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Impact of Government Agricultural Expenditure on the Growth of the Nigerian Economy

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Authors' contributions

This work was carried out in collaboration between these authors. Author FEI designed the study, wrote the introductory part of the paper, and the literature review. Author AEA designed the theoretical framework of this paper upon we designed the model for the paper, and author IMS designed the variables that formed the model for the study, tested the formulated model by using the RGDP as the dependent variable and AOUT, REXPA, INV, DDEBT, NOR, INFL, INTR as the independent variables. To run the econometric analysis, Eview 7.2 statistical windows was employed, which enabled us to draw the summary, and recommendations from the result findings. All authors read and approved the final manuscript.

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ABSTRACT

This study examined the impact of government agricultural expenditure on the growth of the Nigerian economy from 1960 to 2012. The study employed secondary data and sourced from National Bureau of Statistics, and Financial Review of Central Bank of Nigeria. The study employed E-view 7.2 statistical output as a window in exploring the possible links between government agricultural expenditure and economic growth. The results revealed that government agricultural

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expenditure has a direct relationship with economic growth which statistically significant at 5% level. From the results of the findings of the paper, the paper however recommended that government should ensure that credit is made available to farmers with relatively low interest rate, intensify effort on how to control inflation rate, increase the budgetary allocation to agricultural sector to 25% as recommended by agricultural development capital budget , Nigerian economy is to be diversified in order not to make crude oil as the mainstay of Nigerian economy rather agricultural(agrarian) sector because it helps in terms of food supply, employment generations, poverty reduction etc., hence economic growth.

Keywords: Agricultural expenditure; credit facilities; growth.

1. INTRODUCTION

The structure of Nigerian economy had gradually changed from what it used to be before the advent of crude oil gluts of 1970s. However, the dawn of hardship in Nigeria ensued when the agricultural (agrarian) sector started to witnessing total neglect in the early 1970s till date. What uses to become play has now turned into seriously hurts to the entire nation [1].

The agricultural sector has a significant role to play (in other words, it is a variable) when examining the impact of economic growth—such as: providing enough food for ever-increasing population; the employment generations; providing raw materials for secondary and tertiary sectors; improving the welfare of the rural people; wealth accumulation; and exports. From this perspective, agrarian sector is important to Nigerian economy as bone is to a dog [2].

Having understood the anomaly in depending on one sector (.i.e., crude oil sector that conquered every other sectors in terms of GDP's contributions) in the economy, efforts had been made by several Nigerian governments in their policies to diversify the economy into sectors—such as: agriculture; manufacturing; tourism; theatre & Arts; etc [3].

In 1976-1979, the policies of Green Revolution (GR) and Operation Feed the Nations (OPNs) were adopted to diversify the Nigerian economy from monoeconomy. This effort was nipped in the bud, when another government took over powers. Though stringent efforts were made by the succeeded administration, in terms of policy formulation in diversifying the economy. Under the policy the financial institutions (i.e., Universal Banks) were instructed via Central Bank of Nigeria to make 40% of their total credit facilities available for farmers (peasants) who wielded into farming with minimum cost of borrowing (i.e., interest rate). These credit facilities enable the farmers (peasants) to buy modern farming facilities instead of the crude tools for farming, in the end, food would be made surplus, wealth and employments would be generated, and/or foreign earnings from exports [4]. Dwindling in agrarian sector outcomes or outputs continued till the introduction of the Structural Adjustment Programme (SAP) in 1986, in the bid that the agricultural sector would be revamped in order to support the diversification stride of the government policy, in the end the policy could not achieve its objectives as well as revamping the agrarian sector [4].

The agricultural sector has a direct and statistically significant relationship with economic growth of Nigeria. This is measured through: (i) government revenue from taxes; standards of living; infrastructural developments; its share to GNP; employment generations; educational levels; manpower developments, etc [5].

The World has acknowledged in fact that the agrarian sector inspite of its neglect still remains the source of economic vibrancy in the developed and developing economies [6].

The major challenge of the agricultural sector in emerging economies—such as Nigeria, is the level of economic development. Because there is no good accessible road networks; no accessible markets; no power generations, no incentives, no provision of fertilizers, insecticides and pesticides; no provision of irrigational facilities, better tools, and implements (tractors, etc); no means of communication and transportations; rural-urban drifts; etc. [7]. Transportation and communication brings about expansion precisely when the agrarian's surplus is to be transported to the urban areas and manufactured to the rural areas [8]. Perhaps, the agricultural sector may be used as import substitutions and export encouragements. The agricultural produce of emerging countries is raw material to the developed economies and the surplus leads to capital formation when the surplus is used to import capital goods. Two challenges are faced by the emerging economies: (i) elasticity of demand and supply, which means that demand for these goods is inelastic and the supply of these goods is inelastic, in other words, less profit is expected. (ii) Synthetic devices of the developed economies, this means that the supplied goods from the emerging countries can be warehoused for many years without deteriorations or diminishing, in other words, demand would be inelastic and it affects the supplies of the developing countries. Besides, the situation gets worsening when the surpluses are used to import consumable goods [9].

Government budgetary allocation has to be increased to this sector (.i.e., agrarian sector), having known its ramifications, in terms of economic growth and development. And ensure macroeconomic variables are relatively stable [9].

2. LITERATURE REVIEW

Multiple research works on the impact of agriculture and economic growth are available in the school archives, because is an old phenomenon. Some researchers in the result of their findings discovered that agricultural sector has a direct relationship with economic growth. While others, in the result of their findings discovered that though agricultural sector has a direct relationship with economic growth, the constraint is that agricultural sector in the emerging countries—such as Nigeria is fundamentally crude method. Hence much is not being expected as a profit.

In lieu, [10] (as cited in Kofi Annah, 2000) said that a country is poor when the inhabitants are unable to consume $1 or $2 per day. [10] (as cited in Boutros Boutros Ghali, 1995) said that a country's undeveloped is not based on her resources *per se* but as a result of nervous broken down.

Todaro et al. [11] (as cited in Rostow) under examining the stages of growth—he enumerated five stages: (i) the traditional stage; (ii) preconditions for take-off into well sustaining growth; (iii) the take off stage; (iv) the drive to maturity; and (v) the age of high mass consumption.

The stages are known as the steps to growth by the developed and emerging countries. It is pertinent to acknowledge the fact that the developed countries had passed through the first three stages to the drive to maturity and perhaps the age of high mass consumption. The emerging countries are tarrying around the (i) to (iii) [12].

In the discussions of contribution of agriculture to economic growth, [13] examined the analysis of the contribution of agricultural sector on the Nigerian economic development, the multiple regression was used to analyze the panel data, the result indicated a positive relationship between Gross Domestic Product (GDP) vis-a-vis domestic saving, government expenditure on agriculture and foreign direct investment between the period of 1986-2007. Despite these laudable efforts, Nigeria's agricultural sector is still characterized by low yields, attributable to the use of crude implements, a low level of inputs and limited areas under cultivation, among others.

Ekpo et al. [14] observed that Nigeria agricultural export has enlarged to include cocoa, beans and palm kernel. Statistics indicate that in 1960 agricultural export commodities contributed well over 75% of total annual merchandise exports. In 1940's and 50's Nigeria was ranked very high in the production and exportation of major crops in the world. For instance, Nigeria was the largest exporter of palm oil and palm kernel, second to Ghana in cocoa and third position in the exportation of groundnut. He further reported that Nigeria export earnings from major agricultural crops contributed significantly to the Gross Domestic Product (GDP). [15] employed the Granger Causality test to examine the relationship between government spending and economic growth, and the results showed that while government capital expenditure causes economic growth, there was no observable causal relationship between recurrent government expenditure and economic growth. The policy implication of these findings is that any reduction in capital expenditure would have negative repercussions on economic growth in Nigeria.

Examining the government allocation to the agriculture sector, [16] examined the agricultural budgetary allocation and economic growth in Nigeria from an econometric perspective, the results of the analysis show that the relationship between agricultural budgetary allocation and economic growth in Nigeria is positive but not significant in the long run, while the relationship is positive and significant only for the two-year lagged value of agricultural budgetary allocation. This observed relationship is not unrelated to the low budgetary allocations to agriculture over the years in Nigeria. This implies that there is a need for a significant increase in budgetary allocations to agriculture in order to ensure that the agricultural sector plays a pivotal role in the national transformation of Nigeria.

Wahab [17] examined an analysis of government spending on agricultural sector and its contribution to Gross Domestic Product (GDP) in Nigeria, using trend analysis and a simple linear regression to analyse the time series data, the result obtained shows that such spending does not follow a regular pattern and that the contribution of the agricultural sector to the GDP is indirect relationship with government funding to the sector.

Ebere et al. [18] examined the impact of government expenditure on agriculture on economic growth in Nigeria over the years. A time series data of 33 years sourced from the Central bank of Nigeria was used. Ordinary Least Square (OLS) technique of data analysis was used in evaluating the secondary data. From the findings agricultural output, government expenditure and GDP are positively related. It was found that a significant relationship exist between government expenditure in the agricultural sector and the economic growth in Nigeria. The findings also revealed that the sector still encounter some problems like inadequate finance, poor infrastructure, and others.

Iganiga et al. [19] examined the impact of federal government agricultural expenditure on agricultural output in Nigeria, they used the Cobb Douglas Growth Model, Descriptive Statistics and Econometrics Model were used to analyze the time series data. Co-integration and Error Correction methodology were employed to draw out both long-run and short- run dynamic impacts of these variables on the value of agricultural output. Federal government capital expenditure was found to be positively related to agricultural output. With a one-year lag period, it shows that the impact of government expenditure on agriculture is not instantaneous. The policy import of the study is that investment in the agricultural sector is very imperative and this should be complemented with monitored credit facilities.

FAO [20] reported that in terms of capital allocation to agriculture in Nigeria, it as an average of 4.74 percent 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 Food and Agricultural organization (FAO) recommendation that 25 percent of government capital budget being assigned to the agricultural development capital budget.

To measure the importance of any variable to economic growth model, the variable has to be examined base on its contributions the Gross Domestic Product (GDP) and Gross National Product (GNP) [2].

In the 1940s, 1950s and early 1970s the agrarian sector had contributed between 70% and 80% to the GDP, which means in other words that the agricultural sector had the lion share of the GDP. Followed by the manufacturing sector, which contributed approximately between 15% and 20% to the GDP. While the crude oil could hardly contribute 0.2% to the GDP. But reverse had been the case since early 1970s when there were oil gluts. As we are presenting this paper, the crude oil had been the dominant sector who had contributed approximately between 70% and 80% to the GDP, which has rendered other sectors unviable. In the former (.i.e., 1940s, 1950, & 1960s), Nigerian economy (.i.e., GDP) was made up with several sectors, where the economy situation was relatively stable, agrarian sector the prime and/or generated employments for almost 80% of the population, source of wealth accumulation (both to the rural dwellers & government), poverty reduction, and exports. And all macroeconomic variables were relatively stable. In the latter (.i.e., 1970s till date), Nigerian economy (i.e., GDP) was made up with one sector, which otherwise means monoeconomy. With this development, Nigerian economy has suffered with volatility and instability of macroeconomic variables. The targeted growth rate could not be achieved in the terrain of high poverty rate; unemployment rate; inflation rate; income inequality distribution; corruption rate in all facets, which is devouring the country [4].

The decline in the crude oil sector most recently has reawakening the Nigerian government about the danger of monoeconomy, which has pervaded the economy since early 1970s. This has called for long rigorous discourse and debate among the policymakers. There has been a consensus among them to diversify the economy. Inspite of the fact that crude oil is the mainstay of the Nigerian economy, agrarian sector still gives about 80% of employment to the active population, import substituting sector, providing raw materials and/or serve as intermediate goods, and reduction of poverty [10].

3. THEORETICAL FRAMEWORK

Jhingan [7] (as Cited in Jorgenson 1967) has presented a theory of development of dual economy (.i.e. Modern Manufacturing/industrial sector and Agricultural sector).

In this theory we assume that the agricultural sector characterized by constant returns to scale with all factors variable as given by the Cobb-Douglas production functions:

$$Y = e^{\sigma t} L^{\beta} P^{1-\beta} \qquad \text{.............................(1)}$$

Where Y represents agricultural output $e^{\sigma t}$ is technical change which takes place at a constant rate (α) in the time (t); L is fixed quantity of land available in the economy; β is the share of landlords in the product which takes the form of rent; P is total population in this sector; $1-\beta$ is the share of labour in the product paid.

Since supply of land (L) is fixed, equation (1) may be written as thus:

$$Y = e^{\alpha t} p^{1-\beta} \qquad \text{................................(2)}$$

To obtain agricultural output per man, we divide both sides of the above equation (2) by *P,* and we have:

$$\frac{Y}{P} e^{\alpha t} P^{-\beta}$$

Or

$$y = e^{\alpha t} P^{-\beta}$$
$$\left[\therefore \frac{Y}{P} = y\right]$$

Now differentiating with respect to time:

$$\dot{y} = e^{\alpha t} P^{-\beta} + e^{dt}(1-\beta) P^{-\beta-1} \dot{P}$$
$$= e^{\alpha t} P^{-\beta} \left[\alpha = \frac{\beta}{P} \dot{P}\right]$$
$$\left[P^{-1} = \frac{1}{P}\right]$$
$$= y\left[\alpha - \beta \frac{\dot{P}}{P}\right]$$
$$\left[\therefore y = e^{\alpha t} P^{-\beta}\right]$$

Or

$$\frac{\dot{y}}{y} = \alpha - \beta \in \qquad \text{.....................................(3)}$$

$$\therefore \in \frac{\dot{y}}{y}$$

Where α is the rate of technical progress, β is the share of landlords in the product and ∈ is the net reproduction rate.

According to [7], depending on the condition of production and the net reproduction rate, the agricultural sector is characterized either by a, low level equilibrium trap in which output of food per head is constant and population and food supply are growing at the same positive rate $(\alpha - \beta \in)$, or by a steady growth equilibrium in which output per head is rising and population is growing at its physiological maximum rate. The necessary and sufficient condition for a positive growth of output in the agricultural sector is $\alpha - \beta \in > 0$.

4. MODEL SPECIFICATIONS AND DESCRIPTION OF VARIABLES

The model of this paper is hinged on the model of [2], which enables the examination of the impact of government agricultural expenditure on the growth of the Nigerian economy. The model is designed below:

RGDP = f(AOUT, REXPA, DDEBT, NOR, INFL, INTR)
RGDP = $\beta_0 + \beta_1$AOUT ± β_2REXPA ± β_3DDEBT ± β_4NOR ± β_5 INTR + μ ....(4)

Where: RGDP = Real gross domestic product as a proxy for economic growth; AOUT = Agricultural Outputs; REXPA = Recurrent Expenditure on Agriculture; NOR = Non-Oil Revenue; DDEBT = Domestic Debt Rate; INFL = Inflation rate; INTR = Interest rate; μ = Stochastic term or error term.

For the estimation purposes, we transformed equation (1) into log-linear form. Which is expressed as thus:

LOGRGDP = $\beta_0 + \beta_1$LOGAOUT ± β_2LOGREXPA ± β_3DDEBT ± β_4LOGNOR ± β_5LOGINFL ± β_8LOGTINTR + μ ....(5)

Where: LOGRGDP = log of Real Gross Domestic Product as a proxy for economic growth; LOGAOUT = log of Agricultural Outputs; LOGREXPA = log of Recurrent Expenditure on Agriculture; LOGDDEBT = log of domestic Debt Rate; LOGNOR = log of Non-Oil Revenue; LOGINFL =log of Inflation rate; LOGINTR = log of Interest rate; μ = Stochastic term or error term.

The a priori expectations are as follows:

$$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6 \beta_7 > 0$$

Where:

β_0= Intercept, β_1 = Coefficient of Agricultural output, β_2 = Coefficient of Recurrent Expenditure on Agricultural; β_3 = Coefficient of inflation rate; β_4 = coefficient Agricultural Outputs; β_5 = coefficient of Domestic Debt Rate; β_6 = coefficient of Non-Oil Revenue; and μ= white noise error term.

The contribution of this study to knowledge is in terms of the estimation techniques employed and the data used which is extended to 2012. An attempt will be made to empirically investigate the relationship between the impact of government agricultural expenditure on the growth Nigerian economy for the period 1960 – 2012 regression analysis. The equation was estimated using a variety of analytical tools, including group unit root tests, co-integration tests, Granger Causality Analysis and Error Correction Model (ECM). The results are discussed below. The data used for the study covers the period of 1960 and 2012. The study employed secondary data which are derived from various issues of [21,22].

4.1 Model Summary

The results from the testing or running the time series data from 1960 to 2012 in appendix are shown in Table 1 to Table 3 and diagram 1. Table1 shows the summary of the Group unit root test using summary test (.i.e. Levin, Lin & Chu t*; Im, Pesaran and Shin W-stat; ADF-Fisher Chi-square; PP-Fisher Chi-square) with the lag length selection based on SIC: 0 to 3 of the variables used for the empirical study. The group unit root test shows that; Real Gross Domestic Product (RGDP); Agricultural Output (AOUT); Domestic Debt Rate (DDEBT); Interest rate (INTR); Non oil Revenue (NOR); and Recurrent Expenditure on Agriculture (REXPA) were stationary at level at 5 percent level of significance respectively.

The top of the output indicates the type of test, exogenous variables and test equation options. If we were instead estimating a Group unit test, a list of the series used in the test would also be depicted. The lower part of the summary output gives the main test results, organized both by null hypothesis as well as the maintained hypothesis concerning the type of the unit root process.

All of the results indicate the presence of a unit root, as the LLC, IPS, and both Fisher tests fail to reject the null of a unit root at level. While all of the results indicate the absence of a unit root, as LLC, IPS and both Fisher test accept the null of a unit root.

4.2 Cointegration Test Results

Co-integration test determines the long-run relationship between the dependent and independent variables when one or all of the variables is/are non-stationary at level which means they have number of stochastic trends in asymptotic distribution. Co-integration tests are conducted by using the reduced procedure developed by [23]. They noted that a linear combination of two or more 1(1) series may be stationary, or 1(0), on which case we say the series are cointegrated. Such linear combination defines a cointegrating equation with cointegrating vector of weights characterizing the long-run relationship between the variables. The [23] test results are divided into three distinct sections. *First* portion display the test specification and settings, along with the test values and corresponding *p*-values. *Second (*or the middle) section of the output displays the estimated coefficients, standard error, t-statistics, and p-value for the constant, even though they are not strictly speaking valid or intermediate results used in constructing the test statistic that may be of interest. The summary statistics portion is relatively familiar but does require a bit comment [24]. Most entries are self-explanatory, though a few deserve a bit of discussion-such as RHO S.E. and Residual Variance are the (possibly) d.f. corrected coefficient standard error of the regression. The long-run residual variance is the estimate of the long-run variance is the estimate of the long-run of the residual based on the estimated parametric model. The number of stochastic trends entry reports the value used to obtain the *p*-value as shown in Table 2.

Engle and Granger procedure is used to determine the linear combination of two or more series and / or to identify a long-run relationship. The cointegration tests include Real Gross Domestic Product (RGDP); Agricultural Output (AOUT); Domestic Debt Rate (DDEBT); Interest rate (INTR); Non oil Revenue (NOR); and Recurrent Expenditure on Agriculture (REXPA). Which includes Automatic lag specification (lag = 0 based on Schwarz Info Criterion, maxlag = 7) (See Table 2).

4.3 Pairwise Granger Causality Test

Pairwise Granger Causality test between real gross domestic product proxied as economic growth, agricultural output, domestic debt, interest rate, non oil revenue, and recurrent expenditure on agriculture are examined in Table 3 below. The Pairwise Granger causality tests were inconclusive at 5% level of significance. The results alternated between bi-directional, no causality and uni-directional, depending on the lag length allowed. The outcome in respect one two-lag length is presented in Table 3.

Table 1. Group unit root test

Group unit root test: Summary
Series: LOG_RGDP_, LOG_AOUT_, LOG_DDEBT_, LOG_INTR_, LOG_NOR_, LOG_REXPA_
Date: 10/01/14 Time: 20:42
Sample: 1981 2013
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 3
Newey-West automatic bandwidth selection and Bartlett kernel

Method	**Statistic**	**Prob.****	**Cross-sections**	**Obs**
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-8.77834	0.0000	6	182
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-9.89827	0.0000	6	182
ADF - Fisher Chi-square	102.365	0.0000	6	182
PP - Fisher Chi-square	132.054	0.0000	6	186

*** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality*

Table 2. Engle-granger cointegration test

Date: 10/01/14 Time: 20:32
Series: LOG_RGDP_ LOG_AOUT_ LOG_DDEBT_ LOG_INTR_ LOG_NOR_ LOG_REXPA_
Sample: 1981 2013
Included observations: 33
Null hypothesis: Series are not cointegrated
Cointegrating equation deterministics: C
Automatic lags specification based on Schwarz criterion (maxlag=7)

Dependent	**tau-statistic**	**Prob.***	**z-statistic**	**Prob.***
LOG_RGDP_	-5.355177	0.0463	53.09797	1.0000
LOG_AOUT_	-5.952451	0.0158	52.96178	1.0000
LOG_DDEBT_	-3.469144	0.5538	-15.80255	0.6797
LOG_INTR_	-3.054572	0.7358	-14.58579	0.7512
LOG_NOR_	-3.880435	0.3729	-20.11921	0.4083
LOG_REXPA_	-5.090490	0.0662	-28.52182	0.0708

*MacKinnon (1996) p-values.
Warning: p-values may not be accurate for fewer than 30 observations

Intermediate Results:

	LOG_RGDP_	**LOG_AOUT_**	**LOG_DDEBT_**	**LOG_INTR_**	**LOG_NOR_**	**LOG_REXPA_**
Rho – 1	-0.935060	-0.943846	-0.493830	-0.455806	-0.628725	-0.891307
Rho S.E.	0.174609	0.158564	0.142349	0.149221	0.162024	0.175093
Residual variance	0.000101	7.63E-05	0.009397	0.014603	0.019603	0.055761
Long-run residual variance	0.000389	0.000286	0.009397	0.014603	0.019603	0.055761
Number of lags	3	3	0	0	0	0
Number of observations	29	29	32	32	32	32
Number of stochastic trends**	6	6	6	6	6	6

***Number of stochastic trends in asymptotic distribution*

Table 3. Pairwise granger causality tests

Pairwise Granger Causality Tests
Date: 10/01/14 Time: 20:59
Sample: 1981 2013
Lags: 2

Null hypothesis:	Obs	F-statistic	Prob.
LOG_AOUT_ does not Granger Cause LOG_RGDP_	31	4.25589	0.0252
LOG_RGDP_ does not Granger Cause LOG_AOUT_		4.72377	0.0178
LOG_DDEBT_ does not Granger Cause LOG_RGDP_	31	1.36373	0.2734
LOG_RGDP_ does not Granger Cause LOG_DDEBT_		1.60491	0.2202
LOG_INTR_ does not Granger Cause LOG_RGDP_	31	1.00308	0.3805
LOG_RGDP_ does not Granger Cause LOG_INTR_		2.75657	0.0821
LOG_NOR_ does not Granger Cause LOG_RGDP_	31	0.19038	0.8278
LOG_RGDP_ does not Granger Cause LOG_NOR_		0.05054	0.9508
LOG_REXPA_ does not Granger Cause LOG_RGDP_	31	0.18865	0.8292
LOG_RGDP_ does not Granger Cause LOG_REXPA_		0.19085	0.8274
LOG_DDEBT_ does not Granger Cause LOG_AOUT_	31	0.71934	0.4965
LOG_AOUT_ does not Granger Cause LOG_DDEBT_		2.89631	0.0732
LOG_INTR_ does not Granger Cause LOG_AOUT_	31	0.11387	0.8928
LOG_AOUT_ does not Granger Cause LOG_INTR_		2.49777	0.1018
LOG_NOR_ does not Granger Cause LOG_AOUT_	31	0.07182	0.9309
LOG_AOUT_ does not Granger Cause LOG_NOR_		0.73365	0.4898
LOG_REXPA_ does not Granger Cause LOG_AOUT_	31	0.03408	0.9665
LOG_AOUT_ does not Granger Cause LOG_REXPA_		0.49041	0.6179
LOG_INTR_ does not Granger Cause LOG_DDEBT_	31	2.29484	0.1208
LOG_DDEBT_ does not Granger Cause LOG_INTR_		2.26402	0.1240
LOG_NOR_ does not Granger Cause LOG_DDEBT_	31	1.39928	0.2647
LOG_DDEBT_ does not Granger Cause LOG_NOR_		7.53309	0.0026
LOG_REXPA_ does not Granger Cause LOG_DDEBT_	31	0.87235	0.4298
LOG_DDEBT_ does not Granger Cause LOG_REXPA_		1.73095	0.1969
LOG_NOR_ does not Granger Cause LOG_INTR_	31	3.24516	0.0552
LOG_INTR_ does not Granger Cause LOG_NOR_		0.88709	0.4240
LOG_REXPA_ does not Granger Cause LOG_INTR_	31	2.39706	0.1108
LOG_INTR_ does not Granger Cause LOG_REXPA_		0.01361	0.9865
LOG_REXPA_ does not Granger Cause LOG_NOR_	31	17.7484	1.E-05
LOG_NOR_ does not Granger Cause LOG_REXPA_		0.63423	0.5384

The Table reveals that we can fail to reject (.i.e., accepting the alternative and / or not completely rejecting the null) hypothesis that AOUT Granger causes RGDP, we do fail to reject (.i.e., accepting the alternative and/or not completely rejecting the null) hypothesis that RGDP does not Granger cause AOUT. We cannot reject (.i.e., not completely rejecting the alternative and/or accepting the null) hypothesis that AOUT does not Granger cause INTR, and we do not reject (.i.e., not completely rejecting the alternative and/or accepting the null) hypothesis that INTR does not Granger cause AOUT. We can fail to reject (.i.e., accepting the alternative and/or not completely rejecting the null) hypothesis that REXPA does not Granger cause AOUT, but we do fail to reject (.i.e., accepting the alternative and/or not completely rejecting the null) hypothesis that AOUT does not Granger cause REXPA. Therefore it appears that Granger causality runs one-two way (s) from AOUT to RGDP, AOUT to INTR, AUOT to REXPA and not the other way.

4.4 Orthonormal Loadings Biplot

The component scores are displayed as circles and the variables loadings and displayed from the origin with variable labels. The Biplot clearly shows that the first component has positive loadings for all the six variables (.i.e., general agricultural output interpretations). Second, component has positive loadings for interest rate and negative loadings for REXPA, DDEBT, NOR, AOUT, and RGDP. If REXPA does well relative to DDEBT, NOR, AOUT and RGDP, the second specific component will be positive, and vice versa. See Diagram 1 below.

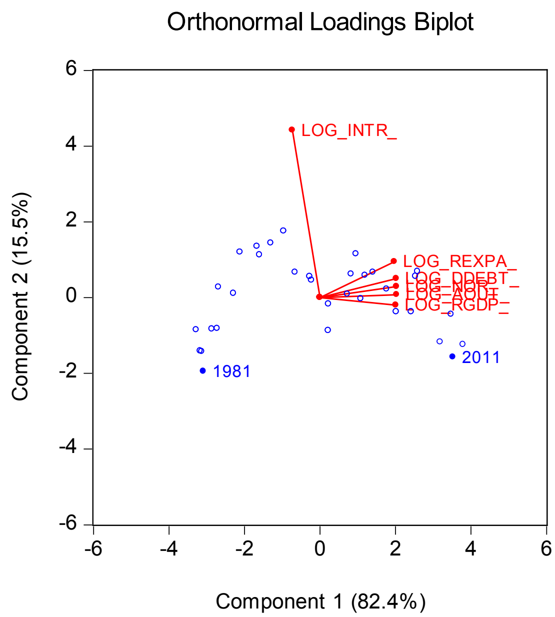

Diagram 1. Orthonormal loadings Biplot

5. CONCLUSION

The result of the econometrics on the impact of government agricultural expenditure on the growth of the Nigerian economy for the period of 1960-2012, the paper revealed from its findings that agricultural sector has a direct relationship with economic growth even though macroeconomic environmental problems persist. Hence a retard economic growth in Nigeria.

6. SUMMARY OF RESULT FINDINGS

The econometric results of the Group unit root and cointegration analysis employed to examine the impact of government agricultural expenditure on the growth of the Nigerian economy for the period 1960 to 2012 in this study is now being summarized with some concluding remarks and / or recommendations. The results obtained conform to the existing studies in our literature that spotted the hindrance- factors (.i.e. inflation and interest rates) that are responsible for the slow pace of the growth of agrarian sector hence economic growth.

From the results of the model, it was revealed that, there is an inverse relationship between inflation rate and interest rate with the economic growth of Nigeria within the period under review, even though, it is statistically significant as the t-statistic suggests at 5% level. But, this is resulting from macroeconomic environmental problems such as inflation pressure, general price level, interest rate, exchange rate, etc.

7. RECOMMENDATIONS

From the econometric study of the impact of government agricultural expenditure on the growth of Nigerian economy, the following recommendations are stated below:

- Government should ensure that credit is made available to farmers (peasants) with relatively low interest rate—since it has an inverse relationship with economic growth.
- Government's efforts should be intensified on how to control inflation rate even though it is statistically significant at 5% level—but it has a negative relationship with economic growth.
- Government should maintain the budgetary allocation to agricultural sector of 25% as recommended by agricultural development capital budget. In order to curb poverty or hunger that is wagging and waxing stronger in Nigeria. Though it has a direct relationship with economic growth
- Government should encourage the financial institutions to make certain percentage of their total credit facility available for agricultural sector. In order to enhance food supply, employment generations, poverty reduction, etc.
- Government should ensure that Nigerian economy is diversified, in other words, crude oil should not be the mainstay of Nigerian economy. Nigerian economy should return to its status as it were in 1940s, 1950s and/or late 1960s. Again its share to Gross Domestic Product (GDP) should increase as it were in the 50s and 60s.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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APPENDIX

Data on real gross domestic product, recurrent expenditure on agriculture, non-oil revenue, inflation rate, interest rate, domestic debt ratio and agricultural output

Year	RGDP	REXPA	NOR	INFL	INTR	DDEBT	AOUT
1960	2489		223.65	0	…	30.00	1,599.80
1961	2501.2	0.42	477.70	6.1	4.00	53.32	1,553.80
1962	2597.6	0.23	498.19	5	3.00	84.90	1,605.80
1963	2825.6	5.43	554.41	-2.3	3.00	101.76	1,737.80
1964	2947.6	0.80	654.34	1	3.60	136.40	1,731.40
1965	3146.8	6.08	612.88	3.9	3.60	183.54	1,742.20
1966	3044.8	9.59	654.34	9.7	3.60	227.80	1,581.80
1967	2527.3	6.96	569.53	-5.6	3.60	237.75	1,358.00
1968	2543.8	0.72	755.96	1.5	3.25	450.67	1,338.00
1969	3225.5	1.16	467.40	10	3.25	665.80	1,530.50
1970	4219	1.92	658.70	13.9	4.50	1,091.00	1,887.70
1971	4715.5	3.86	640.80	16	3.50	1,227.00	1,985.20
1972	4892.8	8.89	679.30	3.4	4.00	987.30	1,861.10
1973	5310	10.75	813.40	4.6	3.50	1,057.20	1,808.70
1974	15919.7	13.77	1,243.20	13.5	4.00	1,262.40	3,658.34
1975	27172	22.43	1,400.70	33.9	3.50	1,675.50	7,639.41
1976	29146.5	11.71	1,961.80	21.1	3.50	2,626.90	6,838.44
1977	31520.3	29.38	2,815.20	21.5	3.00	3,406.70	7,401.64
1978	29212.4	8.69	2,031.60	13.3	5.25	4,813.70	6,712.99
1979	29948	9.15	2,880.20	11.6	5.50	7,214.00	6,033.46
1980	31546.8	17.14	4,726.10	10	6.25	8,215.60	6,501.83
1981	251,052.28	13.03	3,618.80	21.4	6.25	11,192.60	57,989.67
1982	246,726.57	14.80	3,255.70	7.2	7.75	15,007.60	59,450.83
1983	230,380.80	12.77	2,984.10	23.2	7.75	22,221.40	59,009.56
1984	227,254.73	15.66	4,126.70	40.7	9.75	25,672.10	55,918.17
1985	253,013.27	20.36	4,488.50	4.7	9.75	27,949.10	65,748.44
1986	257,784.45	20.69	6,353.60	5.4	9.75	28,438.70	72,135.23
1987	255,996.96	46.15	7,765.00	10.2	15.10	36,789.10	69,608.06
1988	275,409.55	83.00	14,739.90	56	13.70	47,029.60	76,753.72
1989	295,090.80	151.80	26,215.30	50.5	21.40	47,049.60	80,878.04
1990	328,606.06	258.00	26,215.30	7.5	22.10	84,093.10	84,344.61
1991	328,644.54	208.70	18,325.20	12.7	20.10	116,198.70	87,503.53
1992	337,288.64	455.97	26,375.10	44.8	22.10	177,961.70	89,345.43
1993	342,540.47	1,803.81	30,667.00	57.2	23.99	273,836.40	90,596.51
1994	345,228.46	1,183.29	41,718.40	57	15.00	407,582.70	92,832.95
1995	352,646.22	1,510.40	135,439.70	72.9	13.96	477,733.89	96,220.67
1996	367,218.09	1,592.56	114,814.00	29.3	13.43	419,975.60	100,216.18
1997	377,830.80	2,058.88	166,000.00	8.5	7.46	501,751.10	104,514.00
1998	388,468.12	2,891.70	139,297.60	10	9.98	560,830.20	108,814.07
1999	393,107.17	59,316.17	224,765.40	6.6	12.59	794,806.60	114,570.71
2000	412,332.01	6,335.78	314,483.90	6.9	10.67	898,253.90	117,945.07
2001	431,783.18	7,064.55	903,462.30	18.9	9.98	1,016,974.00	122,522.34
2002	451,785.67	9,993.55	500,986.30	12	16.50	1,166,000.70	190,133.40
2003	495,007.17	7,537.35	500,815.30	14	13.04	1,329,680.00	203,409.87
2004	527,576.03	11,256.15	565,700.00	15	13.32	1,370,325.20	216,208.47
2005	561,931.39	16,325.60	785,100.00	17.9	10.82	1,525,906.60	231,463.61
2006	595,821.61	17,900.00	677,535.00	8.2	8.35	2,725,947.30	248,598.96
2007	634,251.14	32,500.00	1,200,800.00	6.6	8.10	4,127,973.50	266,477.18
2008	672,202.55	65,400.00	1,335,960.00	15.1	11.84	2,320,310.00	283,175.43
2009	718,977.33	22,435.20	1,652,700.00	12	12.85	3,228,029.02	299,823.86
2010	776,332.21	28,217.95	1,907,600.00	10.7	5.67	4,551,820.00	317,281.65
2011	834,000.83	41,169.88	2,237,900.00	11.0	6.03	5,622,840.00	335,180.07
2012	888,893.00	33,300.00	2,628,771.39	10.2	7.67	6,537,536.31	348,490.80

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