presence and alongside other forms of credits to farmers, it is said that credits to the agricultural sector are, at best, constrained in the economy. Omankhanlen (2013) submitted that the paucity of agricultural credit to finance agrarian investment is the bane of mechanizing the nation's agricultural produce. Thus, as Hartarska, Nadolnyak, & Shen (2015) would have it, alleviating every credit constraint to the agricultural sector is a *sine qua non* strategy that must be adopted by any serious country. This can be reduced when banks which are the key agents of fund disbursements to the agricultural sector put aside their preference for lending money based on the anticipated income of their customers, especially in connection with high-risk microlending (Osuma et al. 2018). This preference for anticipated income approach to lending has discouraged many a bank from lending to small-scale farmers that make up a large proportion of farmers in Nigeria.

To Obansa & Muduekwe (2013), "the importance of agricultural surplus for the structural transformation accompanying economic growth is often stressed by development economists and generates the crucial question: Does agriculture financing matters in the growth process?" It is reasoned that these and other incentives should boost and bolster agricultural contribution to the aggregate output (GDP) of the country. When money is placed in the hands of needy farmers by way of government direct and indirect spending, it is expected that productivity of agricultural output would be enhanced positively and considerably. Thus, government expenditure to Agriculture (GEXA) should have a positive and significant relationship with aggregate output, ceteris paribus. When government lends to farmers using the commercial banks through the vehicle of credit guarantee scheme, it is expected that farmers that utilize the available resources would ultimately increase their productivity considerably. The same is true with funding by development and commercial banks to the farmers. Thus, it can rightly be postulated that the output growth of the country is a positive function of agricultural financing provided or guaranteed by the government and those advanced by the banks. This theoretical proposition is, however, a subject of empirical determination using practical data, if it is to be accepted as plausible.

Though various studies have been carried out by different authors along these empirical lines, the complete verification of the above proposition, within the context of Nigerian financial environment, is still a far cry. Of course, reasonable insights have been provided in respect of developed countries and emerging economies on the role agricultural financing plays in economic growth and development. Obansa & Muduekwe (2013) concurs that "the need to investigate the impact of agriculture financing on economic

growth appears more imperative for Nigeria". It has to be underlined, as this study maintains, that the imperatives of agricultural financing of the growth of a country's aggregate output is yet to be sufficiently examined and determined in a developing economy like Nigeria. This study is thus, a step in the right direction seeking to investigate the critical impact of agricultural funding by government and banks on the aggregate output (GDP) and, by extension, the economic growth of Nigeria; using the causality approach.

OBJECTIVES AND HYPOTHESES

The central objective of this research paper is to investigate and determine the critical impact of both public-sector spending and private-sector funding (though the vehicles of bank loans and advances) to the Agricultural sector on the aggregate domestic output of Nigeria. Specifically, the paper attempts to determine the direction and magnitude of effects on real output growth of government direct expenditure on Agriculture, government indirect funding of agriculture through the credit guarantee scheme, and the bank loans and advances to the agricultural sector. These would reduce to the following null hypotheses:

i. Government direct expenditure (capital and recurrent) to agriculture does not cause Aggregate output boost in Nigeria.
ii. Government indirect expenditure (in terms of indirect lending and or credit guarantee of commercial bank lending) has no significant causation effect on the gross domestic product of Nigeria.
iii. Bank loans and advances to the agricultural sector does not significantly boost the GDP of Nigeria.

The results of the tests of these hypotheses would assist the researcher to make informed inferences on the critical roles of Agricultural financing in boosting the GDP of Nigeria.

Review of Some Previous Empirical Literature

Some studies have provided empirical background to this study. For instance, Obansa & Maduekwe's (2013) paper employed econometric techniques of ordinary least square (OLS), augmented Dickey-Fuller (ADF) unit root test; and Granger causality test against secondary Nigerian data from 1970 to 2007. The results suggest that there is bi-directional causality between economic growth and agriculture financing; and between economic growth and agricultural growth. It was also underscored that productivity of agricultural investment would be more properly funded with foreign direct private loan, share capital, foreign direct investment and development stocks. Capital-output ratio would be better financed with multilateral loan, domestic savings, treasury bills, official development assistant, foreign direct investment and development stock. Recommendations favor the maintenance of such macroeconomic policies that are consistent with veritable agricultural investment; and that debt-equity swap options are vital to promoting agriculture-led economic growth.

Okunlola, Osuma & Ehimare (2019) studied the impact of guaranteed agricultural finance to oil palm, cocoa, groundnuts, fishery, poultry, cattle, roots, and tubers on the real gross domestic product of the country. They utilized the autoregressive distributed lag (ARDL) approach against Nigeria time-series data from 1981 to 2017. Findings indicated that for both short-run and long-run, none of the guaranteed agricultural finance was statistically significant to influence growth of the real gross domestic product. This led them to firmly assert that agrees with the assertion that: "some of the concerted efforts to finance the agricultural sector in Nigeria have rarely produced any form of improvement".

Oyakhilomen & Zibah (2014) investigated the effects of agricultural production output on economic growth in Nigeria in the face of rural poverty alleviation measures. Using the autoregressive distributed lag (ARDL) bound test approach, they found that agricultural production positively and significantly affected economic growth of Nigeria. Further submission was that, irrespective of the supposed positive influence of agricultural production to economic growth, poverty is still on the increase in the country.

Oboh and Ekpebu (2011) applied ordinary least square (OLS) to examine financial allocational imperatives to the agricultural sector. They uncovered a pertinent need to re-access the factors used by the Nigerian Agricultural, Cooperative and Rural Development Bank (NACRDB) for allocating credits to

beneficiaries. Ewetan et al. (2017) empirically examined the long-run relationship between agricultural output and economic growth in Nigeria using time series data from 1981 to 2014. From the cointegration tests and the vector error correction model (VECM), it was found that there exists a long-run relationship between agricultural output and economic growth. The results of the Granger causality test indicated causality between agricultural output and economic growth in Nigeria. Ayeomoni and Aladejana (2016) examined the relationship between agricultural credit and economic growth of Nigeria, and found the existence of short- and long-run equilibrium relationships between agricultural credit and economic growth.

These and other studies lend some useful insights to understanding the rudiments of agricultural financing and its imperatives to economic growth. However, not many has addressed the crucial issues of singling out the true causal effects of government capital and recurrent expenditure on agriculture. Not many also investigated and singled out the effects of bank financing to agriculture, and that of the agricultural credit guarantee scheme in a single interactive model of agricultural financing sources -cum-GDP-effects. This study attempts to do this by examining the effects of government spending, funding and guaranteeing and that of bank credits to the output of the Nigerian economy.

Method of Study

This paper pursues an analysis after the causal comparative design with included models and estimation techniques such as descriptive statistical tools of data description, least square regression and associated diagnostic tests, and the Granger-causality procedure. These were applied to time-series annual Nigerian data from 1981 through 2019. The data were obtained from the Statistical Bulletin of the Central Bank of Nigeria (CBN).

The Model

This study theorizes that the aggregate output (GDP) of Nigeria is a positive function of government expenditure on agriculture (GEXA), government guaranteed loans to the agricultural sector of the economy through the agriculture credit guarantee scheme funding (ACGSF), and the commercial loans and advances (CBLAS) granted by the respective banks operating in the country.

Thus, it is functionally stated that

$$GDP = f(ACGSF, CBLAS, GEXA) \quad (1)$$

Given a supposed log-linear relation, expression (1) would transform to

$$LNGDP = f(LNACGSF, LNCBLAS, LNGEXA) \quad (2)$$

Explicitly, expression (2) can be re-written as

$$LNGDP_t = \Omega_0 + \Omega_1 LNACGSF_t + \Omega_2 LNCBLAS_t + \Omega_3 LNGEXA_t + \mathscr{E}_{1t} \quad (3)$$

where,

$LNGDP_t$ = Log values of gross domestic product over time, t.
$LNACGSF_t$ = Log values of agriculture credit guaranteed scheme funding over time, t.
$LNCBLAS_t$ = Log values of loans and advances to agriculture by banks over time, t.
$LNGEXA_t$ = Log values of government expenditure on agriculture over time, t.
Ω_0 = intercept or constant
Ω_{is} = coefficients that are elasticities
$\mathscr{E}_{1t}$ = Stochastic error term.

With the estimation of expression (3), the study seeks to uncover the effects of the independent variables on the dependent variable, in this case, GDP.

RESULTS, ANALYSIS AND DISCUSSION

Data Presentation and Description

Annual Nigerian data ranging from 1981 to 2019 were employed for the purposes of analysis in this study. The data are summarized in the Appendix. However, the descriptive statistics are depicted on Table 1. Form the Table, the variables averaged 10.29 for LNGDP, 13.44 for LNACGSF, 3.399 for LNCBLAS, and 0.899 for LNGEXA. The variability of the variables as represented by the standard deviation are 0.572, 2.21, 2.13, and 2.97 for LNGDP, LNACGSF, LNCBLAS, and LNGEXA, respectively. From these values, it appears that the variability of the variable is not so much far away from the mean. They are not so violent in their respective trends and movements. This can be confirmed from the Line Graph represented by Figure 1. The spreads as indicated by the difference between the minimum and maximum values are not too wide. It is not surprising however as the values are in the logarithm form.

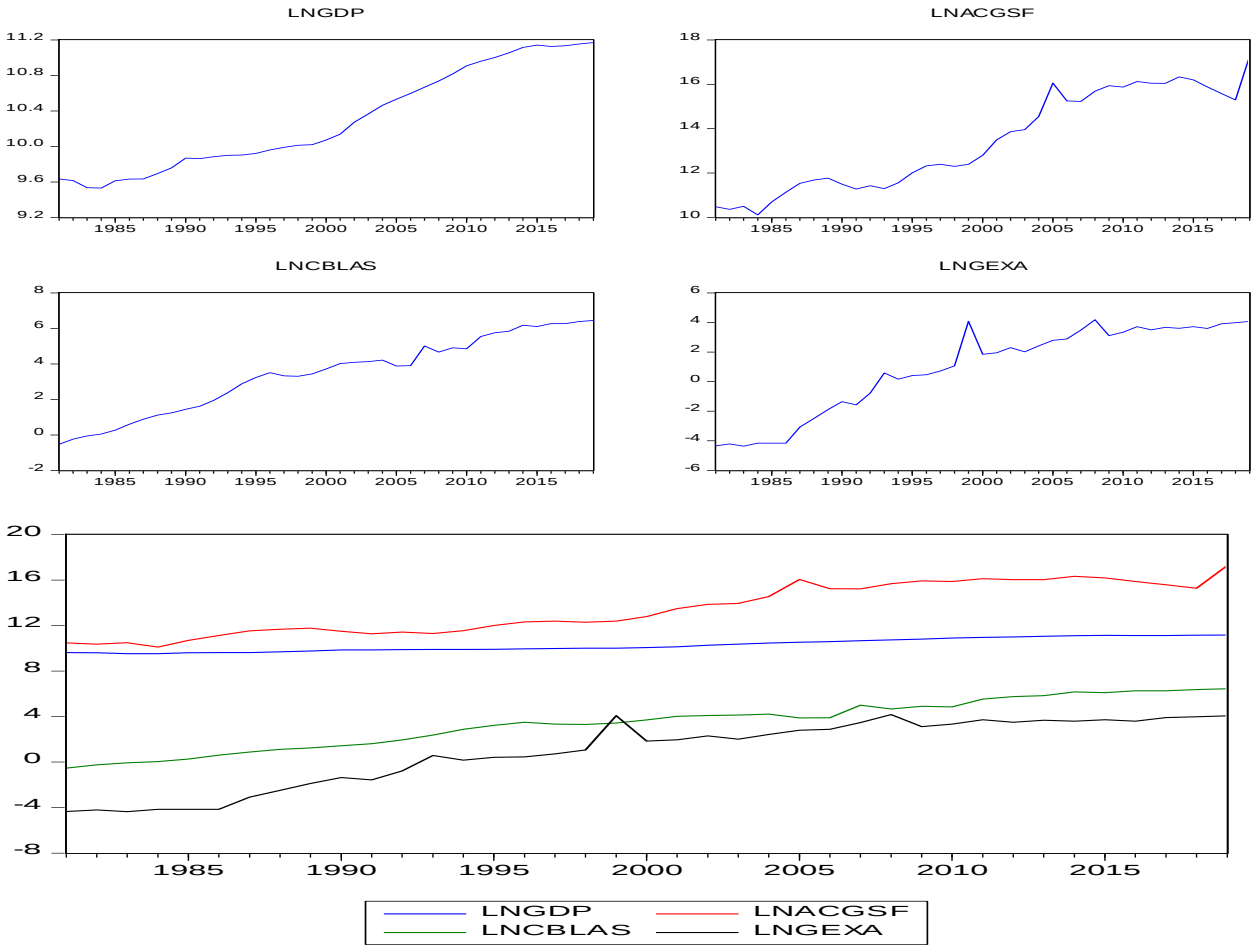
The revealed skewness showed that LNGDP and LNACGSF are positively skewed to the right at 0.29 and 0.101, while LNCBLAS and LNGEXA are negatively skewed to the left at -0.27 and -0.63 respectively. The kurtosis statistic posted values (1.57 for LNGDP, 1.47 for LNACGSF, 1,92 for CBLAS, and 1.96 for LNGEXA) that are less than 3, which is the kurtosis of normal distribution. Invariably, with the Jacque-Bera statistics and associated probabilities of 3.878[0.14] for LNGDP, 3.869[0.144] for LNACGSF, 2.369[0.306] for LNCBLAS, and 4.336[0.114], all the variables are individually normally distributed since their observed probabilities are greater than the alpha probability of 0.05.

Furthermore, the trends in the distribution of the variables are shown in Figure 1, which represents the line Graph of the variables both individually and in combined case. As can easily be gleamed from the Graph, all the variables displayed similar trend and gentle climb as in a hill that is not too steep. That would exclude any tendency of violent fluctuations.

TABLE 1
SUMMARY OF DESCRIPTIVE STATISTICS OF THE VARIABLES

Statistic	LNGDP	LNACGSF	LNCBLAS	LNGEXA
Mean	10.29205	13.44187	3.399437	0.899610
Median	10.07274	12.79788	3.714277	1.955089
Maximum	11.17025	17.27729	6.447706	4.180507
Minimum	9.530920	10.11273	-0.526616	-4.360665
Std. Dev.	0.572260	2.210557	2.134622	2.970211
Skewness	0.297513	0.101065	-0.274769	-0.630439
Kurtosis	1.574361	1.470263	1.924638	1.961580
Jarque-Bera	3.878069	3.869046	2.369893	4.335713
Probability	0.143843	0.144493	0.305763	0.114423
Observations	39	39	39	39

FIGURE 1
LINE GRAPH OF THE VARIABLES



Relationship Between the Variable

The Least Square estimation of model (3) displayed some interesting results that are summarized in Table 2. As shown, the global statistics posted good results. For instance, the R-squared of 0.9618 indicates that at least 96% of the variations in GDP are explained by the interactions of the modeled independent variables namely ACGSF, CBLAS, AND GEXA. When adjustments have been made for the effects of the number of observations (n) and number of predictors (k), the adjusted R-squared becomes 0,959; indicating that at least 95% of the changes in GDP are accounted for by the interactions and associations of the explanatory variables. This revealed degree of association or relationship is confirmed to be statistically significant at 5% significance level with the observed F-statistic of 294.15 and associated probability of 0.00000. Thus, the model performed well in fitting the data obtained for the study. There is goodness of fit. Notwithstanding, the observed Durbin-Watson statistic of 0.879 nearly casted an ugly dent on the utility of the model by revealing a serious autocorrelation problem. However, this is only a firs-order necessary condition that ought to be confirmed when a second-order serial correction test is conducted. This is done in the next section of model diagnostics.

TABLE 2
ESTIMATED REGRESSION RESULTS OF THE VARIABLES

Dependent Variable: LNGDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.505899	0.251759	29.81388	0.0000
LNACGSF	0.167298	0.022876	7.313157	0.0000
LNCBLAS	0.174159	0.036847	4.726492	0.0000
LNGEXA	-0.060787	0.021926	-2.772419	0.0089

R-squared	0.961851	Mean dependent var	10.29205
Adjusted R-squared	0.958581	S.D. dependent var	0.572260
S.E. of regression	0.116464	Akaike info criterion	-1.365559
Sum squared resid	0.474733	Schwarz criterion	-1.194937
Log likelihood	30.62840	Hannan-Quinn criter.	-1.304341
F-statistic	294.1542	Durbin-Watson stat	0.879643
Prob(F-statistic)	0.000000		

Before doing that, is proper to look at the relative statistics results to see how the individual relationships fared. First, the relationship between the GDP and ACGSF is depicted by the beta coefficient of 0.167 with a t-statistic of 7.31 and probability of 0.0000. This is positive and significant at 1% level and makes the study 99% confident in asserting that 100% change in the ACGSF is accompanied by 16.7% change in GDP, ceteris paribus. For the relationship between GDP and CBLAS, the positive coefficient 0.174 and t-statistic of 4.73[0.0000] are also significant at 1% level; enabling the study to be 99% confident in asserting that 100% positive variation in commercial loans and advances to the agricultural sector elicits over 17% increase in GDP, other factors held constant. Finally, the observed degree of relationship between GDP and GEXA is represented by the beta coefficient of -0.061 with t-statistic of -2.77 and probability of 0.0089, which is significant at 1% level. Being negative and significant, it goes to say that 100% increase in government expenditure to the agriculture sector produces a 6% reduction in GDP. This is strange and against a priori expectation. From theory, it is reasoned that as the government spends more on agriculture, it would boost agricultural production, which in turns would cause the GDP to rise. This study can only finger that way and manner the said government spending was done, especially if the acclaimed funds were not properly channeled to the Sector, or if the funds were misappropriated.

Diagnosis of the Model

The study conducted three diagnostic tests namely serial correlation, heteroskedasticity and normality tests to check the overall global utility of the model specified in the methodology section. The serial correlation test was carried out using the Breusch-Godfrey serial correlation LM procedure. The results are laid out in Table 3, where both the F- and Obs*R-squared statistics displayed the value of 1.358 and 13.725, with associated probabilities of 0.2557 and 0.1859 respectively. These observed probabilities are greater than the alpha probability of 0.05 and suggests that there is no problem of serial correlation among the residuals. This is the second-order sufficient condition that over-rides the earlier first-order necessary condition presented by Durbin-Watson results. Thus, the study has no reason to worry about possible presence of serial correlation.

The second diagnostic test relates to heteroskedasticity test that followed the Breusch-Pagan-Godfrey procedure. As seen in Table 4, three statistics are computed with the results displayed as: for F-statistic = 0.5673[0.64], Obs*R-squared = 1.808[0.61], and the Scaled explained Sum of Squares statistic = 0.79[0.85], respectively. The associated probabilities are greater than the alpha probability of 0.05, thus

enabling the study not to reject the null hypothesis of homoskedasticity. Thus, the is no reason to worry about the econometric problem of heteroskedasticity.

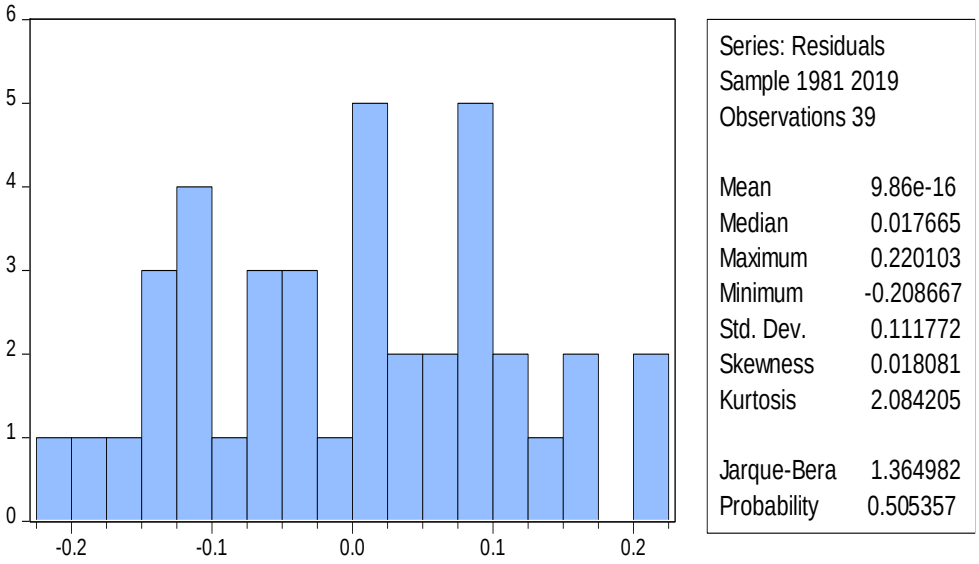
TABLE 3
BREUSCH-GODFREY SERIAL CORRELATION LM TEST

F-statistic	1.357605	Prob. F(10,25)	0.2557
Obs*R-squared	13.72525	Prob. Chi-Square(10)	0.1859

Table 4: Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.567313	Prob. F(3,35)	0.6402
Obs*R-squared	1.808504	Prob. Chi-Square(3)	0.6131
Scaled explained SS	0.789601	Prob. Chi-Square(3)	0.8520

FIGURE 2
HISTOGRAM OF RESIDUALS OF THE VARIABLES



Finally, the last test was the joint normality test using the histogram of residuals either to confirm, or otherwise, the earlier individual tests of normal distribution of variables. From Figure 2, it is easy to see that all the variables' residuals are jointly normally distributed, with the observed Jacque-Bera statistic and associated probability of 1.36[0.51] being not statistically significant at conventional levels. The observed probability is greater than the alpha probability of 0,05, hence suggestion the non-rejection of the null hypothesis of "residuals not normally distributed". These tests lend credence to the possession of amply global utility by the specified model in this study. The study comfortably uses the model to make further analysis as demanded by the objective stated earlier.

Analysis of Causal Relationships Between Variables

The next stage of analysis in this paper is to examine whether or not causal relations exist among the variables, using the pairwise Granger causality tests. The results of the tests are summarized on Table 5. As

reported in the first panel, the hypothesis that LNACGSF does not Granger cause LNGDP cannot be accepted since that observed F-statistic of 23.2 has a probability of 0.00003, which is far less than the alpha probability 0f 0.05. Thus, the agricultural credit guaranteed scheme funding significantly causes output growth in the country. There is no significant feedback effect as causality does not flow from aggregate output (LNGDP) to LNACGSF (F-stat = 2.13, prob = 0.15).

TABLE 5
PAIRWISE GRANGER CAUSALITY TESTS OF THE VARIABLES

Null Hypothesis:	Obs	F-Statistic	Prob.
LNACGSF does not Granger Cause LNGDP	38	23.1996	3.E-05
LNGDP does not Granger Cause LNACGSF		2.13206	0.1532
LNCBLAS does not Granger Cause LNGDP	38	4.93679	0.0329
LNGDP does not Granger Cause LNCBLAS		1.54599	0.2220
LNGEXA does not Granger Cause LNGDP	38	8.14022	0.0072
LNGDP does not Granger Cause LNGEXA		0.70910	0.4055

Similarly, as revealed by the second panel of Table 5, "there is significant causation moving from bank credit to the agricultural sector to aggregate output, since the analysis cannot accept the null hypothesis that "LNCBLAS does not Granger cause LNGDP"; with the observed F-statistic of 4.94 and probability of 0.033. The observed probability is less than the alpha probability of 0.05. There is no feedback from LNGDP TO LNCBLAS [F-stat = 1.54, prob = 0.22] and thus, no significant causality flowing from aggregate output to bank credit to agriculture.

Table 5 also reveals that significant causation is found to move from government expenditure to aggregate output. This is in view of the observed F-statistic of 8.14 posted a probability of 0.0072, which is less than the alpha probability of 0.05. Rejecting the null hypothesis that "LNGEXA does not Granger Cause LNGDP" lends to the inference that LNGEXA causes LNGDP. On the other hand, the null hypothesis that "LNGDP does not Granger Cause LNGEXA" cannot be rejected since the observed F-statistic of 0.709 posts a probability of 0.406, which is greater than the alpha probability of 0.05. Thus, LNGDP does not cause government spending to agriculture.

Discussion of Findings

Three hypotheses were postulated for the purposes of analysis in this study. The first relates with the relationship between direct government expenditure (capital and recurrent) to agriculture (GEXA) and aggregate output of Nigeria. The first attempt at testing this hypothesis using results of the OLS regression indicated an inference to the effect that government expenditure significantly but negatively associates with aggregate output (GDP) in Nigeria. The second attempt at testing the hypothesis using the pairwise Granger causality procedure reveals that government expenditure granger-causes GDP in Nigeria. The agreement between the results from the two statistical techniques is noteworthy. These results would, therefore suggest that government spending on agriculture significantly affect or impact aggregate national output. However, the direction of this effect, being inverse or negative raises a question of whether or not the funds were correctly channeled as expected, or whether the funds are misappropriated, for them to move in different direction with GDP growth. This is another empirical question which personal interview with those responsible for budgetary spending may become a necessity. This is however beyond the present mandate and methodology of this study.

It is however enough to locate the findings of this study within the context of previous empirical studies in the current are of study. From the reviewed literature, the results of this study in respect of relationship

between direct government spending and aggregate output appears to agree only in part with the findings of Obansa & Maduekwe's (2013) that there is bi-directional causality between economic growth and agriculture financing. The result of this study found only a uni-directional causality flowing from government spending or financing of agriculture to GDP.

The second hypothesis concerned itself with the relationship between government indirect expenditure (in terms of indirect lending and or credit guarantee of commercial bank lending) and the gross domestic product of Nigeria. Starting the testing of this hypothesis using results of the OLS regression results revealed that the government guaranteed credit scheme implemented by commercial banks in the country positively and significantly related with aggregate output (GDP) of Nigeria. The second attempt and the sufficient testing the hypothesis using the pairwise Granger causality procedure reveals that the agricultural credit guarantee scheme funding significantly granger-causes GDP in Nigeria. This reveals obvious agreement between the results of the regression and causality models. These results would, therefore suggest that the agriculture credit guarantee scheme funding positively and significantly affects or impacts aggregate national output (GDP).

The above submission does not agree with Okunlola, Osuma & Ehimare's (2019) finding that "for both short-run and long-run, none of the guaranteed agricultural finance was statistically significant to influence real gross domestic product" in Nigeria. Thus, the results of this study does not validate the assertion that "some of the concerted efforts to finance the agricultural sector have rarely produced any form of improvement". It only agrees, in part, with Obansa & Maduekwe's (2013) results that "there is bi-directional causality between economic growth and agriculture financing". The present study observed only a uni-directional causation flowing from agricultural credit guaranteed funding to GDP, and not vice versa.

From the tests of the third null hypothesis that bank loans and advances to the agricultural sector does not significantly boost the GDP of Nigeria, it was revealed that not only does bank credit to agriculture relate significantly and positively with GDP, it does actually granger-causes aggregate output significantly. This is seen from the results of both the regression and causality analysis. Thus, bank credits to agriculture significantly affect or impact GDP positively. This submission agrees with the findings of Ayeomoni and Aladejana (2016) in respect of the existence of short- and long-run relationships between agricultural credit and economic growth. It also agrees, in part, with Obansa & Maduekwe's (2013) results since it is discovered that economic causation flows from agricultural financing (herein bank credit) to GDP. The causality is, however, not vice versa. All in all, it is clear that agricultural funding in Nigeria boost aggregate national output.

CONCLUDING REMARKS

Summary of Findings

The following summarizes the findings of this study:

(i) Direct budgetary expenditure of government on agriculture significantly affect or cause aggregate output, but the direction of effect is negatived by such forces like corruption, misappropriation and other related factors.

(ii) The indirect government funding of agriculture through the credit guarantee scheme positively and significantly impacts and boosts the country's GDP.

(iii) The loans and advances granted to the agricultural sector by banks operating in the country significantly cause growth in the GDP of Nigeria.

Recommendations

Given the results of this analysis, the following policy implications become necessary. First, there is need to encourage the agricultural credit guarantee scheme by making more funds available to the commercial banks to lend to needy farmers. Second, banks, notably the Bank of Agriculture and deposit money banks, should be motivated and encouraged to lend and advance more and more of their lendable funds to the agricultural sector for onward transmission of effects to the GDP. Thirdly, whatever is wrong with the budgetary spending patterns should be corrected with immediate effect, if the country is truly

interested in boosting agriculture for economic growth. Such vices like corruption, including misappropriations, should be confronted and mitigated. Budgetary monitoring and controls should be intensified.

CONCLUSION

From the foregone analysis, it has been shown that both direct and indirect public sector expenditure on agriculture as well as banks' credit to agriculture do have considerable effects on aggregate output of Nigeria? Indirect governmental financing, through the credit guarantee scheme, affects the agricultural sector more positively and significantly than the direct budgetary spending.

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