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Impact of Fiscal Policy on Agricultural Output in Nigeria

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Abstract:

This study examines the impact of fiscal policy on agricultural output in Nigeria using the most recent official data. The metrics for fiscal policy is government capital expenditure and custom duties on fertilizer. The study used annual time series data obtained from CBN annual statistical bulletin, NCS, and FIRS which was found to be stationary at the order of I(1) and I(0). The order of unit root test led to the use of ARDL estimation method employed in the empirical analysis of this research work. The study found evidence of both short and long run relationship between the variables (VAO, GEX, IDMF, and ACGSF) using both Johansen co-integration and ARDL Bounds test. Although government expenditure (GEX) to agricultural sector was found to be statistically insignificant which recommend that government should increase agriculture capital expenditure to ensure that its contribution is significant. Consequently, custom duties on fertilizer (IDMF) was found to be negatively signed and significant indicating a negative impact on agricultural output. This demands that the policy makers should be prudent in the use of fiscal policy instrument in achieving its desired objective.

Keywords: Agricultural output; Fiscal Policy; Nigeria.

JEL Classification: G10; E20.

Introduction

The role of agriculture in pioneering the growth and development of a nation's economy cannot be overemphasized as it fosters sustainability in economic activities; ensure food security; provide employment to dwellers in rural area; reduce poverty; and other numerous benefits. Every industrialized nation has taken its origin from agricultural sector. (Ehinomen & Charles, 2012) stated that industrialization rely on agricultural growth and productivity with both industrial and agrarian revolution having a substantial correlation (Castro, 2011); (Sertoğlu, Ugural, & Bekun, 2017); (O & Abdullahi, 2014); Fankun & Evbuomwan, (2017); (Maku, 2015); (Udah, Nwachukwu, Nwosu, Mbanasor, & Akpan, 2015);

Nigeria government in effort to rehabilitate the deteriorated agricultural sector has come up with schemes and policies to curtail the decadence in the sector, schemes like ACGS (Agricultural Guaranteed Credit Scheme); ACGSF (Agricultural Credit Guarantee Scheme Fund); CAADP (Comprehensive African Agriculture Development Program) CRIN (Cocoa Research Institute of Nigeria); EEG (Export Expansion Grant); FSS (farm settlement schemes); NAFPP(National Accelerated Food Production program); OFN (Operation Feed the Nation); RBRDA (River Basin and Rural Development Authorities) established and launched in 1972 and 1976 respectively; and many others but mention a few..

The prominent policy used by most Government to influence macroeconomic variable are the monetary and fiscal policy, the monetary department of the CBN adopt this policy to control the flow of liquidity and government in the other hand use the tool of fiscal policy through taxation (Revenue) and government expenditure to influence economic activities. Base on this study we focus our attention on fiscal policy. Fiscal policy is viewed as the most important policy instrument available to the government of developing nations like Nigeria to enhance economic growth and equitable distribution of scare resource. It involve the use of tax and expenditure to make a vital change targeted at achieving macroeconomic objective such as; to increase the standard of living; attain full employment; price stability; external balance of payment; equitable distribution of income and wealth.

It has been argued that increase in government spending will bring about slowdown in the performance of an economy while other scholars concluded that increase in government spending and taxes will bring about economic growth. The essence of this study is to investigate if there is a relationship between government spending and taxation (fiscal policy) and agricultural output in Nigeria.

1. Literature Review

1.1. Theory of Taxation

Over the years, various theories have been propounded by different authors and scholars as regard to taxation. (Tiezzi & Xiao, 2016), opined that taxation theory is triggered on the assumption that there is no need for a linear relationship between tax paid and benefits enjoyed from government activities. The assumption of the benefit theory of taxation has given rise to a debate among scholars in this field of study(Fölster & Henrekson, 2006); (Lawal, A. I., Oye, O. O., Toro J. & Fashina, 2018). The theory state that the proportion of tax levied on individuals should be based on the

benefits derived from government activities. The higher the benefit enjoyed from the government activities, the higher the tax paid by the individuals. The theory has been subjected to criticism on the following footing;

1. It is difficult or impossible to evaluate the benefits enjoy by individual from government activities in a year.
2. If the theory is adopted, the poor will pay a higher tax and will suffer because most government activities is targeted at enhancing their standard of living.
3. It alters the basic principle of tax, which is defined as a compulsory levy imposed by government on individuals to fund its administration and provide unmatchable amenities for the citizens.

Base on this study, the overview of some of the various theories on taxation are discussed below:

1.2. Diffusion Theory of Taxation

Diffusion theory of taxation states that when tax is levied, the burden automatically equitably disseminates throughout the community. This theory was establishing on the assumption of perfect competition in the market meaning that when tax is imposed on commodity by the government, the burden passes on to the consumer automatically. (Edgeworth, 1897) buttresses that in reality imperfect market exists while the theory assumes perfect competition in the market. Taxation aim at generation of revenue and ensure equitable distribution of wealth, therefore when tax is review either upward or downward it targets a particular economic unit to achieve the general objective. It is the role of the finance minister to exact policy measure that will ensure the attainment of this objective which is never an easy task, if the theory of diffusion is applicable in the real world there will be no stress for the minister of finance since tax levied can diffusion automatically. This assumption has made the theory impracticable and reduces public attention.

1.3 Ability to Pay Theory of Taxation

The most commonly and widely welcomed principle of taxation is that of the ability to pay principle. It states that tax is to be levied by government on the individuals' base on their ability to pay rather than the benefits principle. This implies that the tax rate of an individual is a function of taxable capacity of such an individual which sound reasonable and just because it confers on the higher income earner to pay more tax than the low income earner. (Teles & Mussolini, 2013) he states that, application of this principle will achieve justice but will not end our difficulties. Simply put, the question on how to evaluate the ability of individual's capacity to pay is not suggested by the principle which constitutes the theory's weakness.

1.4 Theory of Optimal Taxation

The optimal taxation theory propounded that a tax system should be designed and preferred on the basis to maximize a social welfare function which is subject to a set of constraints. It regards social planner as a utilitarian meaning that the social welfare function should centre on the utilities of individuals in the community. In its general analyses, it implores the use of social welfare function which is nonlinear to individual utility function. Non-linearity takes into consideration a social planner who favours, for instance, more equivalent appropriations of utility. Notwithstanding, a few examinations in this writing expect that the social planner thinks exclusively about normal utility, suggesting a social welfare work that is straight in singular utilities. For our motivations in this exposition, these distinctions are of auxiliary significance, and one would not go far wrong in thinking about the social planner as a great "direct" utilitarian. To improve the issue confronting the social planner, it is frequently expected that everybody in the public eye has similar inclinations over, say, utilization and recreation. Now and then this homogeneity presumption is made one stride advance by expecting the economy is populated by totally indistinguishable people. The social's planner will likely pick the expense framework that amplifies the delegate shopper's welfare, realizing that the customer will react to whatever impetuses the tax framework gives. In a few investigations of tax collection, expecting a delegate purchaser might be helpful rearrangements. In any case, as we will see, reaching strategy determinations from a model with a delegate purchaser can likewise in a bad position. According James (Olasunkanmi, 2013) he advance into second attempt on optimal tax models by suggesting the way to formalize the social planner's problem that deals with unobserved heterogeneity which exist among taxpayers. The social planner only considers the income earns by the taxpayer which depend on the ability and the effort of the earner meaning that he ignores the factors by which the income depends upon. If the social planners' tax on the income of the taxpayer base on his capacity, then the taxpayer on ration will be discouraging to exert more effort on higher income which attract higher tax rate and rather prefer a lower income and tax with less effort.

1.5. Theory of Government Expenditure

1.5.1 Adolph Wagner's Theory of Government Expenditures

In the year 1876 mark the earliest theory on public expenditure which was propounded by the German economist Adolph Wagner. This theory is further known as Wagner's law. The theory centered on what he noted as "the law of rising public expenditure and state activities". This Wagner law came into existence after an empirical analysis in the 19th century in western Europe which he argued that the growth on government or state activities largely depend on economic development and industrialization. The following can be extracted from the Wagner's law;

1. An increase in government spending will be more than proportional increase in GDP, this is because some of government capital expenditure is tied to potential or future benefit which may or not reflect on the year by which it was spent.
2. There will be an increasing political pressure for social progress and request for increment of allowance in the conduct of industry as a result of development of modern industrial society.
3. The expansion of state activities can only be possible when there is an increase in government spending on administration and regulation of the economy.

Wagner further came up on a footing that increase in state expenditure occurs during industrialization procedure where public sector activity will have a supremacy over private activity, government needs to provide social amenities such as education, access to clean water, good transport system, public hospital, hedge against natural disaster etc., and modern industrialization will give birth to quest for new technology by the larger firms which requires that government will provide them with one to enable the enable all the sector run smoothly in the economy.

According to (Kuismanen & Kämppi, 2010) throw their support on Wagner's theory by postulating that any progressive country is chaired by industrialization. According to (Maku, 2015)after his research work on public expenditure using modern econometric model, he stated the long run effect of public expenditure whether as a proportion to GDP, its per capital income or to grow in income could not be established even when the public expenditure and economic growth were found stationary. That means he didn't support the Wagner's law using Nigeria data as a case study. According to (Hague, 2016), he coined that public spending is an increasing function of per capital national output. (Sc & Phil, 2018) supported the Wagner's law after he established that more than unity income elasticity public spending in Nigeria. Despite the conflict among the scholars and researchers on this subject, each time economic decision is made, the policy maker will always present the Wagner's law as a footing for their decision concerning public expenditure.

1.6 Wiseman and Peacock Theory on Public Expenditure

Peacock and Wiseman theory on public expenditure was emerge a year after Nigeria gained her autonomy in 1961. There suggestion was made after a careful study and analyses of data concerning England public expenditure. They believed that growth in public spending does not take the form of Wagner's law but chose the political proposition rather than organic state where it is stage that government likes to spend money; people prefer no tax increase and desire increment in government activities in terms of social amenities. According to Peacock and Wiseman, major war or disturbance will emanate between the government and taxpayer on decision about the desirable public expenditure and desired tax limit by the taxpayers. These disturbances will cause displacement effect according to Peacock and Wiseman bringing a negative adjustment to government revenue and spending to a new level thereby creating upward revision of taxation. At the initial stage the citizen will oppose this upward review of taxation but have to tolerate due to the fact that they expect the government to reinstate the state of the economy which will end up becoming 'tax.

Forbearance previously considered as "intolerance". By this government revenue will increase and the state activities can be increased, and the effect is economic growth. In the modem world this disturbances matter little as government expenditure is bound to increase (Ofoegbu & Akwu, 2016).

1.7. Empirical Evidence

A worthwhile study has been carried out by reputable researcher on the relationship between economic growth, public spending, and agriculture. (Ghate, Gopalakrishnan, & Tarafdar, 2016) conducted some studies on public spending to agricultural sector using econometrics analytical approach. The outcome of his study shows that there is a positive relationship between bank credit and interest rate on agricultural output in Nigeria.

Using a time series data between the periods of 1979 to 2007 to verify the amount of federal government spending on agriculture, statistical result derived from the study show that government spending does not precede a regular pattern and there is a direct relationship between government agricultural spending to its contribution to the gross domestic product (GDP) (Brzozowski & Siwi, 2010).

Bouakez (2009) uncovers that large fraction of the budgeted amount to agricultural sector does not go directly to the farmers. Among other economic sector, agricultural sector fall short of actual expenditure than the budgeted amount on annual basis thereby making the total spending relatively low.

(Baharumshah, Soon, & Lau, 2016) carried out a research on the impact of government expenditure on economic growth using the heterogeneous panel data, the outcome of the study show that higher economic growth is a function of large government expenditure.

On the contrary, (Grazia & Klemm, 2016) figured out in his research result that growth of government expenditure has negative impact on economic growth using OLS method and sample of 13 organizations for Economic Cooperation and Development (OECD) countries between the years 1959 to 1984.

Ugwuanyi and Ugwunta (2017) with the broad objective on the relationship between government expenditure and economic growth in Nigeria between the periods of 1970 to 2008 using disaggregated analytical techniques. The result uncovers that government total capital expenditure and total recurrent expenditure has a significantly negative impact on economic growth. Although the result also suggested that expenditure on health care, communication and transport result to an increase in economic growth.

Osuala and Jones in 2014 investigated into the effect of government budgetary allocation on agricultural output in Nigeria between the periods of 1995 to 2009, the outcome of the study shows that there is a significantly positive relationship between budgetary allocations to agricultural sector with the total agricultural production in Nigeria. Simply put, more government spending toward the sector will bring an improvement to agricultural output in Nigeria.

An empirical study was carried out by the International Food Policy Research Institute (IFPRI) (2008) on public spending to agriculture using Nigeria as a case study. The result uncovers that public expenditure on agriculture is low with less than 2% of its total Federal expenditure allocated to agricultural sector between the periods of 2001 to 2005. This percent was less than the required 10% suggested by African leaders to be allotted to the sector and the current policy by then, chase diversification yet the sector was still neglected despite the potential and economic importance.

Izuchukwu (2011) opined that despite the oil abundance agricultural resource has been an important sector in the past decades in Nigeria economy. The multifunctional nature of agriculture will also bring about multiplier effect on any country's industrial fabric and socio-economic.

Onwe and Ph (2014) in his study on the effect of monetary and fiscal policy on the main variables of agricultural sector between the periods of 1971-1991 using Ordinary Least Square (OLS). The study shows that there is a positive relationship between fiscal policy and agricultural productivity. (Ehinomen & Charles, 2012)concluded that both the monetary and fiscal policy act on the long run while monetary policy act strongly in the short run on agricultural sector after investigating into economic variables using autoregressive integration vectors between 1971-1997.

Audu (2015) in his study on the impact of fiscal policy on the growth of agricultural sector in Nigeria using Error Correction Model (ECM) between the periods of 1981-2013, the result show that the long run equilibrium relationship exists among the variables i.e. agricultural output, value added tax, and custom exercise duties on exported agricultural produce. The study further suggested that export duty although statistically significant show a negative effect on agricultural output in Nigeria.

1.8. Summary and Gap in literature Review

Several literatures have been reviewed regarding the role and impact of fiscal policy on economic growth in Nigeria and very few has done a research work on sectorial breakdown, but none has done a research work with the objective stated above in the previous chapter of this research work which cover both the full fiscal activities and schemes toward increasing agricultural output in Nigeria. The most recent work by (Audu, 2015) on this subject provide answers to a pertinent question such as the impact of VAT, Export Duties, and government expenditure, he fail to calibrate the effect of Import Duties on agricultural intermediate input (agricultural equipment or fertilizer) towards agricultural growth in Nigeria. Using the most recent official data, this research work will not only provide answers to the stated research question above, but the outcome of this research will prompt the policy maker to peruse both previous and current adopted policy towards agricultural spending in Nigeria thereby positioning the sector for expected growth.

2. Methodology

2.1. Model Specification

Udah *et al.* (2015) described model as a simplified view of reality designed to enable researcher to describe the essence and inter relationship within the concerned phenomenon it represents.

The Neo-classical version of Robert Solow growth model is preferable for this research work for reasons of its vitality. The model concentrates on four variables; Output (Y), Capital (K), Labour (L), and Human Capital (A). At any state, the economy has a certain level of capital, human capital and labor (Nkoro and Uko 2016). All these when combined produces output. The production functions represent thus:

$$Y(t) = F(K(t), A(t), L(t))$$

A baseline case; Agricultural output, Fiscal policy (Government expenditure and taxation).

The analysis is extended to integrate fiscal policy and other important variables that affect Agricultural output.

The functional model for the empirical analysis of this research work was adopted from the thesis of Akbar and Jamil 2012; Nkoro and Uko 2016, hence, the model is given as:

$$VAO = F(IDMF, GEX, ACGSF) \quad (1)$$

where;
VAO = Value of Agricultural output
IDMF = Import Duties on Fertilizer
GEX = Government Recurrent Expenditure on Agriculture
ACGSF = Agriculture Credit Guaranteed Scheme Fund.
The variables were included in the model to estimate their individual impact on agricultural output
The mathematical form is written as:

$$VAO = \beta_0 + \beta_1 IDMF + \beta_2 GEX + \beta_3 ACGSF + \ldots\ldots\ldots \beta_n N \quad (2)$$

The above when written econometrically is thus:

$$AGP = \beta_0 + \beta_1 IDMF + \beta_2 GEX + \beta_3 ACGSF + U_t$$

where β_0 is the intercept and β_1, β_2, and β_3 are the parameters to be estimated.
With U_t being the stochastic term in the model this covers all variables that are not included.

A Priori Expectation

$\beta_1 < 0$, $\beta_2 > 0$, $\beta_3 > 0$.

2.2. Method of Data Analysis

In this research, a test for stationary will be conducted using the Augmented Dicker Fuller (ADF) and will be compared with Philip Peron (PP) unit root test to ensure that the result of this research is genuine and reliable. The general believe for unit root test is to avoid spurious regression result. To address the issue of possible structural break in the series, long run relationship between the variable, and contribution of each explained variable to forecast other variables, we shall employee the use of unit root test, and we proceed to Auto-regressive Distributed Lag (ARDL) analyses.

3. Research findings

3.1. Unit Root Test

Before we further estimation, using the ARDL Bound test, we test for the stationarity status of all variables to ascertain their order of integration. This is to ensure that variables are not I(2) stationary to avoid spurious regression results (Ayopo, Isola, and Olukayode 2015); (Lawal, Oye, Toro and Fashina 2018); (Ayopo, Isola, and Olukayode 2016a); (Ayopo, Isola, and Olukayode 2016b); (Lawal, Asaleye, Olorunkanmi and Popoola 2018); (Fashina, Asaleye, Ogunjobi and Lawal 2018); (Lawal, Nwanji, Asaleye and Ahmed 2016); (Lawal, Babajide, Nwanji and Eluyela 2018); (Lawal, Nwanji, Oye and Adama 2018); (Lawal, Asaleye, IseOlorunkanmi and Popoola 2018); (Lawal, Nwanji, Adama and Otekunrin 2017). Gerritsen (2016) opined that the existence of I(2) variables the computed **F**-statistics provided by Pesaran *et al.* (2001) are not valid as the Bound test assumed variables to be I(1) and I(0). Therefore, the unit root test

in the ARDL procedure might still be necessary to ensure that none of the variables is integrated in the order of I(2) or beyond. To achieve the above statement, we applied Augmented Dickey-fuller (ADF) unit root was conducted for each variable in the model to test for the stationarity and non-stationarity of variables used in this research work.

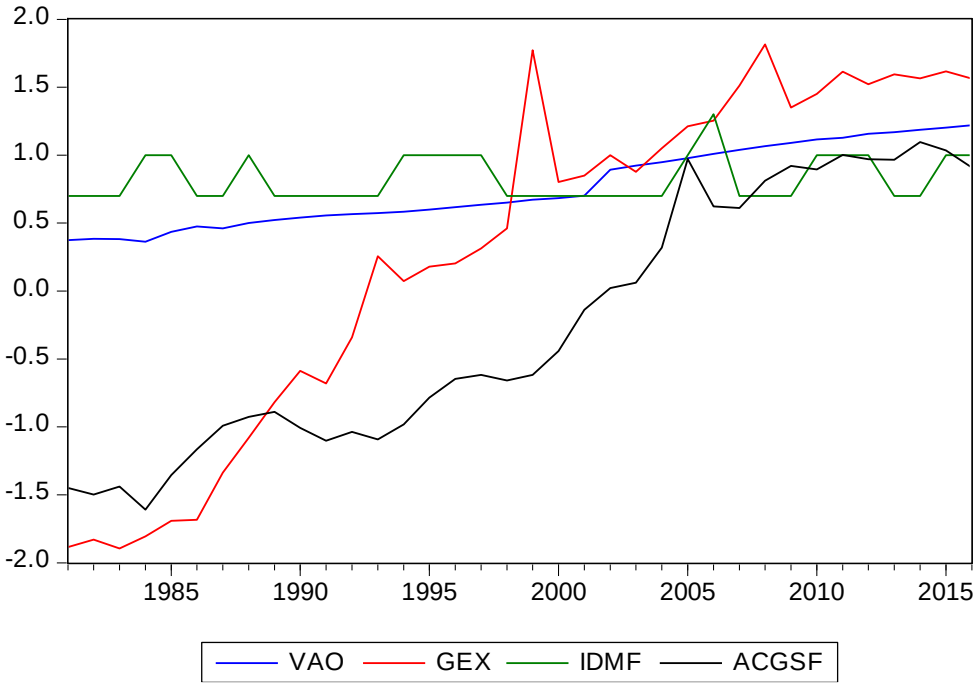
Table 1. Augmented Dickey Fuller Unit Root Result for the variables

Series	ADF at levels	ADF at First Difference	Order of Integration
VAO	0.227886	-5.721808**	I (1)
GEX	-1.921410	-5.822100**	I (1)
IDMF	-4.875060**	-5.537478	I (0)
ACGSF	-0.565714	-4.706188**	I (1)

Source: Author's computation with E-views 9.5

Table 1 shows the Augmented Dickey fuller unit results in test for stationarity. It can be observed that all except one variable (IDMF) are stationary at first difference i.e. I(I) (integrated of order one). IDMF was stationary at 10 percent significant I(0) with the value -4.875060 at levels.

Table 2. Graph of variables after first differencing



Source: Author's computation with E-views 9.5

3.2 Auto Regressive Distributed Lag (ARDL)

The auto-regressive distributed lag was used to test the long run relationship between the variables. Table 3 Using VAO as Dependent Variable

Table 3.

Dependent Variable: VAO
Method: ARDL
Date: 04/15/18 Time: 16:31
Sample (adjusted): 1984 2016
Included observations: 33 after adjustments
Maximum dependent lags: 3 (Automatic selection)
Model selection method: Hannan-Quinn criterion (HQ)
Dynamic regressors (3 lags, automatic): GEX IDMF ACGSF
Fixed regressors: C

Number of models evalulated: 192				
Selected Model: ARDL(1, 3, 0, 1)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
VAO(-1)	0.636877	0.099932	6.373081	0.0000
GEX	-0.014272	0.014559	-0.980331	0.3367
GEX(-1)	-0.006451	0.015132	-0.426308	0.6737
GEX(-2)	-0.030075	0.015172	-1.982242	0.0590
GEX(-3)	0.069409	0.014792	4.692382	0.0001
IDMF	-0.032751	0.026458	-1.237835	0.2278
ACGSF	0.039201	0.027087	1.447210	0.1608
ACGSF(-1)	0.045654	0.032703	1.396029	0.1755
C	0.354099	0.089145	3.972152	0.0006
R-squared	0.994612	Mean dependent var		0.795868
Adjusted R-squared	0.992816	S.D. dependent var		0.276525
S.E. of regression	0.023438	Akaike info criterion		-4.441919
Sum squared resid	0.013184	Schwarz criterion		-4.033781
Log likelihood	82.29167	Hannan-Quinn criter.		-4.304593
F-statistic	553.7871	Durbin-Watson stat		2.073964
Prob(F-statistic)	0.000000			

*Note: p-values and any subsequent tests do not account for model selection.
Source: Author's computation with E-views 9.5

The equation above shows the ARDL result using VAO as dependent variable, with 1 lag for AGDP and 3, 0, 1 lag for GEX, IDMF, and ACGSF respectively. The suitable lag length strength was determined by using Hannan-Quinn criterion. The co-efficient of R-Squared and R-Adjusted explained the percentage by which exogenous variables explain the endogenous variable. The co-integration and long run form for the model is presented below.

3.2.1 Co-integration and Long Run Form

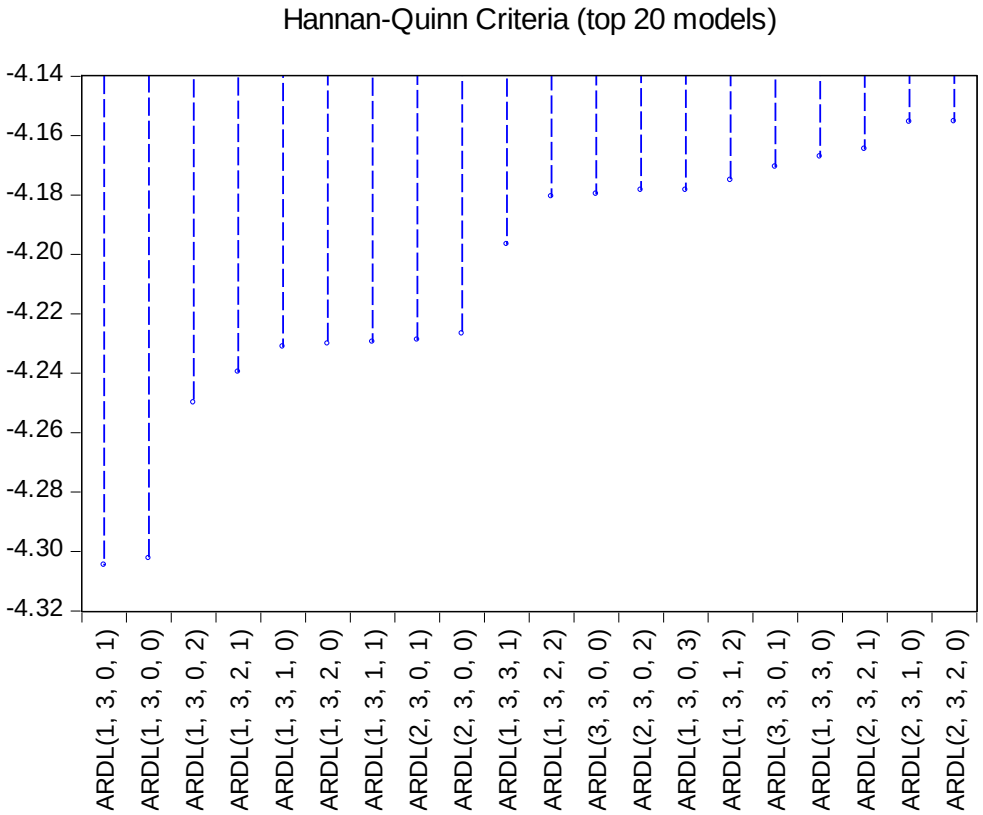
Table 4. Co-Integration and Long Run Form

Dependent Variable: VAO Selected Model: ARDL(1, 3, 0, 1) Date: 04/15/18 Time: 16:33 Sample: 1981 2016 Included observations: 33				
Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GEX)	-0.014272	0.014559	-0.980331	0.3367
D(GEX(-1))	0.030075	0.015172	1.982242	0.0590
D(GEX(-2))	-0.069409	0.014792	-4.692382	0.0001
D(IDMF)	-0.032751	0.026458	-1.237835	0.2278
D(ACGSF)	0.039201	0.027087	1.447210	0.1608
CointEq(-1)	-0.363123	0.099932	-3.633683	0.0013
Cointeq = VAO - (0.0513*GEX -0.0902*IDMF + 0.2337*ACGSF + 0.9751)				
Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
GEX	0.051252	0.025310	2.024967	0.0641
IDMF	-0.090192	0.044651	-1.241439	0.0264
ACGSF	0.233680	0.035317	6.616721	0.0000
C	0.975149	0.074903	13.018756	0.0000

Source: Author's computation with E-views 9.5

Model Selection Summary

Table 5. Model Selection Summary



Model Selection Summary Result

Source: Author's computation with E-views 9.5

Figure above shows the 20 model results of the ARDL, from the result, ARDL (1, 3, 0, and 1) has the lowest Hannan Quinn Criterion value. The lower the HQC value of the model, the more appropriate for the model. The most appropriate model for this study is ARDL (1, 3, 0, and 1).

3.2.2 ARDL Bound Test

Table 6 ARDL Bound Test

ARDL Bounds Test Date: 04/15/18 Time: 16:51 Sample: 1984 2016 Included observations: 33 Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	K
F-statistic	5.884105	3
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.72	3.77
5%	3.23	4.35
2.5%	3.69	4.89
1%	4.29	5.61

Source: Author's computation with E-views 9.5

Two asymptotic critical values bounds provide a test for co-integration when the explanatory variables are I(d) that is (where 0<d<1): an upper value assuming purely I(1) regressors while the lower value assuming the regressors are I(0). If the F-statistic is above the upper critical value, the null hypothesis of no long run relationship will be rejected irrespective of the orders of integration for the time series although best to acknowledge the order of integration to avoid spurious regression result. Conversely, if the **F**-statistics falls below the lower critical value the null hypothesis cannot be ignored or rejected. Finally, if the **F**-statistic test result falls between the lower and upper critical values the result is inconclusive or uncertain.

From the above equation it shows the ARDL Bounds test result. Using the above criteria, the Bounds test result shows the existence of long run relationship between the variables under consideration base on the condition that long run relationship exists when the value of **F**-statistics is greater than the upper bound value at 10 percent level of significance, thus for this study considering the result above F-statistics is 5.884105 which is greater than the upper bound value of 3.77. Conclusively, this implies that the null hypotheses are rejected and we accept the alternative hypotheses meaning that there exist long run relationship between the variables using VAO as explained variable.

3.2.3. Breuch-Godfrey Serial Correlation LM

Table 7 Breuch-Godfrey Serial Correlation Lm

F-statistic	1.043104	Prob. F(2,22)	0.3691
Obs*R-squared	2.858269	Prob. Chi-Square(2)	0.2395

Source: Author's computation with E-views 9.5

Table 7 shows the Breuch-Godfrey Serial correlation LM, from the result the prob. Chi-Square is 0.2395 which is greater than 0.05, therefore the null hypothesis that there are no serial correlations between the variables will be accepted.

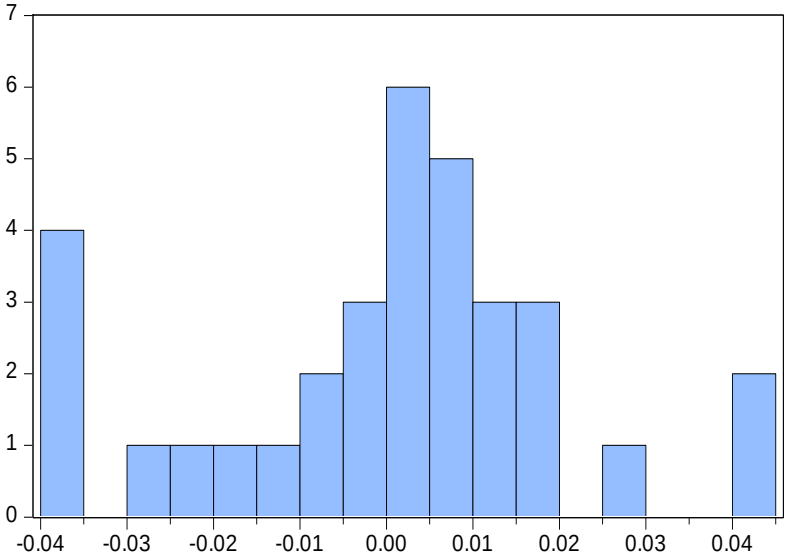
3.2.4. Heteroscedasticity Test: ARCH

Table 8 Heteroscedasticity Test: ARCH

F-statistic	0.814898	Prob. F(2,28)	0.4529
Obs*R-squared	1.705165	Prob. Chi-Square(2)	0.4263

Source: Author's computation with E-views 9.5

Table 9. Normality Test



Series: Residuals	
Sample 1984 2016	
Observations 33	
Mean	3.57e-17
Median	0.002561
Maximum	0.044949
Minimum	-0.037254
Std. Dev.	0.020298
Skewness	-0.122500
Kurtosis	3.013379
Jarque-Bera	0.082781
Probability	0.959454

Source: Author's computation with E-views 9.5

Table 8 shows the Heteroscedasticity, from the result the prob. Chi-square is 0.4263 which is greater than 0.05, therefore the null hypothesis that there is no heteroscedasticity between the variables will be accepted.

Table 9 presents the test for normality for the model, from the result above the Jarque-Bera probability value is 0.959454 which is greater than 0.05, therefore the null hypothesis that errors are not normally distributed in the model is rejected.

Summary and Findings

This chapter capture the empirical analyses considering the formulated hypotheses to answer the research question identified in the first chapter of this research work. First is Augmented dickey-fuller unit root test and secondly auto-regressive distributed lag (ARDL) were employed as tools for analysis. This study investigates the impact of fiscal policy using government capital expenditure on agriculture (GEX) and custom duties on agricultural fertilizer (IDMF) as metrics for fiscal policy and agricultural credit guarantee scheme fund (ACGSF) representing the schemes put in place to rehabilitate the deteriorated agricultural sector in Nigeria. The Augmented dickey-fuller technique was used in testing the unit root property of the series. The result of the unit root test showed that all variables are integrated of order 1 I(1) with the exception of IDMF which is stationary at order zero I(0) thus stationary at levels. The results from the auto-regressive distributed lag (ARDL) showed that when using AGDP as the dependent variable, there is a short run relationship between variables and there also exist a long run relationship among variables. It was also observed that the co-integration equation with the negative value of -0.363123 and probability value 0.0013 at 5 percent level of significant which is less than 0.05. The estimated coefficients of long-run relationship show that agricultural credit guarantee scheme (ACGSF) proxied by Government Expenditure (GEX) has a significant impact on Value of Agricultural Output (VAO) in Nigeria i.e. it will increase the value of agricultural output thereby prompting agricultural growth. A 1% increase in ACGSF and GEX leads to approximately 23% and 5% increase in Value of Agricultural Output respectively. It's important to note that the GEX is not significant but has a positive relationship on the dependent variable. On the other hand, Import Custom duties on agricultural fertilizer is negatively signed with a value of -0.090192 and very significant at 5% level of significant.

Theoretical Findings

Under the theoretical framework, it was found that Taxation theory was triggered on the assumption that there is no need for a linear relationship between tax paid and benefits enjoyed from government activities. The assumption of the benefit theory of taxation has given rise to a debate among scholars in this field of study. The theory state that the proportion of tax levied on individuals should be based on the benefits derived from government activities. The higher the benefit enjoyed from the government activities, the higher the tax paid by the individuals. It gained many scholar's attention, although the most widely spread and accepted theory is the ability to pay principle of taxation. It states that tax is to be levied by government on individuals' ability to pay rather than the benefits principle. This implies that the tax rate of an individual is a function of taxable capacity of such an individual which sound reasonable and just because it confers on the higher income earner to pay more tax than the low-income earner. Consequently, the Adolph Wagner's and Wiseman and Peacock theory dominated the part of theory on government expenditure. The Wagner's theory centred on what he noted as "the law of rising public expenditure and state activities". This Wagner law came into existence after an empirical analysis in the 19th century in western Europe which he argued that the growth on government or state activities largely depend on economic development and industrialization. This means that an increase in government spending will be more than proportional increase in GDP, this is because some of government capital expenditure is tied to potential or future benefit which may or not reflect on the year by which it was spent. Wiseman and peacock on the other hand oppose Wagner's theory they believed that growth in public spending does not take the form of Wagner's law but chose the political proposition rather than organic state where it is stage that government likes to spend money; people prefer no tax increase and desire increment in government activities in terms of social amenities. According to Peacock and Wiseman, major war or disturbance will emanate between the government and taxpayer on decision about the desirable public expenditure and desired tax limit by the taxpayers. These disturbances will cause displacement effect according to Peacock and Wiseman bringing a negative adjustment to government revenue and spending to a new level thereby creating upward revision of taxation. At the initial stage the citizen will oppose this upward review of taxation but have to tolerate due to the fact that they expect the government to reinstate the state of the economy which will end up becoming "Tax Forbearance" previously considered as

"intolerance". By this government revenue will increase and the state activities can be increased, and the effect is economic growth. In the modem world especially in Nigeria this disturbance matter little as government expenditure is bound to increase and finally Nigeria tax structure does not really consider the ability to pay theory of taxation.

Empirical Review Findings

A worthwhile study has been carried out by reputable researcher in other to provide answers to pertinent question regarding economic growth, public spending, and growth in agricultural output. Several literatures have been reviewed regarding the role and impact of fiscal policy on economic growth in Nigeria and very few has done a research work on sectorial breakdown, but none has done a research work with the objective stated above in the previous chapter of this research work which cover both the full fiscal activities and schemes toward increasing agricultural output in Nigeria. The most recent work by (Audu, 2015) on this subject provide answers to a pertinent question such as the impact of VAT, Export Duties, and government expenditure, he fail to calibrate the effect of Import Duties on agricultural intermediate input (agricultural equipment or fertilizer) and schemes towards agricultural growth in Nigeria. Regarding the impact of fiscal policy and agricultural output just little has been done in Nigeria as a whole.

Research Findings

The model for this research work was coined from the work of Robert Solow growth model using VAO (Value of Agricultural Output) as explained variable and GEX (Government Capital Expenditure on Agriculture), IDMF (Import Duties on Agricultural Fertilizer) and ACGSF (Agriculture Credit Guarantee Scheme Fund) as explanatory variables. A careful measure was put in place to ensure the reliability of data used in this research work to avoid spurious regression result.

The empirical analysis employs ARDL method, this study found out that there exist short run and long run relationship among variables and the result of coefficient was used to interpret the speed of adjustment from the short run to long run. It was also observed that the co-integration equation with the negative value of -0.363123 and probability value 0.0013 at 5 percent level of significant which is less than 0.05. The estimated coefficients of long-run relationship show that agricultural credit guarantee scheme (ACGSF) proxied by Government Expenditure (GEX) has a very significant impact on Value of Agricultural Output (VAO) in Nigeria i.e. it will increase the value of agricultural output thereby prompting agricultural growth. A unit change in ACGSF and GEX leads to approximately 23% and 5% increase in Value of Agricultural Output respectively. Although the relationship between GEX and VAO is not significant. On the other hand, Import Custom duties on agricultural fertilizer is negatively signed with a value of -0.090192 and very significant at 5% level of significant. This implies that a unit change in custom duties on fertilizer will bring about 0.090% decline in agricultural output in Nigeria. It can be deduced that the adverse effect of custom duties on agriculture fertilizer can discourage the farmers from going into large scale production and as they are left with natural organic component within the country as the only option in enhancing crop production thereby decreasing the output of agricultural production in Nigeria.

Recommendation

Agriculture has suffered steady set back in Nigeria and demand conscious effort from both individual, private and public enterprise, and government for any hope of rehabilitating the sector. These conscious efforts are outlined under the stated recommendation below which is based on the research result of the study. Base on the point stated above, the following recommendations were made:

1.The government should ensure proper and conscious monitoring of capital expenditure on agricultural sector. From the research result there is both short and long run positive implication of government expenditure which demand that the approved agricultural funds should be used for agricultural endeavour.

2. The annual approved government capital expenditure on agriculture should be used in production of strategic agricultural produce. By strategic agricultural produce it implies, agricultural product that we have comparative cost advantage, heavily consume on daily base, and can reduce pressure on exchange rate.

3. The policy maker should consider removal of all custom duties on agricultural intermediate input such as fertilizer and any other agricultural equipment thereby encouraging more stakeholders towards large scale production in the industry.

4.The role of Agricultural credit guarantee scheme fund (ACGSF) is significant although its activities should be carefully monitored to ensure that the guaranteed funds are utilized for agricultural purpose. This can be possible by obtaining the necessary information about the farmer, tasking the farmers to produce certain quota of agricultural produce regarding the product to which the loan was guaranteed, and comparing the actual return. This will not only form a source of motivation but also discourage bad debt and speed up increase in agricultural output.

5.The government should make a deliberate effort to increase capital budget on agriculture to ensure its significance thereby positioning the sector for expected growth.

6.Finally, part of the agricultural fund should be employed for both short run and long run use as both proved to be co-integrated in the short run and long run. For long run use of approved capital expenditure on agriculture, the government should make available or install modernized farm equipment such as cassava processing plant, rice processing plant and other heavy equipment that can encourage modernized farming. While the short run use should focus on establishing a farm with produce that can be harvested within a year. If there be need for price stabilization and balance of trade, such harvested product can be used to normalize the economic condition.

Conclusion

This study attempts to assess the impact of fiscal policy on agricultural output in Nigeria using the most recent official data. The study used annual time series data which was found to be stationary at the order of one I(1) and I(0) which led to the use of ARDL estimation method employed in the empirical analysis of this research work. This study found evidence of both short and long run relationship between the variables using both Johansen co-integration and ARDL Bounds test. Consequently, custom duties were found to be negatively signed indicating a negative impact on agricultural output. This demand that the policy making department should be prudent in the use of fiscal policy instrument in achieving the desired objective

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