**GOVERNMENT SPENDING ON AGRICULTURE, ROAD INFRASTRUCTURE AND AGRICULTURAL PRODUCTIVITY IN NIGERIA**

**OLAITAN SOLOMON OLATUNJI**

**Department of Economics**

**Osun State University Osogbo, Nigeria**

**AKANBI BOSEDE ESTHER**

**Department of Economics**

**Osun State University Osogbo, Nigeria**

**&**

**AJIKE OLUWASEGUN GODWIN**

**Department of Economics**

**Adeleke University, Ede, Osun State, Nigeria**

**ABSTRACT**

*It is natural to expect that aggregate agricultural output is positively related to government expenditure on agriculture and infrastructure development. However, little attention is paid to agricultural productivity and road infrastructure in Nigeria. Thus, the main objective of the study is to examine empirically the effect of government expenditure on agriculture and road infrastructure on agricultural output in Nigeria. Annual time series secondary data covering the period 1980 to 2020 were obtained from the world development indicators (WDI) published by the world bank, an statistical bulletin published by the central bank of Nigeria (CBN). Data collected were analysed using ARDL model. The Autoregressive Distributed Lag (ARDL) approach is significant to this study because the underlying repressors are both combination of I(1) and I(0) after pre testing of variables. Having empirically examined the impact of government expenditure on agriculture and road infrastructure on agricultural output in Nigeria, the results indicated that government expenditure on agriculture (t-statistic = 2.02) and (t-statistic = 2.24) has a positive short run and long run significant effect respectively on agricultural output in Nigeria. Also, a one percent change in government expenditure on road brought about changes in agricultural output performance in the negative direction in the short run and long run relationship. The value of the R-squared is 0.80, meaning that 80% of the dependent variable, agriculture output is explained by the independent variables in the model. R-squared is 75%, indicating good fit of the model. Finally, the model has -0.26 long-run reversions to equilibrium and it’s significant at 1% level. In conclusion, the outcome of the study disclosed that government expenditure on agriculture has a short run and long run significant effect on agricultural output in Nigeria. The study revealed government expenditure for road infrastructure development is lacking holistic technical evaluation and cost assessment. Hence, the study showed that to improve the agricultural output performance in Nigeria, government expenditure on agriculture and on road should be increased.*

**Keywords: Agricultural Output, Agricultural Productivity, Crop Production, Arable Land, ARDL**

**INTRODUCTION**

Prior to the discovery of oil, Nigerian economy was predominantly agrarians with abundance of arable land and water resources to foster agricultural development. Agriculture is the life blood of industrialization in the world. According to Akintunde et al, (2013) every industrialized country passed through the agrarian era. The maxim that agriculture is the hub of the Nigerian economy underscores the importance placed on agriculture as the engine for growth. Stagnation in agricultural production accounts for the economic failure facing Nigeria, while the acceleration in agricultural productivity is key to industrialization in developed countries. Consequently, the development of agriculture in every country in the world (both developed and underdeveloped) requires government assistance. The potential contributions of agriculture to economic development in Nigeria have been marred by poor funding, coupled with misguided government policies (Ayeomoni, & Aladejana, 2016).

Nigeria has diverse agro-ecological conditions that can support a variety of farming models, which can create its own agricultural models. The food crop sub-sector contributed about 76% of the share of the agricultural sector's contribution to GDP; livestock contributed 10% with remainder made up by forestry and fisheries sub-sectors. In the period before the 1970s, agriculture provided the needed food for the population as well as serving as a major foreign exchange earner for the country (Eze, 2017).The importance of transportation in the development of economies around the world cannot be overemphasized. Transportation, according to Tunde and Adeniyi, (2012) improves the operations of the manufacturing industry, retail, labor, and housing markets. In rural areas particularly where the major source of income for residents is farming, transportation facilitates the transfer of farm produce to the markets.

Infrastructures are socio-economic amenities that promote or facilitate economic growth. In Nigeria, according to Tunde and Adeniyi (2012) noted that infrastructure (road) has not been properly monitored by the government. Infrastructure such as communication, transportation, health, good water, sanitation and education are among the basic requirement for agricultural production, in general economic development. Expenditure on infrastructure is enormous because it is capital-intensive project; however, it is expedience to grow the economy. If government will respond to the growing demand of agricultural products in the increasing population, government will ensure a good road network and other agricultural machines to improve production and reduce the cost of flow of agricultural commodities to the urban areas (Okoh, 2015). This will help to accommodate the increased traffic flow of input and output moving from rural areas to urban centers.

A good communication link between the rural and urban parts of Nigeria can lead to economic development as goods produced in the rural areas are transported to the urban areas. A good communication network also triggers business activities that can spur economic development (Ukeje, 2013). However, Nigerian government seems to be wasting fund over the years because there is no remarkable achievement on the level of road infrastructural development and agricultural productivity development. Public spending or government expenditure is one of the most direct effective instruments used by governments to promote agricultural growth and poverty reduction. The nature of support given to agriculture and infrastructure development by various governments in the country has varied over the years (Ogbonna, and Osondu, 2015). Government spending at the national level and sub-national level follows a basic structure-recurrent spending and capital spending.

In Nigeria, public expenditures on road infrastructure and agriculture have continued to increase over the years. But this has not translated into meaningful growth and development of the agricultural sector in Nigeria especially in the rural areas. The output growth implication of government spending on the huge amount of budgetary allocation to infrastructural and agricultural sector has little or no effect on the economy (Obasanho, 2017). Also, Public expenditures on infrastructure in Nigeria have continued to increase over the years. However, this has not translated into meaningful growth and development of the infrastructural sector in Nigeria especially in the rural areas. Despite the Food and Agricultural Organization's (FAO) recommendation that 25% of the government capital budget should be allocated to agricultural production, Nigeria 's various administrations have failed to comply with it (Ewubare and Udo, 2017).

Few studies have examined the relationship between public spending and infrastructural development in West Africa. Ogbonna and Osondu, (2015) centered their study on the relationship of public spending to agricultural output. Kolawole (2019) affirms the efficacy of government spending in propelling road infrastructure in West African countries.This study aims to investigate the relationship between government spending on agriculture, roads infrastructure facilities and agriculture output in Nigeria. Studies like Ewubare and Udo (2017) examined the impact of public sector spending on Nigerian agriculture. The results indicated that there is a great impact of infrastructure (road and transport service) on agricultural productivity. However, little attention is paid to how government expenditure on agriculture and road infrastructure affect agricultural productivity within the Nigeria context.

**LITERATURE REVIEW**

Government spending is the allocation of funds to socio-economic variables like healthcare, education, good road, national defense and other sectors in the economy. It aims to supply goods and services to the public sector, redistribute income, support industries and improve the economy as a whole (FAOSTAT, 2019). Government expenditures usually tend to increase with time as the economy becomes large or as a result of increase in its scope of activities. Investing in agriculture is one of the most effective ways of promoting agricultural productivity, raising real incomes, reducing poverty and food insecurity, and enhancing environmental sustainability. In Nigeria the major focus of infrastructure investment has been on irrigation, transportation, electric power, agricultural markets etc (Aina, 2015). These not only contribute to agricultural growth output at macro level but also to the wide disparity between different regions with respect to the growth of agriculture.

Infrastructure development is a key driver for progress across the African continent and a critical enabling for productivity and sustainable economic growth. Inadequate infrastructure is cited as the third most serious constraint to doing business in the continent, after access to finance (Edame, and Fonta, 2014). The Africa Infrastructure Development Index (AIDI) was developed to monitor the status and progress of infrastructure development across the continent. Africa Infrastructure Data Initiative (AIDI) is a series of observations on the role played by road infrastructure in improving Agricultural productivity in developing economies. Rural infrastructure, like other public investments, raises agricultural productivity, which in turn induces growth in the rural areas, bringing about higher agricultural wages and improved opportunities for non-farm labor. The rise in agricultural productivity reduces food prices, benefits both urban and rural inhabitants who are net food buyers (Eze, 2017).

Nigeria's low fertilizer and improve seed utilization and inadequate government expenditure were largely responsible for the low productivity and the inability to compete with others. Most times, the farmers depend on less efficient traditional tools which results in less output compared to the use of tractors, harvesters. The physiocrats believe that the fate of the economy is regulated by productivity in agriculture. The period of the colonization in Nigeria, 1861-1960, was accentuated on agricultural development during which emphasis was placed on research and extension services. The first notable activity was the establishment of the Department of Botanical Research in 1893 in Western Nigeria (Babalola, 2015). Government spending is the allocation of funds to healthcare, education, national defense and other sectors in the economy. Government agricultural expenditure is aimed to boost agricultural productivity and output, thereby inciting economic growth. It includes expenses on sector policies and programs, construction of flood control, irrigation and drainage systems, operation or support of extension services or veterinary services to farmers (Benin, 2015).

Activities were directed towards increasing efficiency in crop production and marketing. The Nigeria Agricultural Project was established in 1949 with the aim of producing groundnut for export and guinea-corn for local consumption. It was also aimed to reduce world food shortage, exhibit better farming techniques and increase productivity of Nigeria's agriculture. In the 1960s, the agricultural sector maintained a share of about 56% on the average, which reduced considerably to 25% in the 1970s. The share has somewhat remained stable but not impressive. The index of Agricultural Productivity by type of activity shows the effect of the oil boom on the sector. Agriculture remains the mainstay of the Nigerian economy, contributing about 40% of GDP and employing about 77 percent of the working population (Ayeomoni, and Aladejana, 2016).

For a country to progress in its sustainable development goals, there is a need for strong growth in national income. Improvements in infrastructure quality and economic growth are also necessary. Economic growth will affect citizens' lives positively, such as in the area of poverty reduction. The study utilizes both primary and secondary data as an innovation to contribute to the existing body of knowledge. The provision of public goods and services hinges on market failure, including imperfect markets and information asymmetry for agricultural technology adoption, scale up, uptake and advancement (Benin et al., 2012).

Government spending is also justified on social grounds for income distribution and poverty reduction. Some of the empirical studies on developing countries that address the importance of public financial resources to agriculture include Fan et al (2000), Fan and Zhang (2004) and World Bank (2007a).Using time series data, Lawal (2011) attempted to verify the amount of federal government expenditure on agriculture in the thirty-year period (1979 – 2007). Using trend analysis and a simple linear regression, the study showed that agricultural spending does not follow a regular pattern. The simple linear equation approach may not be able to handle the complex relationship between government expenditure and agricultural productivity. The relationship between government expenditure and GDP may occur through many links. Therefore, single equation model as specified in this study may not be able to capture the various links (Greene, 2012). This may also cast doubt on the estimated results from this study. Based on the above findings, they recommended for an increase funding of the agricultural sector in Nigeria.

In their study, Olomola, et al (2015) examined the relationship between public expenditure and economic growth in Nigeria during the period 1970-2009. Their results showed that federal government capital expenditure likewise infrastructure was positively related with agricultural output. Among other studies with similar findings are Ogwuma (1981) examined public expenditure in Agricultural sector using econometric analysis. Based on his findings, Agricultural financing in Nigeria shows positive relationship between interest rate and loanable funds on the level of Agricultural output. Studies have shown that there is long run nexus between agricultural contribution and government expenditure.

Ewubare and Udo (2017) study the impact of public sector financing on agricultural output in Nigeria between 1980 and 2014. Aregbeyeni, and Kolawole, (2015) examined the effects of the transportation system on food marketing and security, as an indicator of economic growth in Nigeria. The study concluded that the inadequacy in transportation facilities, the high cost of transport and high level of wastage were responsible for the low level of food marketing in the area.

Road transport has both positive and negative impacts on agricultural development. Bad conditions of the road affect the cost of transportation of agricultural produce which in turn affect the rural farmers' income and productivity. This study concluded by suggesting that an improvement in road transport system will lead to increased production by farmers. In Nigeria, Olajide et al, (2012), analyzed the relationship between Agricultural resource and economic growth in Nigeria using Ordinary Least Square (OLS) Methodology. The results revealed a positive relationship between gross domestic product (GDP) and agricultural output in Nigeria. On this basis, the study suggested that increasing capital inputs by giving special incentives to farmers and providing adequate funding, as well as infrastructural facilities such as good roads, pipe borne water and electricity.

**RESEARCH METHODOLOGY**

**THEORETICAL FRAMEWORK**

This study is focused on the Keynesian economics theory; the theory was first presented by the British economist John Maynard Keynes (1936) during the Great Depression. The theory argues that with government technological intervention there is increased in spending and employment. Some scholars argue that Keynesian theory sometimes fails because lower tax rates have been found to boost economic growth.

**MODEL SPECIFICATION**

Using the Keynesian definition of aggregate output, a simple multiple regression function was specified as follows. This model is motivated by the Harrod-Domar growth model as expanded by Chenery & Strout (1966). Two-gap model that growth process depends on accumulation of physical capital. In this model, growth is endogenous, that is, the entire growth process is determined by the action of the public sector.

AGO = f(GEA, GER, AMT, ARL, ELECT) …………...……………….1

In a simple linear equation and log form, model (1) becomes

LAGO = α₀ + α₂GEA + α₃GER + α₄LAMT + α₅LARL + α₆LELECT+ ʯ ……………………2

Where:

AGO = agricultural output (AGO) used as indicator for agricultural productivity, GEA =Government Expenditure on Agriculture, GER = Government Expenditure on Road,

AMT = Agricultural Machinery and Tractor, ARL = Arable Land, and ELECT = Electricity Infrastructure. ʯ is the error term or white noise in its characteristics, α₀ is the intercept, and α₁, α₂ and α₃ represent the parameter estimates.

The general error correction model adopted for the study is specified as follows:

LAGOt = α₀ + ΔGEAt + ΔGERt + ΔLAMTt + ΔLARLt + ΔLELECTt+ ECMt₋₁ + ʯt ……….4

This study employed the Autoregressive Distributed Lag (ARDL) model to establish the relationship among government spending on agriculture, road infrastructure and agricultural productivity in Nigeria. The problem of endogeneity, reverse causality and non-stationarity of variables can be partly solved by developing a dynamic framework. The fundamental importance of this model is that we can simultaneously discuss long-run and short-run relationship within the same framework regardless of whether the variable are integrated of the same order or not, that is, whether all variables are I(1) or I(0) or the combination of I(1) and I(0) variables. From equation 4 the autoregressive distributed lag model is obtained thus:

InAGO = α₀ + α₁InGEAt + α₂InGERt + α₃InAMTt + α₄InARLt + α₅InELECTt+ α₁InAGOt₋₁ + α₂InGEAt₋₁ + α₃InGERt₋₁ + α₄InAMTt₋₁ + α₅InARLt₋₁ + α₆InELECTt₋₁ + ʯt₋₁....................... 5

**EMPIRICAL RESULTS**

**TIME SERIES PROPERTIES OF DATA**

The descriptive statistics of data gives information about sample statistics which includes: the mean (average value), median (middle value after sorting observations), minimum value, maximum value and distribution of the sample measured by Skewness. The test statistic measures the difference of the skewness and kurtoois of the series with those from the normal distribution and also used to test a null hypothesis. Table 4.1 show that the mean and median values lie within their maximum and minimum values for all the variables, which indicate a good level of consistency in the data series.

**Table 4.1 Descriptive Statistics**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | LAGO | GEA | GER | LAMT | LARL | LELECT |
| Mean | 8.74 | 18.74 | 47.85 | 9.89 | 3.50 | 4.12 |
| Median | 8.48 | 7.06 | 7.45 | 9.87 | 3.58 | 4.12 |
| Maximum | 9.81 | 70.27 | 195.90 | 10.59 | 3.70 | 4.43 |
| Minimum | 7.71 | 0.01 | 0.09 | 9.03 | 2.89 | 3.77 |
| Std. Dev. | 0.72 | 22.69 | 64.01 | 0.46 | 0.21 | 0.22 |
| Skewness | 0.12 | 0.94 | 1.11 | -0.07 | -1.68 | -0.10 |
| Kurtosis | 1.46 | 2.56 | 2.87 | 1.87 | 4.75 | 1.61 |
| Jarque-Bera | 4.15 | 6.46 | 8.47 | 2.18 | 24.60 | 3.33 |
| Probability | 0.12 | 0.039 | 0.014 | 0.33 | 0.00 | 0.18 |
| Sum | 358.62 | 768.72 | 1961.87 | 405.62 | 143.69 | 169.28 |

***Source****: Authors’ compilation 2022 based on available data*

**Unit Root Test**

The results of the stationarity test are presented in Table 4.3 using the Augmented Dickey Fuller (ADF) and Phillips-Perron test. It is essential to determine the order of integration of the variables in order to avoid spurious regression since the variables are time series in nature. The result shows that all of the data series are stationary at first difference I(1) at 5% level of significance with intercept alone and with intercept and trend. But GEA became stationary at levels I(0) at 5% level of significance both ADF and PP tests.

**Table 4.3: Unit Root Tests Results using Augmented Dickey Fuller (ADF) Technique**

|  |  |
| --- | --- |
| **Augmented Dickey-Fuller (ADF)**  Variable Level first Difference Status | **Phillips-Perron (PP)**  Level first difference Status |
| LAGO -0.20 -6.02\*\* I(1)  GEA -4.86\*\* 7.07 I(0)  GER -0.93 -10.13\*\* I(1)  LAMT -1.59 -4.33\*\* I(1)  LARL -2.05 -3.90\*\* I(1)  LELECT -0.81 -5.76\*\* I(1) | -0.20 -6.02\*\* I(1)  -4.84\*\* -15.45 I(0)  -0.10 -10.62\*\* I(1)  -2.12 - 4.29\*\* I(1)  -2.36 -6.44\*\* I(1)  -1.45 -10.60\*\* I(1) |

***Note: \* implies 5% level of significance***

***Source: Author’s computation 2020 based on available data from CBN and WDI***

**DETERMINATION OF OPTIMAL LAG LENGTH**

It is important to identify an appropriate lag length to calculate the F-statistics since the ARDL model is sensitive to the lag order. The Akaike Information Criterion (AIC) is considered and used to confirm the appropriate number of length to be used. This AIC provides better and consistent results compared to other lag length criteria. Based on the lag selection criteria test from Table 4.4, the AIC maximum lag length of 2 was selected and employed in the estimation of ARDL models.

**Table 4.4:** VAR Lag Order Selection Criteria Endogenous variables: LAGO GEA GER LAMT LARL LELECT

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Lag | LogL | LR | FPE | AIC | SC | HQ |
| 0 | -255.6130 | NA | 0.027021 | 13.41605 | 13.67199 | 13.50788 |
| 1 | -45.99827 | 343.9832\* | 3.76e-06\* | 4.512732\* | 6.304260\* | 5.155517\* |
| 2 | -12.29450 | 44.93836 | 4.84e-06 | 4.630487 | 7.957611 | 5.824231 |

\* indicates lag order selected by the criterion

**LONG RUN EQUILIBRIUM RELATIONSHIP**

The computed F-statisic is compared with upper and lower critical bounds generated by Peasran et al. (2001) to test for the existence of cointegration. The null hypothesis is H₀: 𝛼ᵢ = 0, (where I = 1, 2… 6) in equation 6 in chapter three. This implies no long run relationship among the variables, against the alternative hypothesis, H₁: 𝛼ᵢ ≠ 0, implying the existence of long run among the variables. The result in Table 4.7 showed that the computed F-statisttic 5.72 is greater than the upper bound 3.38 at 5% level of significance with unrestricted intercept and no trend (upper bound is 3.38 and lower bound 2.39). This implies that there is evidence to reject the null hypothesis of no long run relationship among the variables. Hence, the alternative hypothesis is accepted that there is long run equilibrium relationship among variables.

Table 4.7: ARDL Bound Test Result

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test Statistic | Value | Signif. | I(0) | I(1) |
| F-statistic | 5.721988 | 10% | 2.08 | 3 |
| K | 5 | 5% | 2.39 | 3.38 |
|  |  | 2.5% | 2.7 | 3.73 |
|  |  | 1% | 3.06 | 4.15 |

Source: Author’s Computation, 2022 and Pesaran et al. (2001) Critical Bound Table

Note: K is the number of observation minus 1

**IMPACT OF GOVERNMENT SPENDING ON AGRICULTURE AND ROAD INFRASTRUCTURE ON AGRICULTURAL PRODUCTIVITIES (OUTPUT)**

**SHORT-RUN RELATIONSHIP**

Table 4.8 displays the estimated results of the short-run relationship between productivity output (AGO) and the effects of government spending on agriculture (GEA), and on road infrastructure (GER) in Nigeria.

**Table 4.8: Short-run Coefficients of ARDL Model (1, 2, 0, 0, 2, 2)**  
**Dependent Variable: LAGO and control variables GEA GER LAMT LARL LELECT**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variable | Coefficient | Std. Error | t-Statistic | Prob.\* |
| LAGO(-1) | 0.737425 | 0.106806 | 6.904353 | 0.0000 |
| GEA | 0.002090 | 0.001034 | 2.020291 | 0.0538 |
| GEA(-1) | 0.001415 | 0.000988 | 1.431098 | 0.1643 |
| GEA(-2) | 0.002899 | 0.001269 | 2.285172 | 0.0307 |
| GER | -0.000547 | 0.000542 | -1.010262 | 0.0217 |
| LAMT | 0.216740 | 0.209451 | 1.034799 | 0.0103 |
| LARL | -0.005292 | 0.293095 | -0.018057 | 0.9857 |
| LARL(-1) | -0.444570 | 0.338870 | -1.311918 | 0.2010 |
| LARL(-2) | 0.634842 | 0.235693 | 2.693513 | 0.0122 |
| LELECT | 0.021453 | 0.154858 | 0.138531 | 0.8909 |
| LELECT(-1) | 0.043757 | 0.173445 | 0.252280 | 0.8028 |
| LELECT(-2) | 0.614442 | 0.184576 | 3.328940 | 0.0026 |
| C | -3.157647 | 1.091768 | -2.892234 | 0.0076 |

R-squared 0.95 Adjusted R-squared 0.92 Durbin-Watson stat 1.82 Prob(F-statistic) 0.00

\*Note: p-values and any subsequent tests do not account for model selection

All of the coefficients of the lagged variables in the model are jointly statistically significant using Wald test. However, only arable land (ARL) does not have impact on agricultural output (AGO) in the short run. Therefore, not all the explanatory variables in the model have short-run relationship considering the result of the Wald test.

**LONG-RUN RELATIONSHIP**

In order to examine the impact of government spending on agriculture and road infrastructure on agricultural productivity along with their interactive effects, given the presence of co-integration among variables, the Error Correction Model (ECM) was estimated to show the short and long run effect of government spending on agriculture and road infrastructure on agricultural output. In addition to the fact that ECM comprises the short run transitory effects and the long run relationships, the speed of adjustment of the dependent variable to change in the independent variables is also determined within the framework.

**Table 4.9: ARDL Long Run Dependent Variable: D(LAGO) Selected Model: ARDL(1, 2, 0, 0, 2, 2)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| GEA | 0.024386 | 0.010863 | 2.244885 | 0.0335 |
| GER | -0.002083 | 0.002022 | -1.030488 | 0.0123 |
| LAMT | 0.825439 | 0.623579 | 1.323712 | 0.1971 |
| LARL | 0.704480 | 0.682384 | 1.032381 | 0.0114 |
| LELECT | 2.588408 | 1.032251 | 2.507538 | 0.0187 |
| C | -12.02569 | 3.482958 | -3.452724 | 0.0019 |

EC = LAGO - (-0.0244\*GEA + 0.0021\*GER + 0.8254\*LAMT + 0.7045\*LARL + 2.5884\*LELECT - 12.0257)

Table 4.16: Results of the Error Correction Model (ECM) associated with ARDL Cointegration form

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| D(GEA) | 0.002090 | 0.000760 | -2.751178 | 0.0107 |
| D(GEA(-1)) | 0.002899 | 0.000746 | 3.887479 | 0.0006 |
| D(LARL) | -0.005292 | 0.196467 | -0.026938 | 0.9787 |
| D(LARL(-1)) | -0.634842 | 0.197584 | -3.213022 | 0.0035 |
| D(LELECT) | 0.021453 | 0.114898 | 0.186711 | 0.0533 |
| D(LELECT(-1)) | -0.614442 | 0.146550 | -4.192701 | 0.0003 |
| CointEq(-1)\* | -0.262575 | 0.037398 | -7.021191 | 0.0000 |

R-squared = 0.800922, Adjusted R-squared = 0.754471, Durbin-Watson stat = 2.144564, F-statistic = 1062.101, Prbo(F-statistic)=0.000000

Table 4.15 showed that in both short run and long run impact of government spending on agriculture and road infrastructure has significant positive impact on agricultural productivity (output) given their their respective probability values (Prob.V less than 0.05).

The long-run causal relationship for this model is computed from the t-statistic of Error Correction Mechanism (ECM). Looking at Table 4.16, it is evident that the model has -0.26 long-run reversion to equilibrium and its significant at 1% level. Therefore, we can infer a long-run causal relationship; this implies that the reversion to equilibrium is at an adjustment speed of 26%. The adjustment process is weak, meaning that the economy will recover about 26% within a year after disequilibrium.

**DISCUSSION OF FINDINGS**

Government expenditure on agriculture comprises of expenses on sector policies and programs, construction of roads and flood control, irrigation and drainage systems, operation or support of extension services or veterinary services to farmers, pest control services, crop inspection services, provision of grants and subsidies to farmers, etc. Investing in agriculture is one of the most effective ways of increasing agricultural output performance. However, before 1980 Nigeria sustained itself primarily on agricultural sector. Farming was the major occupation with the use of crude implements compared to what is obtained today. Agricultural policies, programmes and projects featured in the various development plans until mid-1980s when planning was abandoned and SAP, NEEDS and vision 20:2020 were introduced.

Having empirically examined the impact of government expenditure on agriculture and road infrastructure on agricultural output in Nigeria, the results indicated that government expenditure on agriculture has a short run and long run significant effect on agricultural output in Nigeria. While holding other things constant a one percent change in government expenditure on agriculture brought about change in agricultural output in the positive direction. Also, a one percent change in government expenditure on road brought about changes in agricultural output performance in the negative direction in the short run and long run relationship. This implies that an increase in government expenditure on agriculture and road infrastructure in Nigeria for the period of study increases the agricultural output performance. This result is conforming to the a-priori expectation. The value of the R-squared is 0.80, meaning that 80% of the dependent variable, AGO is explained by the independent variables in the model. All the variables have positive relationship with AGO except government expenditure on road (GER). R-squared is 75%, indicating good fit of the model. It is evident from the result of study that the model has -0.26 long-run reversions to equilibrium and it’s significant at 1% level; this implies that the reversion to equilibrium is at an adjustment speed of 26%. The adjustment process is weak, meaning that the economy will recover about 26% within a year after disequilibrium.

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