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Impact of Government Expenditure on Agricultural Growth in Nigeria: An empirical evidence from Kogi State.

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Abstract

This study aimed at examining the impact of state government expenditure on agricultural growth in Kogi state from 2000-2018. The study was anchored on Keynesian theory of government expenditure. Correlational research design was adopted using secondary data from Kogi State Ministry of Budget and Planning and KOSADP. The data collected were subjected to unit root test using Augmented Dickey Fuller (ADF) test to ensure the stationarity of the data. Having established that the data were stationary at first difference, it was further subjected to Johansen Co-integration test to check for long run relationship among the variables. Since the study could not establish long run relationship, it was finally subjected to Vector Autoregressive (VAR) Model. The result from VAR Model revealed that there is no significant relationship between government capital expenditure and agricultural growth in Kogi State. Similarly, the study also discovered that there is no significant relationship between recurrent expenditure and agricultural growth in Kogi State. In line with the findings, the study recommended among other things the need for the Kogi State government to take agricultural funding very important by increasing agricultural expenditure to 10% Maputo declaration benchmark and also ensuring timely release of fund in procurement of agro-equipment to crop farmers as agricultural activities is seasonal and time bound in Nigeria.

Keywords: Public expenditure, capital expenditure, agricultural growth, Kogi State, Nigeria.

Introduction

Agriculture plays a prominent role in improving the lives of the people and also ensuring food sufficiency in a country. The role of agriculture in economic growth and development in any nation is crucial and it is a sign of prosperity and development. These roles include but not limited to ensuring food security to the ever-growing population, sources of raw materials for the industries, earner of foreign exchange, source of income, savings and investment for the farmers, improvement in their living standards, provide market for their produce and so on.

According to International Fund for Agricultural Development (IFAD 2017) report stated that, "Nigeria is predominantly a rural economy with over 60 percent of the population living in rural areas, 90 percent of whom are engaged in subsistence farming; rural poverty was estimated to be 44.9 percent in 2013 against an urban poverty incidence of 12.6 percent". It is in this light that Madu and Yusof (2015) stated that, "In most of the underdeveloped and developing countries (Nigeria inclusive) development remain one of the major challenges and have been described as the major bottleneck to their socio-economic growth, and sustainable

development; most especially at the rural level".

The total budgetary allocation for agricultural sector for Central and State governments in 2016 was N196.3 billion representing 1.6 percent of their N12.3 trillion budget, while N254 billion was allocated representing 1.8 percent of their total budget of N13.5 trillion for the year 2017. From 1992-2016 the budget to the agricultural sector was less than 4% except for 2001 with 5.69%, 2005 4.44% and 2009 7.33% of the total budget (Central Bank of Nigeria (CBN) Statistical Bulletin, 2017). The figures fall below the 2003 African Union (AU)-Maputo Declaration's Comprehensive Africa Agriculture Development Programme (CAADP) that requires African countries to allocate at least 10 percent of their annual budgets to agriculture. Some of the signatories to the Maputo declaration have started the implementation of the agreement. These include countries like Burkina Faso (18 percent), Niger and Mali (15 percent), Malawi (13.8 percent), Ethiopia (11.9 percent), Senegal (10.8 percent) and Zambia (11.5 percent) (Daily Trust, 2018)

Public expenditure is a veritable instrument used by government at federal, state and local levels in order to achieve macro-economic policy objectives. This instrument has become a prominent tool of fiscal policy especially in developing countries where taxable income is very low (Bhatia, 2012). It is not out of place to say that fiscal policy helps to achieve full employment and also maintain high rate of economic growth. This explains why government sees fiscal policy such as spending and taxation as effective instruments of correcting market failure (Gruber, 2011)

Therefore, assessing the impact of state government expenditure on the agricultural growth in Kogi State is important. Mohammed (2018) noted that assessing the impact of government expenditure is important given the reality on ground of high level of poverty, unemployment, high cost of food, lack of industry in the state, low internally generated revenue and low tax base thereby resulting in high cost of food, high cost of living and low standard of living.

In Kogi State, the pattern of public expenditure in area of agriculture has not been impressive as 2017 expenditure in agriculture showed that out of N185 billion naira expended, agriculture generally received a total of approximately N3 billion naira representing 1.6% of the total expenditure of the budget (Kogi State Ministry of Budget and Planning, 2018).

In realization of the crucial roles agriculture has in Nigerian economy, the government at federal level over the years has almost been the sole provider of financial and other capital resources to support agriculture. The federal government has embarked on various policies and programmes aimed at strengthening the sector in order to continue performing its roles, as well as measures for combating food insufficiency. Notable among these policies are the Green Revolution (GR) 1960s; the National Accelerated Food Production Programme (NAFPP) 1972; Operation Feed the Nation (OFN) 1976; Land Use Decree 1978; the Directorate of Food, Roads and Rural Infrastructures (DFRRI) 1986; Fertilizer Company of Nigeria (NAFCON) 1987 and the National Agriculture Land Development Authority (NALDA) 1992.

In addition to the efforts made by the federal government, at the state level, the Kogi State Agricultural Development Project was established on December 19, 1991 to implement the state agricultural development policy. In spite this effort, according to Nigeria Poverty Profile (NPP) 2014 released by the National Bureau of Statistics (NBS), (2016), food poverty in Kogi State was

50.1%, absolute poverty 67.1%, dollar per day 67.3% and per capita expenditure was 73.5%. Based on derived subjective poverty measure, 58.7% were core poor, 38.0 moderate poor, and 3.3% non-poor. Zakaree, Alexander, Abdulmumin and Adeneye (2018) supported this position by stating that:

> *Most of the farmers in the rural areas engage in subsistence agriculture and lack sufficient funds to expand their farm or even practice mechanized farming, with modern equipment like plough, tractors and other labour saving devices. Hence, they could not produce enough food to feed the ever growing population of Nigeria* (p. 241)

However, several studies in the past have examined the impact of agricultural finance on agricultural output/productivity, for instance, Rufus and Oyewole (2018) empirically evaluated the nexus between public spending on agriculture and Nigerian output growth, Idoko and Jatto (2018) examined the impact of government expenditure on agriculture and economic growth in Nigeria; while, Tobechi (2018) examined the effect of agricultural output on economic growth of Nigeria. Furthermore, Esan (2016) carried out an empirical study on the contributions of agriculture to economic development in soba local government area of Kaduna State. Yusuf and Mohammed (2017) assessed the effect of public expenditure on crop production in Yobe State However, to the best of our knowledge, none of these studies was carried out specifically in Kogi State using both capital and recurrent expenditure and thus the need to carry out similar study in Kogi State to see if the findings will be contrary to previous findings or otherwise.

Objectives of the Study

Giving the foregoing, the major objective of this study therefore, is to examine the impact of government expenditure on agricultural growth in Kogi state. The specific objectives are to:

i. Examine the extent to which government capital expenditure has effect on agricultural growth in Kogi State

ii. Ascertain the extent to which government recurrent expenditure has effect on agricultural growth in Kogi State

Hypotheses of the Study

This study is guided by the following hypotheses which are stated in null form as follows:

$H0_1$: There is no significant relationship between capital expenditure and agricultural growth in Kogi State.

$H0_2$: There is no significant relationship between recurrent expenditure and agricultural growth in Kogi State.

Organisational Structure of the Paper

The paper is organized into five sections. Following this introduction is section 2 which focuses on the reviews of relevant literature and theoretical framework. Section 3 discusses the methodology. Section 4 analyses and interprets the data, while section 5 summarizes the findings and offer some recommendations.

Literature Review

Public Expenditure

Public expenditure is the aggregate spending of government in different sectors of the economy in order to ensure economic growth and also achieve macro-economic policy objectives (Olukayode, 2009). This expenditure can be from federal, state and local government level(s). Public expenditure either recurrent or capital expenditure, notably on social and economic infrastructure can be growth-enhancing (Olukayode, 2009).

Public expenditure can be said to influence and enhance agricultural growth in Nigeria. This will increase the income of farmers, help farmers to expand their farms and increase in farm produce. This position was strengthen by Chidinma & Kemisola (2014) when they noted that government expenditure is perhaps the single most important policy instrument available to governments of most developing countries for promoting growth and equitable distribution. Public expenditure can be said to mean the financial activities of the government especially with expanding state activities; it is becoming increasingly difficult to demarcate the portion of public expenditure meant for the maintenance of the government itself from the total (Bhatia, 2012).

Okoro (2013) noted that public expenditure plays an important role in the functioning of an economy whether developed or underdeveloped. He further noted that public expenditure was born out of revenue allocation which refers to the redistribution of fiscal capacity between the various levels of government or the disposition of responsibilities between tiers of the government. The expenditure pattern of government in Nigeria is divided into current and capital. In the Nigerian economy public expenditure can broadly be categorized into capital and recurrent expenditure. Public expenditure is alluded to as an outpouring of assets from government to different areas of the economy. It is in fact the main instrument for a government to control the economy to bring about economic growth, which in turn promotes the living standard of people by providing better infrastructure, good health, education, an improvement in agricultural output and food security (De & Dkhar, 2018).

Capital Expenditure

Capital expenditure has been seen as investment that will yield future benefits. Though, authors have viewed the concept differently especially in the context they used it but there is a consensus about the expected benefits of capital expenditure. Modebe, Okafor, Onwumere and Ibe (2012) viewed capital expenditure in a general context to include even private spending when they observed that capital expenditure is spending on assets; it is the purchase of items that will last and will be used time and time again in the provision of a good or service. This means that the goods and services is the expected benefits capital expenditure is expected to achieve. Though, they further narrow down the definition to capture only government expenditure when they stated that capital expenditure are expenditure on building of a new hospital, the purchase of new computer equipment or networks, building new roads and so on. Though, all these expenses are expected to yield future benefits. It is on this note that Abubakar (2000) viewed capital expenditure as investment. This investment has to do with future benefits. Mohammed (2018) expressed similar opinion as she noted that capital expenditures are expenses on goods and services whose services are rendered over a long period of time. These are expenditure on projects like land, building, road construction, housing, development projects and so on. The benefits of capital expenditure are more durable and long lasting for years than those of recurrent expenditure. According to Njoku (2009), capital expenditure involves expenditure on construction, land extension, building and plant and machinery acquisition. The capital expenditure includes some of the followings: new infrastructural facilities, major renovations and repairs to existing facilities. It is pertinent to state here that capital expenditure confers benefits for several years (Ojong, Ekpo, & Anthony, 2016) Therefore, capital expenditure in the context of this study means state government spending on

crop production in order to increase output and also income of the farmers by providing modern agro-equipment such as harvester, plough, sprayer, bull dozer and what have you for future benefits of food sufficiency.

Recurrent Expenditure

According to Njoku (2009), recurrent expenditure are all expenditures which government incurs in the course of performing its functions. Thus, government expenditure has two components namely recurrent expenditure and capital expenditure. While recurrent expenditure encompasses expenditures recurring over the year such as personnel costs, transportation, utility services, telephone services, stationery, hospitality, maintenance of office furniture and equipment all other day to day, month to month or quarterly running expenses funded by the government. Mgbanya, Onwumere, Eze, Nwokenekwu and Igwe (2018) see recurrent expenditure as expenditure on purchases of goods and services, payment of wages and salaries, consumption of fixed capital which does not result in the creation of fixed assets. A recurrent expenditure or budget tracks ongoing revenues and expenses that occur on a regular basis, be it monthly, quarterly, semiannually, or annually. Also known as an operational budget, a recurrent expenditure includes line items such as wages, utilities, rent or lease payments, and maintenance of existing infrastructure. Modebe et al. (2012) prefer to use the word current expenditure instead of recurrent and their reason that current expenditure is recurring spending or, in other words, spending on items that are consumed and only last a limited period of time. They stated that in the case of the government, current expenditure would include wages and salaries and expenditure on consumables - stationery, drugs for health service, bandages and so on. However, for the purpose of this study, recurrent expenditure includes money expended on maintenance of infrastructure and payment of salaries as captured in the state government expenses.

Agricultural Growth

Agricultural growth may be seen as the increase in agricultural production expressed either in physical or monetary terms which is brought about by small changes over larger areas (Mosher in Mohammed, 2018). Agricultural growth is an integral part of national development. It is that aspect of development that is related to agrarian reforms. Considering the contribution of agriculture to the socio-economic development of many countries, several scholars have postulated theories linking agriculture with national development (Daneji, 2011). De and Dkhar (2018) stated that expenditure in agriculture is important for the transformation of agricultural sector. He further stated that low agricultural output has a negative effect on the economy as a whole via its low production of food and raw materials for industries. Shepherd and Prowse (n.d) noted that agricultural productivity growth is not the only, or even the most critical, factor in exiting poverty in rural areas – further factors include relative prices (especially of food crops), asset inequality, effective public expenditure, and importantly, the stability of agricultural growth. Therefore, in the context of this study, agricultural growth means increase in farmers' output in the area of crop production as measured in metric tons.

Review of Empirical Studies

Yusuf and Mohammed (2017) assessed the effect of public expenditure on crop production in Yobe State using primary data. The study adopted survey research design and collected cross-sectional data. The study

used Chi- square to test the hypothesis and found out that public expenditure does not have effect on the output of crops and therefore recommended that a policy framework needs to be instituted in the diversification of public expenditure. However, the study was carried out in Yobe State and include only capital expenditure and there is need for similar study to be replicated in Kogi State using both capital and recurrent expenditure.

Uremadu, Ariwa and Uremadu (2018) examined the effect of government agricultural expenditure on agricultural output in Nigeria using time series data from Central Bank of Nigeria from 1981 to 2014. Vector Error Correction model estimation technique was used and the study revealed that total government agricultural expenditure (TGEX) had a positive and significant effect on agricultural output (AGO) in Nigeria during the period studied. The major weakness of the work was that the independent variable was not disintegrated; the study used total government expenditure as the independent variable. Therefore, the current study will disaggregate the expenditure into capital and recurrent.

Idoko and Jatto (2018) examined the impact of government expenditure on agriculture and economic growth in Nigeria. The study made use of secondary data collected from Central Bank of Nigeria using time series data from 1985-2015. The multiple regression results of the study revealed that there exists a positive and significant relationship between government expenditure on agriculture and economic growth in Nigeria. Though, the weakness of this study is the use of Ordinary Least Square (OLS) estimation technique even when the ADF test shows that all the variables are stationary at 1st difference.

Tobechi (2018) examined the effect of agricultural output on economic growth of Nigeria with the objective of examining the effect of crop production, livestock, fishery and forestry on economic growth in Nigeria. Secondary data on GDP, crop production, livestock, fishery and forestry were obtained from the CBN statistical bulletin covering 1981-2016. The econometrics methods of Ordinary Least Square, Co-integration, Error Correction Model were used for the analysis of time series data. The coefficient of crop production is positively signed and statistically significant at 5 percent level with GDP. Based on these results, the study recommended that Nigerian government should put good structures in place that allows better and higher agricultural output in the country. However, there is need to use both capital and recurrent expenditure since the study used only recurrent expenditure.

Rufus and Oyewole (2018) empirically evaluated the nexus between public spending on agriculture and Nigerian output growth. The findings show that agricultural sector output has positively impact on the economic growth in Nigeria over the period under study. The main weakness of the study was failure to test for long-run relationship between the variables using Johansen co-integration analysis.

Chidinma and Kemisola (2012) examined the impact of government expenditure on agriculture on economic growth in Nigeria using time series data of 33 years sourced from the Central Bank of Nigeria. The study revealed that significant relationship exists between government expenditure in the agricultural sector and the economic growth in Nigeria. However, the main weakness of the study was failure to test for long-run relationship between the variables using Johansen co-integration analysis.

Mgbanya, Onwumere, Eze, Nwokenekwu & Igwe (2018) assessed the impact of the national recurrent expenditure on Nigeria's agricultural growth from 1990 to 2017. The

Wald test result showed that the F-statistics (23.126) was greater than the F-tabulated (4.32) at p-value < 5%, this implies that the recurrent expenditure on agriculture has a significant impact on the agricultural share of GDP from 1990 to 2017. However, this study overlooked capital expenditure on agricultural growth and also relied on only secondary data for data collection.

Brown and Ajayi (2015) in their study examined the effects of government spending on the agricultural sector in Nigeria. The study revealed that total government expenditure have positive and significant impact on agricultural output in Nigeria during the period under study. Based on the above findings, the study recommended for an increase funding of the agricultural sector in Nigeria. However, the study fails to disaggregate the components of public expenditure.

Theoretical Framework

This study was anchored on Keynesian theory of public expenditure. This was first presented by the British economist J.M Keynes (1936) during the great depression in his book 'The General Theory of Employment, Interest and Money'. The Keynes theory states that expansion of government expenditure accelerates growth and development.

Keynes regards public expenditures as an exogenous factor which can be utilized as a policy instrument to promote growth. The Kogi state government through the instrument of state apparatus influences agricultural output through yearly spending on the sector. The increase in government expenditure in area of providing farm equipment, provision of fertilizer, improved seedlings among other things are expected to have positive relationship with agricultural output. In such a manner that an increase in expenditure will lead to increase in agricultural output as measure in metric tons. This will increase the income of farmers and provide food sufficiency. From the Keynesian thought, public expenditure contributes positively to growth. Hence, an increase in government consumption is likely to lead to an increase in employment, profitability and investment through multiplier effects on aggregate demand. Keynes submitted that the lingering economic depression (low agricultural output) can be dealt with through appropriate spending in area of investment (capital expenditure) and consumption (recurrent expenditure) in order to enhance economic growth (increase agricultural output).This is expected to enhance smooth running of the agricultural sector in order to avoid shortage of agricultural output in Kogi State.

Though, this theory was criticized on the ground that it encourages big government and gives government additional financial burden. In spite this criticism, the theory suits the present study because it explains the relationship between the variables under study.

Research Methodology

Research Design

This study adopted correlational research design. The choice of this design is that it helps the researcher to understand the kind of relationships naturally occurring variables have with one another with little or no efforts to control extraneous variables, (Cresswell, 2009).

Sources of Data

The researcher used secondary source. The first set of data for crop production (CP) used as a proxy for agricultural growth measured in metric tons were collected from Kogi State Agricultural Development Programme (KOSADP) and Government Capital Expenditure (GCE) measure in million naira were obtained from Kogi State ministry of budget and planning. The study covers a sample period from 2000 to 2018.

Model Specification

In order to examine the impact of government capital expenditure on agricultural growth in Kogi state, the following regression model can be specified:

$CP_t = \beta_0 + \beta_1 CE_t + \beta_2 RE_t + \mu_t$ .....(1)

Where CP is crop production measure in metric tons used as a proxy for agricultural growth, CE is state government capital expenditure measured in million naira. RE is state government recurrent expenditure measured in million naira. Subscript t is used to represent the time series dimension. μ error term (signifying other variables not captured in the model) and β_0 is the constant.

Note: All variables are in their natural logarithm form

Unit root test

Before including time series in regression analysis, it is critical to test for unit roots or non stationarity in order to avoid spurious regressions (Engle & Granger, 1987). The determination of the stationarity of each series is a necessary condition for co-integration test, and indeed for the estimation of the VAR model, simply because each series involved in the estimation of a model must be integration of the same order (Engle & Granger 1987). The stationarity or unit root test for this study was conducted using Augmented-Dickey Fuller (ADF) test. Gujarati (2004) noted that empirical work based on time series data assumes that the underlying time series is stationary. The mathematical model to check the unit root is given as:

$$\Delta y_t = a_0 + a_1 t + \emptyset y_{t-1} + \sum_{t=1}^{p} \beta_I \Delta y_{t-I} + \mu_t \quad \text{..... (2)}$$

Where Δ is first difference operator, α_0 is intercept or constant, α_1 is a trend term, ρ is a lag order of the autoregressive process, and μ_t is the error term.

Co-Integration Test

Once the variables have been established to be integrated of the same order, then the Johansen and Juselius (1990) maximum likelihood method of co-integration that shows existence of long run relationship among the variables and the number of Co-integrating vectors can be applied. The test of the null hypothesis of co-integrating vector was conducted on the basis of the Trace and Maximum Eigen value statistics as specify as:

$$\lambda trace = -\left(\frac{T}{2}\right)\sum_{t=r-1}^{n} Log(1-\lambda_i),$$

$$\lambda max\ eig = -TLog\ (1-\lambda r+1) \quad \text{.....(3)}$$

Vector Autoregressive (VAR) Model Estimation

A Vector Autoregressive (VAR) model was estimated upon the discovery of no long run co-integration among the variables. Engle and Granger (1987) argues that if cointegration does not exist among variables in the long run, then there is need to test for short run relationship. VAR model is a theoretically-driven approach useful for estimating short-term relationship of one-time series on another. Thus, VARs directly estimate the speed at which a dependent variable returns to equilibrium after a change in other variables. The study investigated the short run relationship between state government expenditure and agricultural growth in Kogi state. The VAR Model representation for the study models therefore assumes the following form:

$$y_t = \beta_{yo} + \beta_{yy1} y_{t-1} + \cdots + \beta_{yyp} y_{t-p} + \beta_{yx1} x_{t-1} + \cdots + \beta_{yxp}$$

$$x_t = \beta_{xo} + \beta_{xy1} y_{t-1} + \cdots + \beta_{xyp} y_{t-p} + \beta_{xx1} x_{t-1} + \cdots + \beta_{xxp} y_{t-p} + \beta_{xz1} y_{t-1} + \cdots + \beta_{xzp} y_{t-p} + \varepsilon_t^x$$

$$z_t = \beta_{zo} + \beta_{zy1} y_{t-1} + \cdots + \beta_{zyp} y_{t-p} + \beta_{zx1} x_{t-1} + \cdots + \beta_{zxp} y_{t-p} + \beta_{zz1} y_{t-1} + \cdots + \beta_{zzp} y_{t-p} + \varepsilon_t^z \quad \ldots.(4)$$

$\boldsymbol{\beta_{xyp}}$ represent the coefficient of *y* in the equation for *x* at lag *p*. and $\boldsymbol{\beta_{zxp}}$ for *z* involving p lagged value of *z* and $\boldsymbol{\beta_{pzx}}$. $\boldsymbol{\varepsilon_t^y}$, $\boldsymbol{\varepsilon_t^x}$ and $\boldsymbol{\varepsilon_t^z}$ are the error terms respectively that are not related to the past values of the variables. Y is capital expenditure, x is recurrent and z is crop production.

Results and Discussion

This section discusses the analyzed results of the study. The data are presented on tables, graphs, and in any other acceptable and comprehensible format. It further discussed the result of relevant findings based on the analysis.

Table 1: Descriptive Statistics

	CE	CP	RE
Mean	20.40720	15.65838	19.89037
Median	20.22404	15.59621	19.71420
Maximum	21.71169	16.24649	20.81802
Minimum	18.84333	15.24391	18.74543
Std. Dev.	0.955862	0.350313	0.503326
Skewness	0.003547	0.319274	0.012744
Kurtosis	1.759889	1.701851	2.858834
Jarque-Bera	1.217524	1.656906	0.016290
Probability	0.544024	0.436724	0.991888
Sum	387.7368	297.5092	377.9170
Sum Sq. Dev.	16.44610	2.208949	4.560061
Observations	19	19	19

CE= Capital expenditure; CP = Crop production; RE= Recurrent expenditure

Source: Author's Computation Using Eviews version 10 (2019)

The result from Table 1 indicates that the probability of Jarque-Bera test statistic for each of the variables shows a value higher than the conventional critical value of 5%. This indicates that the null hypothesis that states that the data are normally distributed was true. It therefore implies that the three variables were normally distributed.

The insignificant variations between the mean and the median values of each variable, in Table 1, lend additional credence to compliance of the variables with the normal distribution assumption. In addition, the skewness of zero from the three variables also shows that the data are normally distributed.

Stationarity Test

Table 2 Summary of the Unit Root Test Result.

Variable	Order of Stationary	ADF Calculated	ADF Critical	Order of Integration	Decision

LNCP	At level	0.235014	-3.052169	I(0)	Not stationary
	1st Difference	-6.454489	-3.052169	I(1)	Stationary
LNCE	At level	-1.612874	-3.040391	I(0)	Not Stationary
	1st Difference	-4.458176	-3.052169	I(1)	Stationary
LNRE	At level	-2.698591	-3.040391	I(0)	Not Stationary
	1st Difference	-4.166396	-3.052169	I(1)	Stationary

Source: Researcher's Computation Using Eviews 10 (2019)

From the result in Table 2, all the study variables are non-stationary at level - they all have ADF calculated value (absolute value) that is less than ADF critical for all the variables at level. However, an attempt was made to test the stationarity at first difference since none of the variable was stationary at level. The result at first difference showed that all the variables were significant at level because they all have ADF calculated for all the variables greater than ADF critical at 5% level of significance and 95% confidence level. This indicates that the variables are all integrated of order I(1); a necessary and compulsory precondition for the use of Co-integration test in order to test the long run relationship of the variables.

Table 3 Lag Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-25.44733	NA	0.007032	3.555917	3.700777	3.563335
1	1.931738	41.06861*	0.000730*	1.258533*	1.837974*	1.288205*
2	7.781476	6.580956	0.001266	1.652315	2.666338	1.704242
3	16.16778	6.289724	0.002164	1.729028	3.177632	1.803208

Source: Researcher's Computation Using Eviews 10 (2019)

In order to select the optimum lag, the study estimated various lag selection criteria from VAR model. The result presented in Table 3 shows that LR, FPE, AIC, SC and HQ suggested choosing lag one. Therefore, we estimated our model using lag one.

Table 4 **Co-integration Test**

Hypothesize No of CE(s)	Trace Statistics	5% Critical Value	Max-Eigen Statistics	5% Critical Value
None	16.46795	29.79707	11.36304	21.13162
At most 1	5.104908	15.49471	3.854395	14.26460
At most 2	1.250512	3.841466	1.250512	3.841466

Source: Author's Computation Using Eviews 10 (2019).

The Table 4 above showed that there is no co-integration judging from both Trace statistics and Max.Eigen Statistics. The result presented in Table 4 shows that both Trace statistics and Maximum Eigen statistics indicated the variables are not co-integrated, meaning that the variables do not have long-run relationship at 5% level of probability. This is because the Trace statistics and Max Eigen statistics values are less than the 5% critical value. Hence, there is no Co-integration as the null hypothesis of no Co-integrating equations cannot be rejected. Since there is no long-run relationship between the variables, the study estimated short-run VAR model using lag one.

Short-run Analysis: Vector Autoregressive (VAR) Model

Table 5 Parsimonious Vector Autoregressive (VAR) Model

Dependent Variable: LOG(CP)

	Coefficient	**Standard Error**	**t- statistics**	**P Value**
LN(CP(-1))	0.883064	0.14399	6.13292	0.0000
LN(CE(-1))	0.034790	0.06482	0.53673	0.5943
LN(RE(-1))	0.034897	0.09051	0.38557	0.7018
C	0.480631	2.16907	0.22158	0.8257

Source: Author's Computation Using Eviews10 (2019)

The value of the t-statistics, can help to conclude whether or not a lagged variable has a significant adjusted effect on the corresponding dependent variable, by using a critical point of $t_0 = 2$ or 1.96. That is, if $/t_0/ >$ 2, or 1.96, then it can be concluded that the corresponding independent variable has a significant effect on the dependent variable (Agung, 2009).

The result in the table 5 above shows that the t-statistics of capital expenditure on crop production is 0.53673 which is less than 2 or 1.96. This means that capital expenditure has insignificant impact on crop production but

the coefficient is positive. The coefficient of capital expenditure on crop production in the short-run at 5% level of probability is 0.03%, this means that a percentage increase in capital expenditure in the previous year will cause crop production in the current year to increase by about 0.03%. In addition, the p value of 59.43% from the parsimonious VAR Model shows that the value is also greater than 5% level of probability, this is an indication that the study does not have enough statistical evidence to reject the null hypothesis and as such, the null hypothesis was accepted. This led to the conclusion that the capital expenditure does not have significant impact on agricultural growth in Kogi State, Nigeria.

Secondly, the result of the recurrent expenditure on crop production also shows that the t-statistics of recurrent expenditure on crop production is 0.38 which is less than 2 or 1.96. This means that recurrent expenditure also has insignificant impact on crop production but the coefficient is positive. The coefficient of recurrent expenditure on crop production in the short-run at 5% level of probability is also 0.03%, this means that a percentage increase in recurrent expenditure in the previous year will cause crop production in the current year to increase by about 0.03%. Also, the p value of 70.18% from the parsimonious VAR Model shows that the value is also greater than 5% level of probability, this is an indication that the null hypothesis is also accepted to conclude that the recurrent expenditure does not have significant impact on agricultural growth in Kogi State, Nigeria. This result is contrary to previous findings where capital expenditure had been found to have exerted significantly positive impact on agricultural growth (Rufus & Oyewole, 2018; Chidinma & Kemisola, 2012; Uremadu et al. 2018; Idoko & Jatto, 2018; Brown & Ajayi, 2015). However, the finding of this study supports earlier study findings indicating that capital expenditure exerts positive but insignificantly effect on agricultural growth (Mohammed, 2018; Yusuf & Mohammed 2017).

For recurrent expenditure, this result is conflicting with previous findings where recurrent expenditure had been found to have exerted significant positive impact on agricutural growth (Tobechi, 2018; Uremadu et al., 2018; Chidinma & Kemisola, 2012; Rufus & Oyewole, 2018). This is not to say that the findings of this study is uncommon, as finding of this study supports earlier study findings indicating that recurrent expenditure exerts insignificant effect on agricultural growth (Okoro, 2013; Mgbanya et al., 2018). It is instructive to state that the variation in findings may not be unconnected with the nature of the data used by the researcher, the way variables are measured, the geographical location and time scope of the study as well as the methods of statistical analysis adopted by different authors.

Conclusion

Based on the analyses and results, the study found that both capital expenditure and recurrent expenditure have positive but insignificant impact on agricultural growth in Kogi State during the period covered by the study. The study therefore concludes that capital expenditure has positive but insignificant impact on agricultural growth in Kogi State. This means that increase in the capital expenditure will lead to increase in agricultural output but this increase is not significant to bring about the required expectation in area of increasing output of farmers in the study area. The study therefore recommends that there is need for the government of Kogi State to take agricultural funding very importantly by increasing agricultural expenditure up to the 10% Maputo declaration and also ensuring timely release of fund to the Ministry and its

respective agencies. This is to ensure assistance and support to crop producers with agro-equipment, which includes tractors, harvesters, corn milling machine, sprayers, plough, water pumps and chemical equipment machines. This will enhance large scale crop production with the latest techniques and hence facilitating diversity within the purview of agricultural growth. The adequate and timely release of fund is necessary because agricultural activities are time bound or seasonal in Nigeria. Lastly, there is also need for Kogi State government to establish agricultural research institute at the state level that will help farmers with improved seedlings and also provide adequate agricultural extension officer that will serve as intermediary between the government and the farmers. This will help improve farming activities especially in area of improved seedlings for better output.

Suggestion for Further Study

This study has some limitations. It covers only 19 annual observations and used data from secondary source only, covering more annual years, more states and usage of both secondary and primary sources of data would be more appropriate for further investigation. It is recommended that similar study should be replicated in other states with agricultural potentials.

Conflict of Interest

The authors of this paper declare no conflict of interest in this research paper.

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