
**GOVERNMENT EXPENDITURE ON AGRICULTURE AND AGRICULTURAL OUTPUT
IN NIGERIA (1975-2010)**

¹Itodo Ahmed Idoko; ²Apeh Sunday and Adeshina Sheri

^{1&2}Department of Economics

University of Mkar, Mkar, Benue State

ABSTRACT

The study examined the impact of Government Expenditure on Agriculture on Agricultural Output in Nigeria (1975-2010). Cob-douglas Production Function, which states that potential output is primarily determined by measurable inputs, was used as the theoretical framework. The methodology employed was the linearized Cob-Douglas function. The variables of the model include Government Expenditure on Agricultural sector, Commercial banks loans and advances to the Agricultural sector, Foreign direct investment on the Agricultural sector, Annual rainfall and Agricultural credit guarantee scheme fund. Ordinary Least Squares econometric technique was used to estimate a multiple regression of Agricultural output against its above listed explanatory variables. The result of the estimated model revealed a positive both insignificant relationship between Government expenditure to the agricultural sector and Agricultural output within the scope of this research. Based on this finding, the researcher make relevant recommendations that would help improve the statusquo.

INTRODUCTION

The Nigerian economy during the first decade after independence could be described as an agrarian economy because agriculture served as the engine of growth of the overall economy (Ogen, 2003). From the stand point of occupational distribution and contribution to GDP, agriculture was the leading sector. In the early 60's, contribution from this sector accounted for about 70% of the Gross Domestic Product (GDP). This was a period when we were not only virtually self sufficient in production of food crops to feed ourselves but also provided raw materials for industries and major crops for export (Ekerete, 2000). Indeed, agriculture provided the main stimulus to our national economic growth despite the small farm holdings and primitive productive systems. These contributions of agriculture to the nation overshadowed all other economic sectors in the early 1960's (Abayomi, 1997). During this period, Nigeria was the world second largest producer of cocoa, largest exporter of kernel and largest producer and exporter of palm oil (Ogen, 2003). Nigeria was also a leading exporter of other major commodities such as cotton, groundnut, rubber and hide and skins (Lawal, 1997). Despite the reliance of Nigerian peasant farmers on traditional tools and indigenous farming methods, these farmers produced 70% of Nigerian's exports and 95% of its food needs (Lawal, 1997). However, the reverse was the case of the agricultural sector in the seventies when its share of the GDP decline to only 34% by 1974 (Ekerete, 2000). Ever since then Nigeria has been witnessing extreme poverty and the insufficiency of basic food items, the agricultural sector as at 1996 accounted for less than 5% of Nigeria's GDP (Olagbaju and Falola, 1996). Over the past two or three decades, the dormant role of agriculture in the economy, especially in terms of ensuring food security, gave way to massive importation of basic food items such as rice, beans and wheat (Egbuna, 2003). This is a clear indication of the failure of the agricultural sector to keep pace with the demand for its products. This blatant neglect of agricultural sector and the attendant dependency of the economy on a mono-cultural product-petroleum have not augured well for the wellbeing of the economy as a

whole. In a bid to correct this anomaly, the government, from the year 1975 decided to directly participate in commercial production of food crops. Many large scales agricultural projects specializing in the production of grains, livestock, dairies, animals' feeds and others were established (Fasipe, 1990). Sugar factory were set up at Numan, Lafiagi and Sunti (Lawal, 1997). The Nigerian Agricultural and Corporative Bank (NACB) was also established in 1973 as part of government's effort to channel oil fund into agriculture through the provision of credit facility to prop agriculture and agro-based ventures (Olagunju, 2000). Various agricultural development programmes were also adopted as part of efforts to revitalize agricultural performance. These were backed up by substantial budgetary allocations, but agricultural output is still very low (Ojo. 1991). Take for instance, despite the huge amount invested in Fadama Rice programs, Nigeria is still spending huge amount on rice importation. This shows that the results were not adequate not only in relation to the committed financial resources, but also in relation to the nation's minimum needs of agricultural products. It is against this backdrop that this research work sets to examine the extent to which government spending influence agricultural output in Nigeria.

STATEMENT OF PROBLEM

Inadequate funding of the agricultural sector has been re-echoed 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). The agricultural sector in Nigeria which was the main stay of the economy is no longer performing the lead role it was known for. By mid 1970's Nigeria's agriculture started to experience problems, agricultural exports began to decline and food shortages started emerging. From 1975, emboldened by considerable increased revenue from petroleum, government assumed heavier responsibilities for agricultural production, input supply and marketing; in addition to adopting credit control and other allocative policies in favour of agriculture (Ojo& Balogun, 1993). Agricultural production stagnated at less than 1 percent annual growth rate between 1970 and 1982. There was a sharp decline in export crop production, while food production increased only marginally. Thus, domestic food supply had to be augmented with large imports. Food import bill rose from a mere N113.88 million annually in 1970-1974 to N1,964 million in 1991 (CBN,2003). Since 1990 and until recently, Nigeria has been spending an average of 60million USD on the importation of rice annually (Alkali, 1997). Indeed in 1994, the agricultural sector performed below the projected 7.2% of budgetary output (Lawal, 1997). Theoretically, input-output theory in economics posits that input determines output. More so, Keynes postulated that increased government spending boosts economic growth. In the case of Nigeria, there has been a conflicting view about spending on agriculture just as we can see from various scholars stated above. Therefore there is need to examine the extent to which government expenditure as an input has affected agricultural production as an output. It is in the light of this that this research was carried out to study the impact of government spending on the variability of agricultural output in Nigeria from 1975 to 2010.

OBJECTIVE OF THE STUDY

The primary objective of this study is to assess the impact of government expenditure on agricultural output in Nigeria from 1975 to 2010. *Specific objectives of the study are to:*

- i. Assess the impact of government expenditure on agricultural output in Nigeria.

- ii. Assess the impact of Commercial banks loans and advances to agricultural sector, Agricultural credit guarantee scheme fund, and Foreign Direct Investment on Agriculture on agricultural output in Nigeria.
- iii. To assess the impact of annual rainfall on agricultural output in Nigeria.

SIGNIFICANCE OF THE STUDY

First, since 1975 when we started talking about diversification of the Nigerian economy, expenditure on agriculture has been on the increase but then, food insecurity is on the increase, agricultural raw material is still limited in supply and importation of agricultural output is also on the increase. Hence there is need to evaluate what the government is spending and the outcome of that spending. Secondly, according to Stewart, 2000, the agricultural sector has the potential to be the industrial and economic springboard from which a country's development can take off. Despite abundant resources in terms of land mass, rich soil and favorable climatic conditions for agriculture in Nigeria, total agricultural export is still recorded insufficient; hence there is need for this study. Thirdly, despite the measures that have been taken to revamp agriculture through the various agricultural policies, the sector still depicts gloomy pictures. Performance is reflected in environmental degradation, mounting food deficits and decline in both gross domestic product and export earnings, while retail food prices and import bills have been increasing. Therefore the study seeks to assess how far the government expenditure has influence agricultural output and to identify alternative measures in improving the sector. This study will be useful for academic purpose to validate the actual effect of government spending on agricultural output in Nigeria. Also, the study will be helpful for other research work. Finally, the study is of significance since it will aid the researcher to achieve the aim of acquiring a higher degree in economics.

LITERATURE REVIEW (CONCEPTUAL FRAMEWORK)

Government Expenditure

Government expenditure refers to expenses incurred in the public sector. It refers to expenses incurred by the government at various levels which include the Federal, State and local government levels in Nigeria (Siyan, 2000). Public expenditure is used to provide public goods and services to the populace through which economic growth is induced (Bello, 2003). This work focused on government expenditure on the agricultural sector in Nigeria. Government expenditure is classified into two broad themes, namely recurrent and capital expenditures. Recurrent expenditures are goods, which includes all consumption items that occur in a year, they are payments for non-repayable transaction such as salaries, wages and allowances. Capital expenditure relates to payments for the use of non-financial assets used in production process which contributes to long-term development. Examples of capital expenditure include spending on agriculture, health, education, roads, and electricity. Expenditures are further classified into functional and economic composition (Bello, 2003). He further explained that the functional composition defines the purpose of expenditure and the sector to target, while the economic composition looks at the outlay such as capital, wages and salaries etc involves in providing such services. According to Samuelson and Nordhaus (2003), nowhere can the changes in government's role be seen more clearly than in the area of government spending. Kalra (2006) opined that there was a time when public expenditure was considered the economy's revenue and so the best policy was considered one which kept the public expenditure to its absolute minimum. He stressed further that in the course of time the thinking has gone a complete change. A sound public expenditure policy produces good effects

both on production and distribution; it corrects the mal-adjustments in the personal distribution of wealth.

Agricultural Output

Agriculture is the production of foods, feeds, fibre and other goods by the systematic growing and harvesting of plants and animals. It is the science of making use of land to raise plants and animals (Akinboyo, 2008). Nigeria's wide range of climate variations allows it to produce a variety of food and cash crops. The staple food crops include cassava, yams, corn, cocoyam, cow-peas, beans, sweet potatoes, millet, plantains, bananas, rice sorghum, and a variety of fruits and vegetables. The leading cash crops are cocoa, citrus, cotton, groundnut, palm oil, plan kernel, benniseed, and rubber. They were also Nigeria's major exports in the 1960s and early 1970s until petroleum took over the economy. Chief among the export destinations for Nigerian agricultural exports are Britain, the United States, Canada, France, and Germany. The oil glut of the early 1980s reduced substantially, inflows of foreign exchange and consequently, participation of government in investment activities. Most of the companies erected at the wake of the oil boom witnessed low capacity utilization and in extreme cases out-right closure (CBN, 2001). This led to a drastic rise in food import bills and the price of imported goods. To redress this situation, the government embarked on integrated programmes aimed at increasing agricultural production and productivity (CBN, 2001). Olaokun (1979), explained that agriculture is a source of food and raw materials for industrial sector, it create more employment opportunities, it reduce poverty and improve income distribution, it speed up industrialization and easing the pressure on balance of payment. According to Fei-Ran (1987), underdeveloped country can hope to move from the condition of stagnation to one of self-sustained growth if the agricultural sector is developed so that, surplus labour force is absorbed by the new industries. Omowale (1979) also viewed agriculture as a means of reducing dependence on certain importations, curtailing food price increase, earning foreign exchange, absorbing many new entrances to labour market and increasing farmer's income. Helleiner (1966) asserts that, no matter how much development and structural transformation is achieved, agriculture will still remain dominance in the economy for many decades to come. For many other developing countries, agriculture remains the gate way to several desired ends which includes poverty reduction, rural transformation, employment generation, food security and improved national health profile of the citizenry (Okpanachi, 2004).

More so, agriculture provides the bulk of capital required for industrial take off in West African countries. Furthermore, agricultural export provides the necessary foreign exchange required for the purchase of necessary raw materials, manufactured goods and capital equipment for the country (Ogbole, 2006). Egbuna (2003) posited that over the past two or three decades, the dominant role of agriculture in the economy, especially in terms of ensuring food security, gave way to massive importation of basic food items especially grains like rice, beans and millet. This is a clear indication that the agricultural sector needed more attention to keep pace with the demand for its products. Emeka, et'al (1992), disclosed that production of staples such as millet, maize and beans rose by 25% from 24.91 million tons in 1987 to 30.37 million tons in 1990. Fishery production rose to 362,000 tons in 1989, from 254,000 tons in 1987. CBN annual report (1992), opined that the above increase in food production was as a result of increased efforts of extension service agencies to improve efficiency in the procurement and distribution of essential farm inputs. Agriculture's contribution to GDP in

Nigeria is very significant despite the declining productivity of the sector. From 60% of GDP in 1960 and an average of 58.8% between 1960 and 1969, the sector's contribution to GDP stood at 35.4%, 40.9%, 39.0%, 34.0% and 41.0% of GDP in 1980, 1985, 1990 and 2000 respectively. The period from 2000-2004 recorded an average of 40% contribution of agriculture to GDP while in the year 2006; agriculture contributed 41.8% to GDP (CBN, 2006). According to World Bank Development Report (2007), agricultural and rural sector had suffered neglect and under investment in the last twenty years. The World Bank in its development report called for greater investment in agriculture in developing countries. It warned that the sector must be placed at the centre of development agenda of the countries if the goals of reducing poverty and hunger by 2015 were to be realized.

THEORETICAL FRAMEWORK

The theoretical basis of this study anchored on Cobb-Douglas (CD) production function which is a substantial guidance for specifying supply-side agricultural potential output primarily determined by measurable input factor ($X = AL^{b_1} K^{b_2}$). This theory is to a large extent consistent with the theory of supply of production function that underlies specification of the supply-side of agricultural output. The Cobb- Douglas (CD) production function was derived from the observation by Cobb (1928) and Douglas (1948) that over the long-run, the relative share of National Output earned by Labour (L) and Capital (K) tends to be constant. The CD function further assumes constant returns to scale and unitary elasticity of substitution. The CD production is generally given by the equation:

$$X = AL^{b_1} K^{b_2} \dots\dots\dots 1$$

Where:

X = Total output

L = Labour

K = Capital

b_1 and b_2 = Substitution Parameter

$b_2 = (1 - b_1)$ and $(b_1 + b_2) = 1$

Linear homogeneity of CD Production Function

If we increase each factor in equation (1) by a constant λ , we have

$$Q = A (\lambda L)^{b_1} (\lambda K)^{b_2} \dots\dots\dots 2$$

$$Q = \lambda^{b_1 + b_2} A L^{b_1} K^{b_2}$$

$$Q = \lambda A L^{b_1} K^{b_2} \text{ (since } b_1 + b_2 = 1) \dots\dots\dots 3$$

Therefore, $\lambda = 1$

From equation (3), we observed that the CD production is linearly homogeneous in Labour and Capital. This implies that, if we increase all inputs by a constant multiple (λ), output will increase by that same constant. Thus the Cobb-Douglas function is to be characterized by constant return to scale.

Average and Marginal Physical Product

$$APP_L = Q = AL^{b_1} K^{b_2} = AL^{b_1} K^{b_2-1} \dots\dots\dots 4$$

$$APP_K = Q = AL^{b_1} K^{b_2} = AL^{b_1-1} K^{b_2} \dots\dots\dots 5$$

$$MPPL = \partial Q = b_2 AL^{b_1} K^{b_2-1} \dots\dots\dots 6$$

$$MPPK = \partial Q = b_1 AL^{b_1-1} K^{b_2} \dots\dots\dots 7$$

The Cobb-Douglas production function was used by Bernard (2009) in his work; empirical Analysis of Credit Supply and Agricultural Output in Nigeria. He used four explanatory variables (bank loans, government spending on agriculture, agricultural credit guarantee scheme, investment from other countries) and used the OLS method to test the significance of the explanatory variables on output in Nigeria. The result he obtained revealed that except the foreign direct investment on agriculture, other variables expressed significant influence on agricultural output in Nigeria.

THEORETICAL LITERATURE

Wagner's law

The earliest theory advanced on public expenditure is that of Adolph Wagner in 1876 which came to be known as "Wagner's law". He propounded the "law of increasing expansion of public and particularly states activities" which is referred to as the "law of increasing expansion of fiscal requirements". The law suggests that the share of the public sector in the economy will rise as economic growth proceeds, owing to the intensification of existing activities and extension of new activities. According to Wagner, social progress has led to increasing state activity with resultant increase in public expenditure. He predicted an increase in the ratio of government expenditure to national income as per capital income rises. It is the result of growing administrative and protective actions of government in response to more complex legal and economic relations, increased urbanization, and rising cultural and welfare expenditures. According to Musgrave, however, it is not fruitful to seek an explanation for the total expenditure. Tests carried out by various researchers have shown that the increase in expenditure is far more complex than is evident from the tests carried out on empirical data. Therefore according to him, it may be far more rewarding to adopt a desegregated approach (an approach which divides the study of expenditures of government) through a study of expenditures of government on capital formation, consumption and transfer payments. Irving (1968) used the law and came up with a different view (Akogwu, 2007). He opined that public expenditure (E) is an increasing function of per capital gross national product (GDP). i.e.

$E = F \frac{(GNP)}{P}$ similarly, Essien (2003) carried out studies and employed modern econometric

techniques, He posited that even though the variables public expenditure and economic growth were found to be stationary, that is integrate of order (1), they were not co integrated. Thus the long run tendency for public sector spending whether as a proportion of total output, its per capital value or as its singular definition, to grow with income could not be established. He therefore concluded that he found no evidence to support Wagner's law using Nigeria data. On the contrary, earlier study carried out by Obute (1988), established a more than unity income elasticity of public expenditure for Nigeria. In spite of all challenges by scholars, Wagner's law has endured as the premier generalization about the behaviour of government spending (Akogwu, 2007). Any time there is need for important economic decision making on expenditure, policy makers and economic advisers still use the Wagner's law as bases for their decision. Representing Wagner's law functionally, $TGE = f(EG)$ where TGE is total government expenditure and EG is total national output.

EMPIRICAL REVIEW

Akogwu Gabriel (2001) carried out a study on Public Expenditure and economic growth in Nigeria from 1979-2003; a causal analysis. He used the Wagner's law of expanding state

activity as basic theoretical framework. The methodology employed was basically that of econometric techniques, making use of three different forms of models. The Classical Normal Linear Regression Models (CNLRM), Granger causality test, Dickey Fuller and augmented Dickey Fuller unit root test for stationarity as well as the Cointegrating-Durbin-Watson Regression (CRDW) test was carried out. He regressed public expenditure on real Gross Domestic Product (RGDP) and other components of public expenditure. He further specified the relationship explicitly thus;

$$a. \log RTGEE = B_0 + B_1 \log RGDP_t + B_2 \log P_0 P_t + B_3 \log TRNS_t + B_4 \log DMV_t + u_t \dots \dots \dots (i)$$

$$b. \log RTGE_t = B_0 + B_1 \log RPCI_t + B_2 \log TRNS_t + B_3 \log DMV_t + u_t \dots \dots \dots 2$$

$$c. \log RYGE_t = a_0 + a_1 \log RTG_t + a_2 \log RGDP_t + a_3 P_0 P_t + a_4 \log TRNS_t + a_5 \log DMV + u \dots \dots \dots (3)$$

Where RTGE = Real Total Government Expenditure

RGDP = Real Gross Domestic Product Deflected by (CPI)

RPC1 = Real per Capital income

POP = Total Population of the Country

TRNS = Transfer Payment

DMV = Dummy Variables Representing Urbanization, Depreciation and War Dummies

t = Time Period under Investigation

t-1 = Time Lagged 1 Period.

a_0 , b_0 , b_0 , and a_0 are intercepts and are all coefficients of the parameters. His results show a strong relationship between the regressand and regressors. Also, the coefficient of determination (R^2) of 0.80552 indicates that about 81% variation in real total government expenditure is explained by the model during the period under review. His findings also revealed that there is a long-run equilibrium relationship between public expenditure and economic growth in Nigeria, but on the short-run, the income elasticity of public expenditure is fairly inelastic, and not greater than unity. He also opined that change in public expenditure as a result of change in National Output is not automatic. He recommended that there should be greater control of unproductive expenditure such as external debt services and extra budget expenses. The work is relevant to this study since it looks into the behavior of government spending and output. Another study was carried out by Mohammed-Lawal and Atte (2006) on an analysis of Agricultural production in Nigeria from 1981-2003. Descriptive statistics as well as regression analysis were used as major tools of analysis in the study. Regression analysis was used to highlight the factors affecting domestic agricultural production.

Regression model was specified as follows;

$$Y = f(X_1, X_2, X_3, X_4, X_5, u)$$

Where:

Y = real value of agricultural production (₦ million).

X_1 = Food import values (₦-million).

X_2 = GDP growth rate (%).

X_3 = Population Growth Rate (%).

X_4 = Consumer Price Index (1985 = 100).

X_5 = Government Expenditure on Agriculture (₦-million).

u = Error Term

The following production functions were fitted to the model:

Linear function: $Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5$

Semi-Log function: $Y = b_0 + b_1\log X_1 + b_2\log X_2 + b_3\log X_3 + b_4\log X_4 + b_5\log X_5$

Double-Log function: $\log Y = b_0 + b_1\log X_1 + b_2\log X_2 + b_3\log X_3 + b_4\log X_4 + b_5\log X_5$

Exponential function: $\log Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5$

Finding from the study revealed that agricultural production only grew by 5.4%. Result also showed that, all the component of the agricultural sector of the economy have not had any appreciable growth in production, the trend in agricultural production can be described as not impressive, and that agricultural growth has been slow and not even steady. The study recommended that there should be increase in per-capita productivity of the people through improved technological innovation and farmers should be empowered to market their produce at reasonably good prices. This may require government buying excess of the farmers' produce particularly during the season at guaranteed minimum prices. Massimo and Sara (2003); also carried out a study on "a logistic growth theory of public expenditures: a study of five countries over 100 years". The study offers a new theory and empirical testing of long-term trends of public expenditure for five countries which are United State of America, United Kingdom, France, Germany and Italy. Wagner's law and Pigou's conjecture that excess burden of taxation constrains the growth of public expenditures were employed. This was because it can be captured by non-linear first order differential equation. The equation is the verhulst's logistic, originally invested to model Malthusian predictions population growth. The analytical framework combined intuitions from a welfare economics and a public perspective. They offered a new research strategy on the dynamics of government expenditures. They offered preliminary econometric estimates on long run trends (around 1870-1990) of G/Y in U.S, U.K, France, Germany, and Italy. These estimates confirm a pattern of similar trajectories, in spite of different national parameters, and suggest that the logistics view of growth of government is consistent with observed data. The above study deviates from this study since it emphasized on growth theory of public expenditure.

International Food Policy Research Institute (2008) wrote on public spending on agriculture in Nigeria (2001-2005). An empirical analysis was employed. Findings revealed that public spending on agriculture was exceedingly low. Less than 2 percent of total Federal expenditure was allotted to agriculture during 2001 to 2005, far lower than spending in other key sectors such as education, health, and water. This spending contrasts dramatically with the sector's importance in the Nigerian economy and the policy emphasis on diversifying away from oil, and falls well below the 10 percent goal set by African leaders in the 2003 Maputo agreement. Nigeria also falls far behind in agricultural expenditure by international standards, even when accounting for the relationship between agricultural expenditures and national income. The spending that is extant is highly concentrated in a few areas. They recommended that there is an urgent need to improve internal systems for tracking, recording, and disseminating information about public spending in the agriculture sector. Another work was carried out by Kalan and Aziz (2009) titled "Growth of government Expenditure in Bangladesh: an empirical enquiry into the validity of Wagner's Law", the relationship between 'social progress' and 'growth of state activity' in an economy, using Bangladesh data from 1976-2010 in a divariates

as well as trivariate framework incorporating 'population size' as a third variable. The estimated results provide evidence in favour of Wagner's law for Bangladesh in both the short-run and long-run. There was a long-run co integration relation among real government expenditure, real GDP and the size population where government expenditure is positively tied with the real GDP, per capital GDP and population size. Both the real GDP and GDP per capita Granger cause total government expenditure to change. Their finding also revealed that population size is a significant stimulus, for spending to grow in both the long-run and short-run. Their work is more of a causal analysis which revealed why government expenditure increases. Ariyo (1993) carried out an evaluation study on the desirability of Nigerian's fiscal profile between 1970 and 1990. The findings from this study suggest that the structures of government expenditure are inherently unsustainable by the country's resources profile. The major cause attributed to this was the phenomenal increase in government expenditure financed through debt raised from both internal and external sources. This has consequently led to persistent and unsustainable annual deficits. The result also suggested that the structural adjustment programme (SAP) implemented in 1986 has so far not been of much assistance in addressing the problem. The study evaluates the Nigerian fiscal profile and concluded that it has not been desirable since most expenses are financed through debt. Again, another study by Ariyo (1990) provides a behavioral explanation for the persistence of huge annual fiscal deficits in Nigeria. The study on deficits financing reveals that the excess expenditure over and above the budgeted estimates was not anchored on any macroeconomic target. It also revealed large revenue and expenditure variances which suggest the absence of any positive effects over the years. The study concluded that the intrusion of the political class which probably nullified the degree of professionalism of the technocrats was the major cause for the variance. Ajab Amin (2003) examined the effect of fiscal policy on growth in Cameroun. The study focuses on the relationship between public spending and growth via private investment. A derivative of the Denison growth accounting model was employed to analyze the relationship between Cameroun's fiscal policy and economic growth. An ordinary least square (OLS) technique was used in estimating the equations that link private investments with growth. The result from the study shows that expenditures particularly on education and health crowded in private investment. The result further revealed some evidence of causality running from infrastructure to private investment to growth.

Jappelli and Meana (1994) also carried out a cross country study on public investment and welfare and it shows that public expenditure on investment and consumption has different impact on economic activity. That public investment stimulates outputs and so increases government revenue which in turn allows the government to spend more. The findings showed that specific spending promotes growth. Therefore specific revenue resources should be allocated to specific expenditure which will in turn promotes output growth. Osoro (2005), in his work on "public spending, taxation and Deficit" observed that the growing public spending is the cause of large public deficits. His suggestion is that public expenditure should be curtailed and tax base should be broadening since more tax revenue may not increase public expenditure. But given the needs and demand of the public sectors resources, expenditure will always tend to increase. However, his study was aimed at examining causality. He stressed the need to curtail public expenditure in general but did not point out any specific expenditure. Akinboyo (2008), Wrote on the role of statistics in the developments of the agriculture sector from 1960-2007. He attempts to gain insight into the extent of the transformations of the sector, particularly, its contribution in ensuring food security, using

empirical approach, he opined that since 1964 the sector which suppose to be the main driver to economic growth has not perform this role adequately in terms of foreign exchange earnings and better linkages with the other sectors of the economy. He went further to suggest that to redress this enigma and to bring back the glory of the sector, there is need for adequate planning in terms of human and material resources, and these cannot be divorce from adequate reliable and consistent statistics. Otu and Balogun (1991) in their study of credit policies and agricultural development in Nigeria tested two hypotheses that credit policies influence to a large extent the behaviour of both constitutional lenders and borrowers. That is, credit policies can influence favourably the supply and demand for agricultural credit. Secondly, that a positive relationship exists between agricultural credit and a host of other variables such as output and use of modern inputs. Empirically they concluded that credit policies play very little role in influencing both lenders and borrowers behaviour. Credit subsidies are also major sources of production disincentive. They further contend that there is need to re-examine the overall objective of agricultural credit policies largely because it will be erroneous to infer that finance plays little role in agricultural development of the economy. Akpan (1999) uses time series data of 33 years, and the OLS method of regression to analyze the contribution of government expenditures to the growth process in Nigeria. He concluded that capital expenditure on agriculture though not statistically significant but influence positively on investment. Oguamanam (1996) did an empirical work on commercial bank credit to agriculture sector in Nigeria. From the analysis, commercial bank loans and advances have positive relationship with the level of agricultural output, Federal government capital expenditure contributed positively to the growth of agricultural output in Nigeria. Similar work was carried out by Nnanna (2001), on bank lending behaviour and output growth with implication on monetary policy in Nigeria. He revealed a significant relationship between banks lending behaviour and output growth. He further suggested that in the medium-term, the decline in output has negative influence on bank credit to private sector.

Also Isijola (2000) revealed a significant relationship between credit supply and agricultural output in Nigeria. Isijola also identified commercial banks' loans and advances, Agricultural Credit Guaranteed Scheme as the determinant of agricultural credit supply in Nigeria. Shanggen et'al (1998) in their empirical analysis on government spending, growth and poverty supported the view that government spending enhances the growth in agricultural productivity. His managerial analysis also shows that additional government expenditures on agricultural research and extension have the largest impact on agricultural productivity growth. Ekpebu (2006) reviews that the performance of the agricultural sector has been unsatisfying over the years due to insufficient funding or credit facilities, inadequate infrastructural facilities, low technology base, high cost of farm input and inadequate extension services. Ekechi (1977) supported the view that raising the volume of financial savings will increase the volume of total deposit of the banking sector which will further lead to increase in the supply of credit to other sectors of the economy (agricultural sector inclusive).

METHODOLOGY

This study used time series data that span a period of 35years (1975-2010). A multiple regression log linear model is used as analytical tool. The public expenditure data was obtained from Central Bank of Nigeria statistical bulletins and annual reports, ministries of agriculture, other key ministries and agencies (e.g., those responsible for finance, budget, etc.), and agriculture-focused parastatals. In addition, other public finance data will be used

(e.g., revenue data), as well as public expenditure data from other sectors. The core data set will include both budgeted and actual expenditures, classified where feasible along economic, programmatic, sectoral and functional lines. The research adopted the Cobb Douglas production function as shown in the theoretical framework but in a modified form.

The Cobb Douglas production function is written as:

$$Q = AK^\alpha L^{1-\alpha}$$

Linearising the function by introducing log

$$\ln Q = \ln A + \alpha \ln K + (1-\alpha) \ln L$$

However, due to the peculiarity of the objectives of the study, the specification of the production function shall incorporate variables such as government capital expenditure on agriculture, Foreign Direct Investment on agriculture, commercial banks loans advances to agricultural sector, annual rainfall, and agricultural credit guarantee scheme fund. Hence, modified form of the model can be written as:

$$Q = AK_\beta L^\alpha \dots \dots \dots (1)$$

$$Q = \alpha GE\beta_1 + CBL\beta_2 + FDI\beta_3 + AR\beta_4 + ACG\beta_5 + e\mu \dots \dots \dots (2)$$

Applying the logarithm transformation:

$$\ln Q = \ln \alpha + \beta_1 \ln GE + \beta_2 \ln CBL + \beta_3 \ln FDI + \beta_4 \ln AR + \beta_5 \ln ACG + \mu \dots \dots \dots (3)$$

Note $\ln e = 1$, therefore, $e\mu = \mu$ and $\ln =$ logarithm

Q = Agricultural output

GE = Government capital expenditure on agricultural sector

CBL= Commercial banks loans and advances to agricultural sector

FDI= Foreign Direct Investment on Agriculture

RF = Annual Rainfall

ACGSF= Agricultural credit guarantee scheme fund

• = Intercept term

$\beta_1, \beta_2, \beta_3, \beta_4$, and β_5 = Elasticity of output (Q) or the coefficient of the variables

μ = Error term

The sum of the estimated coefficients ($\beta_1 + \beta_2 + \beta_3 + \beta_4 + \beta_5$) gives the homogeneity of the functions. If the sum is =1, we have a constant return to scale in agricultural output, if >1, we have an increasing return to scales and if <1, we have decreasing return to scale.

As for the a-priori expectation,

If GE, CBL, FDI, RF, ACG increases, output(Q) will increase.

REGRESSION RESULT AND INTERPRETATION

From the empirical equation in the model used in this study, the regression result is presented below:

$$\text{LOGQ} = -0.71 + 0.06\text{GE} + 0.21\text{CBL} + 0.72\text{FDI} + 0.004\text{RF} + 0.59\text{ACGSF}$$

(0.95) (0.05) (0.07) (0.11) (0.29) (0.06)

R-squared=0.99

Adjusted R-squared =0.99

Standard Error=0.118

DW=1.56

F=1.969

Source: Eview7 statistical package

From the regression result, the model performed relatively well with multiple correlation coefficient (R-squared) which is 0.99. This shows the strength of the model, 99% indicate a strong model. This was also backed up by an Adjusted R-squared of 99% also, suggesting that about 99% variations in the agricultural output in Nigeria were explained by fluctuations in the specified explanatory variables. The standard error of 0.118; shows that a high level of confidence can be placed on the estimates. The F-statistics is 1.969; this shows an insignificant difference between the variance of the estimate and the variance of the independent variables. The Durbin-Watson (DW)- statistics also shows that the serial correlation is very minimal. The regression coefficients of Government capital Expenditure (GE), Commercial Bank loan and Advances (CBLA), Foreign Direct Investment on Agriculture (FDI), Rainfall (RF), and Agricultural Credit Guarantee Scheme Fund (ACGSF) all carry positive signs, which conformed to the a-priori expectation. The t-values of the regression coefficients of Foreign Direct Investment on agriculture (FDI) and Agricultural Credit Guarantee Scheme Fund (ACGSF) are statistically significant at 1%, 5% and 10% level respectively while that of Commercial Bank Loan and Advances (CBLA) is significant at 5% and 10% level. However, t-values of coefficients of Government capital Expenditure on agriculture (GE) and Rainfall (RF) are not significant. In line with these, we accept the null hypothesis of this research and state that Government expenditure does not have significant impact on Agricultural output in Nigeria.

DISCUSSION OF FINDINGS

- The model used in this research work reveals a positive relationship between agricultural output and government expenditure, commercial bank loan and advances, foreign direct investment, rainfall, and agricultural credit guarantee scheme fund. Government expenditure and Rainfall are statistical insignificant and as such we accept the null hypothesis (1). That is government expenditure does not have significant influence on agricultural output.
- The model used also reveals a negative constant estimate, representing an autonomous spending, implying that the government has been indulging in deficit financing over the period resulting to increase in the rate of inflation. This again will increase input prices thereby affecting output of the agricultural sector.
- Result from our model also revealed that other variables have significant effect on agricultural output in Nigeria; these include foreign direct investment on agriculture and the agricultural credit guarantee scheme fund.

RECOMMENDATIONS

- Attention should be given to irrigation farming by providing its facilities. The insignificant positive response of agricultural output to rainfall connotes inadequate rainfall and may be responsible for the poor performance of agricultural output.
- Farmers should be encouraged to access loans and advances by cutting down long procedure and conditions in obtaining loan. This will enable them to go into commercial farming which will in turn increase output.

- Government expenditure implementation programs should be put in place. More incentives should be given to rural farmers since they covered the larger population in agricultural sector.
- There is need for adequate reliable and consistent statistics which will depict the true state of the sector.

CONCLUSION

This research work examined from government expenditure and agricultural output in Nigeria from 1975 to 2010. From the nominal point of view, spending on agriculture is on the increase while empirical evidence revealed inadequate performance of the sector. It is in line with this argument that this study was carried out in order to investigate the extent to which government expenditure influence agricultural output in Nigeria. In the review of literature, government expenditure as well as agricultural outputs were viewed from different perspectives. Various theories related to expenditure and outputs were also reviewed. These include Wagner's law, traditional Keynesian theory, marginal utility theory and Peacock and Wiseman theory among others. The Cobb-Douglas production function form the theoretical framework for this study and several related empirical works were reviewed. A model was adopted from one of the reviewed literature and modified to suit the purpose of this research. Data were gathered on specified variables from CBN statistical bulletin (various issues), Bureau of statistics, ministry of agriculture and the Central Bank of Nigeria. These data were analyzed through simple percentages, tables, and regression analysis. Using recent economic techniques and confronting the compatible model with the available data in chapter three and four, it was revealed that government expenditure did not have significant effect on agricultural output in Nigeria. Rather other variables such as foreign direct investment and agricultural credit guarantee scheme fund exact greater influence on agriculture. The study was therefore concluded and as supported by the various tests conducted in the research that there is positive relationship but insignificant relationship between expenditure and agricultural output in Nigeria.

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