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Impact of Government Expenditure on Agricultural Output in Nigeria

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Abstract

This study empirically examined the impact of government expenditure on agricultural output in Nigeria using time series data covering the period of 1990 to 2016. The study employed Augmented Dickey–Fuller (ADF) unit root test, Johansen cointegration test and Vector Error Correction model (VECM) as the estimation techniques. We examined the impact of government expenditure on agriculture, interest rate on agriculture credit, deposit bank loans to agriculture and agricultural credit guarantee scheme fund on agricultural output. The results revealed that there is long run relationship among the variables as shown by the result of the Johansen cointegration test. Also, the VECM result showed that the speed of adjustment of the variables towards their long-run equilibrium path was low, estimated as 22.7953% and deposit bank loans to agriculture as well as agricultural credit guarantee scheme showed a positive and significant impact of agricultural output. Based on the empirical that, adequate information system should be provided by government in order to sensitize the farmers on the various forms of credits available to them and ensure effective policies that will curb the diversion of credits meant for agricultural development.

Keywords: Agricultural Output, Government Expenditure, VECM.

INTRODUCTION

Prior to the discovery of oil boom of the 1970s, the importance of agriculture to the economic development of Nigeria is enormous owing to the fact that agriculture was the main source of food and employment for a sizeable number of the people. It also provides raw materials for industries, income for individual and government. For instance, in 1960s, more than 80% of the rural population of Nigeria was engaged in one type of agricultural activities or the other and between 1963 and 1964, the sector contributed as much as 65% of the nation's Gross Domestic Product (GDP) (Muftau and Gafar, 2003; Aina, 2015). Recently those roles seem to elude the country because of neglects resulting from the discovery of oil and the oil boom of 1970s; the global economic crisis of the nation's terms of trade, and the continuous decline in government finance to the sector (Ijaiya and Ijaiya, 2003). Nigeria has diverse agro-ecological conditions that can support a variety of farming models. However, successive administrations over the years neglected agriculture and failed to diversify the economy away from over dependence on capital-intensive oil sector.

Nigeria, which was the largest net exporter of agricultural produce (groundnuts 42%, palm oil 27%, soya beans 28% and cocoa 18% in 1960s, now spends over 1.2 trillion importing palm oil, canned beans and other food items (Akintola, 2011). The country has however, the potentials to return to its previous position if adequate attention is given to agricultural growth policy through finance and the provision of rural infrastructure. This policy should aim at establishing a system of sustainable agricultural financing schemes and programmmes that could provide micro credit facilities (Aina, 2015). It is sad that the small-holder farmers in Nigeria lack access to inputs to increase productivity, income and reduce poverty Alpuerto, Xstan and Nwafor (2009). Despite numerous laudable agricultural programmes like Agricultural support scheme of 2006, FADAMA Development Programmes and Agricultural Credit Guarantee Scheme Fund among others, productivity has not improved (Oriola, 2009; Ewetan, Fakile, Urhie and Ountan, 2017).

Public expenditure, which serves as the bed rock of financing for the sector has consistently fallen short of the public expectation. For instance, a collaborative study carried out by the International Food Policy and Research Institute (IFPRI) and the World Bank in 2008, revealed that Nigeria's Public expenditure on agriculture is less than 2% of total federal annual budget expenditure. This is significantly low compared to other developing countries like Kenya (6%), Brazil (18%) and 10% goal set by African leaders' forum, under the comprehensive Africa Agricultural Development Programme (CAADP). In spite of poor investment, agriculture has on the average contributed 32% of the country's GDP from 1996-2000 and 42% between 2001 and 2009 (CBN, 2010). According to CBN Governor in 2011, agriculture accounted for 40% of the nation's GDP, yet it received only 1% of the total commercial Bank Loans (CBN, 2010). Inadequacy of government funding of agricultural projects and programmes has been observed by researchers because lack of strong evidence of growth promotion externalities by deepening food insecurity, social inequality, rural poverty and hunger, are issues of funding (Ogiri, 2004; Ogbonna and Osondu, 2015).

First, since 1975 when we started talking about diversification of the Nigerian economy, expenditure on agriculture has been on the increase but then, food insecurity is on the increase, agricultural raw material is still limited in supply and importation of agricultural output is also on the increase. Hence there is need to evaluate what the government is spending and the outcome of that spending. Secondly, according to Stewart, 2000, the agricultural sector has the potential to be the industrial and economic springboard from which a country's development can take off (Osondu, 2015). Despite abundant resources in terms of land mass, rich soil and favorable climatic conditions for agriculture in Nigeria, total agricultural export is still recorded insufficient; hence there is need for this study. Thirdly, despite the measures that have been taken

to revamp agriculture through the various agricultural policies, the sector still depicts gloomy pictures. Performance is reflected in environmental degradation, mounting food deficits and decline in both gross domestic product and export earnings, while retail food prices and import bills have been increasing. Therefore the study seeks to assess how far the government expenditure has influence agricultural output and to identify alternative measures in improving the sector. This study will be useful for academic purpose to validate the actual effect of government spending on agricultural sector in Nigeria. Also, the study will be helpful for other research work. Hence, this paper is structured into five sections following the introduction, section II of this paper present the literature review, section III is the methodology of the study, section IV depicts the analysis and interpretation of result and section V conclude the paper.

LITERATURE REVIEW

There have been a number of valuable studies on the impact of government expenditure on agricultural output in Nigeria. Abbas et.al (2016) examined the impact of Government expenditure on agricultural sector and economic growth in Pakistan over the period 1983-2011 with time series data collected from Pakistan Statistical Year Books and Economic Survey of Pakistan, 2015. The study applied Augmented Dickey–Fulle (ADF) unit root test, Johansen Co-integration test and Ordinary Least Square (OLS) technique as analytical tools to analysis the data. The variables studied were Government expenditure on agriculture, agricultural outputs and gross domestic product. The results of Johansen Co-integration test showed that there exists a long-run relationship between Government expenditure on agriculture, agricultural outputs and economic growth in Pakistan. On the other hand, the empirical results of regression analysis revealed that agricultural outputs, Government expenditure have significant influence on economic growth in Pakistan. It was also found out that agriculture sector is still confronting some challenges like inadequate funding, underdeveloped agriculture marketing, poor infrastructure and shortage of irrigation etc. Therefore, it was recommended that Government of Pakistan should increase its expenditure in the development of agriculture sector since it would enhance agricultural productivity and economic growth.

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. The variables studied were gross domestic product (GDP) as dependent variable, government expenditure on agricultural (GEXPA) and (AGO) as independent variables. In order to avoid spurious result, some standard econometric tests were conducted. The result revealed 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 cointegrating equations while the speed of adjustment of the ECM result is 90.9% per annum. The study concluded that government expenditure on agriculture and agricultural output significantly impacts on Nigeria economic growth.

Okezie, Nwosu, and Njoku (2013) analyzed the relationship between Nigeria government expenditure and agricultural sector, using time series data from 1980 to 2011, obtained from the Central Bank of Nigeria Annual Report and Statement of Account, Journal of Food Research and Federal Office of Statistics. It employed the Engle-Granger two step modeling (EGM) procedure to co-integration based on unrestricted Error Correction Model and Pair wise Granger Causality tests. The findings indicate that agricultural contribution to GDP (Gross domestic product) and total government expenditure on agriculture were cointegrated in the study. The speed of

adjustment to equilibrium is 88% within a year when the variables wander away from their equilibrium values. Based on the result of granger causality, the study conclude that a very weak causality exist between the two variables used in the study. Therefore, the policy implication of the findings is that any reduction in government expenditure on agriculture would have a negative repercussion on economic growth in Nigeria.

Utpal and Dahun (2018) analyzed the relationship between government expenditure and agricultural output of Meghalaya. The study was based on a time series data of 30 years from 1984-85 to 2013-14. Autoregressive distributed lag model (ARDL) approach to co-integration and an error correction representation of the ARDL model have were used due to certain advantages. The result of the Bounds test indicates 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 was significantly negative, while expenditures on education and transport on agricultural output were significantly positive that is in line with several earlier studies. Public expenditure in healthcare however does not significantly affect agricultural output. The findings revealed that judicious use of government spending have significant potential to accelerate agricultural development and improve its efficiency.

Aina and Omojola (2017) examined the effect of government expenditure on agricultural sector performance in Nigeria between 1980 and 2013. A relationship was established between government expenditure on agriculture and agricultural production output. The model for the regression analysis has government expenditure on agriculture, interest rate and exchange rate as the independent variables while agricultural production output is the dependent variable. The study used secondary data from the Central Bank of Nigeria Statistical bulletin and applying the econometrics method of Ordinary Least Square and Error Correlation Mechanism (ECM) methods, the short run analysis showed a significant and positive relationship between government expenditure on agriculture and agricultural production output. The regression coefficient of interest rate impacted significantly on agricultural sector output and the coefficient of exchange rate is rightly signed. The long run dynamic result showed that the coefficient of government expenditure on agriculture variable is rightly signed as well as the check variables (interest and exchange rates). There exists a long run relationship among the variables because the coefficient of ECM is rightly signed i.e. negative and significant.

Ishola, Olaleye, Ajayi, and Femi (2013) examined the impact of government expenditure on agricultural sector in Nigeria contribution, using a time series data from 1981 to 2010 sourced from the Central bank of Nigeria. The empirical perspective of the study applied the unit root test and co integration, relying on the theoretical backing posited by Solow. The variables studied are Real Gross Domestic Product, Agricultural sector output and Government Expenditure. It was found that a significant relationship exist between government expenditure in the agricultural sector and the economic growth of Nigeria.

Iganiga and Unemhilm (2013) examined the effect of Federal government agricultural expenditure on the value of agricultural output. In the process, other determinants of agricultural output were examined. This includes total commercial credits to agriculture, consumer price index, annual average rainfall, population growth rate, food importation and GDP growth rate. The Cobb Douglas Growth Model, Descriptive Statistics and Econometrics Model were used to analyze the data. 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. The policy import of the study is that investment in the agricultural sector is very imperative and this should be complemented with monitored credit facilities.

Abula and Mordecai (2016) investigated the impact of public agricultural expenditure on agricultural output in Nigeria for the period 1981 to 2014 with time series data obtained from the Statistical Bulletin and Annual Reports of the Central Bank of Nigeria, 2014. The Augmented Dickey-Fuller test, Johansen Cointegration 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 Cointegration test revealed that there exists a long-run relationship between agricultural output, public agricultural expenditure, commercial bank 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 bank loans to the agricultural sector and interest rate have insignificant positive impacts on agricultural output in Nigeria.

Most of these studies are recent and fairly includes adequate estimation techniques with different combination of government's agricultural financing variables. This study through the review of literature came up with agricultural financing variables such as interest rate on agriculture credit, deposit bank loans to agriculture and agricultural credit guarantee scheme fund which to the best of our knowledge, no study on Nigeria economy has used these to examine their impact on agricultural output. Hence, with right technique of analysis as it will be informed by the behaviour time series data that will be employed, this study will contribute immensely to the existing knowledge.

METHODOLOGY

Theoretical Framework

The Keynesian theory is adopted as the framework of this study. Keynes regards public expenditures as an exogenous factor which can be utilized as a policy instruments to enhance output. According to the Keynesian school of thought, increase in government spending leads to a multiple increase in total output of an economy (Jhingan, 2010). This according to Keynes is the multiplier effect of government expenditure.

$$Y = C + I + G\ (X-M) \quad \text{- - - - - - - - - - 3.1}$$

Where; Y = Output, C = Consumption, I = Investment, G = Government Expenditure, X-M = Net Export (export minus Import). The change in output will be equal to the multiplier times the change in government expenditure.

$$\Delta Y = 1\ (\Delta G) \quad \text{- - - - - - - - - - 3.2}$$

$$1\text{-}b$$

Where $= 1 = K$

$$1\text{-}b$$

$$\Delta Y = K\Delta G$$

Therefore, change in output all over change in government expenditure is equal to the multiplier.

$$\frac{\Delta Y}{\Delta G} = K \quad \text{- - - - - - - - - - 3.3}$$

Hence, expansionary fiscal policy can be used to influence macroeconomic performance and hence increase output growth. This theory suggests that government spending can contribute positively to sectorial growth (like the agricultural sector) in an economy.
In this theory we assume that the agricultural sector output comprising of the output of the four subsectors of the sector (crops, fisheries, forestry, and livestock) is a function of consumption of agricultural output, investment in agriculture, government expenditure on agriculture and net export of agricultural output.

$$YA = CA + IA + GA + (XA - MA) \quad \text{-- 3.4}$$

Where; CA = Consumption of Agricultural Output, IA = Investment in Agriculture, GA = Government Expenditure on Agriculture and XA – MA = Net Export of Agricultural Output.
Thus, an increase in government expenditure on agriculture is likely to lead to a multiple increase in agricultural output. The relevance of this theory to the Nigerian economy is that it describes how the government of the country can help bring about growth in the agricultural sector through its expenditure on the sector.

Model Specification
Following the above theoretical framework, the functional relationship between agricultural financing variables and agricultural output is specified as thus;

$$AGROUP = f(GOVEXP, ACGSF, INTRA, DBLA) \quad \text{- 3.5}$$

The model can be econometrically written as:

$$AGROUP = \beta_0 + \beta_1 GOVEXP + \beta_2 ACGSF + \beta_3 INTRA + \beta_4 DBLA + U \quad \text{- 3.6}$$

In order to put the variables on the same scale and also reduce the problem of multiculinearity, the above model can be linearized thus:

$$\ln AGROUPT = \beta_0 + \beta_1 \ln GOVEXP + \beta_2 \ln ACGSF + \beta_3 \ln INTRA + \beta_4 \ln DBLA + U \quad \text{- 3.7}$$

Where:
AGROUPT = Agricultural sector output; GOVEXP = Government Expenditure on Agriculture; ACGSF = Agricultural Credit Guarantee Scheme Fund; INTRA = Interest Rate on Agricultural Credit; DBLA = Deposit Bank Loans to Agriculture; Parameters = β_0, β_1, β_2, β_3 and β_4 and U = Error term. We expect based on the apriori expectation that; β_1, β_2, and $\beta_4 > 0$ and $\beta_3 < 0$. The study employs time series data covering a period of 27years (1990-2017). The data were obtained from Central Bank of Nigeria statistical bulletins and annual reports, ministries of agriculture, and agriculture-focused parastatals.

Techniques of Analysis
Unit Root Test
To test for a unit root in the time series, we employ the Augmented Dickey-Fuller (ADF) test to test for stationarity of our data at levels and at differences. The model for the test is stated below.

$$Y_t = pY_M + Ut \quad \text{- 3.8}$$

Where p is greater than or equal to -1 but less than and equal to 1, u_t is the white noise error term. We know that if p = 1, that in the case of unit root, equation (3.8) becomes a random walk model

which we know is a nonstationary stochastic process. Therefore, why not simply regress Y_t on its (one-period) lagged value Y_t.i and find out if the estimated p is statistically equal to 1. If it is, then Y_t is nonstationary. This is the general idea behind the unit root test of stationarity. Since most of the macroeconomic time series are non-stationary and are prone to spurious regression, the first step in any econometric or time series analysis is always to test for stationary. The Augmented Dickey-Fuller (ADF) as specified in Dickey and Fuller (1979) was employed. For the ADF, the null hypothesis is that the variable being considered has a unit root against an alternative that it does not.

Cointegration Tests

Following ADF test, if all variables are 1(1) or integrated of order 1, the cointegration test is usually undertaken. The existence of the cointegrating relationship implies that the variables that share mutual stochastic trend and are linked in common long-run equilibrium. Two series are said to cointegrate if they are nonstationary or are integrated of the same order but their combination is stationary or are integrated of order zero. Given the following regression:

$$Y_t = a_o + a_iX_t + U_t \quad \text{- - - - - - - - - - 3.9}$$

Making $u_t$the subject of the formula, we have $u_t = Y_t - a_o - a_iX_t$

This regression model will give a long-run relationship between the two variables if they are both integrated of the same order, but a linear combination of the two series as given above is stationary. Hence the series are said to cointegrate. For the purpose of this research, Johansen-Juselius test of cointegration will be used.

Vector Error Correction Model (VECM) Estimation

The VECM becomes necessary when the variable are integrated at the first level i.e. I(1) indicating a long run relationship. There is need to check for short run causality and the dynamics which is the necessity of the VECM test. The VECM approach allows us to know the speed of adjustment of the variable considered toward their long-run equilibrium path when vector of relationship is considered among the examined variables. The coefficient of the ECT must be negative and statistically significant indicating long run causality and possible convergence and the efficiency of the error correction mechanism.

Analysis and Interpretation

Unit Root Test Result

Table 4.1: Result of Unit Root Test

Variables	ADF-Statistic	Critical value 5%	Order of integration	Remarks
LNAGROUPT	-9.769311	-2.986225	I(1)	Stationary
LNGOVEXP	-5.878779	-2.986225	I(1)	Stationary
LNACGSF	-5.215404	-2.981038	I(1)	Stationary
LNINTRA	-3.515936	-2.981038	I(1)	Stationary
LNDBLA	-4.409291	-2.981038	I(1)	Stationary

Source: *Authors' Computation using E-View 10.0*

Table 4.1 shows the summary of the Augmented Dickey Fuller Unit root test result. The null hypothesis is that an observable time series is not stationary (that is, it has a unit root). From table 4.1, it can be gathered that all the variables were only significant after their first difference and they can all be said to be integrated of order one i.e. I(1).

4.2 Cointegration Test Result

Table 4.2a Results of Johansen Cointegration test for the variables (Trace Test)

Hypothesized No. Of CE(s)	Eigenvalue	Trace Statistic	5% critical value	Prob.**
None *	0.818550	106.0937	69.81889	0.0000
At most 1 *	0.664813	63.42441	47.85613	0.0009
At most 2 *	0.494594	36.09776	29.79707	0.0082
At most 3 *	0.361725	19.03794	15.49471	0.0140
At most 4 *	0.268408	7.813293	3.841466	0.0052

Source: *Authors' Computation using E-View 10.0*

From tables 4.2a, trace test indicates 5 cointegration equations at 5% level of significance. The implication of this is that there is long run or equilibrium relationship between dependent and explanatory variables employed in the study.

Table 4.2b Results of Johansen Cointegration Test for the variables (Maximum Eigenvalue)

Hypothesized No. Of CE(s)	Eigenvalue	Trace Statistic	5% critical value	Prob.**
None *	0.818550	42.66933	33.87687	0.0035
At most 1*	0.664813	27.82665	27.58434	0.0539
At most 2*	0.494594	27.05982	21.13162	0.0092
At most 3*	0.361725	15.22465	14.26460	0.0133
At most 4	0.268408	2.813293	3.841466	0.0052

Source: *Authors' Computation using E-View 10.0*

From tables 4.2(b) maximum eigenvalue result shows that there are four cointegration equations at 5% level of significance. The implication of this is that there is no long run or equilibrium relationship between dependent and explanatory variables, most especially the ones adopted by this study.

4.3 Vector Error Correction Estimation

Table 4.3: Vector Error Correction Result

Error Correction:	D(LNAGROUPT)	D(LNGOVEXP)	D(LNACGSF)	D(LNINTRA)	D(LNDBLA)
CointEq1	-0.227953	0.001926	-0.176673	6.35E-06	0.172518
	(1.27876)	(0.00052)	(0.12193)	(7.6E-06)	(0.04101)
	[-0.17826]	[3.73758]	[-1.44893]	[0.83037]	[4.20651]
D(LNAGROUPT(-1))	-0.783114	-0.001714	0.155543	-5.65E-06	-0.156196
	(1.15555)	(0.00047)	(0.11019)	(6.9E-06)	(0.03706)
	[-0.67770]	[-3.68012]	[1.41166]	[-0.81785]	[-4.21461]
D(LNGOVEXP(-1))	-1310.664	-0.778804	76.92438	0.000142	-65.73194
	(584.226)	(0.23547)	(55.7075)	(0.00349)	(18.7371)
	[-2.24342]	[-3.30742]	[1.38086]	[0.04069]	[-3.50811]
D(LNACGSF(-1))	0.894995	-0.000105	-0.460805	5.07E-07	0.070396
	(2.08930)	(0.00084)	(0.19922)	(1.2E-05)	(0.06701)
	[0.42837]	[-0.12490]	[-2.31305]	[0.04058]	[1.05057]
D(LNINTRA(-1))	17356.06	8.705456	-3281.349	-0.483454	1740.264
	(33829.4)	(13.6349)	(3225.72)	(0.20237)	(1084.97)
	[0.51305]	[0.63847]	[-1.01725]	[-2.38894]	[1.60398]
D(LNDBLA(-1))	8.822319	0.004310	-0.158480	3.15E-05	0.539235
	(6.05748)	(0.00244)	(0.57760)	(3.6E-05)	(0.19427)
	[1.45643]	[1.76517]	[-0.27438]	[0.87047]	[2.77564]
C	282956.6	572.1327	-37269.32	-0.039993	44084.97
	(277012.)	(111.649)	(26413.8)	(1.65712)	(8884.25)
	[1.02146]	[5.12437]	[-1.41098]	[-0.02413]	[4.96215]
R-squared	0.710020	0.463936	0.349804	0.342283	0.530867
Adj. R-squared	0.613360	0.285248	0.133072	0.123044	0.374489
Sum sq. resids	7.50E+12	1218566.	6.82E+10	268.4394	7.72E+09
S.E. equation	645550.4	260.1886	61554.94	3.861774	20703.93
F-statistic	7.345540	2.596344	1.613996	1.561235	3.394771
Log likelihood	-365.8136	-170.4023	-307.0593	-65.14533	-279.8191
Akaike AIC	29.82509	14.19219	25.12474	5.771627	22.94553
Schwarz SC	30.16638	14.53347	25.46603	6.112912	23.28682
Mean dependent	12497.33	203.7661	832.2400	-0.308000	13215.66
S.D. dependent	1038190.	307.7589	66110.66	4.123805	26177.92
Determinant resid covariance (dof adj.)		3.97E+35			
Determinant resid covariance		7.68E+34			
Log likelihood		-1181.452			
Akaike information criterion		97.71619			
Schwarz criterion		99.66640			

Source: *Authors' Computation using E-View 10.0*

The result in table 4.3 shows that agricultural credit guarantee scheme fund and deposit bank loans to agriculture have positive and significant impact on agricultural output while government expenditure on agriculture has negative and insignificant impact on agricultural output. The ECT, technically named as the speed of adjustment, is 22.7953%. It is estimated as negative and statistically significant at 1%, indicating that the short run value of agricultural output (AGROUPT) will converge to its long run value by 22.7953% per annum by the contributions of the agricultural credit guarantee scheme fund, interest rate on agriculture credit, deposit bank loan to agriculture and government expenditure on agriculture as explanatory variables. The coefficient of determination was able to account for 71% of the variation in

agricultural output as explained by the regression. This suggests that the remaining 29% is determined by other factors not included in the model. Also the F-statistic is greater than the critical level which allows us reject the null. Therefore the F-statistics value depicts the joint significant and correct specification of the model.

Table 4.4: VEC Serial Correlation LM test

Lags	LM-Stat	Prob
1	15.40352	0.9314
2	23.84821	0.5282

Source: *Authors' Computation using E-View 10.0*

Table 4.5: VEC Residual Heteroskedasticity Test

Chi-sq	Df	Prob
199.3347	180	0.1540

Source: *Authors' Computation using E-View 10.0*

Table 4.4 shows the result of Serial correlation test using Serial Correlation LM Tests and the result revealed that there is no serial correlation in the model. Since probability level at both lag 1 and 2 is greater than 0.05.

Table 4.5 shows the result of Heteroscedasticity test which was carried out using White's general heteroscedasticity test {with no cross terms}. The test asymptotically follows a chi-square distribution with degree of freedom equal to the number of regressors {excluding the constant term}. It shows that $X^2cal > X^2tab$ at 5% level of significance, we therefore accept the alternative hypothesis of heteroscedasticity and conclude that, there is no heteroscedasticity.

CONCLUSION AND RECOMMENDATIONS

The study examined the impact of government expenditure on agricultural output in Nigeria for the period between 1990 and 2017 employing various techniques of econometric analysis. The variables studied are Agricultural output (AGROUPT), government expenditure on agriculture (GOVEXP), agricultural credit guarantee scheme fund (ACGSF), interest rate on agriculture credit (INTRA) and deposit bank loans to agriculture (DBLA). The result of the empirical analysis revealed that, there is long run relationship among the variables considered in the study and the study revealed the speed of adjustment of over 22 percent, precisely 22.7958% with which the contribution of government expenditure on agriculture, interest rate on agriculture loan, deposit bank loans to agriculture and agricultural credit guarantee scheme fund will aid the convergence of agricultural output to equilibrium in the long run. Hence, we conclude that increased government expenditure on agriculture, reduction in interest rate on agriculture loan, increased deposit bank loans to agriculture and agricultural credit guarantee scheme will in long way increase the level of productivity in the agricultural sector in Nigeria. Therefore, it was recommended that, adequate information system should be provided by government in order to sensitize the farmers on the various forms of credits available to them and ensure effective policies that will curb the diversion of credits meant for agricultural development.

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