



IMPACT OF GOVERNMENT EXPENDITURE ON AGRICULTURAL SECTOR OUTPUT GROWTH IN NIGERIA

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ABSTRACT

This paper investigates the impact of government expenditure on agricultural sector growth output in Nigeria, using time series data from 1971-2013. The study employed Vector Error Correction Model (VECM) to test for long run relationship between the variables and short run dynamism. The tests used in the study revealed that there is significant long run relationship between government expenditure on agricultural sector growth output. The short run dynamics yielded negative and statistically significant coefficient that equilibrium can be restored at 5.0 per cent annually. The study suggests that government expenditure should be intensified not only to increase funding to the sector but also to ensure that funds are properly utilised.

KEY WORDS: Government expenditure, Agricultural sector output growth.

1.0 INTRODUCTION

Agriculture plays a major role in the development of Nigeria economy since independence to date. It is the largest sector with its dominant share of the GDP, employment of more than 70% of the active labour force and the generation of about 88% of non-oil foreign exchange earnings. Agricultural sector's share of the GDP increased from an annual average of 38% during 1992 to 1996 to 40% during 1997-2001 compared to crude oil the GDP from which declined from an annual average of 13% in 1992-1996 to 12% during 1997-2001 (Oji-Okoro, 2011).

In the same vein, Fasinmirin and Braga (2009) also affirmed the need to diversify from the rather monolithic economy of over-dependence on crude oil, which rather than fostering development contributes to environmental degradation, ethnical crisis and national insecurity. A strong and aggressive shift to agriculture will not only afford Nigeria the opportunity of self-sustainability in terms of food production but will also serve as the basis for drastic industrial transformation, which eventually will yield tremendous foreign exchange earning to Nigeria.

By and large, the agricultural sector has the potential to be the industrial and economic springboard from which a country's development can take off. However, in spite of these multifaceted contributions of the agricultural sector, which used to be the main stay of the Nigeria economy the advent of crude oil exploration and other has relegated the potentialities of the Agricultural sector to the background thereby threatening the development of the sector. Agricultural products have been recognized to have domestic food and industrial value and great export potential because they can provide food for the entire population and income to farmers as well as many economic agents involved in marketing products. In spite of the importance of the agricultural sector, the annual budgetary allocation by the Nigeria government has been declining. The Total expenditure on agriculture, as percentages of overall expenditure, fluctuated from 4.57 % in the 1986-1993 periods through an average of 4.51 % per annum in 1994-1998 to 3.53 % in 1999-2005, reflecting government's intensified efforts to reduce its size. Intense efforts at down-sizing also showed up in declines in the ratio to GDP of this component of public expenditure (Udoh, 2011).

Therefore, the central issue of this paper is to investigate the extent of which government expenditure as an input has impacted on agricultural sector growth as an output in Nigeria and other determinants that influence agriculture sector output growth. Previous studies on this area (see Lawal 2011; Adofuet al.; 2012; Nwankwo, 2013; Ademola et al.; 2013 and Oyinbo et al., 2013) covered the period from 1979 to 2007, 1995 to 2009, 1990 to 2010, 1981 to 2010 and 1980 to 2010 respectively. This paper seeks to cover the empirical gap by capturing more data from 1971 to 2013. Granger causality test to examine the causal relationship between government expenditure as an input has impacted on agricultural sector growth as an output in Nigeria. In order to achieve this, the paper is structured into five sections, including this introduction. The second reviews some empirical



literature. The third section presents the methodology. The fourth section provides an empirical result, while the fifth concludes and offers recommendation to the paper.

2.0 LITERATURE REVIEW

Lawal (2011) examines the level of government spending on the agricultural sector and the consequential effect on the GDP in Nigeria, applying time series data spanning the period 1979-2007, the author used the vector auto regression and the result revealed that government spending does not follow a regular pattern and that the contribution of the agricultural sector to the GDP is in direct relationship with government funding to the sector. The study however failed to investigate the causality relationship between the variables. This study therefore is a modest attempt to bridge this gap in the literature.

Idokoet *al.*, (2012) examined the impact of Government Expenditure on Agriculture and Agricultural Output in Nigeria applying time series data covering a maximum time span of 1975-2010. The authors used the Cob-Douglas Production Function and Ordinary Least Squares econometric technique and the result revealed that there exists a positive and insignificant relationship between Government expenditure to the agricultural sector and Agricultural output.

Following similar line of argument, Ademolaet *al.*, (2013) examined the impact of government expenditure on agricultural sector and economic growth in Nigeria applying the time series data covering the period from 1981 to 2010. The authors applied the unit root test and co integration, and the result revealed that there exist a significant relationship between government expenditure in the agricultural sector and the economic growth. The author failed to indicate the causality relationship between the variable. Similarly, Uger (2013) examined the impact of Federal Government's expenditure on agricultural sector in Nigeria. Applying time series data spanning the period 1991 to 2010 the author used simple regression and the result revealed inadequate funding to the sector. The author failed to indicate the causality relationship between the variable.

Oyinboet *al.*, (2013) investigates the link between agricultural budgetary allocation and economic growth in Nigeria applying time series data set spanning the period 1980-2010 the authors used the Augmented Dickey Fuller (ADF) test technique of analysis and the results revealed that there exist a positive but not significant long run relationship between agricultural budgetary allocation and economic growth while the relationship is positive and significant only for the two-year lagged value of agricultural budgetary allocation and that there is a need for increase in budgetary allocations to agriculture in order to ensure that the agricultural sector plays a pivotal role in the national transformation. However, this study is concentrated on the budgetary allocations to agriculture oneconomic growth in Nigeria.

Akintundeet *al.*, (2013) investigated the effectiveness of government annual budgetary allocation to agriculture and the role of monetary policy instruments in the growth of agricultural GDP. Using time series data set spanning the period 1980-2012 and the authors used the OLS method of analysis. The result showed that Agricultural Credit Guarantee Scheme Fund, previous year GDP and Consumer Price Index contribute positively to the growth of agricultural GDP, other variables of like the interest rate, exchange rate, and government expenditure on agriculture contributed negatively to agricultural GDP growth.

Adofuet *al.*, (2012) examined the effect of government budgetary allocation to the agricultural sector on the output of the agricultural sector in Nigeria. Data obtained from 1995-2009. The authors used the OLS regression technique, and results revealed that budgetary allocation to agricultural sector has significant effect on agricultural production and that the relationship between them is strong, positive and significant, also shows that budgetary allocation to the agricultural sector should be increased and monitored, to guarantee food security, employment and overall economic growth and development. This study used VECM regression technique and the author failed to indicate the causality relationship between the variable.

Obansa and Maduekwe (2013) investigated the impact of agriculture financing on economic growth in Nigeria. The authors employed secondary data and Ordinary Least Square (OLS); Augmented Dickey-Fuller (ADF) Granger Causality test. The results revealed that there exist bidirectional causality between economic growth and agriculture financing; and there is bidirectional causality between economic growth and agricultural growth. Similarly, Okezie et al (2013) analyzing the relationship between government expenditure on the agricultural sector and its contribution to economic growth in Nigeria, using time series data from 1980 to 2011, the authors employed the Engle-Granger two step modeling (EGM) procedure to co-integration based on unrestricted Error Correction Model and Pair wise Granger Causality tests. The result indicates that agricultural contribution to GDP (Gross domestic product) and total government expenditure on agriculture are cointegrated. The speed of adjustment to equilibrium is 88% within a year when the variables wander away from their equilibrium values. The result of granger causality, shows that a very weak causality exist between the two variables.

Ammani (2011) examined the impact of exchange rate deregulation and SAP on cotton production and utilization in Nigeria. Using time series data set spanning the period from 1973 to 2007, the author employed multiple regression and the students test technique. The result revealed that exchange rate deregulation has no significant effect on cotton production. Similarly, Yaqub (n.d.) investigated the effect of the exchange rate



changes on the components of agricultural output applying the two-stage-least-squares techniques covering the period between 1970 and 2008. The result shows that there are differences in the way the output of different sub-sectors responds to the exchange rate changes and also the exchange rate changes have negative effects on crop and fishery output, they have positive effects on livestock and forestry.

Adofuet *al.*, (2010) investigated the Effects of Interest Rate Deregulation in Enhancing Agricultural Productivity in Nigeria applying time series data covering a maximum time span of 1986 to 2005 and the authors used the ordinary least square method. The results showed that interest rate deregulation has significant and positive impact on Agricultural productivity and also that interest rate play a significant role in enhancing economic activities.

Amassomaet *al.*, (2011) examined the nexus of interest rate deregulation, lending rate and agricultural productivity in Nigeria applying time series data spanning the period 1986 to 2009 the authors used the co-integration and error correction techniques. Nigeria has embarked on several agricultural policy measures aimed at repositioning and enhancing variables that affects the sector's productivity. The result revealed that interest deregulation had a positive and significance effect on agricultural productivity and credit should be made available to all categories of farmers that would go a long way in boosting agricultural productivity.

Felixet *al.*, (2013) examined the impact of trade liberalization on Nigeria agricultural performance with special interest on export sub-sector. The authors used Error Correction Model and Ordinary Least Square (OLS) results revealed that agricultural degree of openness and agricultural export to import price ratio were significant, whereas, agricultural capital formation, real exchange rate and foreign investment on agriculture are not significant. Therefore, it becomes necessary to formulate policies that will eventually enhance investment in agricultural capital formation, real exchange rate and foreign investment on agriculture will lead to increased output and promote exportation of agricultural products.

3.0 METHODOLOGY

3.1 Data

The study rely on the use of time series data from secondary source spanning the period 1970 to 2013, hence 42 observations. The data was drawn from the Statistical Bulletin of the Central Bank of Nigeria (CBN).

3.2 Definitions of variables

The dependent variable of the study is agricultural sector output which is defined as the total agricultural output realizable within the period under consideration. The independent variables are as follows GEXP refer Government expenditure: This is proxied by government total expenditure on agriculture sector. INFL refer Inflation, implicit price deflator is used as a proxy for inflation. INTR refer Interest rate is measured by prime lending rate. TROP refer to trade openness is as the total export and import to total GDP (X+M/GDP). EXCR refer to exchange rate is proxied by exchange ratio of Naira and Dollar. AC refer to agricultural credit is measured by value of loan granted under the Agricultural Credit Guaranteed scheme.

3.3 The Model

There are several researches which have been carried out on the impact of agricultural sector in the actualization of economic growth and development. Thus, there seems to be no consensus among these studies on the empirical form the specification of model qualifying the impact of the manufacturing sector can take or follow.

$$AGOU_t = \beta_0 + \beta_1 GEXP_{t-1} + \beta_2 INFL_{t-1} + \beta_3 INTR_{t-1} + \beta_4 TROP_{t-1} + \beta_5 EXCR_{t-1} + \beta_6 AC_{t-1} + U_t$$

Where

AGOU= Agricultural sector growth output

β_0 = Constant parameter

$\beta_1 - \beta_6$ =coefficients of independent variables

GEXP = Government expenditure

INFL = Inflation

INTR = Interest rate

TROP = Trade openness

EXCR = Exchange rate

AC = Agricultural credit

U_t = Lag value of other determinants of agricultural sector output growth

4.0 EMPIRICAL RESULTS

This section presents the results of empirical analysis, starting with checking of the Stochastic properties of the variable were tested using the Augmented Dickey Fuller (ADF) and Phillip-perron (PP) unit root test in order to ascertain the integration order of the variables used in the study. The results are presented in table 4.1 and 4.2.

Table 4.1: Results of the Unit Root Test Level Value

Variables	ADF		PP	
	Notrend	Trend	Notrend	Trend
AGOU	-0.555562	-1.058083	-0.528765	-1.504256
GEXP	-0.429631	-2.869587	-0.745810	-2.809873
INF	0.030573	-2.038431	-0.036728	-2.056833

Table 4. 2: Results of the Unit Root Test First Difference

Variables	ADF		PP	
	Notrend	Trend	Notrend	Trend
ΔAGOU	-4.860852*	-4.860440*	-4.849416*	-4.842135*
ΔGEXP	-9.212712*	-9.092089*	-9.380083*	-9.255441*
ΔINF	-5.642371*	-5.765249*	-5.642371*	-5.754119*
ΔINTR	-9.157790*	-6.864156*	-9.868702*	-9.261409*
ΔTROP	-8.554108*	-8.462729*	-8.678269*	-8.601394*
ΔEXCR	-5.235353*	-5.160395*	-5.232341*	-5.156383*
ΔAC	-6.078956*	-6.712565*	-6.078956*	-6.716252*

Source: Author's Computation Using E-View 7. Significant at 1% (*), 5% (**) and 10% (***)

INTR	-1.832926	-2.766759	-1.578590	-2.780522
TROP	-1.814252	-2.541853	-1.623153	-2.402057
EXCR	-0.310541	-1.637014	-0.396062	-1.918441
AC	-2.077611	-0.514491	-2.083447	-0.458372

Source: Author's Computation Using E-View 7.1 Significant at 1% (*), 5% (**) and 10% (***)

Table 4.1 shows the result for stationarity using unit root test at level value. The column depicts Augmented Dickey Fuller (ADF) and Phillips-perron, no trend and trend. At level values all the variables are non-stationary. Henceforth, the situation leads to taking the first difference.

Table 4.2 shows the result for stationarity using unit root test at first difference. The columns depict Augmented Dickey Fuller (ADF) and Phillip- perron (PP). At first difference that is, at I(1) the entire variable are stationary. Therefore, the analysis can proceed to test for a long- run relationship between the dependent variable and independent variables. The VECM model was estimated and the coefficient of the normalised long run cointegration equation is presented below in Table 4.3.

Table 4.3: Long Run Co-Efficient of the Cointegrating Vector Normalised on AGOU

AGOU	COSTANT	INF	INTR	EXCR	GEXP	TROP	AC
1	-7.416722	-0.367543	0.456711	0.325237	-1.031001	7.548336	-0.147584
		[-4.25457]	[4.27315]	[4.48522]	[-14.1627]	[19.8606]	[-13.0429]

Source: Author's Computation Using E-View 7.1t-statistics in [].

Table 4.3 shows the result that government expenditure and inflation are negative and has significant long run relationship to the agricultural sector growth output. The interest rate, exchange rate and trade openness have positive and statistically significant long run relationship to the agricultural sector growth output, but agricultural credit has a negative and significant long run relationship to agricultural sector growth output. The table 4.4 shows result of vector error correction model (short-run dynamics)

Table 4.4: Vector Error Correction Model (Short-Run Dynamics)

	Coefficients	Standard Error	t-Statistics
Constant	0.065830	0.08008	0.82201
D(LNAGOU(-1))	0.536073	0.32253	1.66209
D(INF(-1))	0.187419	0.12884	1.45461
D(INTR(-3))	0.346806	0.19468	1.78142
D(LNEXCR(-1))	0.155497	0.14239	1.09202



D(LNGEXP(-1))	-0.018402	0.09535	-0.19298
ECM(-1)	-0.058729	1.2842	4.5734
R-squared	0.612584	Akaike AIC	-0.754616
Adj. R-squared	0.044373	Schwarz SC	0.236555

Source: Author's Computation Using E-View 7.1.

Table 4.4 presents the result of the vector error correction model (VECM) otherwise referred to as the short-run dynamics of the model. The error correction model, in line with econometric theory, yielded negative and statistically significant coefficient implying that there is possibility of the restoration of equilibrium in case of distortions in the economy. It is however important to mention that the adjustment to equilibrium is very slow. Giving the ECM coefficient of -0.058729, only 5.0 per cent of equilibrium can be restored annually. However, the negative coefficient of the ECM further support the long run relationship among the variable as reported in Table 4.3.

5.0 CONCLUSION AND RECOMMENDATION

This paper examines the impact of government expenditure on agricultural sector growth output in Nigeria, over the period 1971-2013. The authors applied Vector Error Correction Model (VECM) and found that there is exist long-run relationship between government expenditure on agricultural sector growth output in Nigeria. The presence of long run relationship entails that the impact of government expenditure on agricultural sector growth output in Nigeria was significant, that would enable Nigeria to feed its growing population and export agricultural products. The short-run dynamics yielded negative and statistically significant coefficient implying that there is possibility of the restoration of equilibrium in case of distortions in the economy. Since the findings of the study show statistically significant long run relationship between government expenditure and agricultural sector growth in Nigeria, the study suggests that government expenditure should be intensified not only to increase funding to the sector but also to ensure that funds are properly utilised.

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