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THE EFFECT OF GOVERMENT EXPENDITURE ON AGRICULTURAL OUTPUT IN NIGERIA (1981-2018)

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ABSTRACT:
The research analyzed the effect of government spending on agricultural output in Nigeria (1981-2018) empirically. Time series data on agricultural output, recurring government spending on agriculture, agricultural government capital expenditure, and gross domestic product were collected over a period of 37 years from the statistical bulletin of the Central Bank of Nigeria (CBN). Descriptive and econometric analysis methods such as the Augmented Dickey-Fuller test, the Johanson co-integration test and the Ordinary Least Square (OLS) were applied in this research. The result revealed that capital and recurring expenditure on agriculture by the federal government were found to be positively linked to agricultural output. This study recommends that Nigeria's federal government should preserve quality and stability in its agricultural expenditure in order to achieve the significant productivity required.

KEYWORDS: Government, Capital Expenditure, agricultural output, Nigeria and econometrics

1. Introduction

In particular, less developed countries such as Nigeria are commonly viewed as pivotal to the overall economic growth and production of agriculture. A rise in the share of government spending, involving investments in irrigation, agricultural research and extension services to farmers, to 10 percent will bring 1.6 million people above the poverty line (Food and Agricultural Organization, 2009). Rising agricultural productivity has been a key emerging problem over the years for most African countries. Food production can be encouraged by improved agricultural productivity to outpace population growth (FAO, 2011). Nigeria, like other developing countries, is using public expenditure as a primary tool for fostering agricultural productivity.

In the context of the budget, public spending pays for growth for today and in the future. A controversial problem in economic growth has been the balanced budget requirements of the year. Government spending is a monetary weapon used by the government to support the economy. "Past studies and

literature have argued that agriculture is the prime sector for many developing countries in terms of its contributions to gross domestic product (GDP) and employment. The question is" what is to be maintained "and" what is to be produced. In addition, the majorities of people living in poverty worldwide have pursued and reside in rural areas for their income-generating activities from agriculture and agricultural related activities (Apata et al., 2016). It can therefore be concluded that agricultural growth is crucial both for economic development and for reducing poverty, especially in rural areas where most of the world's poor live. The development of productive agriculture in developing countries must be a top priority, and there must be effective government instruments in place to push cost-effective public expenditure on agriculture (Sauer and Gorton, 2012).

Agricultural expenditure is critical to the transformation of the agricultural sector in Nigeria, especially given the low level of investment in the sector, considering its enormous potential to create wealth, generate jobs and alleviate poverty. In terms of population, Nigeria is the largest nation in Africa (177 million) and among the largest in terms of land area (910,770 km2). Nigeria has the world's 27th largest economy, with US$ 523 billion in gross domestic product (GDP); its per capita GDP in 2013 was US$ 3,010 (World Bank 2014). The sector with the greatest potential for pro-poor development in the country is considered to be agriculture. Instead of large-scale commercial agriculture, which has greater potential for stimulating economic development, a large proportion of the agricultural labor force is engaged in subsistence farming (Olomola and Kwabena, 2014). Agriculture is the principal source of livelihood for the rural population of Nigeria, as recent poverty studies indicate. In addition, a higher level of poverty among households whose main source of income is agriculture is observed. Several reports, including the World Development Report on Agriculture (World Bank, 2007), argue that the efficient allocation of resources to the agricultural sector, such as the provision of services such as extension, credit, research and development (R&D) and control of plant and livestock diseases, is critical to the agricultural sector 's strong success. On average, however, less than 4% of Nigeria's overall public spending is allocated to agriculture (Olomola and Kwabena, 2014). This is far below the goal of the Comprehensive Africa Agriculture Development Programme (CAADP), whereby African governments are required to allocate to agriculture at least 10% of their national budgets.

The expenditure of the public sector (e.g. the budget) is one of the most directly successful resources used by governments to support agricultural development. The basic framework follows public expenditures at the federal and sub-national levels: discretionary spending and capital expenditure. Depending on the ministry, department or organization, this budget system is defined by various expenditure categories. Over the years, the nature of support provided to agriculture by different governments in the country has varied. Prior to independence, sectoral assistance was usually intended to grow the export crops needed by the overseas industries. Agricultural support took a much more systematic form after independence when the national development plans were prepared, and thus gave a more serious impression of what the government wanted to do for the sector (Okezie et al., 2013). The public sector involved in agricultural investment in Nigeria, as in other countries, is not monolithic, but consists, horizontally, of various agencies and parastatals, as well as, vertically, of various levels of government, that is, of federal , state and local governments. Specifically, in service delivery and public spending performance, the 36 states of the Federal Republic of Nigeria, the Federal Capital Territory, and the 774 local governments in Nigeria all play a critical role.

In developing countries like Nigeria, the underdeveloped condition of many markets makes government intervention in agricultural investment important. Agriculture investment in Nigeria is extremely poor. Between 1980 and 2011, less than 4% of total federal expenditure was allocated to agriculture, much lower than spending on other primary sectors, such as education, health and water. Nigeria's agricultural public expenditure, expressed as a share of total public expenditure, was lower than that of all other

African countries for which data were available in 2000 Mogues*et al.*, (2008) and was also significantly lower than the regional averages for Asia and Latin America.

A number of researchers have found that government spending on agriculture is directly related to economic development. That is calculated by government tax revenue, its share of GDP, growth in productivity, standard of living, developments in infrastructure, generations of jobs, and developments in labor (Harerimana, 2016). They recognize that, despite its neglect (Mogues et al., 2015), the agrarian sector continues to be the source of economic vibrancy in developed and emerging economies, mainly in Africa (IMF, 2013).

Despite the Food and Agricultural Organization's (FAO) recommendation that 25% of the government capital budget should be allocated to agricultural production, Nigeria 's various administrations have failed to comply with it, affecting government programs and industry policies (Iganiga and Unemhili, 2011). Nigeria has also consistently struggled to meet the Maputo declaration's 10 percent agricultural budget standard, which has contributed to negative repercussions for food security (Ochigbo, 2012). There have been several problems affecting the agricultural sector that have arisen from the poor output of the sector itself.

The rate of agricultural production has stagnated and decreased over the years, as has been shown, and has struggled to keep pace with the needs of a rapidly growing Nigerian population. As a result, import bills for food and industrial raw materials have risen steadily (World Bank, 2008). Based on this issue, as projected by the National Economic Empowerment Growth Strategy (NEEDS, 2005; IFAD, 2007; World Bank, 2008), the federal governments committed increased investments in food and agricultural production have not significantly reduced food imports from 14.5% of total imports to 5% in 2007. Therefore, this study explores the effects of government spending on agricultural production in Nigeria from 1981-2018.

2. Literature review

The art and science of crop and livestock production is agriculture. Agriculture includes, in its broadest sense, a whole range of technologies related to the production of useful plant and animal products, including soil cultivation, management of crops and livestock, and manufacturing and marketing activities. The word agriculture has been coined to include all the innovations that blend into the agricultural sector's total inputs and outputs. In this regard, agriculture includes the entire range of economic activities involved in the development and distribution of industrial inputs used in agriculture: the development of crops, animals and animal products on the farm, the processing of their materials into finished products and the supply of products at the time and place requested by consumers. Agriculture is the systematic cultivation and harvesting of plants and animals for the processing of fruit, feed, fiber and other products. It is the science of growing plants and animals by making use of the ground. It is the simplification of the food webs of nature and the rechanneling of resources for planting and eating of animals by humans (Olorunfemi, 2008). The economy of Nigeria was largely dependent on agriculture until the exploration of oil reserves began in the 1980s. (Ikala, 2010) shared the opinion that agriculture is the occupation of most citizens. The United Nations Organization (2008) has reported that over 50% of the world's population as a whole is engaged in or dependent on agriculture for a living, a general overview of the field. Farming, fishing, animal husbandry and forestry, on the other hand, are involved. According to Oji, (2011), agricultural sector is the largest sector in the Nigerian economy with its dominant share of the GDP, employment of more than 70% of the active labour force and the generation of about 88% of non-oil foreign exchange earnings.

The key tool used by the government to encourage economic growth for development is public spending, especially in developing countries. Through the provision of better infrastructure, education, health and increase in agricultural productivity and food security, development in the economic sector brings a better standard of living for people (Loto, 2011). Government spending is known to be a complex force that makes aggregate adjustments (Loizides and Vamvoukas, 2005). The government can compensate for a low rate of economic activity by growing or lowering government taxes (Shafuda, 2015). Almost all industries in developing countries ' national economies demand more budgetary allocations every year. For example, under the Maputo Declaration of 2003, the agricultural sector requires African governments to increase agricultural sector expenditure to at least 10% of national budgetary resources (New Partnership for Africa's Growth (NEPAD), 2011).

Public spending applies to government expenditures. It refers to the federal, state and local government costs in Nigeria. Public expenditure could also be described as all the expenses incurred by the government for its own maintenance, for society and the economy as a whole, and to support other nations, according to Bhatia (2008), cited in Aruwa (2010). Public expenditure thus covers all the expenditure incurred by the public sector to sustain it, for the benefit of the state, foreign bodies and other countries. It is also possible to describe public expenditure as expenditure incurred by the government in carrying out its operations. It encompasses pensions, civil and public servant pensions, road building and security, law and order maintenance, public works, etc.

Theoretical Framework

As the basis of this research, the Keynesian theory was adopted. Keynes considers public spending as an exogenous factor that can be used to increase performance as a policy instrument. According to the Keynesian school of thinking, the rise in government spending in an economy's total production results in a multiple rise. This is the multiplier impact of government spending, as posited by Keynes.

$$Y = C + I + G\ (X-M) \qquad (2.1)$$

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.

$$\Delta Y = 1\ \frac{(\Delta G)}{1-b} \qquad (2.2)$$

Where $= \frac{1}{1-b} = K$

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

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

$$\frac{\Delta Y}{\Delta G} = K \qquad (2.3)$$

Therefore, it is possible to use an expansionary fiscal policy to influence macroeconomic performance and thereby increase production growth. This theory suggests that government spending can make a positive contribution to an economy's sectoral growth (like the agricultural sector). In this theory, the production of the agricultural sector, consisting of the production of the four sub-sectors of the sector (crops, fisheries , forestry and livestock), is presumed to be a function of agricultural output consumption, agricultural investment, government agricultural expenditure and net agricultural output exports.

$$YA = CA + IA + GA + (XA - MA) \quad (2.4)$$

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 increases 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.

Few economists are held in greater regard than Robert Lucas, Jr., the macroeconomic theorist and Nobel laureate. His work over the last two decades has helped to revive macroeconomic growth research under the banner of the "Current Growth Theory." This literature initially concentrated on producing endogenous growth along the steady-state equilibrium direction of aggregative or single-sector models, introducing a dynamic optimization paradigm integrating individual preferences. Agriculture fits uncomfortably into such models because it uses non-reproducible inputs that are subject to declining marginal returns, such as property. The introduction of Engel's rule, which decreases the share of consumption expenditure in agriculture as revenue increases, further undermines the normative application of steady-state analysis (where equilibrium is equal to each per capita growth rate). A small stream of new growth literature has begun to examine the asymptotic transition course of dual-sector models in order to better understand the classical question of the role of agriculture in economic development. Such an approach allows for systemic improvements, including the risk that the agricultural sector's share will fall to zero in the long term. Nevertheless, the "Modern Growth Theory's ability to help our interpretation of the change is undermined by a reluctance to cope with the diversity of agricultural ecosystems and institutions. In his Lectures on Economic Development, for example, Lucas argues that it is reasonably straightforward to estimate the per capita incomes of pre-modern agrarian societies by simply studying a painting that an ex-student gave him. It portrays, against the idyllic background of some flowering fruit trees, a Korean farmer plowing his field behind an ox.

Empirical Review

(Nwosu*et al* . ,2010) analyzed the agricultural credit guarantee system: its roles, challenges and prospects in the search for agricultural growth in Nigeria by examining the system, its roles since its inception, problems and prospects in contributing to the agricultural development of the country. It was concluded that, because credit is required for improved productivity and agricultural growth, the three levels of government in Nigeria should provide the necessary support and publicity to farmers (particularly small farmers) for the scheme.

The effect of government spending on agriculture on economic growth in Nigeria over the years was examined by Ebere and Osundina (2012). A time series data of 33 years from Nigeria's Central Bank was used. In analyzing the secondary data, the Ordinary Least Square (OLS) data analysis technique was used. GDP has been used as a proxy for economic development, while agricultural production and government agricultural expenditure have been used as measures of government agricultural expenditure. The results show that agricultural production, government spending and GDP are positively related. A substantial relationship between government investment in the agricultural sector and economic development in Nigeria has been found to exist. The findings also showed that some issues such as insufficient funding, weak infrastructure, and others still face the industry.

Similarly, (Itodo*et al*., 2012) concentrated on out-of-Nigeria government spending on agriculture and agriculture and covered the period (1975-2010). The linearized club-Douglas function was the technique employed. The model component comprises government spending on the agricultural sector, loans and

advances from commercial banks to the agricultural sector, foreign direct investment in the agricultural sector, annual rainfall and the Agricultural Credit Guarantee Fund. A multiple regression of Agricultural output against its above-mentioned explanatory variables was calculated using ordinary least square econometric technique. The outcome of the projected model showed a positive relationship between Agricultural output and government spending, loans and advances from commercial banks, FDI, rainfall, and the Agricultural credit guarantee scheme. The model used also showed that other variables have a big influence on Nigeria's Agricultural output; these include FDI on the fund of Agriculture and Agricultural credit guarantee scheme. A negative constant estimate reflecting autonomous expenditure was also revealed in the model used, suggesting that the government was indulging in deficit financing over the time, resulting in an increase in the inflation rate.

The role of microfinance banks in financing agriculture in Yola North Local Government Area, Adamawa State, Nigeria, was studied by Madugu and Bzugu (2012). A total of 100 farmers selected by simple random sampling were collected from primary data. The method for data collection from the farmers was organized questionnaires. To interpret the data collected from respondents, basic descriptive statistics such as means and percentages, and frequencies were used. Results show that for the reason for which it was collected, 60.53 percent used the loan and 55.26 percent repaid the loan collected in (2010) from the Microfinance Bank Yola. 15.29 percent of respondents identified the high interest rate on microfinance bank loans as a major issue, 10.95 percent identified the delay in loan disbursement as their key concern, while only 1.18 percent of respondents reported that the loan they requested was not issued.

In Imo State, Nigeria, Ejike*et al*., (2013) analyzed Agricultural Credit Risk and Default Management by Banks. Using a standardized and validated questionnaire, the data were collected from 12 purposely selected bank branches and 72 randomly selected farm loan beneficiaries in the state. Means, percentages, frequency distribution and ordinary least square regression model were analyzed for data analysis. The standard deviations identified for the risk of agricultural credit to farmers were found to be N187,928.93, N146,586.56 and N154,805.41 respectively in the three zones (Owerri, Okigwe&Orlu zones) of the Imo State. The results of the regression analysis show that the relevant variables, supervision, feasibility, collateral, penalty, assessment and insurance, are important credit and default management techniques used in the study area by banks in their agricultural lending phase.

An assessment of credit facilities on agricultural production and productivity in Nigeria was analyzed by Imoisi and Ekpeyoung (2012): 1970-2010.0. Data was gathered from the Statistical Bulletin of the Central Bank of Nigeria and analyzed using the Ordinary Multiple Regression Least Square Method. The results showed that there is an essential relationship between loans and advances from Deposit Money Banks and agricultural production.

In their study "Determinants of Access to Credit among Rural Farmers in Oyo State, Nigeria," Ololade and Olagunju (2013) described constraints facing rural farmers in the acquisition of credit. The data was obtained using standardized questionnaires, which were administered to 210 respondents using a multi-stage sampling protocol. Through the use of descriptive statistics and the logit model, the data was analyzed. The binomial ($\sigma 2 = 90.32$) logit model's sigma values that calculated model significance showed that the data matched the model fairly well. The binomial logit model showed that sex (-2.0187), marital status (-1.9786), lack of guarantor (2.1517), high interest rate (6.8263) and access to credit had significant relationships. At 10%, the variables were important.

Ihugba*et al* ., (2013) in the study-Assessment of Nigerian agricultural expenditure: its relationship with agricultural production (1980-2011) using time series data from 1980 to 2011, collected from the Annual Report and Statement of Account of the Central Bank of Nigeria, the Journal of Food Research and the

Federal Statistics Office. The co-integration method based on unregulated Error Correction Model and Pairwise Granger Causality tests was used by the Engle-Granger two-step modeling (EGM) technique. From the research, our results suggest that this study co-integrates agricultural contribution to GDP (Gross domestic product) and total government agriculture expenditure.

On the other hand, Ekwere and Edem (2014) examined the evaluation of the Agricultural Credit Facility in Agricultural Production and Rural Development among small-scale farmers. 136 farmers who were selected using the stratified random sampling technique were given standardized questionnaires and the data obtained were summarized in percentages. Regression analysis was adopted to analyze the effects of socio-economic factors on farmers' loan size, while Cobb-Douglas Production Function Analysis (CDPFA) was used as the dependent variable to assess the relationship between key independent variables such as loan quantity, farm size, inputs and farm performance. The analysis revealed a significantly high (R2= 0.922) degree of relationship between the dependent variable and the independent variables; gender, age, education, family size, farm size, farming experience. The Adjusted coefficient (R2 = 0.918) revealed that 91.8 % variation in the size of loan explained by the changes in variables. The F-test significantly showed the joint effect of variables in the model on the size of the loan. And on hypothesis two, the independent variables; loan amount, farm size, and inputs explained the variation in the total value of the output of the farmers. The study, therefore, shows that access to agricultural credit impacts positively on agricultural production.

Iyanda*et al*., (2014) assessed social Capital and Access to Credit among Cassava Farming Households (CFHs) in Ogun State, Nigeria. One hundred and twenty CFHs were surveyed using a multi-stage sampling technique. Analyses included descriptive statistics and regression technique. Social capital dimensions considered are density of membership index, cash contribution index, labour index, decision-making index, meeting attendance index, and heterogeneity index and the obtained indices were 49.5%, 35.5%, 51%, 57.3%, 55.1%, and 48.3% respectively. Some 44.2% and 35% of respondents sourced capital from personal savings and rotating savings & credit associations respectively, and the mean credit granted represented 45.5% of CFHs' credit needs. Logistic regression analysis of access to credit revealed that increasing values of decision-making index, age, and payback period correspond to increased odds of having access to credit. Conversely, increasing values of heterogeneity index and household size correspond to decreasing odds of having access to credit.

Olomola and Gyimah (2014) explored the demand for loans and rationing among Nigeria's small-scale farmers. The research uses primary data collected from 1,200 small-scale farmers via a 2013 survey across the country's six geographical zones. The research methodologically extends credit rationing analysis beyond quantity rationing and introduces explicit econometric models to evaluate the determinants of three forms of credit rationing: rationing of quantities, rationing of risks, and rationing of prices. To determine the determinants of credit rationing, the apparently unrelated regression model is used. The findings indicate that it is more likely that farmers will be refused than that a loan sum lower than what was demanded will be granted to them. We find that gender, geographical location and marital status have no statistically significant impact on the likelihood of quantity rationing for farmers.

Wangusi and Muturi (2015) examined the effect on agricultural production of agricultural public spending: Kenya's case study. A descriptive research design was adopted in the study and a simple regression model was used to assess the importance of public agricultural expenditure on agricultural productivity. Given the inefficient and unreliable empirical results due to sharpness in time series in developing economies such as Kenya, the series was transformed into natural logarithms. Also, stronger and unbiased empirical evidence is given by the log-linear specification. Correlation analysis was used to interpret the data and determine relationships between variables with the correlation (R) and p-value of significance as the key

deciding factors. The findings suggest that the agricultural sector has a positive and important relationship between agricultural production and public expenditure.

A correlation between Federal Government Spending on Agriculture, Agricultural Production Response and Economic Growth in Nigeria (1979-2013) was investigated by Kareem *et al*., (2015). To evaluate the mentioned goals, a secondary source of data was obtained from the 2014 edition of the Central Bank of Nigeria (CBN) statistical bulletin. The time series data ranged from 1979-2013 and covered 35 years. The findings showed that there is a fluctuating pattern in agricultural government spending over the years under study. The results of the regression show that the explanatory variable (government expenditure) explained about 16 percent of the total variation in the dependent variable (Real GDP), while the explanatory variable (government expenditure) explained about 21 percent of the total variation in the dependent variable (agricultural output). The results also revealed a negative correlation between public sector expenditure on agricultural production and economic development.

Ewubare and Eyitope (2015) used quasi-experimental research design during the analysis of the impact of public spending on agricultural production output in Nigeria. In its research, the study employed time series data. Data acquired in the study were collected from the annual statistical bulletin 2013 of the Central Bank of Nigeria and the National Bureau of Statistics 2013. For the study, the ordinary minimum square of multiple regressions, the Johansen cointegration techniques and the model of error correction were used. The statistical program E-view 7.1 was used for the analysis. The findings showed that the coefficient of determination was 0.9468 and that the ECM coefficient had a negative and statistically important indication. The value of Durbin / Watson is 1.954 and the f-statistics are important at the 5 percent level of 33.84. Specifically, the two and three lag forms of the GEA explanatory variables were positive and statistically significant. At the 5 percent stage, the DBA was positive but not statically important. The GCF coefficients were correctly signed and statistically relevant at 5 percent level for the two and three lag periods.

With time series data obtained from Pakistan Statistical Year Books and Pakistan Economic Survey, 2015, Chandio*et al*., (2016) analyzed the effect of government spending on the agricultural sector and economic growth in Pakistan over the period 1983-2011. The current research used the Enhanced Dickey-Fuller (ADF) unit root test, the Johansen Co-integration test and the Ordinary Least Square (OLS) technique as analytical data analysis methods. The Johansen Co-integration test results have shown that there is a long-term relationship between government spending on agriculture, agricultural development and economic growth in Pakistan. On the other hand, the empirical results of the regression analysis showed that government spending and agricultural outputs have a big effect on Pakistan's economic development.

Exploring public spending and agricultural development was studied by Apata*et al*., (2016). Comparative study of agricultural development in Nigeria and Malaysia (1970-2010). Secondary data used and compiled from Government Finance Statistics of FAOSTAT and International Monetary Fund (various issues) from 1970 to 2010. A basic version of the theory of endogenous growth has been introduced. Results showed that government spending in Nigeria as a percentage of GDP witnessed major public financing in agriculture in the 1960s-1980s, but the decrease in the 1990s-2010, while Malaysia experienced continuity in both agricultural public financing and development.

In the course of the analysis, Matthew and Mordecai (2016) used the Enhanced Dickey-Fuller test, Johansen Cointegration test, Error Correction Method (ECM) and Granger Causality test as analytical instruments. Public agricultural spending, commercial bank loans to the agricultural sector and interest rates have been clarified by agricultural production. The Johansen Cointegration test revealed that a long-

term relationship exists between agricultural production, public agricultural expenditure, agricultural sector commercial bank loans and interest rates in Nigeria. The results of the parsimonious ECM model showed that public agricultural spending has a major negative impact on agricultural production, while agricultural sector commercial bank loans and interest rates have marginal positive effects on agricultural output in Nigeria.

The effect of formal credit on agricultural production was also examined by Chandio*et al*., (2016): Evidence from Pakistan using secondary data from 1996 to 2015. In order to verify the stationary nature of the data, the Augmented Dickey-Fuller (ADF) test was used. In comparison, the Johansen Co-integration (Trace Statistic) test was used to assess if there is a long-term relationship between formal loans and agricultural production. The (OLS) approach has been used to estimate the effect of formal credit on agricultural production. The findings of the empirical regression suggest that the explanatory variable (formal credit) was statistically 0.860350.0-coefficient. This means that a credit increase of 1 percent would raise agricultural production by 0.86 percent. It is clear that there is a positive and valuable effect of formal credit on agricultural production.

Dori (2016) reviewed the effect of the Agricultural Credit Guarantee Scheme Fund of the Central Bank of Nigeria on Nigeria's Agricultural and Economic Growth. The results of the study showed that the scheme had improved the credit flow to Nigerian farmers. It expands the acquisition and adoption of modern farming inputs by farmers (beneficiary), hectare use, additional labor force, productivity, income earnings and standard of living. Food production, food security, import substitution for locally produced food , agricultural export commodities, GDP, foreign exchange earnings and rural development of Nigeria were also improved by the scheme.

Onuoha*et al*., (2016) explored Nigeria's agriculture-poverty nexus. The research covered the time period between 1990 and 2015. In order to first establish the causal relationship between Agric production and poverty in Nigeria, the Granger causality test was adopted while the standard least square econometric technique was used to analyze the effect of agriculture on poverty reduction. The outcome of the findings showed that there was no causal correlation between agriculture and poverty reduction in Nigeria during the study period. The study further revealed that agricultural output did not have a significant impact on poverty reduction in terms of crop production, livestock management and fisheries, while agricultural output in forestry reportedly had a significant impact on poverty reduction.

2. Methodology / Sources of Data

The data for this study is majorly secondary. Therefore, this study employed secondary data obtained from the Central Bank of Nigeria (CBN) Statistical bulletin and Bullions of various years. (1981-2018)

Model Specification
Multiple Linear Regressions

Based on the New Growth theory which this study adopted which is centered on the inverse correlation that exists between the share of the national labour force in agriculture and its level of per capita income as well as allows for structural shifts that includes the possibility that the share of the agricultural sector declines toward zero over the long run which is similar to the Nigerian situation, the following model is formulated:

$$AGO_t = \beta_0 + \beta_1 GREX_t + \beta_2 GCEX_t + \beta_3 GDP_t + \mu_t \quad \ldots\ldots (1)$$

Where:

AGO_t = Agricultural output at time *t*

GREXA = Government recurrent expenditure in agriculture at time *t*

GCEXA = Government capital expenditure in agriculture at time *t*

GDP = Gross Domestic Product at time *t* measured as economic growth
β_0 = Intercept of the model
β_1, β_2, and β_3 are the parameters
μ= error term
t = time period

Error Correction Model (ECM)

$$\delta(\mathbf{AGO})_t = \beta_0 + \beta_1\sum\delta(\mathbf{GREXA})_{t-1} + \beta_2\sum\delta(\mathbf{GCEXA})_{t-1} + \beta_3\sum\delta(\mathbf{GDP})_{t-1} + \varphi\mathbf{ECM}_{t-1} + U_t \quad \ldots (2)$$

Where:

δ – is change operator.

$_{t-1}$ – is the lag term to be decided by lag selection criteria.

Φ – is the coefficient of error correction (rate of equilibrium restoration of the model).

3. Results and Interpretations

Table 1: Interpretation of Multiple Regressions

Dependent Variable: AGR_OUTPUT_IN_BILLION_N
Method: Least Squares
Date: 10/14/20 Time: 07:14
Sample: 1981 2018
Included observations: 41
HAC standard errors & covariance (Bartlett kernel, Newey-West fixed bandwidth = 4.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CAP_EXP_IN_BILLION_N	105.4224	30.63211	3.441567	0.0016
RECUR_EXP_IN_BILLION_N	4.358294	5.178595	0.841598	0.4059
C	458.6262	867.0444	0.528954	0.6003

R-squared	0.445180	Mean dependent var	4224.136
Adjusted R-squared	0.412544	S.D. dependent var	5532.256
S.E. of regression	4240.236	Akaike info criterion	19.62023
Sum squared resid	6.11E+08	Schwarz criterion	19.75085
Log likelihood	-359.9743	Hannan-Quinn criter.	19.66628
F-statistic	13.64058	Durbin-Watson stat	0.641762
Prob(F-statistic)	0.000045	Wald F-statistic	6.749533
Prob(Wald F-statistic)	0.003400		

Source: Eviews 9 Output

$$\boldsymbol{AGO_t} = 458.62 + 4.358\ \mathbf{GREXA}_t + 105.422\ \mathbf{GCEXA}_t$$

S.E	**(**867.04)	(5.1785)	(30.63)
T-test	**(**0.528)	(0.841)	(3.441)
P-value	**(**0.6003)	(0.4059)	(0.00016)

F= 13.64 R-sq = 0.445 N= 37

The value of the intercept 867.04 is the predicted outcome when the independent variables are equated to zero. Government capital expenditure shows a coefficient value of (β= *105.42*, t-test = 3.44 and p < 0.05). These values indicate that a significant and positive relationship exists between government capital expenditure and agricultural output in Nigeria. Therefore, if all other independent variables are held constant, every 1 unit increase in the level of government capital expenditure will increase the agricultural output by 105.42 units. The coefficient of government recurrent expenditure is positive and statistically insignificant at 5% to agricultural output in Nigeria, (β= *4.358*, t-test = 0.8415 and p > 0.05). This implies that increase in the government recurrent expenditure by 1 unit will lead to increase in agricultural output by 4.358 units. The coefficient of determination shows that the relationship between the variables is 0.445, implying that there is a strong positive relationship between the variables. It also means that 44.5% changes in the agricultural output are as a result of the changes in the independent variables. The F-test (ANOVA) with a value of 13.64 and p-value of 0.000 shows that there is a strong linear relationship between federal government expenditure and agricultural output in Nigeria. A robustness test was conducted for the model, especially Heteroskedasticity and Autocorrelation consistency (HAC). The HAC test corrects for the problems of heteroskedasticity and Autocorrelation (Gujarati, 2004).

Error Correction

Table 2: Error Correction Model

Dependent Variable: D(AGR_OUTPUT_IN_BILLION_N)
Method: Least Squares
Date: 10/14/20 Time: 7:35
Sample (adjusted): 1981 2018
Included observations: 41 after adjustments
HAC standard errors & covariance (Bartlett kernel, Newey-West fixed bandwidth = 4.0000

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(CAP_EXP_IN_BILLION_N)	-14.87544	15.70200	-0.947360	0.3506
D(RECUR_EXP_IN_BILLION_N)	0.093131	0.757069	0.123015	0.9029
ECM(-1)	-0.201982	0.112838	-1.790025	0.0089
C	406.3574	297.8983	1.364081	0.1821

R-squared	0.136154	Mean dependent var	453.5929
Adjusted R-squared	0.055168	S.D. dependent var	2266.661
S.E. of regression	2203.251	Akaike info criterion	18.33769
Sum squared resid	1.55E+08	Schwarz criterion	18.51364

Log-likelihood	-326.0785	Hannan-Quinn criter.	18.39910
F-statistic	1.681209	Durbin-Watson stat	2.523921
Prob(F-statistic)	0.190651	Wald F-statistic	1.277426
Prob(Wald F-statistic)	0.298774		

Source: Researcher's computation with Eviews 9 Output

Table 2 shows the result of the error correction model (ECM). The value of the ECM approximately is 20.2%, meaning that the disequilibrium is corrected to equilibrium at a speed of 20.2% in the following year.

Discussion of Findings

It can be deduced from the outcome of the regression that government capital expenditure on agricultural production is positive and important. The outcome is consistent with the results of Ebere and Osundina (2012), which examined the effects of government spending on agriculture over the years on Nigeria's economic development. The results show that agricultural production, government spending and GDP are positively related. There has been an important relationship between government spending on agriculture and economic development in Nigeria.

Summary of Findings The influence of government spending on agricultural production in Nigeria from 1981-2018 was examined in this report. The study used a multiple linear regression that was subjected to validation tests to ensure that the findings obtained did not yield any false results that could not withstand the time test. For this analysis, the model and data passed the robustness test, which confirms the validity of the data and the model respectively. The results of the regression estimation showed the study's following results.

A positive and important impact of the expenditure of government resources on agricultural development in Nigeria. The optimistic and negligible effect of recurrent government spending on agricultural production in Nigeria. Finally, both government agricultural capital expenditure and government agricultural recurrent expenditure have shown that government (capital and recurrent) expenditure has been consistently stable for the period under review and has led to a positive increase in agricultural production.

3. Conclusion/Recommendations

In recent years, the Nigerian agricultural sector has been made less competitive by overvalued currencies, inappropriate pricing policies and rural-urban migration, creating a shortage of farm labor. Decreasing arable land area per capital, irregular rainfall and climate change, poor funding, poor supply of inputs such as fertilizers, agro-chemicals and improved seeds are factors that battle against high agricultural production in Nigeria. There is evidence that rapid economic development cannot be accomplished without well-focused agricultural productivity enhancement programmes being placed in place. In this report, the results showed that agricultural government capital expenditure increased agricultural production by 105.42 billion naira in Nigeria. Consequently, recurrent government spending on agriculture raises agricultural production by 4.35 billion Naira. It is therefore concluded that government spending (capital and recurring) has a positive effect on agricultural production in Nigeria. Therefore, this study recommends among other things that the Nigerian federal government should preserve continuity in the level of its agricultural capital expenditure.

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