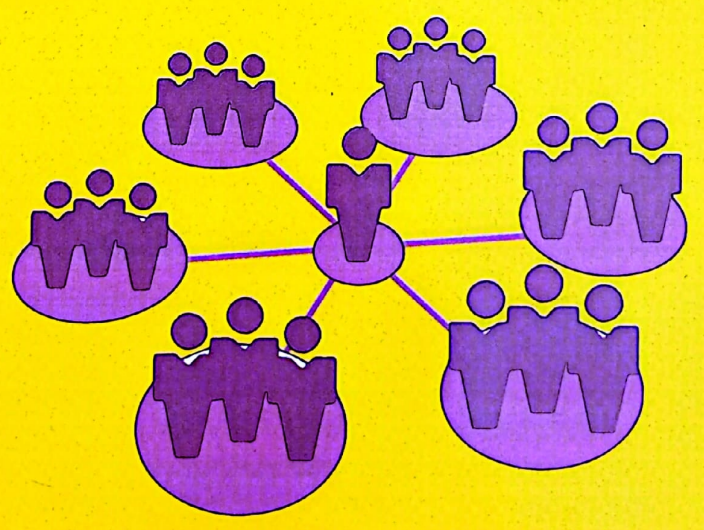
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13 Government Expenditure on Crop Production in Kogi State: An Analysis of Vector Autoregressive Model

Oyoru, Rashida Adamu, PhD

Abstract

The study investigated the impact of government investment on agricultural development in Kogi State. The term public expenditure on agriculture is used to denote both one-time and ongoing expenses for things like irrigation systems, maintenance of current infrastructure, and support for farmers in the form of seedlings and pesticides. Variations in the results of past investigations served as the source of inspiration for the current study. In a correlational study method, secondary data from KOSADP and the Kogi State Ministry of Budget and Planning were employed. The study's hypotheses were investigated with the aid of the Vector Autoregressive (VAR) Model. The results of the VAR model revealed, among other things, that there is no observable relationship between agricultural growth in Kogi State and government capital spending. Agro-equipment, which includes tractors, harvesters, corn milling machines, sprayers, ploughs, water pumps, and chemical equipment, is one type of agricultural resource that crop producers can use to receive support and assistance, according to the study's findings, which suggest that the Kogi State government should take agricultural funding seriously by making sure that the funds are promptly released to the ministry and the appropriate parastatals. Another approach to do this is to make sure that funds are made available on time and in adequate quantities to cover capital expenditures, as agricultural activities are time-sensitive.

Keywords: *capital expenditure, agricultural growth, government, vector autoregressive, ministry*

Background

Every country's economic success and development depends on both long term and short-term investment in those countries, which is also a symbol of prosperity and development. Nigeria has agricultural potentials as the country is endowed with fertile and arable land for agriculture. Providing food security for the world's growing population and providing raw materials for industry, earning foreign exchange, earning an income, giving farmers a place to save and invest, improving their standard of living, opening up markets for their goods, and many others are indicators of economic prosperity (Mbanya, Onwumere, Eze, Nwokenekwu & Igwe, 2018).

According to a 2017 report from the International Fund for Agricultural Development (IFAD), "Nigeria is predominantly a rural economy with over 60% of the population living in rural areas, 90% of whom are engaged in subsistence farming, and in addition, rural poverty was estimated at 44.9 percent in 2013 against an urban poverty incidence of 12.6 percent. In light of the surrounding situation, Madu and Yusof (2015) stated that "In most underdeveloped and

developing countries (including Nigeria), development remains one of the major challenges and has been described as the major bottleneck to their socioeconomic growth and sustainable development; particularly at the rural level". It is critical to keep in mind that the nation's ability to finance food security still matters. In Maputo, Mozambique, in 2003, African leaders emphasized the significance of money by pledging to devote at least 10% of their budgets to agriculture in order to increase food production and generate employment.

Public spending is a genuine tool used by government at all levels—federal, state, and local—to achieve macroeconomic policy objectives. This device has become a crucial tool of fiscal policy, particularly in emerging economies with extremely little taxable income. It is reasonable to state that fiscal policy aids in achieving full employment and sustaining a high rate of economic growth (Bhatia, 2012). This explains why the government views fiscal policy, such as spending and taxation, as a viable tool for resolving market failure. Public spending, whether ongoing or capital, affects both agricultural and economic growth (Jumare & Yero, 2017; Olukayode, 2009; Thompson & Rita, 2016). Empirical studies have supported this assertion by demonstrating how spending on both capital and recurrent items has an effect on agricultural growth (Mbanya, Onwumere, Eze, Nwokenekwu & Igwe, 2018).

Agriculture is the cornerstone of the community economy in Kogi State due to the abundance of arable land there. The state produces a wide variety of agricultural products, including as groundnuts, cashews, melon, palm oil, cassava, yams, and cashew flour. Jimoh (2006) also made note of the fact that the majority of people in Kogi State are farmers and that mixed cropping is the state's main farming method.

Determining how government spending has impacted the growth of agriculture in Kogi State is therefore important. Mohammed (2018) noted that assessing the impact of government spending is crucial given the high level of poverty, unemployment, high food prices, lack of industry in the state, low internally generated revenue, and low tax base that cause high food prices, high living costs, and a low standard of living. It is believed that if the farmers in Kogi State are given the necessary financial resources through government spending in the areas of procurement of necessary agricultural inputs, provision of infrastructural facilities such as motorable roads, irrigation facilities, storage facilities, and so on, the agricultural sector has the potential to generate employment opportunities for young people, lower the high rate of poverty, and provide enough food for the state.

Statement of Research Problem

Due to differences in the results of past investigations that provided the impetus for this investigation which is the problem the study intends to solve. For instance, several research discovered that government expenditure has a negative and negligible effect on the expansion of the economy and on agriculture (Desmond, Titus & Timothy, 2012 and Jumare, Yusuf & Mohammed, 2017). Other studies have found a weak but positive relationship between government spending and agricultural growth (Desmond et al., 2012; Mohammed, 2018; Yusuf & Mohammed, 2017).

Not least of all, some research uncovered a positive and strong association between the elements (Brown & Ajayi, 2015; Chidinma & Kemisola, 2012; Esan, 2015; Idoko & Jatto, 2018; Ifarajimi & Ola, 2017; Mohammed, 2015; Oyakhilomen & Zibah, 2014). Recurrent and capital

government spending have positive and significant influence on economic and agricultural growth; they also have negative and inconsequential effects as well as other positive and insignificant effects (Desmond et al., 2012; Jumare et al., 2016; Okoro; 2013; Udoka & Anyingang, 2015). Since some studies disregarded these, the gaps were filled by employing both the capital and recurring aspects of public spending.

This study looked at the effect of government spending on agricultural growth in Kogi State against this backdrop. Public spending on agriculture is a proxy for capital and ongoing expenses such as irrigation facilities, maintenance of existing infrastructure, and support for farmers in the form of seedlings and pesticides. Agricultural growth is measured in metric tons of crop production as statistics have shown that crop production made up more than 80% of agriculture's contribution to the country (CBN statistical bulletin, 2018). The following research questions were posed in order to accomplish the main goal.

Research Questions

i. What is the effect of state government capital expenditure on agricultural growth in Kogi State?
ii. What is the effect of state government recurrent expenditure on agricultural growth in Kogi State?

Objectives of the Study

i. Examine the extent to which state government capital expenditure affects agricultural growth in Kogi State.
ii. Assess the extent to which state government recurrent expenditure affects agricultural growth in Kogi State.

Research Hypotheses

$H0_1$: State government capital expenditure has no significant relationship with agricultural growth in Kogi State.

$H0_2$: State government recurrent expenditure has no significant relationship with agricultural growth in Kogi State.

Literature Review and Theoretical Framework

Capital expenditure

There is a degree of agreement regarding the anticipated advantages of capital spending, despite the fact that authors have understood the concept differently, particularly in the context in which they utilized it. Modebe (2012) noted that capital expenditure is spending on assets; it is the acquisition of objects that will last and be utilized repeatedly in the supply of a good or service. This indicates that the products and services are what a capital investment is anticipated to produce. However, he further simplified the concept to only include government expenditure when he claimed that capital expenditures involve money spent on things like building a new hospital, purchasing new computer hardware or networks, and building new roads, etc. All of these expenses, nevertheless, are predicted to be recouped eventually. On this issue, Abubakar (2000) sees capital expenditures as an investment. This investment takes future gains into account. He shared the same opinion as Mohammed (2018), who emphasized that capital expenditures are costs associated with goods and services that are provided over an extended period of time. He noted that it includes things like land, structures, infrastructure,

housing, development initiatives, and so forth. The benefits of capital expenditure are stronger and last longer than those of recurrent expenditure. Njoku (2009) defined capital expenditure as money spent on building, extending land, purchasing structures, and equipment. The capital expenditure includes a number of things, such as brand-new infrastructure, substantial upgrades, and repairs to current buildings. The benefits of capital investments over the long term should not be overlooked (Ojong, Ekpo & Anthony, 2016)

Recurrent expenditure

Recurrent expenses are all costs that the government incurs while carrying out its duties, according to Njoku (2009). Therefore, capital investment and recurring expenditure make up government spending. Recurrent expenses include those that are paid for by the government on a daily, monthly, or quarterly basis, such as personnel costs, transportation, utility and telephone costs, stationery costs, hospitality costs, maintenance costs for office furniture and equipment, and stationery costs. Recurrent expenses, according to Mgbanya et al. (2018), are those that go toward paying for workers and salaries, buying goods and services, and consuming fixed capital without producing fixed assets. Whether it be monthly, quarterly, semi-annually, or annually, recurring revenue and outgoing costs are tracked by a budget or recurrent spending. Salary, utilities, rent or lease payments, and infrastructure maintenance are all examples of recurring expenses. An operational budget is another name for it. Modebe, Okafor, Onwumere, and Ibe (2012) prefer the word current expenditure over recurrent expenditure because both terms refer to spending on items that are used frequently, or current expenditure, which is recurring spending. They claimed that the government's ongoing costs would pay for salaries, wages, and the procurement of consumables including bandages, office supplies, and drugs for medical services.

Crop production

Agricultural growth can be seen of as one part of the complex, multifaceted process of development that tries to increase the agricultural sector's capacity for production by transforming the rural economy from a peasant or subsistence economy to a modern, commercialized agricultural industry (Mohammed, 2018). A rise in agricultural production that is quantified in either physical or monetary terms and is the result of incremental improvements made over a greater area is referred to as agricultural growth (Mosher in Mohammed, 2018). The expansion of agriculture is essential to a country's development. Agrarian reforms are tied to that component of development. Many academics have proposed theories connecting agriculture with national development in light of the role of agriculture to the socioeconomic growth of many countries (Daneji, 2011).

In addition to growing agricultural output, other factors that help rural communities escape poverty include relative prices (especially for food crops), asset disparities, effective government expenditure, and most importantly, the stability of crop production. Stable and dedicated governmental spending is necessary for sustained agricultural expansion, not just in agriculture but also in related industries (infrastructure, health, education) (Daneji, 2011).

Governments now view public farm investment with skepticism. Project-based lending, which is more conventional and less favored by donors, may contribute more to agricultural growth than upstream kinds of help like budget support and multisector assistance. One

important message is that, in most low-income countries, getting pro-poor agricultural incentives is the biggest challenge (Shepherd & Prowse, n.d). Infrastructure, education, demand-led expansion, and expanded information provision mechanisms all require sustained and dedicated investment in order to avoid stagnant growth patterns that have little to medium term impact on the reduction of poverty. It is also crucial to take steps to combat the variability in crop production rates. Investment in irrigation and other infrastructure will be necessary, as well as in methods to control prices at the national and international levels, which is yet another area where governments and the international community are hesitant to act. Overall, the public policy environment for agriculture has to be greatly improved (Shepherd & Prowse, n.d). The four (4) factors listed by Pavittar (2016) that are strong determinant of crop production are technological (HYVs/seeds, fertilizers, and pesticides), institutional (agricultural credit and land holdings), infrastructural (irrigated area, farm mechanization, electricity, storage infrastructure, transportation, and agriculture market), and socio-economic (socio-economic factors) (Population, poverty, and literacy).

Review of Empirical and Related Literature

Using primary data collected from the distribution of a questionnaire to registered farmers in the state, Yusuf and Mohammed (2017) evaluated the impact of public spending on crop output in Yobe State. Cross-sectional data were gathered as part of the survey research design used in the study. To achieve the study's objective, the study used Chi-square to test the hypothesis and discovered that public expenditure does not affect the output of crops. According to the findings, the study recommended that a policy framework be put in place to diversify public spending in the form of capital expenditure for agricultural investment that will boost crop production. However, the analysis only considered capital expenditures as one type of government spending (public investment). It didn't take consumption into account (recurrent expenditure). The study's primary flaw was leaving out one aspect of public spending from the independent variable.

Using time series data spanning 33 years that were collected from the Central Bank of Nigeria, Chidinma and Kemisola (2012) investigated the effect of government spending on agricultural on economic growth in Nigeria. To reach its goal, the study used the Ordinary Least Square (OLS) method of data analysis. The study found a strong correlation between government spending in the agriculture sector and Nigeria's economic growth. According to the study, the nation's agricultural industry needs to be developed by adequate government spending to support its economic growth. The study's primary flaw, however, was that Johansen co-integration analysis was not used to check for a long-term link between the variables.

Uremadu et al. (2018) used time series data from the Central Bank of Nigeria from 1981 to 2014 to investigate the impact of government agricultural spending on agricultural output in Nigeria. The results of the unit root test, co-integration test, and vector error correction model showed that total government agricultural spending (TGEX) in Nigeria had a positive and significant impact on agricultural output (AGO) throughout the time period under study. The study therefore recommended that efforts should be made by government to reduce the rate of importation in the nation, government should not only adequately fund agriculture by maintaining a healthy population, but also promote a mechanized agricultural system by

using modern technology and inputs to boost yields in domestic rice production and other farm produce.

Muhammed (2015) assessed the impact of the Kogi State survival farming intervention program on cassava output in three Kogi State local government areas. The respondents for the study were selected through a multi-stage sampling procedure. The factors influencing respondents' participation were identified using a method of data analysis called regression. The study revealed that Survival Farming Intervention Program impacted income, and standard of living of farmers. The program should be expanded and replicated in other LGAs and States across the nation, including FCT, Abuja, according to the study's recommendations. The study's flaw is that it only considers cassava yield when evaluating the effectiveness of an intervention program; instead, it would have been more acceptable to encompass other crop yields in this type of study.

Tobechi (2018) looked at the impact of agricultural output on Nigeria's economic growth in order to look at the impact of crop production, livestock, fisheries, and forestry. From the CBN statistical bulletin, which covers the years 1981 to 2016, secondary data were gathered on the GDP, agriculture production, livestock, fishing, and forestry. Time-series data were analyzed using the econometric techniques of ordinary least squares, co-integration, and error correction model. At a GDP level of 5%, the agricultural production coefficient is statistically significant and has a positive sign. Based on these findings, the report advised the Nigerian government to set up suitable frameworks to enable better and greater agricultural output in the nation. The work's flaw is that it only considers one aspect of public expenditure (recurrent expenditure).

Oyakhilomen and Zibah (2014) focused on empirical research of the relationship between agricultural productivity and the growth of the Nigerian economy. Time-series data were employed in this work, and the data were analyzed using unit root tests, bound test (ARDL) and co-integration test. The data analysis showed that Nigeria's strong economic growth pattern was significantly influenced by agricultural production. According to the report, pro-poor policies should be created to increase public and private sector investments in agricultural development and therefore decrease rural poverty. The inability to separate the various aspects of agriculture in order to identify those that contribute most to economic growth and hence improve policy input is the work's main flaw.

In Kogi state between 2000 and 2018, Abubakar, Yusuf, and Abdulmalik (2020) investigated the effect of state government spending on agricultural growth. Secondary data from Kogi State Agricultural Development Project (KOSADP) and the Kogi State Ministry of Budget and Planning were used in a correlational research approach. To ensure the stationarity of the data, a unit root test utilizing the Augmented Dickey Fuller (ADF) test was performed on the obtained data. The testing of the hypotheses was done using the Vector Autoregressive (VAR) Model. According to the VAR Model's findings, there is no discernible connection between Kogi State's government capital spending and agricultural growth. The study recommended among other things, that the Kogi State government give agricultural finance a high priority by raising agricultural expenditure to 10% in accordance with the recommendation of the Maputo declaration. The study focused on agricultural growth generally which could lead to difficulty in model specification, the current study focuses on only crop production.

Mohammed (2018) used data from both secondary and primary sources to evaluate how government capital spending has affected Yobe State's agricultural development. In order to gather secondary data, the Yobe Ministry of Budget and Economic Planning and Agricultural Development Program for the years 1992 to 2016 were used. The primary source was the distribution of a questionnaire to registered farmers in the state from a few local government areas. To ascertain the relationship between the provision of agro-equipment and the provision of other agricultural input through government capital spending on crop production for Agricultural development in Yobe State, data gathered from primary sources were analyzed. The primary data was analyzed using chi-square and the result revealed that there was no correlation between crop production for agricultural development and the availability of farm inputs (fertilizer) and agro-equipment. Using the cointegration test and the VAR model to evaluate secondary data, it was also discovered that there is a positive but negligible association between government capital expenditure and agricultural development in Yobe over the course of the investigation. The study recommended that agricultural financial policies be encouraged with the aim of aiding crop producers using various agricultural resources, such as agro-equipment. The study's flaw is that the study only considers capital expenditure as one of the aspects of public spending.

Theoretical Framework

Keynesian theory of government expenditure

In his 1936 book *The General Theory of Employment, Interest, and Money*, John Maynard Keynes first addressed government spending. The Keynesian idea holds that greater government spending encourages quicker economic expansion and growth. Thompson and Rita (2016), who acknowledged the relationship, state the following:

> Keynes was among the economists who examined the connection between government spending and growth who garnered the most attention for his opposing perspective. According to Keynes, government spending is an exogenous factor that can be used as a tool for policy to encourage growth in different areas. According to Keynesian theory, government spending helps the economy grow. Therefore, through multiplier effects on aggregate demand, a rise in government consumption is likely to result in an increase in employment, profitability, and investment. Government spending increases aggregate demand as a result, which leads to higher output depending on expenditure multipliers (Thompson & Rita, 2016, p. 97).

In order to combat economic depression, Keynes believes that the aggregate supply function is steady and focuses solely on the aggregate demand function (low agricultural output). Keynes said that the government's inability to control the economy through effective economic policies is the cause of the ongoing economic downturn (poor agricultural output). According to Keynesian theory, public spending may be changed to alter national income levels, and raising public spending will boost national output (Emerenini & Ihugba, 2014; Ifarajimi & Ola, 2017; Patricia & Izuchukwu, 2013; Udoka & Anyingang, 2015).

Keynes consequently put forth the idea of government intervention (Public expenditure). According to Keynesian economics, the government can aid in the restoration of normalcy when significant economic shocks throw the economy out of balance by boosting demand through public spending.

Application of the Keynesian theory of Government Expenditure to the Study

This concept states that when state investment rises, the Kogi government expands economic activities and boosts agricultural productivity. According to the Keynesian theory, government spending, especially deficit spending, can act as a short-term stimulus to assist prevent a recession or depression. Economic theory holds that government spending can either help or hurt economic growth (Okoro, 2013). According to Keynesian macroeconomics, a sizable quantity of public spending can foster economic growth since it has multiplier effects on aggregate demand. In order to keep things simple, this research contends that public spending policies directly affect aggregate demand, which in turn stimulates the economy. By extension, this model can be used to boost agricultural output in Kogi State.

Research Method

The research design in this study is correlational research design to examine relationship between expenditure and crop production in Kogi State. This approach was taken because quantitative data were used in the data collection and analysis. The secondary data was gathered from the KOSADP crop survey report and the annual existing report from the ministry of budget and planning. The Kogi State Agricultural Development Programme (KOSADP) provided the first set of data for crop production (CP) used as a proxy for crop production, which was measured in metric tonnes. The Kogi State Ministry of Budget and Planning provided the data for government recurrent expenditure (GRE) and government capital expenditure (GCE), both of which were measured in million naira.

Table 1: Variables measurement

	Variable	Description	Type	Works adapted from:	Apriori Expectation
1.	CP	Crop production	Dependent	Mohammed (2018)	1
2.	CE	Capital expenditure	Independent	(Idoko & Jatto, 2018; Babatunde, 2018)	+
3.	RE	Recurrent expenditure	Independent	Mbanya et al., 2018; Tobechi, 2018	+

Source: Generated by the Researcher Based on a previous study (2019)

Model Specification of the Variables

The following regression model can be set to look at how government capital and recurrent spending affects agricultural growth in Kogi State:

$$CP_t = \beta_0 + \beta_1 CE_t + \beta_2 RE_t + u_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 1$$

Crop production, expressed in metric tons, is used as a proxy for crop production, whereas government capital spending and recurrent expenditure are both expressed in millions of naira. The time-series dimension is represented by subscript t. Meanwhile, the following illustrates the linear relationship between the variables:

$$CP=f(CE \text{ and } RE) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 2$$

The model used to test the hypothesis formulated for this study is presented below

$$LNCP_t=\beta_0+\beta_1 LNCE_t+\beta_2 LNRE_t+u_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3$$

CP = Crop production; CE= Capital expenditure; RE= Recurrent expenditure; β_0= Constant; β_1-β_2= coefficients; μ= error term (signifying other variables not captured in the model); t = Time dimension; LN= Natural Logarithm

Data Presentation, Analysis, And Discussion

Stationarity test

One of the most important initial steps in a multiple regression is to test the stationarity of the data series. This is because non-stationary variable inputs in multiple regression analysis have a tendency for producing false or inaccurate regression results, which can result in wrong hypotheses and economic forecasts (Engle & Granger, 1987). The applicability of the model selected for the inquiry depends on knowing the stationarity status of the pertinent variables.

Even though Ordinary Least Square (OLS) was initially suggested for the study, the outcome of the stationarity test dictates which estimate techniques should be used. According to the popular wisdom, an ordinary least square can be used if all the variables are stationary at I(0); otherwise, alternative techniques must be used. This study utilized the co-integration test, which requires that all variables be integrated of order I(1), or non-stationary at levels, but stationary at the first difference.

The Augmented Dickey-Fuller (ADF) Test (Dickey & Fuller, 1979) was used to determine if the variables were stationary or not. It is based on the straightforward reasoning that a non-stationary process has limitless memory because it does not exhibit decay when subjected to shocks. As opposed to the alternative hypothesis that "the variable has no unit root (stationary)," the decision rule is based on the null hypothesis that "the variable has a unit root (non-stationary)". The choice is made by contrasting the ADF test probability values (p-value) with the 5 percent significant level for both the Level and First Difference for each variable. Where the p-value is greater than 5%, the null hypothesis is accepted; whereas, where it is equal to or less than 5%, it is rejected.

Table 2: Summaries the result of the unit root test

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
LNTGE	At level	-1.935106	-3.040391	I(0)	Not Stationary
	1st difference	-3.572185	-3.065585	I(1)	Stationary

Source: Author's computation using Eviews 10

According to the data in Table 2, all research variables are non-stationary at the level; their P-values are all higher than the level of 5% significance, and the estimated ADF is lower than

the level ADF crucial for all variables. Since none of the variables were stationary at level, an effort was made to evaluate stationarity at the first difference. The initial difference result demonstrated that all of the variables were significant at the level because they all have a P value of less than 5% level of significance and the ADF calculated for all of the variables was greater than ADF critical at a 5% level of significance and a 95% level of confidence. This shows that all of the variables have order I(1) integration, which is a prerequisite for using the co-integration test to examine the long-term relationships between the variables. For the variable's unit root result.

Long-run analysis: cointegration test

Under the null hypothesis that the variable is not cointegrated using the Johansen technique, the study performed the Johansen cointegration test to ascertain the long-term association between the variables.

This is a crucial analysis that aids in determining whether the study's key variables have a stable, long-term relationship. The variables may need to be cointegrated when a linear combination of variables, such as I(0) and I(1), that are integrated of the same order results in a stationary series (Olokoyo, 2011). This suggests that they may have a long-term connection, meaning that while they may drift apart in the short term, they will eventually draw closer together. The Max-Eigen value and Trace statistics were used to calculate the number of co-integration vectors. The null hypothesis (*) stating that "there is no co-integrating equation (or none)" is rejected when the Trace statistics and Max Eigen statistics are greater than the critical value at the 5 percent level of probability or when the p-value is less than or equal to 5 percent, but accepted otherwise. Table 3 provides a summary of the findings from the cointegration test between the dependent variable and each of the independent variables.

Table 3: 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 from Eviews 10

As shown in Table 3 above, Trace statistics and Max.Eigen statistics are not co-integrated. There is no long-term link between the variables at a level of significance of 5%, as evidenced by the results in Table 5.3, which reveal that neither Trace statistics nor Max-Eigen statistics showed that the variables are co-integrated. Because the variables don't have a long-run relationship with one another, the study used lag one to generate the short-run VAR model.

Short-run Analysis: Vector autoregressive (VAR) model

As suggested by the AIC lag selection criteria, the study estimated the short-run VAR model using lag 1 because the variables do not have a long-term connection. The outcome of the output is displayed in Table 5.4 below:

Table 4: 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 via Eviews 10

The VAR estimates do not display the p-values for testing the correct parameters. But it is straightforward to assess whether or not a lagged variable has a significant adjusted effect on the related dependent variable based on each value of the t-statistics by using a critical point of $t_0 = 2$ or 1.96. If $/t_0/$ is greater than 2, or 1.96, it can be claimed that the pertinent independent variable has a large impact on the dependent variable (Agung, 2009).

The capital investment in crop production has a t-statistic of 0.53 according to the results in Table 4 above, which is less than 2 or 1.96. This shows that, despite the positive correlation, capital investment has little impact on agricultural yield. The coefficient of capital expenditure on crop output in the short run at a degree of probability of 5% predicts that a percentage increase in capital expenditure from the previous year will result in an increase in crop production of about 0.03 percent in the current year. This shows that a little increase in capital spending during the current year will have a positive but limited impact on agricultural yield the next year. The null hypothesis is accepted because the p-value, which is 59.43%, is also higher than the criterion of significance of 5%.

Second, the outcome of the recurrent expenditure also reveals that the t-statistics of recurrent expenditure is 0.38, which is smaller than 2 or 1.96. This indicates that although the coefficient is positive, recurrent spending also has a negligible impact on crop yield. A percentage increase in recurrent expenditure from the prior year will result in an increase in crop production of around 0.03 percent in the current year, according to the coefficient of recurrent expenditure on crop production in the short run at a 5% level of significance. The null hypothesis is likewise accepted because the parsimonious VAR Model's p-value of 70.18 percent suggests that the value is also greater than the 5 percent criterion of significance.

Discussion of Major Findings

i. According to the study from the parsimonious VAR Model, crop production and agricultural growth in Kogi State have a positive but minor association, with crop output increasing by 0.034 percent for every percentage rise in government capital expenditure. Additionally, the Parsimonious VAR Model's p-value of 59.43 percent showed that the value was not significant. Agriculture in Kogi State cannot flourish as a result of this level of effect. The results from the VAR model can be used to confirm the conclusions from the source data because they demonstrate that an increase in public spending will only result in a gain of 0.034 percent. This finding differs from that of earlier studies, which showed that capital investment significantly boosted agricultur-

al growth (Rufus & Oyewole, 2018; Chidinma & Kemisola, 2012; Uremadu et al.,2018; Idoko & Jatto, 2018; Brown & Ajayi, 2015). The study's findings corroborate past research' findings that capital investment has a modest but positive impact on agricultural growth (Iganiga & Unenhilin 2011; Mohammed, 2018 Yusuf & Mohammed 2017; Desmond et al., 2012).

ii. The parsimonious VAR Model used in the study also showed a positive but negligible link between crop production and agricultural growth in Kogi State, with crop production increasing by 0.034 percent for every percentage point rise in government recurrent expenditure. Agriculture in Kogi State cannot flourish as a result of this level of effect. Additionally, the Parsimonious VAR Model's p-value of 70.18 percent suggested that the value is negligible because the p-value is greater than 5 percent. The findings of this study are at odds with those of past studies, which revealed that recurrent spending had a significantly positive impact on agricultural growth (Tobechi, 2018; Mbanya et al., 2018 Uremadu et al., 2018; Oyakhilomen & Zibah, 2014; Chidinma & Kemisola, 2012; Rufus & Oyewole, 2018). The results of this study are consistent with those of other studies indicating that recurrent spending has minimal effect on agricultural growth, therefore this is not meant to imply that they are uncommon (Oguso, 2017; Mbanya et al., 2018; Okoro; 2013; Udoka & Anyingang, 2015).

Conclusion and Recommendation

This study found that public spending throughout the study period had a beneficial but little impact on crop production in Kogi state based on tests done on the data and interpretation of the findings. In light of the data and the aforementioned conclusion, the study suggests that:

a. The Kogi State government needs to take agricultural funding seriously by making sure that the money is released on time to the ministry and the appropriate parastatals so that crop producers can receive support and assistance to be able to have access to variety of agricultural resources, such as agro-equipment, which includes tractors, harvesters, corn milling machines, sprayers, ploughs, water pumps, and chemical equipment machines used on the farm. This can also be accomplished by making sure that funds are released in a timely manner and in adequate amounts to cover capital expenditures, as agricultural activities are time-sensitive.

b. The government must allocate more funds for recurrent related expenses to crop production in order to recruit more extension agents, who serve as intermediary between farmers and the government. Kogi State government can achieve this by establishing 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.

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