

## MOBILIZATION OF DOMESTIC FINANCIAL RESOURCES FOR AGRICULTURAL PRODUCTIVITY IN NIGERIA

Awe A.A (Ph.D)

Department of Economics, Ekiti State University

Ado-Ekiti, Ekiti State, Nigeria.

[aweabelariyo@yahoo.com](mailto:aweabelariyo@yahoo.com)

### ABSTRACT

*The paper examines the mobilization of domestic financial resources for agricultural productivity in Nigeria with a view to identify the contributions of the various sources of finance to agricultural productivity in Nigeria. To achieve this objective, the paper employed Vector Auto Regressive Model (VAR) to analyze time series data from (1980 – 2009). The paper identified the various instruments and strategies used by the government for mobilizing resources for the agricultural sector in Nigeria to include subsidy and agricultural credit policies that were financed through Nigerian Agricultural Credit Bank (NACB), credit facilities from Nigerian Bank for Commerce and Industries at the state level, credit through Commercial and Merchant Banks and provision of agricultural credit to the defunct Commodity Board by the Central Bank of Nigeria. The OLS (VAR) result revealed positive relationships between the variables and the variance decomposition measured the proportion of forecast error. The paper therefore recommend that the Federal government recurrent expenditure on agriculture should be reviewed upward for enhanced agricultural productivity and that both the Federal government and the Commercial Banks should mobilize more financial resources toward the agricultural sector to boost agricultural productivity which would guaranteed maximum agricultural productivity in Nigeria.*

**Keywords:** Mobilization, Domestic, Financial Resources, Agricultural Productivity and VAR.

### INTRODUCTION

Agriculture has traditionally been characterized as the mainstay of the Nigerian economy in spite of the growing importance of oil exploration in Nigeria. Nigeria has remained essentially an agrarian economy. In the context of the Nigerian economy, agriculture is tied to the various sectors and is essentially for generating broad – based growth and development. Agriculture is therefore fundamental to the sustenance of life and has become the bed – rock of economic development as it still accounts for significant share in Gross Domestic product (GDP), total exports and employing the bulk of the total labour force (Jimaza and Sani, 2003).

At independence, the contribution of agriculture to the GDP was about 25% between 1975 and 1977. This was partly due to the phenomenal growth of the mining and partly as a result of the disincentives created by macroeconomic environment. Similarly, the growth rate of agricultural productivity exhibited a downward trend during the period. Thus, between 1970 and 1982 agricultural productivity stagnated at less than one percent annual growth rate at a time when the population growth rate was 2.5 to 3.0 percent per annum (Adubi, 2001).

The period witnessed sharp decline in exportation of cash crop production while food production increased marginally such that the increase could not meet the demand of the alarming increase in population hence, domestic food supply had to be augmented through large imports. Despite all these, agriculture remained a vital pursuit in Nigeria. It is from agriculture and particularly from agricultural exports that the Nigerian economy has recorded its principal stimulus for economic growth.

Unfortunately, agricultural financing has suffered a major setback in Nigeria through some inhibiting factors. The factors include low agricultural productivity, lack of capital and credit facilities, inadequate availability of inputs and storage facilities, lack of conducive and enabling environment, weak agricultural extension delivery and outdated infrastructure. Based on the above inhibiting factors, there is the need to mobilize more financial resources to enhance and boost agricultural productivity in Nigeria through the provision of modern technology and mobilization of financial resources for re – positioning the agricultural sector in Nigeria.

However, Agricultural operations in Nigeria over the past years have been quite primitive and productivity remained very low due to inadequate application of modern technology. The cost of agricultural machinery like tractors, harvesters, planters and so on are astronomically high and are out of the reach of an average Nigerian

farmer. Also included is inadequate supply of critical inputs such as hybrid seeds, fertilizers and agro - chemicals at the appropriate time and at affordable prices have remained major constraints to increased agriculture productivity in Nigeria.

The Nigerian government has been intervening in the agricultural sector through its policies, programmes and strategies to increase production and strengthen the sector so as to play its expected role in the development process but such efforts have not been fruitful despite the size of resources committed, various research work carried out on the impact of agriculture on economic growth and wealth creation, agricultural productivity remained low due to the neglect of the importance of constant supply of money and other agricultural facilities or resources that may likely arouse interest in agricultural practices and undertakings. This is the area in which this paper intends to contribute to knowledge

The objective of the paper is to examine the contribution of the various sources of finance to agricultural productivity in Nigeria. The remaining part of the paper is divided into four sections. Section two consists of review of literature. Section three presents analytical technique and sources of data. Section four deals with presentation of results and discussion while section five contains the conclusion and recommendation..

### **Policy Instrument and Strategies for Mobilizing Resources to the Agricultural Sector in Nigeria**

In order to improve agricultural productivity in Nigeria, the government introduces the following policies and strategies. One of the major policy instruments for mobilizing resources to enhance agricultural productivity is the use of subsidy. The Nigerian government has granted selective subsidies on farm inputs, farm equipment and facilities and farm service to reduce the cost of agricultural production over the years. The subsidy policy embarked upon by the Nigerian government cuts across the various sub –sectors of the agricultural sector. In the crop sub – sector, input covered by subsidy are seeds, seedling, water supply, fertilizer, pesticides, herbicides, processing and storage equipment and irrigation facilities such as dams, and boreholes, construction pumps, sprayers and other farm machinery and equipment (Emeka, 2007).

Farm services covered by subsidy are farm clearing machines, agricultural extension services and pest and disease control services. In the livestock sub – sector, inputs subsidized include slaughter houses and abattoirs for meat processing, animal feeds, veterinary drugs and services for animal, pest and disease control services. In the fishery sub –sector, inputs listed for subsidy include pond construction, fish seeds and fingerlings, construction of floats and smaller fish boats and fishermen training services (Olomola, 2008). In the forestry sub - sector the inputs subsidized are seeds and seedlings, fertilizers, agro - chemicals, powered saw and logging equipment, forest extension training, pest and disease control services (Abe, 2001).

The main area of direct involvement of the federal government in mobilizing resources is in the provision of the general framework within which agriculture will develop guidelines for states and public agencies in the areas in which emphasis are laid for investment. Most especially in the area of strategic national food reserve for the purpose of food security, supports to input supply and distribution including seedlings, support to rural infrastructural development and maintenance of a reasonable flow of resources into agricultural and rural development through adequate budgetary allocation (Olayemi, 2005).

On the part of the state governments, they contribute to resource mobilization through the promotion of extension services, ensuring access to land as well as involvement in the training of manpower, pest and disease control, credit administration and development including rural roads and water supplies, maintenance of buffer stocks of agricultural commodities and development and management of irrigation and dams (Ukepe, Out, Amoo, and Essien, 2003).

In addition to the role of the state governments, the local government authorities are expected to take over progressively the responsibilities of the state with respect to provision of rural infrastructure and promotion of rural infrastructure and promotion of farmers organizations, mobilization of farmers for accelerated agricultural and rural development through cooperative societies, provision of land for new entrants into farming in accordance with the provision of the land use Act. According to the Act, the federal, state and local governments have the responsibility to jointly and adequately finance agricultural operations and rural infrastructural development.

The role of the private sector in resource mobilization towards agricultural financing is to take the advantage of the improved enabling environment provided by the public sector for profitable investment in agriculture. In particular the private sector is expected to participate in the maintenance of small and medium scale dams for the purpose of maximizing the use of water resources for irrigation (Nwagbo and Famoriyo, 2001).

### Resource Mobilization Through Agricultural Credit Policies

An attempt at institutionalizing agricultural credit as a means of providing the much needed capital for agricultural production dated back to pre-independence era. The nature of public agencies charged with agricultural credit administration has witnessed several changes over the years. According to Ojo (1996) in the 1940- 1960 period, agricultural credit agencies to all purpose were development institutions whose operations were only minimally geared towards agricultural financing, The 1970s witnessed the multiplicity of specialized credit institutions.

The public sector credit institutions involved in agricultural credit operations include the Nigerian Agricultural Credit Bank (NACB) that started operations in 1973. In addition to the establishment of NACB, there were complementary creation of regional and state credit agencies that were largely created because of the creation of more states and the beginning of serious concern for agricultural development.

The agricultural credit agencies in the states were owned by the state government and many of them operates through different proprietorships who began arrangement for the industrial and commercial aspects of agricultural production through credit facilities from Nigerian Bank for Commerce and Industry (NBCI) now Bank of Industry.

The third agricultural credit programme comes under the operation of commercial and merchant banks which were basically private institutions. All commercial banks have helped in the financing of agriculture from their inceptions. The credit Guarantee scheme (ACGS) was established in 1978 to lend support to the activities of the commercial and merchant banks in their lending programmes for agriculture. Empirical evidence shows that bank loans have significant effect on agricultural productivity (Bates,, 2001). However the debate in the efficiency of bank loans to agricultural productivity in Nigeria has been fierce and indeed still raging..

The fourth agricultural credit programme comes under the operation of the Central Bank as the apex institution of the financial system. The Central Bank performs several types of functions to aid agricultural financing. The Central Bank of Nigeria (CBN) provided credit directly to the defunct commodity Boards for the financing of agricultural produce marketing and also made fund available to agricultural lending agencies through loans and part ownership of their share capital (Sanni 2009). The CBN also monitors the implementation of credit guidelines given to commercial banks with reference to agriculture as a "preferred" sector.

Despite the intervention of all the three tiers of government, private sector and agricultural lending agencies in Nigeria over the years, the share of agricultural sector in the GDP has not been encouraging as the sector can no longer supply domestic food requirements, raw materials for agro- allied industries and earn enough foreign exchange through exports.

This study therefore seeks to empirically evaluate the impact of the resources mobilized from government sectors especially federal Government capital and recurrent expenditure on agriculture, financial resources mobilized from the operations of Agricultural credit Guarantees scheme and sectoral distribution of commercial bank loans to the agricultural sector.

### Analytical Technique

In order to examine the impact of resource mobilization on agricultural productivity in Nigeria, the model for this research paper is specified thus.

$$IAP = F (FGRE, FGCE, OAC, SDCML)$$

$$IAP = a_0 + a_1FGRE + a_2 FGCE + a_3OAC + a_4SDCLML + U$$

Where

IAP = index of agricultural production

FGRE = federal Government Recurrent expenditure on agriculture

OAC = Operation of Agricultural credit Guarantee Scheme Fund.

SDCML = Sectoral Distribution of Bank loan to the Agricultural sector.

### A Priori Expectation of the Independent Variables

A positive relationship is expected between the index of agricultural production and each of the explanatory variables specified in the model.

**Estimation Technique**

The estimation technique adopted is the vector Auto regressive (VAR) scheme as developed by Johansen and Joselius. The Johansen and Joselius (1990) allow the simultaneous evaluation of multiple relationships and impose no prior restrictions on the co- integration space. The adoption of VAR was informed by the fact that VAR is commonly used for analyzing the dynamic impact of random disturbance (shocks) on the system of variables. This analytical method is well- suited for examining the channels through which a variable operates. In effects the strength of the VAR model lies in its ability to incorporate the residual from the past observations into the regression model for the current observation. The technique also has the advantage of being easy to understand, generally applicable and can be easily extended to non- linear specifications of models that may contain endogenous right side variables (Johansen, 1991).

Johansen (1988) asserts that the VAR techniques allows a mixture of I(0) and I(1) variables as regressors. That is, the order of integration of relevant variables may not necessarily be the same. Following Johansen (1988), the VAR of order P denoted by VAR<sub>pj</sub> can be constructed thus.

$$Z = \mu + \sum_{t-1}^P + \beta_t Z_t + E_t \quad (1)$$

Where

Z is the vector of both X<sub>t</sub> and y<sub>t</sub> where Y<sub>t</sub> is dependent variable (IAP) AND f<sub>t</sub> = (FGRE, FGCE, OAC, SDCML) which is the vector matrix that represents a set of explanatory variable. E<sub>t</sub> is the stochastic term and t is a time or trend variable β is amatic of VAR parameters for lag.

According to Johansen (1988) Vector Error Correction Model (VECM) can be developed as follows.

$$\Delta Z_t = \mu + \alpha_t Z_{t-1} + \beta Y_t + \sum_{t-1}^P Y_{t-1} + \sum_{t-1}^P Y_{t-1} + \sum_{t-1}^P X_{t-1} + \sum_{t-1}^P$$

Where, Δ is the first difference operator. The model in equation (2) is the vector error correction model for the co-integration series. In this case the short – run dynamics of the variables in the system are presented by the variables in levels. The Vector Error Correction Model combines the long – run aspect of the model and the short – run adjustments.

**Sources of Data**

The study employs time series secondary data collected on the variables specified in the model spanning the period 1980 to 2009 from Central Bank of Nigeria. Statistical Bulletin (2010), various issues of Annual Report, Economic and Financial Review (2010) and the National Bureau of Statistics (2010) were used for the study.

**Results and Discussion**

The study adopts the VAR techniques to examine the contribution of the various sources of finance to agricultural productivity in Nigeria. The VAR methodology assumed that all variables are endogenous so that it can distribute the impact of shocks from a variable on the other variables. Each variable is therefore explained by its lagged or past values and the lagged values of all other endogenous variables in the model.

The result of the VAR estimating two lags is presented in Table 1

**Table 1: Vector Autoregressive Estimate.**

	IAP	FGRE	FGCE	OAC	SDCML
IAP (-1)	1.3402	-1468.4	697.13	-25489.8	729.96
IAP (-2)	-0.2972	1969.4	-999.82	19080.87	-771.79
FGRE (-1)	-0.0001	-0.6955	0.6409	-11.6454	0.1719
FGRE (-2)	9.57E -05	0.0832	0.1943	14.7932	0.1250
FGCE (-1)	-8.42L <sup>2</sup> -05	0.0217	1.4098	7.2152	0.4132
FGCE (-2)	0.0002	0.9301	-2.2102	-15.81	-0.0716
DAC (-1)	1.04E -05	0.0107	-0.1387	-2.4230	0.0192
DAC (-2)	-2.46E-05	0.559	0.3517	7.2970	0.0083
SDCML (-1)	-0.0001	0.9549	4.060	22.48	0.7587
SDCML (-2)	0.0003	3.807	-4.883	-4.3593	-1064
C	0.9290	-3968112.6	24084.17	762185.8	-2141.25
R <sup>2</sup>	0.99	0.99	0.98	0.96	0.98
adj- R <sup>2</sup>	0.98	0.99	0.98	0.94	0.97

Source: Author’s Computation

The result in Table 1 above presents the OLS estimates of the VAR. The result shows that there are several Lags of the same variable such that each estimated coefficient is not expected to be statistically significant, probably due to the pressure of multicollinearity problem. This is why the VAR coefficients are of little exogeneity of each model which is determined by the R<sup>2</sup> and the adjusted R<sup>2</sup>. It is shown in Table 1 that all the variables have very high R<sup>2</sup> and adjusted R<sup>2</sup> respectively. This indicates that there is high level of endogeneity in each variable which implies that there are multi – directional relationships among the variables.

Since the objective of this study is to examine the individual contribution of the identified variables to agricultural productivity (IAP), equation 1 of Table 1 is our focus.

The R<sup>2</sup> is 0.99 while the adjusted R<sup>2</sup> is 0.98. this implies that all the sources of finance, that is, federal government recurrent expenditure (FGRE), Federal government capital expenditure (FGCE), operation of agricultural credit guarantee scheme fund (OAC) and sectoral distribution of commercial and merchant bank loan (SDCML), jointly contributed about 99 percent to the total variation in Agricultural productivity (IAP).

The result of VAR report here is normalized for agricultural productivity (IAP), even though VAR assumes all variable are endogenous. Only the short – run function of the four financial resources to agriculture in Nigeria are presented in the following equation.

$$IAP_t = 0.929 - 0.0001 FGRE_{t-1} + 0.00095 FGRE_{t-2} - 0.00084 FGCE_{t-1} + 0.0002FGCE_{t-2} + 0.000040A_{t-1} - 0.00002.40AC_{t-2} - 0.0001SDCML_{ta} + 0.0003SDCML_{t-2} + 1.3402 IAP_{t-1} - 0.2972IAP_{t-2} - - - - (1)$$

A better explanation of this function is carried out using the variance decomposition and impulse analysis. The results are presented as follows.

**Impulse Response**

The impulse response analysis of the VAR traces the effect of a one standard derivation shock to one of the innovations on current and future values of the endogenous variables. The impulse response is normalized for IAP because it is assumed that the IAP is endogenous.

The impulse response graph is presented in figure 1 showing that it covers a forecast period of ten years. It is used to predict or forecast the behaviour of the endogenous variable (IAP) to a standard derivation shock on FGRE, FGCE, OAC and SDCML.

A visual observation of the impulse graph shows that a standard deviation shock in federal government recurrent expenditure (FGRE) produces a somehow unstable effect on the agricultural productivity (IAP), Oscillating between negative and positive impact throughout the period. The same pattern is observed for all other variables. At this point, it shows that as we go into the future, agricultural productivity responds to shocks in various sources of finance in somewhat unstable manner. A comparison between the four variables shows that the response of agricultural productivity to the responses of agricultural productivity to the federal government recurrent expenditure is more pronounced than the rest of the sources of finance.

**Variance Decomposition**

The analytical variance decomposition method gives information about the relative importance of each random innovation to the four sources of finance in the VAR. It decomposes the variation in each of the endogenous variables into the component shocks. The result is the normalized form that is normalized for IAP.

**Table 2: Variance Decomposition of IAP**

	IAD	FGRE	FGCE	DAC	SDCML
1	100.0	0.000	0.000	0.000	0.000
2	91.07	5.45	0.48	1.854	1.122
3	54.524	54.52	2.070	6.251	2.148
4	37.21	54.52	0.589	6.211	1.464
5	16.99	17.95	1.076	9.825	0.144
6	20.42	69.42	0.94	8.99	0.212
7	18.83	70.62	1.020	9.39	0.137
8	19.41	70.22	0.977	9.21	0.164
9	19.17	70.37	0.997	9.29	0.1502
10	19.27	70.31	0.988	9.262	0.156

The variance decomposition in Table 2 shows that the forecast error of agricultural productivity (IAP) maintained a very fast reduction from 100 percent in the first year to 91% in the second year and gradually diminished to about 16.99%, in the fifth year. It however rose slightly to 20.42% in the sixth year and declined again to around 19 percent in the tenth year. This implies that agricultural productivity receives shocks from its own lag, that is feedback shocks, but these shocks gradually fade away and thereby give room to shocks from other sources.

As could be observed from table 2, the major shock to agricultural productivity comes from shocks from the federal government recurrent expenditure (FGRE). The shocks increase from about 5.45 percent in the first year to 35 percent in the third year and gradually increase and remain sustained at about 70 percent until the tenth year. This implication is that the major shock to agricultural productivity comes from the insufficient recurrent expenditure into the sector.

Other sources of finance also contributed to agricultural productivity but, not as significant as the recurrent expenditure. For example, table 2 shows that, federal government capital estimation and the sectoral distribution of commercial Bank loans contribute less than 1 percent to shocks in agricultural productivity on the average.

Another significant component of shocks to agricultural productivity (IAP) is the operation of Agricultural credit guarantee scheme fund (OAC). As shown in table 2, it contributed about 1.85 per cent in the second year. This gradually increased to about 6 percent in third year and fourth year respectively. The contribution further increased to and sustained at about 9 percent throughout the forecast period.

The above result shows that federal government recurrent expenditure (budget estimate), feedback from past poor productivity level and the operation of agricultural credit guarantee scheme fund contributed to shocks in agricultural productivity in that order. This result confirms the impulse response result that discovered that agricultural productivity responds to the federal government recurrent budget estimates than all other sources of finance.

## CONCLUSION

In conclusion, the vector autoregressive result shows that all the sources of finance, the federal government capital expenditure, the federal government recurrent expenditure, operations of agricultural credit guarantee scheme fund and sectoral distribution of commercial and merchant bank loan contributed significantly to agricultural productivity.

However, there was insufficient federal government recurrent expenditure mobilized towards the agricultural sector and the financial resources from the financial institutions contributed insignificantly to agricultural productivity.

The analysis of the Variance Decomposition of variables reveals that as we go into the future, agricultural productivity responds to shocks of various sources of finance is somewhat unstable.

## RECOMMENDATION

It is therefore recommended that the federal government recurrent expenditure on agriculture should be revised upward for enhanced agricultural productivity. The financial institution especially the commercial banks need to mobilize more financial resources towards the agricultural sector to boost agricultural productivity. There is also the need for government to consistently mobilize more financial resources to the agriculture sector to guarantee maximum productivity.

## REFERENCES

1. Abe, S.I. (2001). Nigerian Farmers and their Problems. *Bullion*, Central Bank of Nigeria, 5(5), 71-86
2. Adubi, A..A. (2001). *Agriculture in the Nigerian Economy*. , Being a Paper Presented At the Workshop on Planning and Management of Agriculture Sector, August 14 – 25, 2000 Organized by Nigeria Centre for Economic Management. (NCEMA), Ibadan.
3. Central Bank of Nigeria (CBN, 2010). *Statistical Bulletin*.
4. Emeka, O.M. (2007). Improving the Agricultural Sector Toward Economic Development and Poverty Reduction in Nigeria. *Bullion Central Bank of Nigeria*, 31(4), 21-32
5. Jimaza, M. and Sanni, E.I. (2003). Agricultural Production and the Economic Development of Nigeria. *Journal of Development and Society*, 1(4), 126-143.
6. Johansen, S. (1988). Statistical Analysis of Co-integration Vector. *Journal of Economic Dynamics and Control*, 12, 231-254.

7. Johansen, S.(1991). Estimation and Hypothesis testing of Co–Integration Vector in Grussian Vector Autoregressive Model. *Econometrica*, 59, 155-180.
8. Johansen, S. and Joselius (1990). Maximum Likelihood Estimates and Interference on Co –Integration with Application to the Demand for Money. *Oxford Bulletin of Economics and Statistics*, 5, 6 –23
9. National Bureau of Statistics (2010). *Abstract of Statistics*
10. Nwagbo, E. and Famoniyo, S. (2001). Problems of Agriculture and Finance in Nigeria. *Proceeding of A Seminar Organized by Central Bank of Nigeria*, Lagos 27<sup>th</sup> – 30<sup>th</sup> April.
11. Ojo, M. O. (1996). The Impact of Macroeconomic Policy Reforms on Nigeria Agriculture. *Economic and Financial Review*, 12(1), 89-103
12. Olayemi, J.K. (2005). Agricultural Policies for Sustainable Development in Nigeria. *African Rural Social Science Research Networks*.
13. Olomola, A. S. (2008). Analysis and Management of Agriculture: Sector Performance and Inter – Sectoral Linkages. *Being a Proper Presented at the Teaming Programme on Sectoral Policy analysis and Management*, Ibadan June 13<sup>th</sup> – 17<sup>th</sup>.
14. Sanmi, H.T. (2009). Financial Institution and Agricultural Finance: The Role of Commercial Banks. *Economic and Financial Review*. Central Bank of Nigeria, 7(4), 21-35
15. Ukepe, E.U., Otu, F., Amoo, B.A. and Essien, E.A. (2005). Agricultural Development.Issues of Sustainability. *In Nnama, O.J. Alade, S.O. and Odoko F.O Comtemporal and Economics Policy Issues in Nigeria*, Central Bank of Nigeria, Abuja..