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EFFECT OF DOMESTIC PUBLIC INVESTMENT IN AGRICULTURE ON THE ECONOMIC GROWTH OF NIGERIA

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Abstract

This study aimed at evaluating the effect of agricultural sector domestic public investment (DPI) on economic growth in Nigeria. The data of DPI in agriculture from 1999 – 2019, extracted from the Central Bank of Nigeria statistical bulletin were used to investigate if DPI in agriculture has a positive effect on economic growth in Nigeria. The study analyses were conducted using linear regression with the application of Ordinary Least Squares (OLS) technique and Granger causality technology. The findings revealed that DPI in agriculture did not have positive and significant effect on economic growth in Nigeria. The findings also revealed that causality relationship between DPI and economic growth in Nigeria was lacking over the 20 – year study period. The study therefore concluded that government expenditures in agriculture have not been fully utilized suggests that the Nigerian government should retool and design new expenditure policy initiatives in agriculture to adequately scale-up economic growth and development.

Key words: Agricultural Sector, Domestic Public Investment, Economic Growth

Introduction

Nigeria kick started a lot of investments in several sectors of her economy by enacting the Economic Reform Act of 2004. This became an offshoot of reforms in several sectors of the economy such as: Education, Health, Agriculture, Transport, Information Communication Technology, Infrastructure etc. These reforms ensured injection of funds by way of public investment into these sectors.

As noted by Ozigbu, Ezekwe & Morris (2018), the pattern and dimensions of public investments have changed over time, even with successive governments re-igniting interest in economic, community and social services. As investments in economic services such as agriculture, construction, communication and transportation foster infrastructural development, those of community and social services such as education and health are crucial for human capital formation.

Public investments in agriculture include spending by all levels of government from the annual budgetary allocations. These investments cover expenditure on crop development, seed production

and distribution, agricultural mechanization, extension services, irrigation, research and so on (Mathew & Mordocai, 2016). As opined by Abada & Okuma (2016), agriculture is fundamental to the sustenance of life and is the bedrock of economic development as it entails reduction in poverty level and enhancement of the overall wellbeing of the citizenry.

Nigeria, over the years, has been making huge investments in the agricultural sector but this has not translated to self sufficiency in food production. Successive governments have been recycling the same/similar policies to embezzle public funds to the total neglect of food production (Olukoya, 2007). Public investment program in irrigation which was initiated during the oil boom of the 1970s and recycled by successive regimes has been a monumental failure (World Bank, 2001).

As opined by Eze (2017) the need for investment in agriculture cannot be overemphasized, as it contributes to economic growth and development of the economy. These growth and development come in various ways such as creation of employment opportunities, provision of food for the ever growing population, industrial raw materials to industries, generation of foreign exchange earnings and revenue to the government, as well as eradication of extreme poverty in the country.

Government's spending in the agricultural sector which had maintained an upward trend is yet to translate to corresponding increase in economic output as Nigeria has remained a net importer of food and other agricultural products. As opined by Mathew and Mordecai (2016), the negative impact of public agricultural expenditure on agricultural output may have resulted due to discrepancies that existed between the amount allocated to the sector and the amount actually spent on it.

Aim of the Study

The aim of this study is to determine the effect of domestic public investment in agriculture on economic growth of Nigeria and was guided by the following research question:

How does domestic public investment in agriculture affect economic growth in Nigeria?

In line with the problem statement and specific objective, the following null hypothesis was formulated.

Ho. Domestic public investment in agriculture does not have a positive and significant effect on economic growth in Nigeria.

Review of Related Literature

Public Investment Efficiency

The economic and social impact of investment depends on its efficiency. To be efficient, public investment must meet some conditions such as being allocated to projects with the highest ratio of benefits to costs, and its aggregate level must align with fiscal sustainability (IMF, 2013).
Efficiency of public investment entails not only its proper allocation to sectors but also the production of public assets at the lowest possible cost (Blanchard & Leigh, 2013).

Public investment efficiency can be assessed by estimating the 'efficiency frontiers', which involve comparing an indicator of public infrastructure quantity (the input) to an indicator of public infrastructure quality (the output). The further a country is from the efficiency frontier, the lower its efficiency (Eden & Kraay, 2014).

There are however, challenges that are common to public investment efficiency and these include: weak strategic guidance, budget planning and budget appraisal; poor project selection and budgeting because of rigidities in the sectoral allocation of investments ; fragmented decision making regarding capital and current budgets; completion delays and cost overruns from cost estimates and inadequate cost controls (Forni & Gambetti, 2010).

For it to be efficient, public investment choices are usually linked to a development strategy which is based on an assessment of the potential opportunities for, and impediment to growth in each locality. These investment strategies are usually result oriented, well informed and realistic as they are expected to position the area for competitiveness and sustainable development (Wu & Wang, 2007).

Domestic public investments serve multiple objectives as they are expected to join up related investments across several sectors of the economy. These objectives are well beyond growth and are linked to inclusive development or environmental objectives which are meant to be understood in

complimentarily from the early stages of the planning process (Yu, 2004). These complementarities, when sought, tend to reduce conflict among sectoral strategies (Shioji, 2001).

Public investments are therefore efficient when they are made on the basis of well informed and evidence – based strategies. For this to be achieved, Governments usually encourage the production of data at the right scale to inform investment strategies that produce evidence for decision making and also tackle the ever growing complex tasks associated with public investment.

Domestic Pubic Investment in Agriculture and Economic Growth

Agriculture in developing economies like Nigeria is concerned as an occupation from which livelihood can be derived by the greater number of the population of the country, as noted by Eze(2017) from (Anthony, Ezedinma & Ochopa, 1995). A country's agricultural sector, therefore, is expected to play a particular important role in development and growth performance as its performance determines the well-being of a large fraction of the population (Udoh, 2011). The government therefore has a role to play in economic development and growth which is usually done through public spending. This spending by government is an important factor or self-sustaining productivity gains and long term growth as it ensures creation of rural non-farm jobs and increased wages which in turn leads to poverty reduction within the economy.

Public expenditure on agriculture here includes spending by the various arms of government i.e local, state, and Federal governments on agriculture from annual budgetary allocations.

Public investment in agriculture is expected to drive the roles conventionally ascribed to the agricultural sector in a growing economy such as:

- Providing adequate food for an increasing population
- Sourcing adequate raw materials to the industrial sector
- Constituting the major source of employment
- Constituting a major source of foreign exchange earnings and
- Providing a market for the products of the industrial sector.

Generally speaking, investment refers to all economic activity which involves the use of resources to produce goods and services. Investment in agriculture is particularly important for the development of less developed countries. Agriculture makes it possible for a nation to be self sustaining and be

able to feed a greater percentage of its population. Investment in agricultural research and extension services improves and facilitates the dissemination of the results of scientific researches that also increases production (Anwer and Sampath, 1999).

Empirical Review

Inysa, Daniel, Dayagal and Chiya (2016) in the study 'Nigerian economic growth and recovery: role of agriculture', investigated the impact of agriculture on economic growth of Nigeria. Using ordinary least squares (OLS) regression technique, it was discovered that domestic investments on agriculture significantly impacted agricultural output as a component of GDP.

Udoh (2011) in his work, 'An examination of public expenditure, private investment and agricultural sector growth in Nigeria: Bounds Testing Approach', weighed the relationship between public expenditure, private investment and agricultural output growth in Nigeria over the period 1970-2008 using Autoregressive distributed lag(ARDL) modeling approach. The result of the error correction model revealed that increase in public expenditure has a positive influence on the growth of agricultural output and therefore, economic growth.

Ogboru, Abdulmalik & Park (2018) examined 'Government Expenditure on agriculture and its impact on unemployment reduction in Nigeria: 1999-2015', using time series data. The regression results demonstrated that government expenditure (capital & recurrent) has positive effect on economic growth.

Mathew & Mordecai (2016) investigated the impact of public agricultural expenditure on agricultural output in Nigeria (1981-2014), using the Augmented Dickey-fuller test, Johansen ciontegeration test, Error correction model (ECM) and Granger Causality test. The Johansen co integration test revealed that there exists a long run relationship between public expenditure and economic growth. However, the ECM model showed that public agricultural expenditure has a significant negative impact on economic growth in Nigeria.

Ayeomoni & Aladejana (2016) in the study: 'Agricultural Credit and economic growth Nexus: Evidence from Nigeria', examined the relationship between agricultural credit and economic growth in Nigeria using time series data which spanned from 1986-2014. The finding showed that short and

long run relationship existed between agricultural credit and economic growth. The study concluded that economic growth is influenced by dynamic variables such as domestic public investment and credit to agricultural sector.

Obansa & Maduekwe (2013) studied the impact of 'Agriculture financing and economic growth in Nigeria' using secondary data and some economic techniques such as ordinary least square (OLS); Augmented Dickey- Fuller (ADF), unit root test; Granger causality test. The results of the various models used suggest that there is bidirectional causality between economic growth and agricultural financing and there is bidirectional causality between economic growth and agricultural growth.

Ele, Okon, Ibok & Brown (2014) in the study, 'Analysis of Agricultural public capital expenditure and agricultural economic growth in Nigeria 1961-2010; investigated the impact of public agricultural expenditure on economic growth using Augmented Dickey-Fuller test, Johansen maximum likelihood test and Granger causality test. The result of the parsimonious error correction model showed that agricultural capital expenditure had a positive impact on agricultural economic growth.

Odetola & Etumnu (2013) examined the 'Contribution of agriculture Economic growth in Nigeria, using accounting framework and series data from 1960-2011. The findings revealed that agriculture sector has contributed positively and consistently to economic growth in Nigeria, re-affirming the sector's importance in the economy.

Eze (2017) in his work, 'Agricultural sector performance and Nigeria's economic growth', investigated the contribution of agricultural sector output to the growth of domestic economy in Nigeria for the period 1980-2014. Specifically, the study examined the causality between agricultural sector and economic growth, as well as the impact of the sector on the growth of the Nigerian domestic economy. The findings showed that agricultural sector output contributed positively but insignificantly to the growth of Nigerian domestic economy.

Oyakhilomen & Zibah (2014), in their work: 'Agricultural production and Economic growth in Nigeria: Implication for rural poverty Alleviation', investigated the relationship between agricultural production and the growth of Nigerian economy with focus on poverty reduction using time series data. The result showed that agricultural production was significant in influencing the favourable trend of economic growth in Nigeria.

Fatuase, Olubukola, Oparinde and Akinyemi (2016) in their study examined the 'Effect of Agriculture and health expenditures on economic growth in Nigeria', using autoregressive distributed lag (ARDL) model to describe the relationship that exists among economic growth, agricultural and health expenditures in Nigeria for the period 1982-2012. The result revealed that there exists a long-run equilibrium relationship between economic growth and government expenditures on agriculture and health in Nigeria.

Research Design

This study adopted an *Ex post Facto* research design. The data collated were analyzed using linear regression with the application of Ordinary Least Squares (OLS) technique and Granger causality technology. Data analysis was carried out with the aid of E-views 10.0 statistical software.

Model Specification

In this research, domestic public investment in agricultural sector serve as the independent variable while economic growth captured with real gross domestic product serve as the dependent variable.

The model specified the equation for estimation as follows:

RGDP = f (DPA) … (1)

The model is expressed in implicit and explicit forms below:

In Implicit Form: RGDP = f (DPA)…… (1)

Explicit: as econometric equation;

$RGDP_t = \beta_o + \beta_1 DPA + \mu$,…….(2)

Where,

f = Functional Relationship

DPA = Domestic Public Investment on Agricultural Sector

β = The Parameters of the independent variables to be estimated.

μ = Stochastic Error Term

t = Time Period

Presentation and Analyses of Data

Data Presentation

YEAR	GDP (₦' Billion)	DPA (₦' Billion)
1999	5307.360	59.32000
2000	6897.480	6.340000
2001	8134.140	7.060000
2002	11332.25	9.990000
2003	13301.56	7.540000
2004	17321.30	11.26000
2005	22269.98	16.33000
2006	28662.47	17.92000
2007	32995.38	32.48000
2008	39157.88	65.40000
2009	44285.56	22.44000
2010	54612.26	28.22000
2011	62980.40	41.20000
2012	71713.94	33.30000
2013	80092.56	39.43000
2014	89043.62	36.70000
2015	94144.96	41.27000
2016	101489.5	36.30000
2017	113711.6	50.26000
2018	127736.8	53.99000
2019	144210.5	70.27000

Source: *Central Bank of Nigeria (CBN) Statistical Bulletin, 10.*

Note:

GDP = Gross Domestic Product

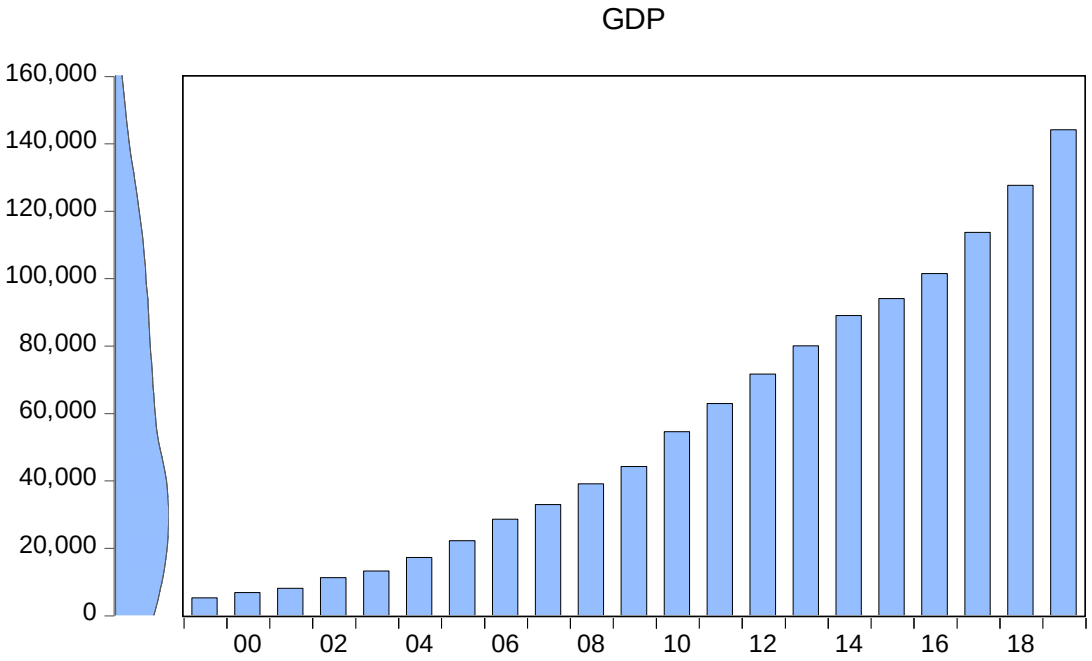
DPA = Domestic Public Investment on Agricultural Sector

The data above is a time series secondary data covering the variable under study. The data are ranging from 1999 to 2019. They were extracted from the Central Bank of Nigeria (CBN) statistical bulletin 2019.

Graphical Analysis

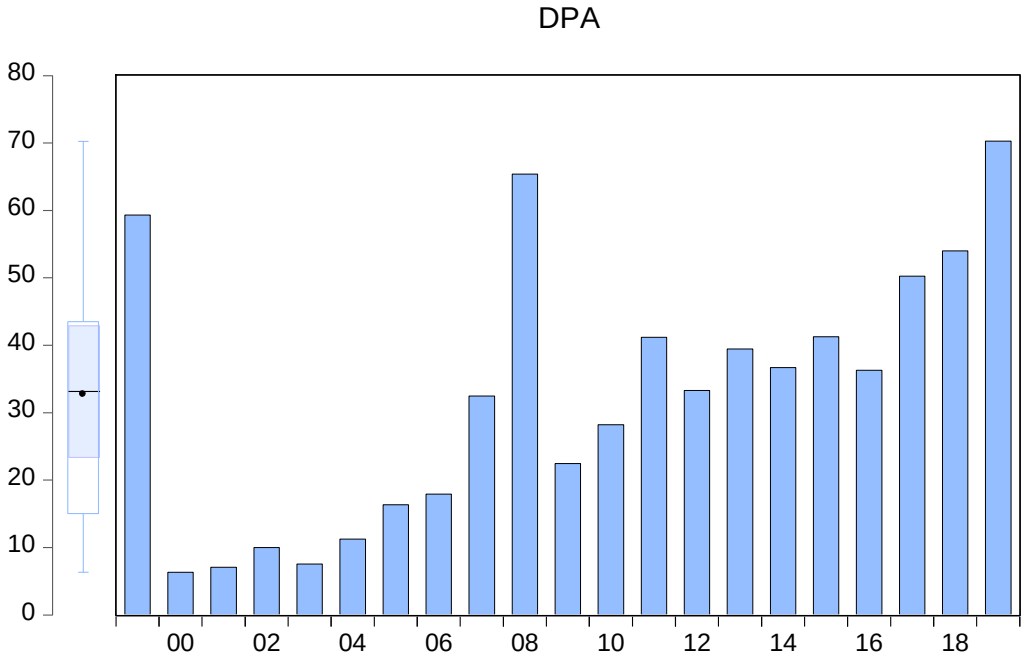
This section of the analysis is focused on carrying out a graphical analysis of the agricultural sector. This was done to show and demonstrate the trend of the variable for the period under study.

Figure 1



Source: *Author's Computation Using E-views*

Figure 2



Source: *Author's Computation Using E-views*

Descriptive Data Analysis

	GDP (N'BN)	DPA (N'BN)
Mean	55685.79	32.71524
Median	44285.56	33.30000
Maximum	144210.5	70.27000
Minimum	5307.360	6.340000
Std. Dev.	43111.23	19.67721
Skewness	0.528294	0.280938
Kurtosis	2.075657	2.056661
Jarque-Bera	1.724441	1.054894
Probability	0.422223	0.590110
Sum	1169402.	687.0200
Sum Sq. Dev.	3.72E+10	7743.854
Observations	21	21

Source: *Author's Computation Using E-views 10.*

The descriptive statistics was computed to evaluate the statistical characteristics of the selected time series. The table above reveals the mean, median, standard deviation, Skewness, Kurtosis, Jarque-Bera, Sum of Square deviation, etc of the data. A striking observation is that the mean values of economic growth rate GDPR between 1999 -2019 yielded ₦55685.79 billion and the mean of DPA

is ₦32.71524 billion,. The probability value of the variable reveals that the variable is normally distributed. The Skewness and Kurtosis of the variables clearly shows that the Jarque-Berra has a normal residual distribution.

Regression Analysis

Dependent Variable: LOG(GDP)
Method: Least Squares
Date: 10/26/20 Time: 15:14
Sample: 1999 2019
Included observations: 21

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.455583	0.177048	25.16601	0.0000
LOG(DPA)	-0.035237	0.026574	-1.326013	0.2047

R-squared	0.897318	Mean dependent var	10.52609
Adjusted R-squared	0.796424	S.D. dependent var	1.026086
S.E. of regression	0.061356	Akaike info criterion	-2.509302
Sum squared resid	0.056468	Schwarz criterion	-2.210867
Log likelihood	32.34767	Hannan-Quinn criter.	-2.444534
F-statistic	1115.712	Durbin-Watson stat	0.753990
Prob(F-statistic)	0.000000		

Source: *Researcher's Computation Using E-views* 10.

Interpretation of the Numerical Coefficients

The regression output also shows that estimations of domestic public investment on agricultural sector (DPA) against economic growth measured with logarithm of Gross Domestic Product Log (GDP). A closer look at the numerical parameters shows that the DPA has a negative numerical coefficient at the magnitude of -0.035237. This entails that there is a negative relationship between DPA and economic growth in Nigeria. It also shows that domestic public expenditures on the agricultural sector contribute negatively to economic growth in Nigeria for the years under analysis. This does not conform to economic a priori expectation but reveals the situation of Nigeria. This

shows that public expenditures channeled to the agricultural sector does not yield expected and corresponding increase in economic growth possibly due to oil dominance.

Test of Hypothesis

Domestic public investment in agriculture does not have a positive and significant effect on economic growth in Nigeria.

Presentation and Analysis of Result

Table

Variable	**Coefficient**	**P-value**
DPA	-0.035237	0.2047

Source: *Main Regression Output*

Decision Rule

The decision rule is to reject the null hypothesis if the probability is less than 0.05 and accept the alternative hypothesis. However, if the probability is greater than 0.05, we accept the null hypothesis and reject the alternative hypothesis.

Decision

From the above analysis, it is clearly seen that the probability value of DPA yielded 0.2047 and it is obviously greater than 0.05. This compels the acceptance of the null hypothesis for hypothesis three. Hence; domestic public investment in agriculture does not have a positive and significant effect on economic growth in Nigeria.

Summary, Conclusion and Recommendation

Domestic public investment in agriculture does not have a positive and significant effect on economic growth in Nigeria (p-value = 0.2047 > 0.05, β = -0.035237). The analysis encourages the acceptance of the null hypothesis as it is clearly seen that the probability value of domestic public investment in agriculture (DPA) yielded 0.2047 and is obviously greater than 0.05.

This study has been able to determine the effect of domestic public investment in agriculture on Nigerian economic growth. Summary of findings clearly revealed that domestic public investment in

agriculture has a negative and insignificant impact on economic growth in Nigeria. The conclusion that can be drawn from this is that over the years under analysis, government expenditures on the aforementioned sector have not been well utilized. This may have been caused by corruption, nepotism and other clogs of government expenditures.

Recommendation

In the light of the findings of this study, it is recommended that Nigerian Government should retool and design new expenditure policy initiatives in agriculture to adequately scale-up economic growth and development.

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