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Determinants of Agricultural Output: Implication on Government Funding of Agricultural Sector in Abia State, Nigeria

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Abstract

Using secondary data generated from the Abia State Agricultural Development Programme, National Root Crops' Research Institute Umudike in Abia State and the Central Bank of Nigeria, the determinants of agricultural production in the State were examined. The Ordinary Least Squares (OLS) regression analysis was applied to the data. Result show that total land area cropped, total annual rainfall and total population were strong factors that significantly determined total crop output in the state at 1% level. Whereas the total land area and total annual rainfall were positive in their signs, the total population was negative. Government therefore need to do more to ensure that insufficient food that the rapidly growing population would depend on is addressed. Government spending on agriculture would need to be revisited in terms how the fund is applied to ensure that it meaningful affect the rural agrarian economy.

Keywords: Crop output, Determinants, Government funding, Abia State

Introduction

The role of agriculture in transforming the economic framework of any economy cannot be over emphasized given that it is the source of food for man and animal and provides raw materials for the industrial sector. Thus, it plays a significant role in the reduction of poverty (Nwankwo, 1993). Although Nigeria has been an agricultural economy and has targeted the agricultural sector as the principal source of growth and revenue, the role of agriculture in the

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economy has since independence seem to be experiencing a downward trend due majorly to lack of finance inter alia (Okorie, 1998; Hammond, 2003). It was also evident that from the increasing food supply shortfalls, rising cost of food processing and delivering, foreign exchange earnings from agricultural exports, agriculture is not given the needed attention to economic development (CBN, 2002). If we are able to deal with corruption problems meaningfully in our re-branding Nigeria initiative, problem of inadequate funding is another major obstacle confronting the agricultural sector if tackled, would contribute to agricultural productivity and economic development.

Inadequacy of government funding of agricultural projects and programmes has been observed by researchers because lack of strong evidence of growth promotion externalities by deepening food insecurity, social inequality, rural poverty and hunger are issues of funding (Ogiri, 2004). If public and private investment is directed towards greater public good, the lukewarm attitude to food production for domestic production rather than cash production for export would be taken care of (Adedeji, 1986). Ogunfowora (1973) had argued that all talks by government on the priority and improvement of agriculture must be reflected on the pattern of state resources allocation, and thus called for sizeable and assured quantum of such resources.

This study therefore is set to determine the contribution of government funding to agricultural production in Abia State and compare with some other factors on which agricultural output depends on as well. This will guide policy making for increased agricultural productivity in the State in particular and the nation as a whole.

Methodology

Abia State created in 1991 and which lies within the Southeast of Nigeria and between latitude 4^0 41^I and 6^0 14^I North and Longitude 7^0 10^I and 8^0 East is the study area. Abia State is one of the 36 states of the Federal Republic of Nigeria.

Data for the study were of secondary origin and covered climatic weather conditions; rainfall between 1994-2007 were obtained from the National Root Crops' Research Institute, Umudike; total land area cropped and the total yield of staple crops produced from 1994-2007 were obtained from the Abia State Agricultural Development Programme; and the budget estimates for the actual expenditure on all the economic sectors of the state were obtained from the Ministries of Agriculture and Finance, that is, the total budgetary allocation or actual releases from 1994-2007. Data were edited and sorted out for correctness for analysis. The multiple regression analysis and correlation analysis were carried out to accomplish the objective of the study.

A casual relationship between crop output which is the dependent variable and four other explanatory or independent variables were encapsulated into the following implicitly stated production function:

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Y = f (TLAC, TAR, TPAS, TAGA), where Y = Total crop output (grain equivalent) in naira, TLAC = Total land area cropped in hectares, TAR = Total annual rainfall in millimetres, TPAS = Total population of Abia State in million numbers, and TAGA = Total actual government expenditure on Agriculture in Million naira. Four functional forms of the model namely linear, exponential, semi-log and the double log were fitted to the data and the best fit chosen as the lead equation.

Results and Discussion

Based on the strength of the coefficient of determinations, number of significant variables, their sign and degree of significance and conformity to a priori expectation, the linear function is chosen as the lead equation. The model shows that total land area cropped, total annual rainfall and total population are the significant variables that determined agricultural output in the state.

Total land area cropped is significant at 1% level. It is positive in sign as expected. Implication therefore is that the higher the hectares cultivated or devoted to crop farming in the state, the higher the total output that would be produced. This therefore calls for the need to devote every idle farmland in the state to agriculture as more food would be available if these idle areas are cropped.

Total annual rainfall estimated variable is significant also at 1% level and positive in sign. This is in consonance to expectation as rainfall is an important factor to agricultural production in the study area as the farmers hardly engaged in irrigation farming. Adequate rains will increase agricultural productivity. In fact should the rains be spread throughout the year, certain crops such as the vegetables would be grown all the year round in the study area.

The estimated coefficient of the total population in the state was also highly significant in the determination of agricultural output from the soil. The variable is significant at 1% but negative in sign contrary to the other two variables. This implies that an increase in total population does not lead to an increase in agricultural productivity but rather to a decrease. There is therefore insufficient food for the rapidly growing population. The low labour force in the agricultural sector and the dependence on crude farm implements and equipment for agricultural production could possibly account for the inability of the total cropped land to produce enough for the total population. Hunger therefore is bound to persist unless something is done to change the trend. If government could encourage the farmers towards achieving labour saving technologies, output could be meaningfully increased.

Incidentally, the total actual government spending on agriculture estimated variable was not significant in the determination of agricultural output. This questions not only the amount spent but also how the money is translated to affecting the rural farmers who need government intervention. It calls for a restrategizing on disbursement and application of fund by government to rural agricultural production.

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The result of the correlation of these variables to agricultural output indicate that only total land area cropped and total annual rainfall that significantly and strongly correlated with total output while total population and total actual government expenditure on agriculture were never significant.

Conclusion

The determinants of agricultural production in Abia State reveal that the effect of government actual spending on agriculture is yet to improve agricultural productivity. However, the total area cropped, the total annual rainfall and the total population have significantly continued to exert effect on agricultural output. Policies therefore should gear towards curbing the negative effect of increasing population and making more land available to potential farmers and introducing irrigation farming to take advantage of the dry seasons for crops like vegetables since the potential fertility of the available land is not in doubt if attended to as should be. Government funding to accomplish this is paramount if the poor resource farmers could meaningfully contribute to meeting the production challenge of the teeming population.

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Table 1: Regression Results of Determinant of Agricultural Output in Abia State

Variable	Linear	Exponential	Double log	Semi – Log	Correl. Coeff.
Constant	2285799.100*	-2981975.000	11.854	14.808	1.000
	(3.868)	(-0.167)	(0.999)	(36.200)	
TLAC	2.904*	599330.830**	0.439**	2.078E-06*	0.059*
	(3.456)	(2.323)	(2.557)	(3.572)	(P=0.017)
TAR	546.094*	178888.700	0.143	3.685E-04*	0.7911*
	(5.267)	(0.560)	(0.676)	(5.134)	(P=0.001)
TPAS	-0.758*	-282164.000	-0.272	-5.426E-07	0.0140
	(-3.254)	(-0.198)	(-0.287)	(-3.364)	(P=0.490)
TAGA	2.608E-05	6389.227	2.542E-03	2.931E-11	0.008
	(0.330)	(0.073)	(0.043)	(0.535)	(P=0.490)
R2	0.867	0.427	0.460	0.864	
R Squared	0.808	0.172	0.221	0.804	
F-ratio	14.655	1.675	1.920	14.322	

Source: Computer Print Out, 2007

Note: * = significant at 1%, ** = significant at 5%; Values in parenthesis are t-ratios