International Journal of Management Studies, Business & Entrepreneurship Research
ISSN: 2545-5893(Print) 2545-5877 (Online)
Volume 6, Number 2, June 2021
http://www.casirmediapublishing.com

GOVERNMENT EXPENDITURE ON THE AGRICULTURAL SECTOR AND ECONOMIC GROWTH IN NIGERIA

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ABSTRACT

This paper looked at Government Expenditure on the agricultural sector and economic growth in Nigeria. To achieve this, time series data on Real Gross Domestic Product, GCEXP (Government Capital Expenditure on Agriculture) and GREXP (Government Recurrent Expenditure on Agriculture) in the Nigerian economy from 1980 to 2019 was gotten. The Auto Regressive Distributed Lag (ARDL) method was used to analyze the data. The study discovered that government expenditure on the agricultural sector has a significant impact on economic growth in Nigeria. The study recommends that Government should increase its level of expenditure to the agricultural sector, thereby providing more funding in the sector to raise its productivity and increase its contribution to economic growth in Nigeria. Another recommendation is that the Central Bank of Nigeria should come out with stable policy guideline to enable the commercial banks disburse loans to farmers at a very lower interest rate, in order to help them expand their production capacity.

Key words: Economic Growth, Gross Domestic Product, Government Expenditure

INTRODUCTION

Economic growth is one of the pre determining factors for the actualization of economic development in an economy. The attainment of economic growth and development is the goal of all nations in the world. Unfortunately in Nigeria there has been this dwindling fortune in the growth of the Nigerian economy and this has prompted researchers to examine what may be responsible for this dwindling fortune of economic growth of the country. Some scholars have considered examining the role of agriculture in the growth of the economy. Despite the predominance of the oil and gas sector in Nigeria, agricultural sector still remains a source of economic resilience in the economy. Before the discovery of oil in the country in the late 1950s and early 1960s, agriculture was the dominant sector of Nigeria economy. It consisted over 65% of the country's Gross Domestic Product (GDP) and provided

the bulk of the foreign exchange earnings through the export of cash crops. The sector is one of the most important sectors of Nigeria's economy as it holds a lot of potentials for future economic development of the nation having played dominant role in the remote past. With the emergence of oil as a major source of government revenue and foreign exchange earner, agricultural sector was neglected which led to the decline of the sector's contribution to the economy (Ijaiya, 2000; Iwayemi, 1994; Ukpong and Malgwi, 1991). Agriculture is an important sector of Nigerian economy in the world today. Agriculture is the bedrock of economic growth, development and poverty eradication in the developing countries. Agriculture has also regarded as the engine and panacea to economic prosperity, Todaro and Smith (2009) quoted Gunner Myrdal (1984) to have said that the battle for long-term economic growth will be won or lost in the agricultural sector. However, how this path leads to economic prosperity is still subject to debate among development specialists and economists.

Nigerian economy in past decades strives on the agricultural sector. The sector is reputed as the mainstay of the economy in the early 1960's. It is seen as the key driver for growth and development. In fact, to further buttress the pivotal role the sector plays in the Nigerian economy, the agricultural sector is part of the Millennium Development Goals program of poverty reduction in Nigeria. In most developing countries (low and middle-income countries), the agricultural sector remains, the largest contributor providing inputs, food, employment opportunities, raw materials for other industries, provision of foreign earnings from exportation of the surpluses, and more importantly the enormous advantage of the value added in the various production process (Izuchukwu, 2011). Agricultural sector acts as catalyst that accelerates the pace of structural transformation and diversification of the economy, enabling the country to fully utilize its factor endowment, depending less on foreign supply of agricultural product or raw materials for its economic growth. Apart from laying solid foundation for the economy, it also serves as import sector, as it provides readymade market for raw materials and intermediate goods for industries.

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The role of the government in economic management is performed through the formulation and implementation of economic policy generally and fiscal policy in particular. As recognized by the new growth theory, government spending or expenditure is an important factor for self – sustaining productivity gains and long term growth. Government expenditure is referred to as outflow of resources from government to other sectors of the economy (Nurudeen and Usman 2010). Government spending or public spending is sub-divided into current and capital expenditure. Capital expenditure has been defined as payment for non-financial assets used in production while current expenditures are payments for non-repayable transactions within a year, (CBN, 2003). For instance, government expenditure can contribute to agricultural growth (and hence poverty alleviation), it has indirectly created rural non – farm jobs and increased wages. The real significance of government development lies in the fact that it imparts a greater amount of "trickle-down" benefits for the poor in the growth process than growth alone. While economic growth alone often reduces poverty only by increasing mean consumption, government expenditure on agricultural reduces poverty both by increasing mean consumption and improving distribution of income (Nasiru, 2012)

Inadequate funding of the agricultural sector has been argued by several experts as an obstacle to increased agricultural output (CBN, 2007; Bernard, 2009). However, from a nominal point of view, it is evident that in Nigeria, government spending on agriculture continue to increase over the years while empirical evidence have revealed that the performance of the agricultural sector has been inadequate (CBN,2000; Ekerete, 2000). Having realized the declining role of agriculture to economic growth, the government over the years has put in place certain policy measures and programmes with a view of increasing the contribution of agriculture to economic growth. However, a peep into the federal government capital expenditure on agriculture as a ratio of the total federal government capital expenditure, it portraits a gloomy future for the sector's development in the country. As indicated in CBN(2010), from 1980 to 2011, the federal government capital

expenditure on agriculture were below 10% except in the following years; 1981, 1982, 1983, 1985, 1986, 2001, 2002, 2004, 2005, 2007, 2008 and 2009 because these were the years that coincides or the year after with different government agricultural development policies and programmes such as the Green Revolution in 1980, the structural adjustment programme (1986), The Directorate of Foods, Roads and Rural Infrastructure (1987) although it was 5.7% but increased to 7.1% the following year, food for all programme in 1987, the better life for rural women programme also in 1987, the Rural Agro-Industrial Development Scheme(RAIDS) in 2001 and Economic Empowerment Development Strategy (NEEDS, SEEDS and LEEDS) of 2003 which was implemented in 2004. The federal government recurrent expenditure on agriculture as a ratio of the total federal government recurrent expenditure was highest in 2008 (3.4) the year after the introduction of late president Yardua"s seven point agenda which has agriculture as one of the seven priority sectors and lowest from 1981-1987 (0.3%) (CBN, 2010). Capital expenditure to the agricultural sector in Nigeria rose from 62.9 billion naira in 2011 to 63.4 billion naira in 2012 and then declined to 56.4 billion naira in 2013(CBN, 2016). In 2014, the capital expenditure to the agricultural sector rose to 60.9 billion naira and then declined further to 50.95 billion naira and 44.47 billion naira in 2015 and 2016 respectively(CBN, 2010). The recurrent expenditure of the government on the agricultural sector was 22.4 billion naira in 2009 which then rose to 28.2 billion naira and 41.2 billion naira in 2011 respectively. There was a decline to 33.3 billion naira in 2012 followed by an increase to 39.3 billion naira, 38.67 billion naira, 40.31 billion naira and then to 41.28 billion naira from 2012, 2013, 2014, 2015 and then to 2016(CBN, 2010).

Statement of the Problem

The agricultural sector in Nigeria which was the dominant sector in the Nigerian economy is no longer performing the leading role it was known for, as far back as 1960s. The agricultural sector has been affected with numerous problems which has been the results of the poor performance of the sector itself. This has attracted various strategies including

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expansion of public expenditure on agricultural activities by different governments in the country. Notwithstanding, this expenditure on agricultural sector has perhaps been on the increase without expressly translating to corresponding expansion or increase in economic growth. There is still the massive importation of rice, fish, wheat and other agricultural products into the country, even when the present President Buhari and his team place a ban on the importation such. This raises the question as to whether agriculture is good for economic growth or not. Therefore there is the need to examine the extent to which government expenditure as an input has affected agricultural production which in turn boosts economic growth. It is on this background that the need to investigate the impact of government expenditure on agricultural sector on economic growth in Nigeria is important.

Research Questions

The following questions have been designed to guide the study:

1. What is the impact of government expenditure on agriculture on economic growth in Nigeria?
2. Is there a long run relationship between government expenditure on agriculture and economic growth in Nigeria?

Objectives of the Study

The objective of this study is:

1. To find out if government expenditure on agriculture has a significant impact on economic growth in Nigeria.
2. To examine if a long run relationship exists between government expenditure on agriculture and economic growth in Nigeria.

Research Hypothesis

This research is aimed at studying government expenditure on the agricultural sector and economic growth in Nigeria. The following hypotheses have been designed to aid in the research work.

H_0: Government expenditure on the agricultural sector does not have a significant impact on economic growth in Nigeria

Hi: Government expenditure on the agricultural sector has a significant impact on economic growth in Nigeria.

THE LITERATURE

According to Iwena (1995), the term "agriculture" is derived from two Latin words, "ager", meaning field and "cultura" , meaning cultivation. By this statement, agriculture means field cultivation or agriculture has to do with growing and harvesting of crops or plants. The most primitive form of human beings was that of gathering and hunting. As soon as human beings began to form permanent settlements and gave up wandering in search of food, agriculture was born. Akinboyo (2008) defined agriculture as the production of food, feed, fiber and other goods by the systematic growing and harvesting of plants and animals. It is the science of making use of the land to raise plants and animals. It is also the simplification of nature's food webs and the rechanneling of energy for human planting and animal consumption. Ogieva (2003) also defined agriculture as the art and science of cultivating the soil, producing livestock, preparing livestock feeds, processing crops and livestock for man, and the processes of selling these excess crops and livestock. He went further to say that it is a deliberate attempt by man to cultivate crops, rear animals, caring for them for the benefit he will get from doing so. More so, it embraces various preparations and processing of plant and animal products as well as the disposal of those products through marketing. Abayomi(1997) defined agriculture as an organization of inputs such as land and mineral capital in a variety of forms and management of labour for the production and marketing of food and fibre. She went further to say that agriculture is the coordination of inputs such as land, labour, and natural resources for productive purposes, and marketing of those output produced. Agriculture can also be understood as the life of the rural population in which production is ultimately bound for consumption. Agriculture is the key to sustained growth of the modern economy because agriculture is a sector of economic activities which provide human beings with some of their most basic needs such as food and income.

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Government expenditure is referred to as the outflow of resources from government to other sectors of the economy (Nurudeen and Usman 2010). Government spending or public spending is sub-divided into current and capital expenditure. Capital expenditure has been defined as payment for non-financial assets used in production while current expenditures are payments for non-repayable transactions within a year, (CBN, 2003). Economic growth is the process whereby the real per capita income of a country increases over a long period of time. Economic growth is related to a quantitative and sustained increase in the country's per capita output or income accompanied by expansion in its labour force, consumption, capital and volume of trade (Jhingan, 2012). Economic growth is a necessary but not sufficient condition for economic development. Compared to the objective of development, economic growth is far easier to realize. This is because the process of development is far more pervasive. Apart from a rise in output, it involves changes in the composition of output as well as a shift in the allocation of productive resources so as to ensure social justice. Thus, an economy can grow, but it may not develop because poverty, unemployment and inequalities may continue to persist due to the absence of technological and structural changes. But it is difficult to imagine development without economic growth

The theoretical foundation of this study is premised on the production function, Harold-Domar Growth model formulated by Harrod (1939) and Domar (1946) and the Two-Gap model. Production function expresses the relationship between output and inputs thus; $Q = f(L, K)$, where Q = output, L= labour and K = capital. In this context, output represents the performance of the agricultural sector; labour represents workers employed in the agricultural sector, while K represents investment in the agricultural sector. The Harrod-Domar growth and Two-Gap models by Chenery and Strout (1966) also provide justification for the critical role of capital (investment) in the growth process. The theories argued that due to low income and savings, investment in less developed countries are inadequate in stimulating the expected output or growth. To them, this short coming can be remedied by the intervention

through funding from either private or public sources. It is important to note that, most times, capital which plays critical role in enhancing output in agricultural sector falls short of requirement due to low income of farmers which results in low savings and investments (savings investment gap) and hence, the need for both organized private and public sectors funding.

Loto (2011) investigated the effect of government expenditure on economic growth in Nigeria for the period 1980 to 2008, with a particular focus on five sectoral expenditures, including securing, health, education, transportation communication and agriculture. The result indicates that in the short run, expenditure on agriculture was found to be negatively related to economic growth. The impact on education, though also negative and was not significant. The impact of expenditure on health was found to positively related to economic growth while expenditures on national security transportation and communication were positively related to economic growth, their impact were not statistically significant.

Ebere and Osundina (2012). Study examined the impact of government expenditure on agriculture on economic growth in Nigeria over the years. A time series data of 33 years sourced from the Central bank of Nigeria was used. Ordinary Least Square (OLS) technique of data analysis was used in evaluating the secondary data. GDP was used as a proxy to economic growth, while agricultural output and government expenditure on agriculture were used as indicators of 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 economic growth in Nigeria. The study modeled along with these variables: Real Gross Domestic Product, Agricultural sector output and Total Government Expenditure. The findings also revealed that the sector still encounter some problems like inadequate finance, poor infrastructure, and others.

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Okezie, Nwosu and Njoku (2013) wrote on an assessment of Nigeria expenditure on the agricultural sector: Its relationship with agricultural output (1980 - 2011). The Error correction model model (ECM). They used AGDP-Gross Domestic Products as a proxy for economic growth (the dependent variable) and TGA-total government expenditure on agriculture as the independent variable. The estimated coefficient of the ECM term which is also the speed of adjustment to equilibrium is negative and statistically significant as required by the granger representation theorem. This is enough evidence that AGDP and TGA are cointegrated in this study. The speed of adjustment to equilibrium is 88% within a year when the variables wander away from their equilibrium values. It was further discovered that a positive relationship exists between the dependent and the independent variable.

Olawumi and Adesanmi (2018) wrote on Public expenditure on agriculture and output growth in Nigeria. They used the Ordinary Least Square (OLS) method to run a regression analyses on times series data from 1981 to 2015. The model had Gross domestic products (GDP) as the dependent variable while Agricultural Output and total government expenditure were the independent variables. They discovered that there is a positive relationship between the dependent variable and the independent variables.

Idoko and Jatto (2018) wrote on government expenditure on agriculture and economic growth in Nigeria using time series data from 1985-2015. The OLS method was used and the model had RGDP (Real Gross Domestic Product) as the dependent variable while AGO (Government Expenditure on Agriculture), CF (Capital Formation), CCA (Commercial Bank Credit to Agriculture) and DS (Domestic Savings) were the independent variables. The multiple regression results of the study revealed that there exists a positive and significant relationship between government expenditure on agriculture and economic growth in Nigeria. However, this study intends to fill the gap in the literature by looking into the nexus between government expenditure on agriculture and economic growth in Nigeria, using secondary data spanning from 1981

through 2019. This is because all the literature consulted for this study do not involve the use of time series data up to 2019. Also this study adopted the Auto Regressive Distributed Lag (ARDL) method of estimation which other studies consulted did not use. Specifically, the study intends to determine the relationship between public agriculture expenditure and economic growth in Nigeria.

METHODOLOGY

Model Specification

Model specification is a mathematical expression showing the interrelationship between the economic relationship existing between economic variables (dependent and independent). The model is a three-variable model and stated covers the Gross Domestic Product (GDP) at constant prices as the dependent variable to capture economic growth while agricultural sector output and government expenditure (General) were the independent variables to capture government expenditure on agriculture in Nigeria. Taking inference from Solow growth model, which was subsequently modified by Mankiw, Romer and Weil (1992) and is termed the "Augmented Solow growth model", Solow (1956) postulated that economic growth is resultant from the accumulation of physical capital and an expansion of the labor force in conjunction with an "exogenous" factor, technological progress, that makes physical capital and labor more productive (Udah, 2010) and (Ebere and Osundina , 2012). For the purpose of this research work the above was adopted and built upon, proxing economic growth with Gross Domestic Products (GDP) and government expenditure (both capital and recurrent) to check how the government's commitment in the area of expenditure in the agricultural sector has contributed to economic growth. With this adjustment incorporated into the model, it can therefore be specified in the form expressed below: Harrod-Domar model Y = F (K, L).

The adopted model for this study is specified mathematically as follows:

RGDP = f (GCEXP, GREXP) ..... (1)

The model was the econometrically specified thus:

$$RGDP = \beta_0 + \sum_{i=1}^{n} \beta_1 \Delta RGDP_{t-i} + \sum_{i=0}^{n} \beta_2 \Delta GCEXP_{t-1} + \sum_{i=0}^{n} \beta 3 \Delta GREXP_{i-1} + et \ldots\ldots\ldots\ldots (2)$$

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Where:
RGDP = Real Gross Domestic Product
GCEXP = Government Capital Expenditure on Agriculture
GREXP = Government Recurrent Expenditure on Agriculture
U_t = Stochastic or error term

Apriori Expectation

$\beta_0 > 0, \beta_1 > 0, \beta_3 \; and \beta_3 > 0$

RESULTS AND DISCUSSION

The unit root test is carried out to find out if the data is stationary. In econometric analysis, data is stationary when its means and variance are constant over time and the value of the covariance between the two time periods depends only on the distance or gap or lag between the two time periods and not the actual time at which the covariance is computed. (Gujarati, 2004). There are several tests of stationarity but the most commonly used in applied econometrics is the Dickey – fuller augmented unit root test and it was used in this study.
The table (table 1)below presents the summary of the unit root test for the variables in the model.

Table 1: Summary of the Unit Root Test

Variables	ADF test statistic	Critical value 1%	Integration order
RGDP	-7.115980	-3.615588	I(1)
GREXP	-4.591246	-3.610453	I(0)
GCEXP	-6.922100	-3.615588	I(1)

Source: Authors computation using Eviews.

The results show that while RGDP and GCEXP were stationary at first difference, GREXP was stationary at levels. Pesaran, Shin and Smith (2001) proposed Autoregressive Distributed Lag (ARDL) if the underlying variables are both stationary at levels [I(0)] and stationary at first difference [I(1)]. This has made the use of ARDL suitable as the technique of analysis. The model was tested for cointegration using the bounds test. This is because it allows a mixture of I(1) and I(0) variables as regressors. The table (table 2) below shows that the computed F

statistics (2.203352) falls below the critical values for the lower bound. We then conclude that there is no cointegration in the model. Since cointegration was not detected in the model, it implies that there is no long run relationship between the dependent variable and the independent variables in the model. The ARDL technique was then used to estimate the model.

Table 2: Bounds Test for Cointegration

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	2.203352	10%	3.17	4.14
k	2	5%	3.79	4.85
		2.5%	4.41	5.52
		1%	5.15	6.36

Source: Authors computation using Eviews.

The table below (table 3) shows the summary of the results obtained.

Table 3: Results of the ARDL estimation

Variables	Coefficients	Probability
GREXP	1.84	0.0001
GCEXP	4.26	0.0027
Constant	2.57	0.0028

Source: Authors computation using Eviews.

From table 3 above, it can be seen that the intercept or constant term was obtained to be 2.57. This implies that RGDP will have this value even if the independent variables (GREXP and GCEXP) assume zero figures. The coefficient of GREXP was 1.84 and was positive. This means that GREXP contributes positively to RGDP and that 1 percent change in GREXP will lead to a 1.84 percentage change in RGDP. The coefficient of GCEXP was 4.26 and was positive. This means that GCEXP contributes positively to RGDP and that 1 percent change in GREXP will lead to a 4.26 percentage change in RGDP. From Appendix attached, the R2 obtained was 0.82 which shows the model has a good fit. It also implies that 82% of the variations in the dependent variable (RGDP) are explained the

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ISSN: 2545-5893(Print) 2545-5877 (Online)
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independent variables (GREXP and GCEXP). While 18% of the variations in the model are explained by the error term or other variables not captured in the model.

TEST FOR AUTOCORRELATION

Table 4: Breusch-Godfrey Serial Autoorrelation LM Test

F-statistic	0.871290	Prob. F(2,22)	0.4324
Obs*R-squared	2.642209	Prob. Chi-Square(2)	0.2668

Source: Authors computation with Eviews.

From the table above, it can be seen that the P-value of the Breusch-Godfrey serial correlation LM test is 0.43 which is greater than the level of significance of 0.05. This implies that there is no autocorrelation.

TEST FOR HETEROSCEDASTICITY

Table 5:Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	2.270208	Prob. F(11,24)	0.0452
Obs*R-squared	18.35737	Prob. Chi-Square(11)	0.0737
Scaled explained SS	6.125084	Prob. Chi-Square(11)	0.8649

Source: Authors computation with Eviews.

From the table above, it can be seen that the P-value of the Breusch-Pagan-Godfrey test 0.045 is less than 0.05. This implies that there is the presence of some level of Heteroskedasticity.

TEST FOR MULTICOLINEARITY

Table 6: Multicolinearity test

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
RGDP(-1)	0.024089	28.55667	3.419586
RGDP(-2)	0.032337	37.38148	4.845258

RGDP(-3)	0.027281	30.75998	4.298975
RGDP(-4)	0.019755	21.94008	3.214959
GREXP	1.59E+17	2.196931	1.433957
GREXP(-1)	2.36E+17	3.226894	2.154994
GREXP(-2)	2.08E+17	2.818907	1.924760
GREXP(-3)	2.41E+17	3.229825	2.252743
GREXP(-4)	2.15E+17	2.850647	2.029960
GCEXP	1.62E+18	11.18048	4.828371
GCEXP(-1)	1.51E+18	10.07468	4.565212
C	5.99E+21	15.71750	NA

Source: Authors computation with Eviews

The results from the table above shows Variance Inflation Factors (VIF). Since the value of the Uncentered VIF is greater than the centered VIF, it implies that there is no multicolinearity.

Hypothesis Testing

The F-statistics is used to test the overall significance of the parameters, the test is conducted at 5% level of significance. We use V_1 and V_2 to check the tabulated value of the F.

V_1=k-1 where k is the number of parameters. V_1=4-1=3

V_2= n-k where N=number of samples. V_2=40-4=36

Ftab= 2.84

Fcal= 9.76

Decision Rule

If Ftab is greater than Fcal accept null hypothesis

If Ftab is less than Fcal, reject null hypothesis.

A look at the obtained F values above, it can be seen that the Ftab is less than the Ftab. This implies that the null hypothesis is rejected and the alternative hypothesis is accepted. We conclude that government expenditure on the agricultural sector has a significant impact on economic growth in Nigeria.

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The results obtained are consistent with the works of Idoko & Jatto (2018), Okezie, Nwosu & Njoku (2013) and Ebere & Osundina (2012) who discovered a significant relationship between government expenditure on agriculture and economic growth in Nigeria. The results were different from the discovery made by Loto (2011) who investigated the effect of government expenditure on economic growth in Nigeria for the period 1980 to 2008, with a particular focus on five sectoral expenditures, including securing, health, education, transportation communication and agriculture. The result indicates that in the short run, expenditure on agriculture was found to be negatively related to economic growth.

CONCLUSION AND RECOMMENDATIONS

This study concludes that increase in government expenditure on agriculture contributes positively to economic growth as at the end of 2019.

Without prejudice to theoretical expectations of the relationship between public expenditure on agriculture and economic growth in this study, it is clear that the results agree with apiori expectations. It is for this that the study recommends that:

1. Government should increase its level of expenditure to the agricultural sector, thereby providing more funding in the sector to raise its productivity and increase its contribution to economic growth in Nigeria.
2. The Central Bank of Nigeria should come out with stable policy guideline to enable the commercial banks disburse loans to farmers at a very lower interest rate, in order to help them expand their production capacity.

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APENDIX A.

Data on Real Gross Domestic Product (RGDP), Government Capital Expenditure and Government Recurrent Expenditure.

YEAR	RGDP	GCEXP	GREXP
1980	337,904,164,332	8.991	0.237
1981	279,946,975,212	10.24	0.321
1982	288,087,234,697	6.156	0.313

International Journal of Management Studies, Business & Entrepreneurship Research
ISSN: 2545-5893(Print) 2545-5877 (Online)
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1983	258,625,025,563	6.616	0.427
1984	236,722,471,332	2.846	0.417
1985	283,291,022,741	3.058	0.411
1986	454,565,200,089	3.743	0.381
1987	554,732,965,587	4.427	0.726
1988	548,281,496,803	6.599	0.83
1989	653,313,620,311	17.355	1.518
1990	735,736,665,393	15.982	2.58
1991	766,467,622,671	2.19	2.087
1992	799,569,031,720	9.413	4.649
1993	825,504,336,910	18.244	10.837
1994	633,844,676,977	21.788	11.833
1995	295,200,100,545	15.341	6.257
1996	233,402,374,563	38.928	16.812
1997	237,553,988,159	6.2	16.822
1998	258,659,368,272	8.9	29.633
1999	936,753,967,364	6.9	313.427
2000	803,499,496,299	5.8	48.347
2001	920,561,397,058	57.9	70.649
2002	740,321,503,392	32.4	124.394
2003	787,778,463,667	8.5	75.343
2004	1,085,139,440,019	38.7	112.566
2005	908,742,700,817	60.3	163.26
2006	821,316,326,946	89.5	17.9
2007	818,935,767,539	94.1	32.5
2008	739,880,935,436	106	65.4
2009	1,038,660,430,341	138.9	22.4
2010	554,693,595,266	78	28.2
2011	543,875,191,416	62.9	41.2
2012	531,300,321,497	63.4	33.3
2013	528,265,182,859	56.4	39.4
2014	540,812,985,858	60.9	38.67
2015	655,056,129,127	50.95	40.31
2016	588,317,635,839	44.47	41.28
2017	684,909,803,443	55.93	40.79
2018	697,999,419,576	50.12	41.04
2019	691,454,611,511	53.02	40.92

Source: Central Bank of Nigeria (CBN) statistical Bulletin 2019.

APENDIX B
UNIT ROOT TEST RESULTS

Null Hypothesis: D(RGDP) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.115980	0.0000
Test critical values:	1% level	-3.615588	
	5% level	-2.941145	
	10% level	-2.609066	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RGDP,2)
Method: Least Squares
Date: 02/04/21 Time: 02:20
Sample (adjusted): 1982 2019
Included observations: 38 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(RGDP(-1))	-1.167172	0.164021	-7.115980	0.0000
C	1.24E+10	2.95E+10	0.420147	0.6769

R-squared	0.584474	Mean dependent var	1.35E+09
Adjusted R-squared	0.572932	S.D. dependent var	2.78E+11
S.E. of regression	1.82E+11	Akaike info criterion	54.74226
Sum squared resid	1.19E+24	Schwarz criterion	54.82845
Log likelihood	-1038.103	Hannan-Quinn criter.	54.77292
F-statistic	50.63717	Durbin-Watson stat	1.987309
Prob(F-statistic)	0.000000		

Null Hypothesis: GREXP has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.591246	0.0007
Test critical values:	1% level	-3.610453	

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	5% level	-2.938987
	10% level	-2.607932

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GREXP)
Method: Least Squares
Date: 02/04/21 Time: 02:21
Sample (adjusted): 1981 2019
Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GREXP(-1)	-0.720091	0.156840	-4.591246	0.0000
C	28.69219	10.86909	2.639796	0.0121

R-squared	0.362943	Mean dependent var	1.043154
Adjusted R-squared	0.345725	S.D. dependent var	69.85825
S.E. of regression	56.50644	Akaike info criterion	10.95651
Sum squared resid	118140.2	Schwarz criterion	11.04182
Log likelihood	-211.6519	Hannan-Quinn criter.	10.98712
F-statistic	21.07954	Durbin-Watson stat	2.118042
Prob(F-statistic)	0.000049		

Null Hypothesis: D(GCEXP) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.922100	0.0000
Test critical values:	1% level	-3.615588	
	5% level	-2.941145	
	10% level	-2.609066	

*MacKinnon (1996) one-sided p-values.

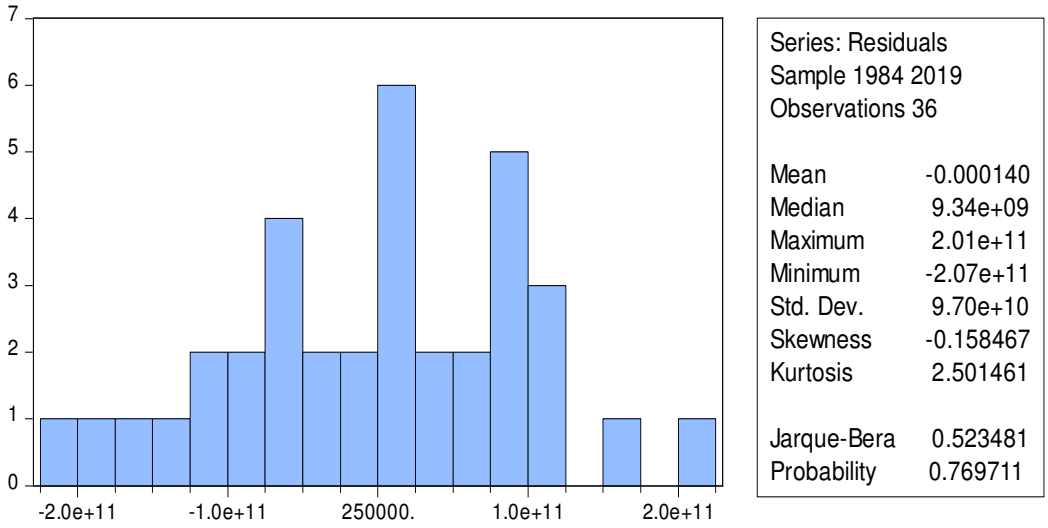
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GCEXP,2)
Method: Least Squares
Date: 02/04/21 Time: 02:22
Sample (adjusted): 1982 2019

Included observations: 38 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GCEXP(-1))	-1.142109	0.164995	-6.922100	0.0000
C	1.279600	3.155069	0.405570	0.6875

R-squared	0.570997	Mean dependent var	0.043447
Adjusted R-squared	0.559080	S.D. dependent var	29.24314
S.E. of regression	19.41797	Akaike info criterion	8.821471
Sum squared resid	13574.08	Schwarz criterion	8.907660
Log likelihood	-165.6080	Hannan-Quinn criter.	8.852136
F-statistic	47.91547	Durbin-Watson stat	2.049844
Prob(F-statistic)	0.000000		

NORMALITY TEST



APENDIX C BOUNDS TEST

ARDL Long Run Form and Bounds Test
Dependent Variable: D(RGDP)
Selected Model: ARDL(4, 4, 1)
Case 3: Unrestricted Constant and No Trend
Date: 02/04/21 Time: 02:27
Sample: 1980 2019

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Included observations: 36

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.57E+11	7.74E+10	0.000000	0.0000
RGDP(-1)*	-0.528141	0.152044	-3.473611	0.0020
GREXP(-1)	1.05E+09	6.70E+08	0.000000	0.0000
GCEXP(-1)	8.10E+08	8.82E+08	0.000000	0.0000
D(RGDP(-1))	0.301778	0.173815	1.736206	0.0953
D(RGDP(-2))	0.207454	0.149320	1.389328	0.1775
D(RGDP(-3))	0.307368	0.140552	2.186868	0.0387
D(GREXP)	1.84E+09	3.99E+08	0.000000	0.0000
D(GREXP(-1))	84845031	8.05E+08	0.000000	0.0000
D(GREXP(-2))	-1.90E+08	6.68E+08	0.000000	0.0000
D(GREXP(-3))	-1.21E+09	4.63E+08	0.000000	0.0000
D(GCEXP)	4.26E+09	1.27E+09	0.000000	0.0000

* p-value incompatible with t-Bounds distribution.

Levels Equation
Case 3: Unrestricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GREXP	1.98E+09	1.19E+09	1.662583	0.1094
GCEXP	1.53E+09	1.52E+09	1.007958	0.3235

EC = RGDP - (1981217007.4600*GREXP + 1533145691.3498*GCEXP)

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	2.203352	10%	3.17	4.14
K	2	5%	3.79	4.85
		2.5%	4.41	5.52
		1%	5.15	6.36

			Finite Sample: n=40	
Actual Sample Size	36			
		10%	3.373	4.377
		5%	4.133	5.26
		1%	5.893	7.337
			Finite Sample: n=35	
		10%	3.393	4.41
		5%	4.183	5.333
		1%	6.14	7.607

t-Bounds Test			Null Hypothesis: No levels relationship	
Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-3.473611	10%	-2.57	-3.21
		5%	-2.86	-3.53
		2.5%	-3.13	-3.8
		1%	-3.43	-4.1

APENDIX D: ARDL RESULTS

Dependent Variable: RGDP
Method: ARDL
Date: 02/04/21 Time: 02:31
Sample (adjusted): 1984 2019
Included observations: 36 after adjustments
Maximum dependent lags: 4 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (4 lags, automatic): GREXP GCEXP
Fixed regressors: C
Number of models evalulated: 100
Selected Model: ARDL(4, 4, 1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
RGDP(-1)	0.773637	0.155206	4.984579	0.0000
RGDP(-2)	-0.094324	0.179824	-0.524533	0.6047
RGDP(-3)	0.099914	0.165170	0.604919	0.5509
RGDP(-4)	-0.307368	0.140552	-2.186868	0.0387
GREXP	1.84E+09	3.99E+08	4.614099	0.0001
GREXP(-1)	-7.12E+08	4.86E+08	-1.463532	0.1563

International Journal of Management Studies, Business & Entrepreneurship Research
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GREXP(-2)	-2.75E+08	4.56E+08	-0.602631	0.5524
GREXP(-3)	-1.02E+09	4.91E+08	-2.074898	0.0489
GREXP(-4)	1.21E+09	4.63E+08	2.608985	0.0154
GCEXP	4.26E+09	1.27E+09	3.346965	0.0027
GCEXP(-1)	-3.45E+09	1.23E+09	-2.814277	0.0096
C	2.57E+11	7.74E+10	3.325486	0.0028

R-squared	0.817852	Mean dependent var	6.43E+11
Adjusted R-squared	0.734367	S.D. dependent var	2.27E+11
S.E. of regression	1.17E+11	Akaike info criterion	54.07219
Sum squared resid	3.29E+23	Schwarz criterion	54.60003
Log likelihood	-961.2994	Hannan-Quinn criter.	54.25642
F-statistic	9.796428	Durbin-Watson stat	2.295172
Prob(F-statistic)	0.000002		

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

AUTOCORELATION TEST

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.871290	Prob. F(2,22)	0.4324
Obs*R-squared	2.642209	Prob. Chi-Square(2)	0.2668

Test Equation:
Dependent Variable: RESID
Method: ARDL
Date: 02/04/21 Time: 02:33
Sample: 1984 2019
Included observations: 36
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RGDP(-1)	0.191110	0.251625	0.759503	0.4556
RGDP(-2)	-0.204652	0.251879	-0.812504	0.4252
RGDP(-3)	0.018913	0.189480	0.099814	0.9214
RGDP(-4)	0.030544	0.143226	0.213254	0.8331
GREXP	-48115428	4.58E+08	-0.105026	0.9173
GREXP(-1)	-3.88E+08	6.05E+08	-0.641339	0.5279
GREXP(-2)	1.43E+08	5.80E+08	0.246427	0.8076
GREXP(-3)	2325848.	5.14E+08	0.004522	0.9964
GREXP(-4)	2.25E+08	4.96E+08	0.454272	0.6541
GCEXP	46891848	1.34E+09	0.035079	0.9723
GCEXP(-1)	-2.55E+08	1.29E+09	-0.197047	0.8456

C	-1.22E+10	1.00E+11	-0.121934	0.9041
RESID(-1)	-0.328311	0.345711	-0.949671	0.3526
RESID(-2)	0.159407	0.350980	0.454177	0.6542

			-0.00014
R-squared	0.073395	Mean dependent var	0
Adjusted R-squared	-0.474145	S.D. dependent var	9.70E+10
S.E. of regression	1.18E+11	Akaike info criterion	54.10707
Sum squared resid	3.05E+23	Schwarz criterion	54.72288
Log likelihood	-959.9273	Hannan-Quinn criter.	54.32201
F-statistic	0.134045	Durbin-Watson stat	1.923624
Prob(F-statistic)	0.999722		

HETEROSCEDASTICITY TEST

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	2.270208	Prob. F(11,24)	0.0452
Obs*R-squared	18.35737	Prob. Chi-Square(11)	0.0737
Scaled explained SS	6.125084	Prob. Chi-Square(11)	0.8649

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 02/04/21 Time: 02:35
Sample: 1984 2019
Included observations: 36

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.37E+22	6.35E+21	-2.161083	0.0409
RGDP(-1)	4.59E+09	1.27E+10	0.360577	0.7216
RGDP(-2)	-7.84E+08	1.48E+10	-0.053114	0.9581
RGDP(-3)	1.87E+10	1.36E+10	1.379291	0.1805
RGDP(-4)	2.94E+10	1.15E+10	2.546240	0.0177
GREXP	2.67E+19	3.28E+19	0.814956	0.4231
GREXP(-1)	1.06E+19	3.99E+19	0.266668	0.7920
GREXP(-2)	2.60E+19	3.74E+19	0.695036	0.4937
GREXP(-3)	-3.22E+19	4.03E+19	-0.799934	0.4316
GREXP(-4)	-9.00E+19	3.80E+19	-2.369212	0.0262
GCEXP	-6.56E+19	1.05E+20	-0.627881	0.5360
GCEXP(-1)	-1.06E+20	1.01E+20	-1.050217	0.3041

R-squared	0.509927	Mean dependent var	9.15E+21

International Journal of Management Studies, Business & Entrepreneurship Research
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Adjusted R-squared	0.285310	S.D. dependent var	1.14E+22
S.E. of regression	9.61E+21	Akaike info criterion	104.3331
Sum squared resid	2.22E+45	Schwarz criterion	104.8609
Log likelihood	-1865.995	Hannan-Quinn criter.	104.5173
F-statistic	2.270208	Durbin-Watson stat	1.610568
Prob(F-statistic)	0.045152		

MULTICOLINEARITY TEST

Variance Inflation Factors
Date: 02/04/21 Time: 02:35
Sample: 1980 2019
Included observations: 36

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
RGDP(-1)	0.024089	28.55667	3.419586
RGDP(-2)	0.032337	37.38148	4.845258
RGDP(-3)	0.027281	30.75998	4.298975
RGDP(-4)	0.019755	21.94008	3.214959
GREXP	1.59E+17	2.196931	1.433957
GREXP(-1)	2.36E+17	3.226894	2.154994
GREXP(-2)	2.08E+17	2.818907	1.924760
GREXP(-3)	2.41E+17	3.229825	2.252743
GREXP(-4)	2.15E+17	2.850647	2.029960
GCEXP	1.62E+18	11.18048	4.828371
GCEXP(-1)	1.51E+18	10.07468	4.565212
C	5.99E+21	15.71750	NA