An Analysis of Impact of Government Expenditure on Agricultural Develpoment and Economic Growth in Nigeria: An Empirical Investigation (1980-2019)

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Abstract
Purpose: *This article investigated the impact of government expenditure on agricultural development and economic growth in Nigeria over the period 1980-2019*
Design\methodology: *The procedure for this investigation was achieved with the use of Cobb-Douglas production function*
Findings: The findings have shown that *that government capital expenditure on economic services has a positive relationship with RGDP, while, government recurrent expenditure on agriculture was found to have a negative relationship though significant impact on RGDP) whereas negative impact was found between government expenditure and economic growth. This means that an increase in government recurrent expenditure on agriculture brings about reduction in RGDP. Due to improper use of resources which was supposed to be invested towards agricultural development and economic growth. On the relationship between agricultural output and economic growth of Nigeria, the result shows agricultural output has a positive but insignificant impact on RGDP. An increase in agricultural output brings about an increase in RGDP which means economic growth.*
Research limitation/ implication: *In policy terms, considering the fact that Agricultural productivity plays significant impact in stimulating RGDP for the period of 1980-2019 agriculture is really responding to some new policies such as anchor borrower's schemes. With this one can conclude that if proper monitoring and evaluation is taking into consideration, the study rest assured that in the long run, Agricultural productivity will enhance the attainment of food security and growth sustainability.*
Key words: *Government expenditure, agricultural development and economic growth, cobb-Douglas production function, Nigeria.*

I.   Introduction

The role of agricultural sector to the economy cannot be overemphasized considering its building roles for sustainable development, in terms of employment potentials, export and financial impacts on the economy. In the world widely, agricultural sector acts as the catalyst that accelerates the pace of structural transformation and diversification of the economy, enabling the country to fully utilize its factor endowments, depending less on foreign supply of agricultural product or raw materials for its economic growth, development and sustainability, shola, S. A., Olaleye, S.O., Ajayi E.O, & Femi, E.(2013).

Government expenditure is perhaps the single most important policy instrument available to government of most developing countries for promoting growth and equitable distribution of income. An important problem facing most countries is the low growth of government revenue as variance with rapid growth of public expenditure stimulated by the increase in demand for improved economic welfare by the people. This however leads to an increase in budget deficits with adverse effects on the economy.

 Agriculture remains the most important single activity of the Nigerian economy, with about 70% of the working population still engaged in it. Despite the predominance of the oil and gas sector in Nigeria agricultural sector still remains source of economic resilience in the Nigerian economy.

Government spending in Nigeria has continued to rise due to the huge receipts from production and sales of crude oil, and the increased demand for public (utilities) goods like roads, communication, power, education and health. There is increasing need to provide both internal and external security for the people and the nation. Available statistics show that total government expenditure (capital and recurrent) and its components have continued to rise in the last three decades. For instance, government total recurrent expenditure increased from N4, 805.20 million in 1980 and N36, 219.60 million in 1990 and further to N1, 589,

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270.00 in 2007. On the other hand, government capital expenditure rose from N10, 163.40 million in 1980 and N24, 048.60 million in 1990. Capital expenditure stood at N239, 450.90 million and N759, 323.00 million in 2000 and 2007 respectively. The various components of capital expenditure have risen between 1980 and 2018,Robinson M.O., Eravwoke K.E., Ukavwe& Andrew (2014).

However, the rising government expenditure have not translated to meaningful growth and development, as Nigeria ranks among the poorest countries in the world. In addition, many Nigerians have continued to wallow in abject poverty, while more than fifty percent live on less than US$1 per day. Moreover, macroeconomic indicators like balance of payments, import obligations, inflation rate, exchange rate, and national savings reveal that Nigeria has not fared well in the last three decades Bright O., Henry O., & Mercy O., (2012)

Although Nigeria has been an agrarian economy and has targeted the agricultural sector as the principal source of growth and revenue, the role of agriculture in the economy has since independence seen to be experiencing a downward trend due to lack of finance Binuomote S. O. Adeleke O. A. & C. O. Omodunbi. (2012).

The mismatch between the performance of the Nigerian economy and massive increase in government total expenditure over the years raises a critical question on its role in promoting economic growth and development. Some authors contend that the link between public expenditure and economic growth is weak while others report varying degree of causality relationship in Nigeria (Onakoya. A.B. and Somoye, R. O.C. 2013) .The question which arises therefore is what is the relative contribution of government expenditure on agricultural development and economic growth in Nigeria? This study aims at investigating the impact of government expenditure on agricultural development and economic growth in Nigeria from 1980 to 2019.

The main objective of this study is to examine the impact of government expenditure on agricultural development and economic growth in Nigeria.

II.   Research Hypothesis

H_o: Government expenditure has no significant impact on agricultural development and   economic growth of Nigeria.

H_1: Government expenditure has significant impact on agricultural development and economic growth of Nigeria.

2.1 Conceptual, Theoretical Framework and Empirical Review.

Agriculture in its broadest sense, comprises the entire range of technologies associated with the production of useful products from plants and animals, including soil cultivation, crop and livestock management, and the activities of processing and marketing. The term agribusiness has been coined to include all the technologies that mesh in the total inputs and outputs of the farming sector. In this light, agriculture encompasses the whole range of economic activities involved in manufacturing and distributing the industrial inputs used in farming: the farm production of crops, animals and animal products, the processing of these materials into finished products and the provision of products at a time and place demanded by consumers, (Ishola et al. 2013).

The role of agriculture in reforming both the social and economic framework of an economy cannot be over emphasized. In effect, it has been the main source of gainful employment, sources of food for the nation to feed its teeming population, a regenerative source of foreign exchange earnings, a means of providing the nation's industries with local raw materials and a reliable source of government revenue. Aminu and Anono (2012) public expenditure can be seen as an outflow of resources from government to other sectors of the economy whether it is required or not, it is categorized into capital and recurrent expenditure (CBN, 2001). Public expenditure is an important instrument for government to control the economy. It is indeed used to fill the gaps that are untouched in the market economy through the provision of public utilities, healthcare, and social securitiese.tc. (Manh&Terukazu 2005). Government uses its expenditure and revenue activities to effect the desired change in income, production, price and employment. According to Scott (2010), Similarly, Sareen (1990) saw public expenditure as the expenditure of central, regional and local government organization on intermediate and final goods and services. This is undertaken to achieve a variety of goals including the redistribution of benefit in kind provision public goods, the correlation of disequilibrium in markets and the regulation of industry.

The size and structure of public expenditure will determine the pattern and form of growth in output of the economy. The structure of Nigerian public expenditure can be broadly categorized into capital and recurrent expenditure. Recurrent expenditure is referred to as government expenses on administration such as wages, salaries, interest on loans maintenance etc. whereas capital expenditures are expenses on capital project like roads, airports, education, telecommunication and electricity generation etc.

One of the main purposes of government spending is to provide infrastructural facilities and the provision and maintenance of these facilities require a substantial amount of spending. Expenditure on infrastructural investment and productive activities (in state owned enterprises) ought to contribute positively to growth, If government spending is used to finance investment in roads, education, health, agriculture and other areas, these investments will have direct social and economic beneficial effects on the country. (Tajudeen, 2013).

Over the years, government has almost been the sole provider of financial and other capital resources to support agriculture. Government has attempted to increase her expenditure on agriculture through budgetary allocation and through the provision of cheap and readily available credit facilities, (Nwosu 2004). Nwosu 1995 found that over the years, the government budgeting allocation has become an important determinant of agricultural output in Nigeria.

Food and Agricultural Organization FAO recommended that 25 percent of government capital budget allocation be assigned to the agricultural development capital budget. In Nigeria, this has not been achieved by government, thereby affecting government programs and policies for the sector. In terms of capital allocation to agriculture, it was average of 4.74 per cent from 1970-1980. But, from 1980-2000, it rose to 7.00 percent and 10 percent from 2001-2007 though revealing an increase, but still falls short of FAO recommendation of 25 percent. The result of the unstable expenditure in the agricultural sector by the government over the years was the dismal performance of the sector. The performance of agricultural output could be measured by its contribution to Gross Domestic Product (GDP) until the Nigerian civil war of 1967 – 70, agriculture dominated Nigerians economy contributing some 53 per cent to GDP in 1965. By 1984 it percentage share had almost halved.

Jhingan (2006), asserts that economic growth, related to the quantitative and sustained increases in the country's per capita income or income accompanied by expansion in its labour force, consumption, capital, and volume of trade. On the contrary, Samusundra, (2010) defined economic development as a structural change in the economy thereby depleting the agricultural sector and increasing the outputs of industrial, manufacturing and other sectors of the economy. More so, economic growth is the increase in the value of goods and services provided by an economy. It is the process by which a country's wealth increase overtime. Economic growth is a term used to indicate the increase of per capita GDP or other measures of the aggregate income.

with these theoretical explanations, one may rightly argue that a given economy can growth without development. But it is very difficult if not in possible for someone to imagine development without economic growth particularly when population is rapidly growing (Jhingan, 2006).

The Growth Stages Model
Basically, the theoretical model that links agricultural development, economic development with government expenditure is the growth stages model based on Rostows1960 general model and Jogensen's 1961 dynamic dual economy models. The sequential stages in Rostow models are:
1.   Traditional society.2. Preconditions for take-off.3.The take-off 4.The drive to maturity and
5.The age of high mass consumption.
Over time, growth of the leading sector slows down because of saturation of demand and other factors while another sector moves ahead. Agriculture was considered the leading in the initial stages thereby highlighting the role that the agricultural sector plays in accelerating economic growth. In particular, the stage-wise model summarizes agricultural development as consisting of three stage – tradition or static, transitional and dynamic. Critics point to its overly symbolic nature and naïve assumptions of linear patterns of agricultural growth. Contemporary evidence shows that national economies are characterized by asymmetric growth dynamics across sectors. The high payoff input model emphasized that agricultural growth depends on the availability and price of modern agricultural factors: i) Investment in agricultural research ii) Investment in capabilities for the production, supply and iii) distribution of modern inputs and Investment in human capital (that is, capabilities of farmers to acquire and use new knowledge and inputs).
 Based on the above discussed theoretical models of agricultural this research work follows the growth state model of agricultural growth because it is the model with less criticism and the model show the important of agriculture in various stages of economic development (Rostow,1960).

III.   Methodology
3.1 Model Specification
Model which specifies that economic growth (RGDP) is significantly influenced by government recurrent expenditure on agriculture, government capital expenditure on economic services, real gross domestic product on agriculture and agricultural output. The basis of this research model is adopted from the Cobb - Douglas production function which takes the form: -

$$Q = f(AL^{\alpha} K^{\beta})$$ -- (3.1)

Where Q is the output; A is the level of technology; L is the labor; K stand for capital; while α and β stand for the coefficients of labor and capital respectively.

Equation (i) can be transformed by incorporating Government recurrent expenditure on agriculture (GREA) as a proxy to labor (L) and government capital expenditure on economic services (GCEES) as a proxy to capital(K), while agricultural output, as factor a inputs that determines real gross domestic product(RGDP). The functional relationship can be expressed as follows;

$$RGDP = f(RGDPA, GREA, GCEES, AGOU)$$ ---(3.2)

Where:

$RGDP$ = Real Gross Domestic Product.

RGDPA =Real gross domestic product on agriculture.

GREA= Government recurrent expenditure on agriculture.

GCEES =Government capital expenditure on economic services.

AGOU = Agricultural output

From equation (ii) above, we can generate an econometric model by incorporating intercept (β_0) and disturbance variable ($\sum$) as follows:-

$$RGDP= \beta o + \beta_1 RGDPA + \beta_2 GREA + \beta_3 GCEES + \beta_4 AGOU + \sum$$ ------------------ (3.3)

Finally, a time series model can be generated by adding (*t*) subscribe to model (iii) with the exception of intercept of the model (β_0) as:-

$$RGDPt = \beta o + \beta_1 RGDPA_t + \beta_2 GREA_t + \beta_3 GCEES_t + \beta_4 AGOU_t + \sum_t$$ ------------------ (3.4)

Equation (iv) is our final model for estimating the impact of government expenditure on agricultural development and economic growth (RGDP) in Nigeria for the period of 36 years.

3.2 Estimation Techniques

A time series data covering (1980-2019) a period of 39 years was estimated using Augmented Dickey Fuller (ADF) unit root test, Vector Autoregressive (VAR) method, Lag Length Selection Criteria, Johansen co-integration technique, Vector error correction model (VECM) and Ordinary least square Estimator

4.1 Empirical results

This presents data analysis, result interpretation of empirical findings on the: Impact of Government Expenditure on Agricultural Development and Economic Growth in Nigeria. The data were analyzed using Econometrics software (E-views 9).

4.1 Unit Root Test

Using Augmented Dickey-Fuller Test

Table 4.1

Unit Root Test

Variables	Order of integration	Augmented Dickey Fuller Test Critical Values				
		1%	5%	10%	ADF Statistic	Prob.
Δ_2 RGDP	I (2)	3.646342	2.954021	2.615817	7.558474	0.0000
RGDPA	I (0)	3.632900	2.948404	2.612874	4.263012	0.0019
ΔGREA	I (1)	3.639407	2.951125	2.614300	9.203052	0.0000
ΔGCEES	I (1)	3.639407	2.951125	2.614300	7.689416	0.0000
Δ_2 AGOU	I (2)	3.653730	2.957110	2.617434	7.633912	0.0000

Source: (Computed by author using E-views 9)
1. Δ= Difference Operator
2. I(d) = No. of times of integration
3. Level = 10%, 5% and 1% level of significance

The results on table 4.1 above shows that all the variables have been found to be stationary at level, first and second differencing at 1%, 5% and 10% level of significance respectively, i.e. one of the variable is integrated of order one (0), 2 of the variables are integrated of order (1) while the remaining 2 variables are integrated of order (2). We therefore, proceed to Co-integration tests between the variables to detect any possible long-run relationship between the series.

4.1.2 Vector Auto correlation Estimate.
VAR estimation enabled the determination of the optimal lag length selection while serial correlation test was conducted to determine the stability of the VAR equations and the residuals were not auto correlated.
The result of the Serial Correlation LM test is presented below

Table 4.1.2
Serial correlation LM test

Lags	LM-Stat	Prob.
1	27.90367	0.3123

Prob from chi square with 25 df
Source:(Computed by author using E-views 9) (2019)

From the table 4.2.1 above it can be observed that there is absence of serial correlation. In other words the residual are not auto correlated.

Table 4.1.3
VAR Lag Order Selection Criteria

Lag	Logl	LR	FPE	AIC	SC	HQ
0	-1538.112	NA	1.82e+33	90.77128	90.99575	90.84783
1	-1407.858	214.5356*	3.79e+30*	84.57988*	85.92667*	84.03918*

Source: (computed by author using E-views 9) (2019)
*Indicates lag order selection by the criterion. From the table 4.2.2 above, LR, FPE, AIC, SC, and HQ selected lag 1 as the optimal lag thus, lag 1 was selected for the estimation procedure as presented on the table.

4.2.1   Johanseen Co-integration Test
The tables below compares unrestricted co-integration rank test obtained from the trace and maximum Eigen value test with the corresponding critical values due to Mackinnon. The result of the two tables below (table 4.2.1 and 4.2.2) indicates that trace statistics shows an evidence of (2) co-integrating equations and maximum Eigen statistics shows an evidence of one (1) co-integration equation at 5% critical value, which implies an existence of unique long-run relationship between (RGDP) and other variables of study in the model.

Table 4.2.3
Unrestricted Co-integration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	5% Critical Value	Prob.**
None*	0.687807	90.49751	69.81889	0.0005
At most 1*	0.551746	52.08107	47.85613	0.0190
At most 2	0.416639	25.60202	29.79707	0.1410
At most 3	0.200940	7.816681	15.49471	0.4852

Source: (Computed by author using E- views 9) (2019)
Trace test indicates 2 co-integrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

From the table above, the trace statistic at (None * = 90.49751) exceeds its critical value of 69.81889, the null hypothesis of no co-integrating equations is rejected. Also the trace statistic at (At most 1* =52.08107) is greater than it critical value of 47.85613, the null hypothesis that there is one or fewer co-integrating equations is rejected. Also because the trace statistic at (At most 2 =25.60202) is less than its critical value of 29.79707, the null hypothesis that there are two or fewer co-integrating equation can be accepted. Finally because the trace statistic at (At most 3 =7.816681) is less than its critical value of 15.49471, the null hypothesis that there are three or fewer co-integrating equation is also accepted

Table 4.2.3
Unrestricted Co-integration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	5% Critical Value	Prob.**
None*	0.687807	38.41644	33.87687	0.0134
At most 1	0.551746	26.47905	27.58434	0.0687
At most 2	0.416639	17.78533	21.13162	0.1381
At most 3	0.200940	7.402530	14.26460	0.4427

Source: (Computed by author using E-views 9) (2019)

Trace test indicates 1 co-integrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

The Eigen value shown in table 4 .3.2 also indicates the presence of co-integration. The max Eigen statistic at (None*=38.41644) exceeds its critical value of 33.87687, the null hypothesis of no co-integrating equations is rejected. Also the max Eigen statistic at (At most1=26.47905) is less than its critical value of 27.58434, the null hypothesis that there is one or fewer co-integrating equations are accepted. Also because the max Eigen statistic at (At most2 = 17.78533) is less than its critical value of 21.13162, the null hypothesis that there are two or fewer co-integrating equations is accepted.

Therefore, since we found one co-integrating vector, the economic interpretation of the long-run on Real Gross Domestic Product (RGDP) in Nigeria can only be obtained by normalizing the estimates of the unrestricted co-integrating vector on the Real Gross Domestic Product. The co-integrating equations identified, can then be used as an error correction term in the error correction model (ECM).

4.2.4 Vector Error Correction Model (VECM)
Table 4.2.4
VECM OLS Estimates of RGDP

	Coefficient	Std. Error	t-Statistics	Prob.
C(1)	0.053946	0.049907	1.080941	0.2893
C(2)	0.516015	0.160335	3.218343	0.0033
C(3)	0.005485	0.023491	0.233508	0.8171
C(4)	-41.48916	20.06215	-2.068032	0.0483
C(5)	7.792307	3.257341	2.392229	0.0240
C(6)	0.000840	0.000520	1.616827	0.1175
C(7)	421.9790	261.6445	1.612795	0.1184

R-squared = 0.618065 Adjusted R-squared=0.533191 Durbin Watson D* = 1.704285
F statistics = 7.282114 Prob. (F-statistic) = 0.000106
From table 4.2.4, it can be seen that there is no long-run relationship among the variables.i.e. there is a divergence away from equilibrium.
R-squared and Adjusted R-squared which are 61% and 53% respectively, this means that 61% and 53% of variation in the dependent variable is explained by the independent variables

4.3 Conclusion and policy Implication.
The discussion of findings is done in line with objectives of the study. To investigate the relationship between government spending on agricultural development and economic growth. It was found that government capital expenditure on economic services has a positive relationship with RGDP, this was in line with the result of most researches as seen in the works of Iganiga and Unemhilin (2011) The authors found that government capital expenditure has a positive and significant impact on economic growth which is consistent with other part studies.

This means that an increase in government capital expenditure on economic services brings about an increase in RGDP. That is investment in government expenditure on economic services and agricultural sector is very imperative and this should be complemented with monitored credit facilities. River basins and irrigation facilities should be provided to have all year round agricultural product food importation should be banned to encourage local producer and population control should be intensified in the rural setting to avoid the Malthusian prediction of pestilence and strife.

However, government recurrent expenditure on agriculture was found to have a negative but significant impact on RGDP, this was in line with the work of Tajudeen and Ismail (2013) where a negative impact was found between government expenditure and economic growth. This means that an increase in government recurrent expenditure on agriculture brings about reduction in RGDP. This could as a result of improper use of resources which was supposed to be invested towards agricultural development and economic growth. To examine the impact of agricultural output on economic growth in Nigeria. The result showed that agricultural output has a positive but insignificant impact with RGDP. An increase in agricultural output brings about an increase in RGDP.As agricultural output increases (i.e. the total productivity of the economy, enhancing raw materials for industries, export promotion thereby leading to more employment of labour from both the agricultural sector and the industrial sector,

Similar view on the effect of positive relationship of agricultural output on economic growth was expressed by Itodo et. al, (2012). Farmers should be encouraged to access loans and advances by cutting down

long procedure and conditions in obtaining loan. This will enable them to go into commercial farming which will in turn increase output. Government expenditure on the implementation programs should be put in place and more incentives should be given to rural farmers since they covered the larger population in agricultural sector.

In general form, GDP has shown as serious impact on Agricultural sector due to the fact that previous policies enacted by the various administrations have paid up in one way or the other. Taken for instance the resent Agriculture policy implemented ancho-borrowers has enable various famers across the nation have access to modern seeds and modern agricultural technological tools which faster productivity within short period of time. Rice farmers were seriously engage and considered relevant in the whole process. Nigeria witness bumper harvest in rice farming. This does not stop their but also boost the employment opportunity across the country. According to NBS (2019), Agriculture alone contribute to GDP with 18.7% in the year 2018, rice production output account for over 15.3% of the total Agricultural productivity within the period of 2017-2019.

So the policy implication of the research findings revealed that Agricultural productivity has significant impact in stimulating RGDP for the period of 1980-2019. It means that looking at the policies at stake, are really responding. With this we can conclude that if proper monitoring and evaluation is taking into consideration, in the long run, Agricultural productivity will lead Nigeria to the promise land of attaining food security, growth sustainability and achieving favorable balance of payment in addition to general growth and development at large.

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