



DETERMINANTS OF NIGERIA GOVERNMENT AGRICULTURAL EXPENDITURE (1999-2020): EVIDENCE FROM VECTOR ERROR CORRECTION MODEL APPROACH

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ABSTRACT

The study focused on the determinants of government agricultural expenditure in the long and short run from 1999-2020 using Vector Error Correction Model approach. Annual time series data on agricultural GDP, agricultural expenditure, inflation rate, exchange rate, interest rate, private investment, public investment and foreign direct investment collected from the records of Central Bank of Nigeria and National Bureau of Statistics database were analyzed using inferential statistics (ADF, Johansen co-integration and VECM). The results showed that all the variables co-integrate and were stationary at first difference. In the long run, inflation (1.118415) and private investment (0.004239) were the significant and important variables that determine agricultural expenditure. The coefficient of multiple determination (R^2) was 0.925, indicating that 92.5% variation in agricultural expenditure was explained by the variables. The Error correction Term is statistically significant and negative (-0.0278) in the short run indicating a slow speed of adjustment of variables towards equilibrium. In the short run, inflation, private investment and public investment were the important variables that influenced government expenditure. The study concludes that inflation, private and public expenditures influenced government agricultural expenditure significantly and therefore recommend friendly policies to curtail inflation, conducive environment to catalyze private investment and stimulation of public investment to boost agricultural growth.

Keywords: Agricultural expenditure, Long run, Short run, Influence, VECM.

INTRODUCTION

The Food and Agriculture Organization (FAO, 2017) recommended that 25% of developing countries' budgetary expenditure be channeled/allocated to agricultural sector development. This has not been achieved by the various administrations in Nigeria, thereby affecting government programmes and policies for the agricultural sector. Over the past years, oil prices have continued to fall, plunging the country into recession with states unable to pay salaries or execute capital projects. These figures are far cry from the 2003 AU-Maputo Declaration's Comprehensive Africa Agriculture Development Programme (CAADP) that requires African countries to allocate at least 10% of their annual budgets to agriculture and achieve 6% annual growth in agricultural GDP. CAADP is Africa's policy framework for agricultural transformation, wealth creation, food security and nutrition, economic growth and prosperity for all, which Nigeria is a signatory.

The Agricultural sector has witnessed remarkable policy changes since the Nigerian Vision 20:2020 (NV 20:2020) was launched in 2009. The first implementation plan (2010 – 2013) was ongoing when the Agricultural Transformation Agenda (ATA) came on stream in 2011 and lasted until 2015. In August 2016, the agriculture promotion policy (otherwise known as the Green Alternative) was launched. As the nation experienced these different phases of strategic plans there has been no systematic framework of reviewing the performance of the



sector to provide evidence-guide policy decisions and development strategies (Olamola and Moques, 2018). A regular review is required for proper planning, identification of priorities and setting of targets not only to achieve meaningful transformation of the sector but also to synchronize the sector's development with the nation's medium and long-term development objectives. These policies blueprints together provide insights on national priorities in agriculture, guiding policies, policies strategies, and responsibilities of the Federal, State, and Local governments in delivery public agricultural goods and service.

Budgetary allocation to agriculture compared with other key sectors is also low, despite the sectors role in the fight against poverty, hunger, and unemployment, and in the pursuit of economy development (Olamola and Moques, 2018). Governments spending on health, infrastructure, and education also have replicated effects on the performance of the agricultural sector; this is stemmed from the fact that the health of the farmer and literacy level go a long way in improving the farmer's productivity. Therefore, the share of government expenditure on agriculture in total government spending can be taken as an indicator to measure how much attention the government gives to the sector. Agricultural productivity has fluctuated widely and productivity has declined.

In terms of contribution to GDP, available statistics from the Central Bank of Nigeria (CBN, 2013) shows that the agricultural sector's share of GDP increased from 28% in 1985 to 32% in 1988, dropped to 31% in 1989, rose to 37% in 1990 but fell significantly to 24% in 1992, it increased again to 37% in 1994. It was 32% in 1996 and rose to 40% in 1998, dropped again to 27% in 2000, increased to 37% and fell to 31% in 2002 and 2006, respectively. The percentage contribution of the agricultural sector to GDP fell persistently from 0.37 in 2009 to 0.22 in 2012 and to 0.20 in 2014 (Matthew and Mordecai, 2016).

Economic growth measured by GDP means the increase of the growth rate of GDP, but what determines the increase of each component is very different. Public expenditure, capital formation, private or public investment, employment rates, exchange rates among other factors have different impacts on economic growth and we should take into account that these determinants have different implications if the states are developed or not. There are also socio-political factors and events that have a major influence on the economic advancement of a country (Matthew and Mordecai, 2016). Large percentage of Nigeria's farmer seems not to benefit from government expenditure in the agricultural sector. Thus, the intended objectives and goals of government expenditure have been largely defeated (Demenongu *et al.*, 2014).

Data show that output of Nigeria agricultural production has been fluctuating for some years and the sources of these shocks may not be clear. This has led to heavy importation of food crops to meet up with the country consumption over the years. In 2018, the federal government spent ₦172.8 billion on agriculture, representing 2% of its total budget of ₦8.6 trillion for the year. ₦53.8 billion was for recurrent, while ₦118.9 billion was for capital votes. In 2017, of the ₦7.3 trillion budgets for the year, the federal government voted only ₦123 billion (1.6%) for agriculture. Salaries and overheads got ₦31.7 billion while the remaining ₦91.6 billion was for capital projects. The central government spent ₦75.8 billion (1.26%) on agriculture in 2016 out of its total budget of ₦6 trillion. ₦29.6 billion of the amount was for bureaucratic expenses, leaving ₦46.17 billion for agricultural service (Nurudden, 2018). It is quite germane to look at those factors that influenced Nigerian government agricultural expenditure both in the long and short run, this will help answer question as to why insufficient amount is allocated to that sector. The study was guided by the following objectives: to determine the factors that influenced Nigerian government agricultural expenditure in the long run and also how these factors influenced agricultural expenditure in the short run.



Following the Keynesian growth theory, the Keynesian school of thought according to Romer (2010), suggested that government spending can contribute positively to sectorial growth (agricultural growth in particular) in an economy. Thus, an increase in government expenditure is expected to lead to an increase in employment, profitability and investment through multiplier effects on aggregate demand. Consequently, government expenditure increases the aggregate demand which brings about an increased output depending on expenditure multipliers. Keynes regards public expenditures as an exogenous factor which can be utilized as a policy instrument to promote growth (agricultural growth in particular).

Musgrave (1978) theory of public expenditure growth argued that effectiveness of government expenditure matters most in the economy with the view that if the government expenditure on productive sector (agricultural sector) is not effective, it will cause a negative impact on the growth of that sector (agricultural sector) (Ewubare and Eyitope, 2015).

With regards to factors influencing government agricultural expenditure in Nigeria, several authors have confirmed the fact that FDI has a positive impact on economic growth, e.g., Adeleke *et al.* (2014), Mohammed and Ehikioya (2015), Udeaja and Onyebuchi (2015) and Uwakaeme (2015). In Nigeria, a rise in FDI inflows will help the country to break out of the vicious cycle of extreme poverty.

As noted by Fatukasi (2012), inflation is the persistent increase in the general price level within the economy which affects the value of the domestic currency. He opined that, maintenance of price stability continues to be one of the main objectives of monetary policy for most countries in the world today and Nigeria is not an exception. However, there are some instances, where inflation can actually increase economic growth. For Example, higher anticipated inflation may lower the real rate of interest, causing portfolio adjustments to move away from real money balances to real capital; thereby raising real investment and promoting economic growth. Studies by Olu and Idih (2015) and Umaru and Zubairu (2012) confirmed that inflation has positive effect on economic growth in Nigeria. However, Uwakaeme (2015), Agwu (2014); and Babatunde and Shuaibu (2011) found that inflation in Nigeria negatively affects economic growth.

According to the McKinnon – Shaw hypothesis, interest rates affect economic growth positively. The neoclassical theories as well as the Tobin's q theory of invest assert that interest rates affect economic growth negatively. For Nigeria, many studies confirm that interest rates are negatively related to economic growth, e.g., Udoka and Roland (2012), Agwu (2014), Orji *et al.* (2015); and Jelilov (2016) and Maiga (2017).

Exports are undeniably; an important determinant of economic growth. Exports play a pivotal role in increasing the level of aggregate economic activities through multiplier effects on the level economic growth. Many studies have confirmed this for Nigeria, e.g., Oyatoye *et al.* (2011) and Tartiyus *et al.* (2015).

Private investment is a powerful mean for innovation, economic growth and poverty reduction. Countries with wider and deeper private – sector investments demonstrate accelerated growth. The private sector contributes more meaningfully to economic growth than the public sector (Mesagan *et al.*, 2019). This is due to less corruption in the private sector investment compared to the public sector investment. Literature is filled with proofs that private investment in most developing countries is positively related to economic growth, e.g., Tchoussasi and Ngangue (2014), Nwakoby and Alajekwu-Udoka (2016), Esayas (2016) and Makuyana and Odhiambo (2019). Specifically in Nigeria, Kalu and Onyinye (2015), Ilegbinosa *et al.* (2015) and Orji *et al.* (2015), have confirmed the fact that private investment is positively related to economic growth. Public investment in non – infrastructural projects is likely to relate negatively with economic growth. In Nigeria, Adekola (2014), Ilegbinosa *et al.*



(2015) and Udejaja and Onyebuchi (2015) have confirmed the fact that public investment has a positive effect on economic growth.

MATERIALS AND METHODS

The Study Area

The study area is Nigeria. Nigeria is a West African country lying between longitudes 3⁰E and 15⁰E and latitudes 4⁰ and 14⁰N. The capital of the country is Abuja, which is geographically located in the North Central part of the country. Nigeria, which is the most populous country in Africa, has an estimated population of over 170 million (Udah and Nwachukwu, 2015). It is situated in the Gulf of Guinea and it is bordered by Benin Republic to the West, Republic of Cameroon and Chad to the East and Niger Republic to the North. The lower course of the Niger River flow southward part of the country in the Gulf of Guinea, with Swamps and Mangrove Forest bordering the Southern part (Oyinbo and Rekwot, 2013). The country has a total area of 923,768 square kilometers with land occupying 910,768 square kilometers and water occupying 13,000 square kilometers (Oyinbo and Rekwot, 2013).

Nigeria has a tropical climate with two distinct seasons; the dry and the wet seasons. It comprises the following ecological Zones: Mangrove Swamp, Rainforest, Guinea Savannah, Sudan Savannah and Sahel Savannah. Its terrain is divided into the South low lands merging into Central hills and Plateau, mountains in the south and plains in the North. There are arable crops which occupy 33.02% of the total land cover; permanent crops occupy 3.14%, while others occupy 63.84% (Udah and Nwachukwu, 2015). Above 70% of Nigeria's population is engaged in agriculture (NBS, 2016). The major agricultural crops produced in the country include cocoa, cotton, palm-oil, maize, rice, sorghum, millet, groundnut, cassava, yam and rubber. The major livestock reared are cattle, sheep, goat, pig, and poultry.

Method of Data Collection

Data for this study were obtained from secondary sources. The data were obtained from the records of Central Bank of Nigeria (CBN) publications and annual reports, National Bureau of Statistics (NBS) database, Federal Ministry of Agriculture and Rural Development, Food and Agriculture Organization Statistics (FAOSTAT) and World Bank database. Variables for which data were collected include: agricultural GDP growth rate, government agricultural expenditure, inflation rate, exchange rate, population growth rate, real interest rate, export rate, private investment, public investment and foreign direct investment.

Data Analytical Techniques

Data for this study were analyzed using inferential statistics like Vector Error Correction Model (VECM), used to capture the objectives of the study. In order to obtain more meaningful insight, logarithmic transformation of these variables was adopted. The unit root test of all variables was carried out. The Augmented Dickey Fuller (ADF) method was used to test for the presence of unit root in each variable (an indication for non-stationarity). This was because the use of data characterized by unit roots might lead to serious errors in statistical inference

Augmented Dickey Fuller test (ADF): Following Oyinbo and Rekwot (2013) the Augmented Dickey Fuller (ADF) model with the constant term and trend can be specified as follows:

$$\Delta Y_t = \alpha_0 + \alpha_1 t + \beta Y_{t-1} + \sum_{i=1}^p \delta_i \Delta Y_{t-i} + \varepsilon_1 \quad \dots (1)$$

where; Y is the value of the variable of government expenditure on agriculture, foreign direct investment, inflation, interest rate, export, private investment, public investment, population



growth rate and GDP growth rate). α_0 is the constant, α_1 is the coefficient of the trend series, p is the lag order of the autoregressive process, Y_{t-i} is the lag value of order one of Y_{t-i} and ε_1 is the error term.

For the Vector Error Correction Model (VECM), Government agricultural expenditure was specified as follows:

$$\ln \text{Gea}_{t-1} = \alpha_0 + \alpha_1 \ln \text{Gdr}_{t-1} + \alpha_2 \ln \text{Gea}_{t-1} + \alpha_3 \ln \text{Fdi}_{t-1} + \alpha_4 \ln \text{Inf}_{t-1} + \alpha_5 \ln \text{Rir}_{t-1} + \alpha_6 \ln \text{Ex}_{t-1} + \alpha_7 \ln \text{Pri}_{t-1} + \alpha_8 \ln \text{Pi}_{t-1} + \alpha_9 \ln \text{Pop}_{t-1} + \partial \text{ECM}_{4t} + \mu_{9t} \quad \dots (2)$$

$$\ln \text{Gdr}_{t-1} = \alpha_0 + \alpha_1 \ln \text{Fdi}_{t-1} + \alpha_2 \ln \text{Inf}_{t-1} + \alpha_3 \ln \text{Rir}_{t-1} + \alpha_4 \ln \text{Ex}_{t-1} + \alpha_5 \ln \text{Gea}_{t-1} + \alpha_6 \ln \text{Pri}_{t-1} + \alpha_7 \ln \text{Pi}_{t-1} + \alpha_8 \ln \text{Pop}_{t-1} + \alpha_9 \ln \text{Gdr}_{t-1} + \partial \text{ECM}_{5t} + \mu_{1t} \quad \dots (3)$$

$$\ln \text{Fdi}_{t-1} = \alpha_0 + \alpha_1 \ln \text{Gea}_{t-1} + \alpha_2 \ln \text{Inf}_{t-1} + \alpha_3 \ln \text{Rir}_{t-1} + \alpha_4 \ln \text{Fdi}_{t-1} + \alpha_5 \ln \text{Ex}_{t-1} + \alpha_6 \ln \text{Pri}_{t-1} + \alpha_7 \ln \text{Pi}_{t-1} + \alpha_8 \ln \text{Pop}_{t-1} + \alpha_9 \ln \text{Gdr}_{t-1} + \partial \text{ECM}_{6t} + \mu_{2t} \quad \dots (4)$$

$$\ln \text{Inf}_{t-1} = \alpha_0 + \alpha_1 \ln \text{Gdr}_{t-1} + \alpha_2 \ln \text{Fdi}_{t-1} + \alpha_3 \ln \text{Inf}_{t-1} + \alpha_4 \ln \text{Rir}_{t-1} + \alpha_5 \ln \text{Ex}_{t-1} + \alpha_6 \ln \text{Pri}_{t-1} + \alpha_7 \ln \text{Pi}_{t-1} + \alpha_8 \ln \text{Pop}_{t-1} + \alpha_9 \ln \text{Gea}_{t-1} + \partial \text{ECM}_{7t} + \mu_{3t} \quad \dots (5)$$

$$\ln \text{Rir}_{t-1} = \alpha_0 + \alpha_1 \ln \text{Gdr}_{t-1} + \alpha_2 \ln \text{Fdi}_{t-1} + \alpha_3 \ln \text{Inf}_{t-1} + \alpha_4 \ln \text{Ex}_{t-1} + \alpha_5 \ln \text{Pri}_{t-1} + \alpha_6 \ln \text{Rir}_{t-1} + \alpha_7 \ln \text{Pi}_{t-1} + \alpha_8 \ln \text{Pop}_{t-1} + \alpha_9 \ln \text{Gea}_{t-1} + \partial \text{ECM}_{8t} + \mu_{4t} \quad \dots (6)$$

$$\ln \text{Ex}_{t-1} = \alpha_0 + \alpha_1 \ln \text{Gea}_{t-1} + \alpha_2 \ln \text{Fdi}_{t-1} + \alpha_3 \ln \text{Inf}_{t-1} + \alpha_4 \ln \text{Rir}_{t-1} + \alpha_5 \ln \text{Pri}_{t-1} + \alpha_6 \ln \text{Pi}_{t-1} + \alpha_7 \ln \text{Ex}_{t-1} + \alpha_8 \ln \text{Pop}_{t-1} + \alpha_9 \ln \text{Gdr}_{t-1} + \partial \text{ECM}_{9t} + \mu_{5t} \quad \dots (7)$$

$$\ln \text{Pri}_{t-1} = \alpha_0 + \alpha_1 \ln \text{Gdr}_{t-1} + \alpha_2 \ln \text{Fdi}_{t-1} + \alpha_3 \ln \text{Inf}_{t-1} + \alpha_4 \ln \text{Rir}_{t-1} + \alpha_5 \ln \text{Ex}_{t-1} + \alpha_6 \ln \text{Pi}_{t-1} + \alpha_7 \ln \text{Pop}_{t-1} + \alpha_8 \ln \text{Pri}_{t-1} + \alpha_9 \ln \text{Gea}_{t-1} + \partial \text{ECM}_{10t} + \mu_{6t} \quad \dots (8)$$

$$\ln \text{Pi}_{t-1} = \alpha_0 + \alpha_1 \ln \text{Gdr}_{t-1} + \alpha_2 \ln \text{Fdi}_{t-1} + \alpha_3 \ln \text{Inf}_{t-1} + \alpha_4 \ln \text{Rir}_{t-1} + \alpha_5 \ln \text{Ex}_{t-1} + \alpha_6 \ln \text{Pri}_{t-1} + \alpha_7 \ln \text{Pop}_{t-1} + \alpha_8 \ln \text{Gea}_{t-1} + \alpha_9 \ln \text{Pi}_{t-1} + \partial \text{ECM}_{11t} + \mu_{7t} \quad \dots (9)$$

$$\ln \text{Pop}_{t-1} = \alpha_0 + \alpha_1 \ln \text{Gdr}_{t-1} + \alpha_2 \ln \text{Fdi}_{t-1} + \alpha_3 \ln \text{Inf}_{t-1} + \alpha_4 \ln \text{Rir}_{t-1} + \alpha_5 \ln \text{Pop}_{t-1} + \alpha_6 \ln \text{Ex}_{t-1} + \alpha_7 \ln \text{Pri}_{t-1} + \alpha_8 \ln \text{Pi}_{t-1} + \alpha_9 \ln \text{Gea}_{t-1} + \partial \text{ECM}_{12t} + \mu_{8t} \quad \dots (10)$$

where;

Gea_{t-1} = Govt. Total Expenditure on Agricultural Sector

Gdr_{t-1} = agricultural GDP growth rate

Fdi_{t-1} = Foreign Direct Investment

Inf_{t-1} = Inflation

Rir_{t-1} = Real Interest Rate

Ex_{t-1} = Export

Pri_{t-1} = Private Investment

Pi_{t-1} = Public Investment

Pop_{t-1} = Population Growth Rate

∂ECM_t = error correction term

μ_t = error term.

The variables used in the model were measured as follows:

1. Agricultural GDP Growth Rate (GDR): This was measured in percentage (%)
2. Export (EX): This was measured United States (US) Dollar and converted to Naira (₦) value.



3. Foreign Direct Investment (FDI): This was measured in United States (US) Dollar and converted to Naira (₦) value.
4. Government Total Expenditure on Agricultural Sector (GEA): This was measured in Naira value (₦).
5. Inflation (INL): This was measured in percentage (%).
6. Population Growth Rate (POP): This was measured in percentage (%).
7. Private Investment (PRI): This was measured in United States (US) Dollar and converted to Naira (₦) value.
8. Public Investment (PI): This was measured in United States (US) Dollar and converted to Naira (₦) value.
9. Real Interest Rate (RIR): This was measured in percentage (%), It is expected that inflation and agricultural expenditure will have direct relation, the higher the inflation, the more the expenses, also interest rate, population growth rate, private expenditure and public expenditures. If these are high, agricultural expenditure will also be high.

RESULTS AND DISCUSSION

Unit Root Test for Stationarity

Table 1 presents test of stationarity using Augmented Dickey-Fuller test (ADF) for government agricultural expenditure, foreign direct investment, inflation rate, interest rate, export, private investment, public investment, and population growth rate. The ADF test result indicates that all variables were not stationary at level but stationary on first difference, that is they co-integrated of order one [1(1)]. The result implies that the level forms of these variables exhibited random work or have multiple means of co-variances or both. However, first difference of variables is integrated or stationary.

Table 1: Augmented Dickey-Fuller Unit Root Test Result

Variables	Level		First difference		Decision
	t-statistics	Probability	t-statistics	Probabilit y	
GDPGA	-1.792838	0. 8980	-5.399702	0.0001***	1(1)
EXPD	-2.451872	0. 2460	-5.054892	0.0001***	1(1)
FDI	-1.957173	0. 6600	-5.810594	0.0000***	1(1)
INF	-3.307748	0. 3420	-4.625983	0.0002***	1(1)
IR	-3.715150	0. 1680	-6.269987	0.0001***	1(1)
EXPT	-2.426603	0. 3050	-5.172579	0.0001***	1(1)
PRI	-1.746005	0. 9790	-5.651239	0.0000***	1(1)
PBI	-2.910730	0. 4930	-6.217134	0.0000***	1(1)
PGP	-1.527636	0.1461	-4.691889	0.0003***	1(1)

***, ** and * indicate stationary at 1%, 5% and 10% level of significance, respectively

Source: Author's computation, 2021

Factors Affecting Government Agricultural Expenditure in the Long-Run

The result of the factors affecting government expenditure on agricultural in the long-run is presented in Table 2. The result shows the long run influence of some economic factors on agricultural expenditure. The coefficient of determination (R^2) of the model 0.925,



indicating that 92.5% variation in agricultural expenditure was explained by inflation and private investment, as these variables were significant. The result shows that in the long run, inflation and private investment significantly affected agricultural expenditure.

Specifically, the coefficient of inflation (1.118415) was positive and significant at 1% level of probability. This implies that a unit increase in inflation will increase agricultural expenditure by 1.118415. This means that as long as inflation continues to increase in Nigeria, the government expenditure would as well continue to increase, and this can lead to over spending in the agricultural sector without achieving any reasonable growth in the agricultural GDP. This study is contrary to the findings of Kandil (2006) who found that government spending shocks and price inflation are negatively correlated in most countries. Ojarikre *et al.* (2015) examined empirically the causal relationship existing between public expenditure growth and inflation in Nigeria from 1981 to 2012 and found that no statistically discernible relationship between government expenditure growth and inflation in Nigeria. They therefore, kick against the “old-time religion” of restricting aggregate demand by tight monetary policy as often demonstrated by the Central Bank of Nigeria through adjustments in the Monetary Policy Rate (MPR), but rather advocate a relaxation of the MPR with the necessary adjustments, when necessary, as inflation is occasionally necessary to jump-start an economy that is floundering.

The result also revealed that the coefficient of private investment (0.004239) was positive and significant at 1% level of probability. This implies that a unit increase in private investment will likely increase agricultural expenditure by 0.004239. This calls for the Nigerian government to encourage private investors in the country. There is need for appropriate interest rate policy, taken into cognizance the investment climate and the targeted sector of the economy, in order to encourage private investment and expansion in the size of the market and the enhancement of purchasing power of the people are also needed to encourage private investment in the services sector. The study agrees with Ahmad *et al.* (2012) who examined the effect of government spending and macro-economic uncertainty on private investment in service sector for the period 1972 to 2005 and found that government recurrent expenditures mostly appeared as substitutes to private investment and affect private investment in services negatively in the long run.

Table 2: Estimates of Long-Run Response of Factors Affecting Government Agricultural Expenditure

Variables	Coefficients	Standard errors	t-statistic
Expenditure (-1)	1.000000	-	-
INF (-1)	1.118415***	0.12252	9.12863
PRI (-1)	0.004239***	0.00025	16.9809
Constant	-55.66158	-	-

Note: *** denotes rejection of null hypothesis at 1% and 5% significant level, respectively.
Source: Author's computation, 2021

Factors Affecting Government Agricultural Expenditure in the Short-Run

The short run result from the Vector Error Correction Model is presented in Table 3. The Error correction Term (ECT) is statistically significant and negative -0.0278 which indicates a slow speed of adjustment of variable towards equilibrium. This implies that 2.8% deviation from equilibrium position is corrected within the year. From the results, three



variables namely, inflation, private investment and public investment were the important and significant variables that influenced government expenditure on agriculture in the short run.

The coefficient of determination R-square is 0.925, indicating that 92.5% of the variation in agricultural expenditure was explained by these variables (inflation, private investment and public investment) in previous year.

The coefficient of inflation was positive (0.890787) and significant at 1% probability level. This means that acceleration in inflation leads to acceleration in agricultural expenditure by 0.890787 in the short run. High inflation rate leads to increase in the amount of money to be spent for nation's budget and its subsector. This study is in agreement with studies by Olu and Idih (2015), and Umaru and Zubairu (2012) who confirmed that inflation has positive effect on economic growth in Nigeria. The result also agrees with Abbas *et al.* (2016) who found inflation and expenditure to be positively correlated.

The coefficient of private investment as revealed in table 3 was positive (0.004469) and significant at 1% probability level. This means that acceleration in private investment will leads to acceleration in agricultural expenditure by 0.004469 in the short run. This calls for Nigerian government to encourage the activities of the private investors in the country. This is an indication that private investment had been deficient during the period under study. A nation with a viable private sector is expected to spent less and been complemented by private investors. Private sector according to Mesagan *et al.* (2019) contributes more meaningfully to economic growth than the public sector due to less corruption in the private sector investment compared to the public sector investment.

From Table 3, the coefficient of public investment was positive (0.001612) and significant at 1% probability level. This means that acceleration in public investment will leads to acceleration in agricultural expenditure by 0.001612 in the short run. This indicates that Nigerian government over the period under study had been increasing its spending on agricultural sector without achieving reasonable growth in the agricultural GDP since the direction of growth in the agricultural GDP decelerated within the period under review. The study disagrees with the findings of Udoh (2011) who found public investment to have an indirect relationship with government agricultural expenditure.



Table 3: Estimates of Short-Run Effects of Factors Affecting Government Agricultural Expenditure

Error Correction:	D(EXPD)	D(INF)	D(PRI)
CointEq1	-0.027770 (0.22312) [-4.60640]	-1.081859 (0.43965) [-2.46075]	414.0375 (1403.81) [0.29494]
D[EXPD (-1)]	0.563063 (0.15263) [3.68899]	0.714885 (0.30076) [2.37694]	-39.37502 (960.340) [-0.04100]
D[EXPD (-2)]	0.142006 (0.16450) [0.86325]	0.710504 (0.32414) [2.19194]	51.66616 (1035.01) [0.04992]
D[INF (-1)]	0.890787*** (0.13419) [6.63841]	0.008477 (0.26441) [0.03206]	548.8751 (844.277) [0.65011]
D[INF(-2)]	0.441916 (0.16907) [2.61376]	0.307366 (0.33315) [0.92260]	170.9073 (1063.77) [0.16066]
D[PRI(-1)]	0.004469*** (0.00095) [4.68350]	0.004508 (0.00188) [2.39773]	-2.889391 (6.00367) [-0.48127]
D[PRI(-2)]	0.001683 (0.00111) [1.52037]	-0.005195 (0.00218) [-2.38190]	1.446778 (6.96352) [0.20777]
C	0.027973 (3.47982) [0.00804]	17.35665 (6.85685) [2.53129]	10917.59 (21894.3) [0.49865]
RIR	0.123334 (0.08841) [1.39501]	-0.157428 (0.17421) [-0.90367]	77.52837 (556.263) [0.13937]
PBI	0.001612*** (0.00062) [2.58881]	-0.003739 (0.00123) [-3.04709]	-0.947050 (3.91839) [-0.24169]
R-squared	0.925411	0.752458	0.621767
Adj. R-squared	0.829512	0.434189	0.135467
Sum sq. resids	17.02778	66.11417	6.74E+08

Note: ***, ** and * denote rejection of null hypothesis at 1%, 5% and 10% significant level, respectively.

Source: Author's computation, 2021



Table 3: Estimates of Short-Run Effects of Factors Affecting Government Agricultural Expenditure **Cont'd.**

Error Correction:	D(EXPD)	D(INF)	D(PRI)
S.E. equation	1.559660	3.073253	9813.067
F-statistic	9.649799	2.364222	1.278566
Log likelihood	-24.13583	-35.66640	-172.8349
Akaike AIC	4.015980	5.372517	21.50998
Schwarz SC	4.506106	5.862643	22.00011
Mean dependent	-0.194118	-0.347059	204.5847
S.D. dependent	3.777312	4.085664	10553.92
Determinant resid covariance (dof adj.)		4.79E+08	
Determinant resid covariance		33410921	
Log likelihood		-219.6232	
Akaike information criterion		29.72038	
Schwarz criterion		31.33779	

Note: ***, ** and * denote rejection of null hypothesis at 1%, 5% and 10% significant level, respectively.

Source: Author's computation, 2021

CONCLUSION AND RECOMMENDATIONS

From the results obtained, government agricultural sector expenditure in Nigeria plays a key role for the growth of agriculture and can boost agricultural production. It is clearly seen that the highest volatility during the period of study was exhibited by private investment (PRI), followed by the export (EXPT), and population growth rate (PGR) had the lowest volatility. Nigerian government expenditure in agricultural sector is quite low and variations in government agricultural expenditure was explained by inflation, private and public expenditures which significantly influenced government agricultural expenditure. The result revealed inflation and private investment coefficients were positive and have statistical significant influence on agricultural expenditure at 1% probability level in both short run and long run, while public investment had positive significant influence on agricultural expenditure in the short run only at 1% probability level, therefore, there is a need to adopt friendly policies to curtail rising inflation, provision of conducive environment to catalyze private investment is important and also, public investment should be stimulated to boost agricultural growth.

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