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Investigating the Influence of Public Spending To Agricultural Sector on Economic Growth in Nigeria

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Abstract
This study investigates the influence of public spending on agricultural sector and its impact on economic growth in Nigeria over the period of 1981 to 2019.Data for the accomplishment of the study objectives were generated from Central Bank of Nigeria (CBN) and the National Bureau of Statistics (NBS), while Error Correction Model (ECM) and Vector Error Correction Model (VECM) were employed to analyse the data. Three widely government measures (recurrent and capital expenditures and credit facility to agricultural sector) were used. The study shows that there exists a significant (positive) relationship between government recurrent and capital expenditures to agricultural sector and economic growth and also reveals no significant (negative) relationship between government agricultural credit guarantee scheme fund (ACGSF) and economic growth. This implies that agricultural credit guarantee scheme fund was not contributing to economic growth while, there is lasting effect of capital and recurrent expenditures on agricultural sector yielding returns and indeed contributing to real growth in Nigeria within the time frame covered by the study. Therefore, government should monitor and evaluate how the credit facilities given to farmers are being used for the purpose it is meant for.

Keywords: ***Economic Growth, Capital Expenditure, Recurrent Expenditure, Credit Facilities***

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I. Introduction

Agriculture is the science and art of cultivating plants and livestock. It is a dominant occupation, employing about 60-70 percent of the total population of West Africa (NBS, 2016). Agricultural sector comprises establishment primarily engaged in growing crops, lumbering, raising animals, and harvesting fish and other animals from a farm, ranch, or their natural habitats. The growth and development of any nation depend to a large extent, on the development of agriculture according to Iganiga and Unemhilin (2011). Nigeria is a vast agricultural country, endowed with substantial natural resources which include: 68 million hectares of arable land, fresh water resources covering about 12.6 million hectares, 960 km of coastline and an ecological diversity(World, 2019). Yusuf (2014) observed that despite the articulation of government policies, strategies, programs and the broader framework of sustainable agriculture investment, the rural communities in Nigeria remain underdeveloped and many complex issues regarding the design, implementation, and monitoring and evaluation remain unresolved. The Nigerian agricultural sector has the potentials to be the industrial and economic springboard for development to take off, more often than not; the activities are usually concentrated in the less developed rural areas where there is a need for rural transformation, redistribution, and socio-economic developmentand the dependence of Nigeria on a mono-cultural crude oil based economy had not augured well for the well-being of the Nigeria economic growth.

According to Noko (2015) the role of agriculture in reforming both the social and economic framework of an economy cannot be over-emphasized. It is a source of food and raw materials for the industrial sector. It is also essential for the expansion of employment opportunity, for reduction of poverty and improvement of income contribution, for speeding up industrialization and easing the pressure on balance of payment. World Bank (2014) in a report concluded that in many developed and developing countries agriculture investmentremain a source of employment, source of basic food supply with which a nation can feed its teeming population, a generative source of foreign exchange earnings, means of providing the nation's industries with local raw materials, and as areliable source of government revenue. Generally, the Nigerian government has formulated various policies and programs aimed at strengthening the sector in order to continue to perform these roles. This study therefore investigates the influence of government spending on agricultural sector in Nigeria and its impact on economic growth.

Statement of Problem

The Food and Agricultural Organisation (FAO) recommends that 25 per cent of government capital budget be allocated to agricultural development. In spite of Nigeria's rich agricultural endowment, the agricultural sector has been growing at a very low rate. Nigerian agricultural sector has been affected with numerous problems which has been the result of the poor performance of the sector itself. The sector is supposed to be major employer of labour, attracting major Foreign Direct Investment and earning foreign exchange to Nigerian economy. The reverse seem to be the case, this may be caused due to many agricultural policies beenmisguided, poor funding or their impacts been swamped by macro policies affected by inflation, exchange rates and the cost of capital which in turn affects accelerated, sustainable economic growth and development of Nigeria.

Interestingly, the question that readily comes to the mind of researchers is that in spite ofpublic spending and programs to the agricultural sector why isits performance abysmally poor? This study intends to provide answers to these puzzles by analysing the effects of the composition of government expenditure on the agricultural sector in Nigeria from 1981 to 2019.

Objectives of the Study

The broad objective of the study is to investigate the influence of public spending to agricultural sector on economic growth of Nigeria.

The specific objectives of the study are;

(i) To determine the impact of government recurrent expenditure in the agricultural sector on real GDP.
(ii) To determine the impact of government capital expenditure in the agricultural sector on real GDP.
(iii) To examine the effect of government credit facilities to agriculturalsector on real GDP in Nigeria.

Research Questions

i. To what extent is the impact of government recurrent expenditure in the agricultural sector on real GDP of Nigerian economy?
ii. To what extent is the effect of government capital expenditure in the agricultural sector on real GDP?
iii. To what extent is the influence of government credit facilities to agricultural sector on real GDP of Nigeria?

Research Hypothesis

$H_{0:1}$: There is no significant relationship between recurrent expenditure to agricultural sector and economic growth of Nigeria.
$H_{0:2}$: Capital expenditure on Agricultural sector has no significant relationship on economic growth of Nigeria.
$H_{0:3}$: Credit facilities to agricultural sector have no significant relationship with economic growth of Nigeria

Conceptual Clarification

Agriculture deals with the cultivation of land (Crop farming), fishery, livestock farming, forestry and wild-life conservation, for the purpose of satisfying human wants (UNDP,2012). It goes further to include the processing of farm products and the preservation, storage and marketing of these produce. Ammani(2012), presented agriculture as referring to the productive and commercial enterprise involved in providing food, inputs and services to the farm sector, Input sector aid the processing, marketing and storage of farm produce (the product sector). Agriculture business for a developing country like Nigeria deserves a special attention due to its highly complex, unique and significant nature and potentials for meeting human necessities as noted by (Arokoyo, 2012). Arokoyo (2019) aver that an agricultural extension service is very crucial for development and growth of a nation. He is of the view that capacity and management issues are critically important for well functioning system and they are the main elements to get right, including continuing education, incentives, coordination and operational budget.

Agriculture is the major and most certain path to economic growth and sustainability as it encompasses all aspect of human activities-being the art, act, a cultural necessity and science of production of goods through cultivation of land and management of plants and animals which creates an activity web-chain that satisfies social and economic needs as noted by (World Bank ,2019). Agriculture is the mainstay of mankind; nations all over the globe give it a priority by developing and exploiting this sector. Nigeria happens to belong among the few that have greatly retarded from their past glorious heights in agriculture, down to a near zero scale of agricultural production.

The Role of Agriculture and Nigeria Economic Growth

Economic growth is an increase in the capacity of an economy to produce goods and services, compared from one period of time to another (Loto, 2011). It can be measured in nominal or real terms, the latter of which is adjusted for inflation. The gospel of economic salvation cannot be preached without due regards to agricultural development. Development economists focus more on how agriculture can best contribute to overall economic growth and development. The physiocrats in their theory of wealth in the 18th century stated that; the wealth of nations is solely from the value of agriculture. They laid more emphasis on agriculture in the development of an economy. In their views, the development of an economy depends on the growth of the agricultural sector. The source of national wealth is essentially agriculture. The physiocrats believe that the fate of the economy is regulated by productivity in agriculture and its surplus is diffused throughout the system in a network of transactions. The agricultural sector to the physiocrats is the only genuinely productive sector of the economy and the generator of surplus upon which all depends.

According to (Timmer,2002; World Bank, 2008) growth in agricultural output can fuel growth in the non agricultural economy through a variety of mechanisms, some direct and some indirect. Nigeria is blessed with a wide variety of agricultural potentials, ranging from varieties of crops to varieties of animals and plants and natural agricultural-supportive factors like forests, waters, sands and most of all human resources that are under-used. Timmer (2002) observed that agriculture indirectly contributes to economic growth via its provision of food availability, food price stability, and poverty reduction. He argued that the role of agriculture has been under estimated because of data limitations that preclude explicit quantitative analyses of the indirect effects of agriculture's contributions to capital and labor efficiency and total factor productivity by global economic shocks. According to Fatonetal (2020), higher agricultural productivity is vital for economic growth, especially in Africa, because of strong growth linkages and comparative advantages in trade.

Government Credit Facilities and Agricultural Investment in Nigeria

Timmer (2002) emphasised the importance of indirect non-market linkages that improves the quality of the major production factors (labor and capital). Right now, the Nigerian government and several other governments in Africa are in desperate need of a lot of individuals and businesses to start agricultural businesses. This could ensure their countries to have a steady flow of income even if the price of crude oil stays low or completely goes extinct. With an economic recession and several other uncontrollable events, the government is making access to agricultural loans a lot easier. People investing in agriculture in Nigeria now have easier access to loans, fertilizers, machinery, land, and a lot more. Taking advantage of the government's call for people to startup agricultural businesses now, is a smart move for incentives for a reasonable number of agricultural businesses to become successful. These agribusinesses create employment opportunity for the teeming population and a linkage through which contributes indirectly to economic growth.

Empirical Review

Aigbokha (2001) examined the impact of government expenditure on Agriculture on economic growth in Nigeria over the years with 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. GDP was used as a proxy to economic growth, while agricultural output and government expenditure on agriculture. From the findings, agricultural output, government expenditure and GDP are positively related. It was found that a significant relationship exists between government expenditure in the agricultural sector and the economics growth in Nigeria. The findings also revealed that the sector still encounter some problems like inadequate finance, poor infrastructure and others.The study recommended that it is imperative for the country to develop its agricultural sector through sufficient government spending in other to set up its economic growth.

Agunuwa, Inaya and Proso (2015), investigated the relationship between agricultural public capital expenditure and economic growth in Nigeria over the period1961 to 2010 using annual data obtained from the Central Bank of Nigeria. The data were analyzed using Augmented Dickey-Fuller test, Johansen maximum likelihood test and Granger Causality test. The result of the Johansen co-integration test showed that there exists a long run relationship between all the explanatory variables and the explained variable. The result of parsimonious error correction model showed that agricultural public capital expenditure had a positive impact on economic growth. Also, Granger Causality test showed a unidirectional relationship between agricultural public capital expenditure and agricultural economic growth. This means that agricultural economic growth does not cause expansion of agricultural public capital expenditure; rather it indicates that agricultural public capital expenditure raises the nation's agricultural economic growth. This investigation dint makes emphasis on policy adjustment as a factor needed to promote economic growth.

A study examined by Onoja, Onu and Ajodo-Ohiemi (2012), on the impact of agricultural development on Nigerian growth within (1980-2010) the period of 30 years. The study clears the argument that has existed among development economist if agricultural sector holds the key to national development and industrialization. The study made use of OLS techniques and variables such as

agricultural output, capital formation, inflation rate and interest rate to inquire on the question whether agricultural sector functions as a main driver to economic growth and development. It was empirically uncovered that a positive relationship exists between the agricultural sector and economic growth.

In an empirical study on the contribution of agricultural sector on the economic growth of Nigeria, by Uremaduetal (2018) covering the period of 33 year (1980 to 2013), Augmented Dickey-Fuller (ADF) test and Johansen Co integration test were conducted. Real Gross Domestic Product (RGDP) per capita was used as the dependent valuable while agricultural output and oil rent were the explanatory variables. The study shows the pivotal and important role agricultural sector could play to the economic growth of nation if given full attention.

II. Methodology

The main aim of this study is to analysis the influence of expenditure to agricultural sector on economic growth in Nigeria**.**To ascertain the phenomena under study, the study employed the secondary source of data collection. The relevant data for this study was obtained from the Central Bank of Nigeria (CBN) statistical bulletin and National Bureau of Statistics (NBS), covering from 1981 to 2019. Two widely used component of public sector expenditure are employed: recurrent expenditure on agriculture and capital expenditure on agriculture, agricultural credit guarantee scheme fund (loan) and real GDP

Table 1: Description of variables

Variable	Definition	*Unit*	Sources
ARGDP	Represents the agricultural real gross domestic product. It captureseconomic growth from agricultural sector from1981-2019.	*InARGDP*	CBNStatistical Bulletin(2020)
ACGSF	*Represents the agricultural credit guarantee scheme fund. It is a credit facilities in form of loan to famers*	lnACGSF	CBNStatisticalBulletin (2020)
AGRCAP	Represents agricultural government capital expenditure. It includes expenditure on capital projects, like irrigation, silos etc.	$lnAGRCAP$	CBNStatisticalBulletin(2020)
AGRREC	Represents agricultural government expenditure. Which includes administration, economic services, social andcommunity services, transfers etc.	$lnAGRREC$	CBNStatisticalBulletin(2020)

Source: Author's Design.

The hypothesis has been stated with the view of ascertaining the significant impact of agricultural variables on the economic growth of Nigeria. The functional form of the model is expressed below

$ARGDP = f(AGRCAP, AGRREC, ACGSF)$ (1)

ARGDP = Agricultural Real Gross Domestic Product, expressed in billions of Naira as a measurement of economic growth from Agricultural sector.

AGRREC =Agricultural Government Recurrent Expenditure (₦' Billion)

AGRCAP =Agricultural Government Capital Expenditure (₦' Billion).

ACGSF = Agricultural Credit Guarantee Scheme Fund (₦' thousand).

The above equation can be written in economic model and equation (1) can be transformed into econometrics model and in their respective natural log form as thus;$lnargdp = \alpha_0 + \beta_1 lnagrcap + \beta_2 lnagrrec + \beta_3 lnacgsf$ (2)

$lnargdp = \alpha_0 + \beta_1 lnagrcap + \beta_2 lnagrrec + \beta_3 lnacgsf + \varepsilon_t$ (3)

Where $lnargdp$ is log of real gdp ,$lnagrcap$ is log of capital expenditure, $lnagrrec$ is log of recurrent expenditure, lnacgsf is the log of credit facilities in form of loan to famers, ε_t is the error term and α_0 is the intercept.

In time series analysis, before running the cointegration test the variables must be tested for stationarity. For this purpose, we use the conventional ADF tests, the Phillips– Perron test following Phillips and Perron (1988) .Based on the unit root test, we conducted optimal lag test, johanson cointegration test to ascertain the long-run relationships among the variable, error correction and subsequently vector error correction model and stability test. Therefore, before applying this test, we determine the order of integration of all variables using unit root tests by testing for null hypothesis $H_o: \beta = 0$ (i.e βhas a unit root), and the alternative hypothesis is $H_1: \beta < 0$. All the variables should be integrated at first order difference I(1) so as to avoid spurious result.

. The VECM analysis in this study is based on equation (3) and it involves four cointegration vectors as thus;

$$\Delta lnargdp_t = \alpha_0 + \sum_{i=1}^{n} \beta_{1i} \Delta lnargdp_{t-1} + \sum_{i=0}^{n} \beta_{2i} \Delta lnagrcap_{1_{t-1}} + \sum_{i=0}^{n} \beta_{3i} \Delta lnagrrecx_{2_{t-1}} +$$

$$\sum_{i=0}^{n} \beta_{4i} \Delta lnacgsf_{3_{t-1}} + \lambda_1 ecm_{t-1} + \mu_t \quad (4)$$

ecm_{t-1} is the error correction term obtained from the cointegration model. The error coefficients (λ_1) indicate the rate at which the cointegration model correct its previous period's disequilibrium or speed of adjustment to restore the long run equilibrium relationship. A negative and significant ecm_{t-1} coefficient implies that any short run movement between the dependant and explanatory variables will converge back to the long run relationship.

Table 4.1: Data from CBN annual reports and National Bureau of Statistics, 1981-2019

Date	Agrrec (N'b)	Agrcap(N'b)	Acgsf (N'th)	Argdp (N'b)
1981	0.01303	4.71697	35642.40	2364.37315
1982	0.01480	3.60520	31763.90	2425.96089
1983	0.01277	3.24723	36307.50	2409.08192
1984	0.01566	2.96434	24654.90	2303.50542
1985	0.02036	4.10964	44243.60	2731.06247
1986	0.02069	4.46931	68417.40	2986.83538
1987	0.04615	6.30385	102152.50	2891.67233
1988	0.08300	7.68700	118611.00	3174.56762
1989	0.15180	14.58820	129300.30	3325.94709
1990	0.25800	25.96200	98494.50	3464.71626
1991	0.20870	18.12130	79107.40	3590.83744
1992	0.45597	25.92403	91953.10	3674.79283
1993	1.80381	28.86619	80845.80	3743.66581
1994	1.18329	40.53671	104463.00	3839.67545
1995	1.51040	133.92960	164133.10	3977.38194
1996	1.59256	113.21744	225519.50	4133.54821
1997	2.05888	163.94112	242028.30	4305.67963
1998	2.89170	136.40830	219144.20	4475.24138
1999	59.31617	165.45383	241839.00	4703.64368
2000	6.33578	308.14422	361449.00	4840.97120
2001	7.06455	896.39545	728545.40	5024.54211
2002	9.99355	490.99645	1050982.30	7817.08450
2003	7.53735	493.28265	1151015.00	8364.83210
2004	11.25663	554.44337	2083744.70	8888.57340
2005	16.32596	768.77404	9366392.90	9516.99154
2006	17.91903	659.62097	4195099.68	10222.47498
2007	32.48423	1232.11577	4087447.94	10958.46913
2008	65.39901	1270.60099	6497958.93	11645.37098
2009	22.43520	1630.21480	8328565.78	12330.32555
2010	28.21795	1879.36205	7840496.63	13048.89280
2011	41.20000	2196.68000	10028988.81	13429.37877
2012	33.30000	2595.48000	9332484.23	14329.70562
2013	39.43101	2911.12899	9256676.80	14750.52321
2014	36.70000	3238.33000	12456250.87	15380.38934
2015	41.27000	3041.14000	10857380.83	15952.22014
2016	36.30453	2886.19547	7858643.35	16607.33733

2017	50.26068	3284.93932	5849388.73	17179.49529
2018	53.98774	3952.01226	4377626.29	17544.14774
2019	70.27454	4655.32546	4070032.47	17958.58371

Sources: NBS/CBN statistical bulletin 2020

Unit Root Test (ADF Tests)

Unit Root Test was applied to determine whether those variables are stationary. Stationary variable can be defined as variable with a constant mean, constant variance and constant auto covariance. A variable is stationary if its t-statistic is greater than Mckinnon critical value at 5% and at absolute term (Brooks, 2008; Sulaiman, Oke&Azeez, 2011). Stationary property also means when there is a change in a variable during a particular time, the effect will continue for the following time which is t+1, t+2 (Cheng, Goh, Japheth, Lai & Yong, 2013).

The results presented in Table 4.1 and 4.2 below clearly indicate that all series exhibit unit root property using both ADF test and PP test. Thus, according to the ADF and PP tests, all the four variables of ARGDP, AGRREC, AGRCAP and ACGSF were non-stationary at their levels but became stationary after the first differencing. Hence the series are all integrated series of order I (1) and therefore showed that all the variables are stationary (no unit root) at first difference using 5 per cent level of significance ($\alpha = 0.05$). This is because their respective ADF test PP test statistics values are greater than Mckinnon critical value at 5% and at absolute term. The results implied that all series has to be differenced once in our model in order to avoid spurious results.

Table 4.2: ADF Unit Root Test Results for Nigeria Annual Series (1981-2019)

	ADF @ LEVEL					ADF @ 1ST DIFFERENCE				
variable	t-statistics	1%	5%	10%	Result	t-statistics	1%	5%	10%	Result
Agrrec	-2.0111	-3.6268	-2.9458	-2.6115	1(0)	-8.5707	-3.6210	-2.9434	-2.6103	1(1)
Agrcap	-0.6627	-3.6156	-2.9411	-2.6091	1(0)	-7.0360	-3.6210	-2.9434	-2.6103	1(1)
Acgsf	-1.0690	-3.6156	-2.9411	-2.6091	1(0)	-5.4942	-3.6210	-2.9434	-2.6103	1(1)
Argdp	-0.0799	-3.6156	-2.9411	-2.6091	1(0)	-5.9071	-3.6210	-2.9434	-2.6103	1(1)

Source: Extract from eviews10

Table 4.3: PP Unit Root Test Results for Nigeria Annual Series (1981-2019)

	PP @ LEVEL					PP @ 1ST DIFFERENCE				
variable	t-statistics	1%	5%	10%	Result	t-statistics	1%	5%	10%	Result
Agrrec	-1.5731	-3.6156	-2.9411	-2.6091	1(0)	-9.0807	-3.6210	-2.9434	-2.6103	1(1)
Agrcap	-0.6291	-3.6156	-2.9411	-2.6091	1(0)	-7.4294	-3.6210	-2.9434	-2.6103	1(1)
Acgsf	-1.0709	-3.6156	-2.9411	-2.6091	1(0)	-5.4969	-3.6210	-2.9434	-2.6103	1(1)
Argdp	-0.0806	-3.6156	-2.9411	-2.6091	1(0)	-5.9063	-3.6210	-2.9434	-2.6103	1(1)

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Source: Extract from Eview10

Based on the results obtained, it was concluded that the results for ADF tests and PP test are satisfying the initial assumption for co-integration analysis. Subsequently it is well again to confirm cointegration test under Johansen approach for explaining long-run associations among four variables under study.

Interpretation of Results

Here we present results of empirical analyses of the study optimal lag selection was first conducted, followed by Johansen co integration, Vector Error Correction, and lastly, diagnostic test.

Selection of optimal lag using

Table 4.4 show various optimal lag selection for this study. Since, the SC: Schwarz information criterion or AIC: Akaike information criterion showed optimal at lag 1, therefore, subsequent analysis will lag 1.

Lag Selection criteria at lag 1

VAR Lag Order Selection Criteria
Endogenous variables: LARGDP LAGRREC LAGRCAP LACGSF
Exogenous variables: C
Date: 06/14/21 Time: 06:55

Sample: 1981 2019
Included observations: 36

Table 4.4: Optimal lag selection

VAR Lag Order Selection Criteria						
Endogenous variables: LARGDP LAGRREC LAGRCAP LACGSF						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	-139.22	NA	0.0335	7.9567	8.1326	8.0181
1	-1.03	238.00	3.81e-05	1. 0276*	2.0479*	1.4752*
2	17.503	27.796*	3.43e-05*	1.1682	2.6111	1.5802
3	28.674	14.274	4.92e-05	1.2958	3.5831	2.0941

* indicates lag order selected by the criterion, LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error, AIC: Akaike information criterion, SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Johansen Co integration Test Results

The co integration result presented in Table 4. 6 indicated that at McKinnon-Haug-Michelis 5% significance level of the Trace suggests that the incorporated time series variables are co integrated at the fourth hypothesized co integration equations order i.e. r = 3 for linear deterministic trend model with intercept (i.e. the hypothesis of no co-integration among the variables can be rejected for Nigeria).

This implies that there exist at least one co integrating equations among the incorporated series in the estimated VAR system. The results shows that both the test statistics is more than its critical value while $r \leq 1$, which indicates there exists a long-run association among the variables. Since the variables are co integrated, it is concluded that there exists a long-run equilibrium relationship between the variables.

Date: 06/14/21 Time: 06:45
Sample (adjusted): 1981 2019
Included observations: 37 after adjustments
Trend assumption: Linear deterministic trend
Series: LARGDP LAGRREC LAGRCAP LACGSF
Lags interval (in first differences): 1 to 1

Table 4.5: Johansen Cointegration Test Results (Lag length 1) for Series

Series: LARGDP LAGRREC LAGRCAP LACGSF				
Lags interval (in first differences): 1 to 1				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.730352	61.85468	47.85613	0.0014
At most 1	0.171051	13.36105	29.79707	0.8744
At most 2	0.108292	6.419950	15.49471	0.6459
At most 3	0.057195	2.179154	3.841466	0.1399
Trace test indicates 1 cointegratingeqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized		Max-Eigen	0.05	

No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.730352	48.49363	27.58434	0.0000
At most 1	0.171051	6.941096	21.13162	0.9562
At most 2	0.108292	4.240796	14.26460	0.8331
At most 3	0.057195	2.179154	3.841466	0.1399
Max-eigenvalue test indicates 1 cointegratingeqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Source: extract from eviews10

The co-integrating equation is chosen based on log likelihood ratio. If the log likelihood ratio is positively signed, we chose the equation with the lowest log likelihood ratio. If negatively signed, we chose the highest log likelihood ratio at absolute term. From the Johansen co-integration normalized cointegrating result, ARGDP, AGRREC, AGRCAP are positive and ACGSF is negative. Hence we estimate the VECM to test for long run and short run relationship or adjustment mechanism.

Table 4.6: Normalized cointegrating result

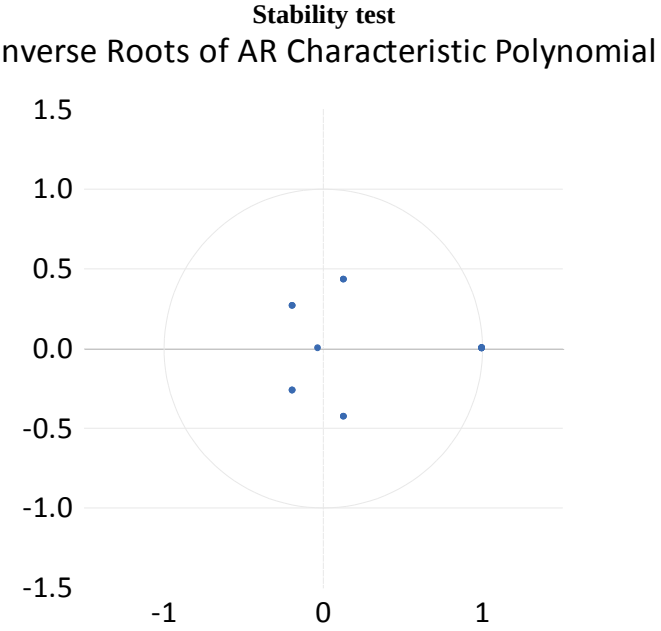
Vector Error Correction Estimates
Date: 06/14/21 Time: 06:50
Sample (adjusted): 1981 2019
Included observations: 37 after adjustments
Standard errors in ( )& t-statistics in [ ]

CointegratingEq:	CointEq1				
LARGDP(-1)	1.000000				
LAGRREC(-1)	0.466288	Coefficient			
	(0.05224)	SE			
	[8.92530]	t-statistics			
LAGRCAP(-1)	0.771666	Coefficient			
	(0.08628)	SE			
	[8.94382]	t-statistics			
LACGSF(-1)	-0.07014	Coefficient			
	(0.05003)	SE			
	[-1.40186]	t-statistics			
C	-4.255185				
Error Correction:	D(LARGDP)	D(LAGRREC)	D(LAGRCAP)	D(LACGSF)	
CointEq1	-0.112291	-0.59267	1.019053	0.369109	Coefficient
	(0.04072)	(0.44723)	(0.13293)	(0.25369)	SE
	[-2.75742]	[-1.32519]	[7.66614]	[1.45494]	t-statistics

Source: Extract from Eview10

From the cointegrating equation, LAGRREC and LAGRCAP show a positive and statistically significant long run relationship with LARGDP. It confirms the apriori expectations. It means that 1% increase in LAGRREC and LAGRCAP will lead to0.4662% and 0.7716% increase in LARGDP in the long run. LACGSF shows negative and statistically insignificant relationship with LARGDP.

The error correction term is -0.1122, and t-statistics(-2.757). Since the coefficient of the error term is negative and significant, it means that (1). There is a long run causality running from explanatory variables to the dependent variable. (2) There is speed of adjustment towards long run equilibrium. That is the speed of adjustment of about 11.29% (3) Any shock or innovation in the system will converge towards a new long run equilibrium at the speed of 11.29% in the next period.



Source: Extract from using E-view 10

Figure 4.1; Roots of the AR

The result of the inverse root stability test for the Vector Error correction model in figure 1 above indicates that the model is dynamically stable. This can be seen as all the dots are inside the circled boundary.

Significance of independent variables/evaluation of hypothesis

Agrrec = Agricultural Government Recurrent Expenditure

$\boldsymbol{H_0 = \beta_1 = 0}$

$\boldsymbol{H_1 = \beta_1 \neq 0}$

Decision Rule: Reject $\boldsymbol{H_0}$ **if** p-value is less than significant level. Or t-statistic is more than 2 (rule of thumb). Otherwise, do not reject$\boldsymbol{H_0}$.

VECM: t-statistic = 8.92530

Decision: Reject $\boldsymbol{H_0}$since the t-statistic is greater than 2. Therefore, we conclude that there is significant relationship between government recurrent expenditure to agriculture and economic growth.

Agrcap = Agricultural Government Capital Expenditure

$\boldsymbol{H_0 = \beta_1 = 0}$

$\boldsymbol{H_1 = \beta_1 \neq 0}$

Decision Rule: Reject$\boldsymbol{H_0}$if-value is less than significant level. Or t-statistic is more than 2 (rule of thumb). Otherwise, do not reject$\boldsymbol{H_0}$.

VECM: t-statistic = 8.94382

Decision: Reject $\boldsymbol{H_0}$since the t-statistic is greater than 2. Therefore, we conclude that there is significant relationship between government capital expenditure to agriculture and economic growth.

ACGSF = Agricultural credit guarantee scheme fund

$\boldsymbol{H_0 = \beta_1 = 0}$

$\boldsymbol{H_1 = \beta_1 \neq 0}$

Decision Rule: Reject $\boldsymbol{H_0}$ if p-value is less than significant level. Or t-statistic is more than 2. Otherwise, do not reject $\boldsymbol{H_0}$.

VECM: t-statistic =-1.40186

Decision: Do not reject H_0since the t-statistic is less than 2.Therefore, we conclude that there is no significant relationship between Agricultural credit guarantee scheme and economic growth.

III. Discussion Of Findings

There is significant positive relationship between government recurrent expenditure to agriculture and economic growth. The recurrent expenditure has a positive significant effect on the real GDP, both in long-run. Suggesting that the effect of the recurrent expenditure in total government expenditure explains the plausible observed impact on the real GDP growth. This finding is in line past empirical studies.

There is significant relationship between government capital expenditure to agriculture and economic growth. This implies that the lasting effect of capital expenditure on agriculture is yielding returns and indeed

contributing real growth in the agricultural sector in Nigeria. This finding is also in conformity with related studies.

There is no significant relationship between Agricultural credit guarantee scheme and economic growth. This implies that agricultural credit guarantee scheme fund was not contributing to economic growth. In other words, farmers divert these loans to other things order than agriculture. Therefore, government efforts in this area concentrated more on unproductive activities than productive activities. In order to boost economic growth the government should address the factors causing the negative impact and insignificant effect on growth. A well-defined loan policy should be pursued and efficient management of the scheme should be emphasized.

IV. Conclusion

The first objective of this study was to determine the impact of government recurrent expenditure in agricultural sector on real GDP. There is a positive and significant relationship existing among AGRREC and GDP (since the test showed cointegration) and the impulse response shown a significant shock emanating from explanatory variables to dependent variable. We therefore state that there is a long run relationship between economic growth and public investment on agriculture sector.

The second objective was to determine the impact of capital expenditure in the agricultural sector on real GDP in Nigeria. The long run equation under the VECM frame work indicates that AGRCAP has positive and significant effect on real GDP. However, based on statistical significance, therefore, AGRCAP exert significant influence on RGDP in Nigeria within the time frame of the study.

The third objective aim was to examine the effect of government credit facility (ACGSF) to agricultural sector on real GDP in Nigeria. The dynamic regression result under the VECM frame work indicates that ACGSF has negative and insignificant effect on real GDP. Hence, we accept the null hypothesis and reject the alternate hypothesis and conclude that ACGSF has no significant relationship with real GDP in Nigeria within the time frame of the study.

Recommendations

Based on the findings, the study recommends that;

1. Given the significant long run relationship between public investment in agriculture and economic growth, we recommend that Central Banks/government should take actions toward safe investment environment in agricultural sector and find ways to stop diversion of funds made for agricultural purposes.
2. Due to positive and significant relationship between capital expenditure in agricultural sector and economic growth, we recommend that policymakers should identify and evaluate alternative or different intervention programmes in terms of both their immediate and long term impacts on the capital project being executed by farmer in the local areas.
3. We recommend that budgetary allocation to the agricultural sector should be increased significantly so that adequate funds can be available for driving the activities of the sector. Budgetary implementation in the agricultural sector should also be pursued to the latter so as to foster a higher level of budget implementation; such as for agricultural capital projects. This will ultimately ensure that the Agricultural Transformation Action Plan (ATAP), which is geared towards achieving food security, employment generation and wealth creation, is realized in Nigeria.

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