



AGRICULTURAL COMMERCIALIZATION AND FOOD SECURITY IN NIGERIA

Ahmed Halliru Malumfashi*

Murtala Abdullahi Kwara*

Abstract: *In this paper the impact of agricultural commercialization on food security in Nigeria is examined using OLS regression method. The results show that commercialization enhances food security in the country. Other variables that significantly contribute to food security are domestic food production and food import. Per capita income showed a very weak relationship with food security. Policies to improve food security in the country should be geared towards increasing domestic food production and improving the distribution of income. Commercialization of agriculture is also important for ensuring food security and land reforms and provision of credits to smallholder farmers are needed to encourage commercialization.*

Keywords: *Food Security, Commercialization, Agriculture, Income, Nigeria.*

*Department of Economics, Umaru Musa Yar'adua University Katsina, Nigeria.



1. INTRODUCTION

Commercialization of agriculture offers great potentials for diversifying Nigeria's export base given the vast agricultural land, labor force and climatic conditions which makes it possible for the production of cash crops such as cocoa, rubber, palm-oil, palm-kanel and cotton, etc as well as food crops to support the teeming population. Expansion of agricultural exports and the development of agricultural sector in general which employ over 70% of the work force and provide 80% of the food requirement in Nigeria is key in reducing poverty and hunger that engulfed millions of its people most of whom are in the rural areas.

Agricultural commercialization despite its importance generates some concern about its impact on food security at both household and national levels. The argument is that creasing cash crop production may be attained at the expense of food production as more resources are geared towards increasing the former. This could increase the danger of poverty, hunger and food insecurity. This concern, thus, attracted empirical studies as to the impact of agricultural commercialization on food security and most of these studies found that commercialization improve food security of households. For example, Langat B. K. in Kenya and Eltighari et al. in Sudan have all found that a shift to cash crop production improved household's food security. Most of these studies mostly focused on the impact of commercialization on food security at household level but few tried to examine the food security impact at national level particularly in Nigeria and this study intend to fill such gap.

2. FOOD SECURITY IN NIGERIA

Food security has been defined as the availability and accessibility for all people, at all times, to enough and nutritious food required for an active and healthy life (FAO, 2006). This is the most comprehensive definition of food security. Food should be available through production or import or both and this is limited to the amount of resources committed. Accessibility of food shows the ability of people to acquire food which is largely determined by their level of income. Thus, improving income is crucial to increasing food accessibility. Food should also be available and accessible at all times such that at all seasons, all year round, food is available hence there is no threat at any given time.

Despite the fact that Nigeria's food production is the highest in Sub-Sahara Africa, food insecurity continued to loom (Edokpia and Okafor, 2009). They observed that food production in Nigeria raised from 89.23 million metric tones in 1995 to 110.11 million metric



tones in 2000 and conclude that the country may not meet the millennium Development Goals (MDGs) of eliminating hunger by 2015. The Food and Agricultural Organization (FAO) also reported that Nigeria has the highest number of undernourished people in West Africa. Food security indicators in Nigeria also confirmed this. For example, food imports had increased from 940.6 million in 1985 to 3474.5 in 1990 and further increased to 16245.5 in 2006 (CBN, 2007).

3. EMPIRICAL LITERATURES

There are many empirical studies that tried to examine food security and insecurity both at households, national and regional levels. For example, Langat et.als (2011) investigate the socio-economic factors influencing households' food security among smallholder tea farmers in the district. Multi-stage proportional-to-size cluster sampling was used to sample 165 households. Data was collected using both questionnaires and interviews. Translog Cost Function was used to specify the supply side factors influencing food security in the district. Household dietary diversity index (HDDI) had a positive correlation between the land size on maize and output. Months of adequate household food provisioning (MHAFFP) also had positive correlation with tea income, outputs of maize and tea and their respective land sizes. Factors influencing household food security were; land productivity, off-farm income and land allocation to maize and tea, household characteristics: education, gender, and employment. Optimal allocation of land between tea and maize productions will guarantee household food security. Strategies aiming at increasing household food security should target increased access to inputs for food production and productivity of land and income diversification.

Jones G. and Jayne T.S., 1999. The effect of cash crop production on food crop productivity in Zimbabwe: synergy or trade-off? The paper studies the dynamics between cash cropping and food crop productivity in Gokwe North District in Zimbabwe, a major cotton producing area. The main research issues were: (1) to identify the determinants of commercialized crop production at the household level; and (2) to determine the effect of increasing crop commercialization on household food productivity. The paper derives a *household crop commercialization index*, defined as the ratio of crop sales to total crop production. An econometric models for identifying the determinants of household-level commercialization



and for measuring its effects on food crop productivity. The principal findings of the paper were:

1. This area of Zimbabwe is highly commercialized in cotton production. Maize accounts for 47.4% of cropped area, while cotton accounted for 45.2%. However, there are clear differences in the purposes for growing these crops: 100% of the cotton production was marketed, while 93.8% of maize production was grown for home consumption. Cotton sales contributed 83.6% of the value of marketed crop income. In this area of Zimbabwe, agricultural commercialization is virtually synonymous with expanding cotton cultivation.
2. Especially under conditions of credit and input rental market failures, cash cropping schemes may enable households to increase both input use and productivity of food crops. Cotton commercialization at the household level significantly and positively affected food crop productivity, *ceteris paribus*. The expected value of food grain output for households at the mean level of cotton commercialization was 38.1% higher per hectare of food crops than households growing no cotton. Also gross crop income per hectare and per family member were positively related to the share of cotton in cropped cultivation.
3. Traction equipment and draft power were found to be key determinants of households' ability to diversify into cotton production. Under the relatively land-abundant conditions of the study area, animal traction allows households to put more land under cultivation, and therefore is a major source of increased farm production per capita.
4. Cotton commercialization was significantly positively affected by farm size, other factors held constant, but farm size was significantly inversely related to food crop productivity.
5. The level of education, maturity of the household head and the household's investment in animal traction significantly and positively affected food crop productivity.
6. The degree of cotton commercialization varied significantly across locations at various stages of settlement development. The development stages for the settlements were driven by the relative timing of tsetse control.

Overall, the findings show that farm dynamics between cash cropping, capital investment, and food crop productivity are important to consider in discussions of agricultural commercialization among smallholder farmers.

The challenge for government policy is to identify and facilitate strategic pathways to create positive interactions between food and cash crops, and between the public and private



sector. The various pathways, by which crop commercialization can affect food security and incomes under conditions of pervasive market failures, need to be more clearly understood to develop more informed policies in support of smallholder welfare. This study suggests that, despite frequent criticisms stressing the trade-offs between agricultural commercialization and food crop production, it is important to also consider the potential synergies.

Igberaese and Okojie (2010) assessed the courses of food insecurity in Nigeria and found that insecurity is attributed to bulk buying by the rich, wastage in parties, excessive exports at the expense of domestic needs and the lack of storage facilities leading to post-harvest losses. They recommended for income redistribution, investment in storage facilities and entrenchment of internal order, high limitation on food export and the need to stimulate more food production.

Babatunde, (2009) analyzed the impact of income on calorie intake in Nigeria using OLS regression method. Per capita calorie intake was used as the dependent variable that capture food security which is explained by domestic food output, food import, food export, per capita income and inflation as the explanatory variables. The result shows that domestic food production impact positively and significantly on calorie intake at 1%. Also per capita income shows a positive income and the coefficient is significant at 5% with an elasticity of 0.2%. Food imports, food exports and inflation are insignificant in food security even at 10%. He recommended that policies that address food production, income and nutrition are needed to reduce food insecurity in Nigeria.

David L.T. and Michael T. W., (1994) used household survey data from war-lorn northern Mozambique to examine the factors associated with higher incomes and improved rural household food security. Incomes and calorie consumption were found to be low and variable in each district, and both are highly correlated with land holdings. The central role of land holdings is largely a result of serious market failure. Food market participation rates and the proportion of net buyers are lower than in other sub-Saharan Africa (SSA) research. Purchased food as a percentage of total caloric intake and off-farm income as a percentage of total income are both very low by SSA standards. In short, surveyed smallholders have adopted a strategy of marked reliance on farm-based own production to ensure their survival. It is suggested that land holdings will continue to be key determinants of household



income and consumption for the foreseeable future. Brad-based rural development efforts, possibly organized around existing cotton-growing enterprises, may offer one way out of the poverty trap for smallholders.

Eme (2009) examined the dynamic relationship between oil production and food insecurity in Nigeria using VAR approach in view of the increasing hunger and poverty in the country despite huge oil wealth. Food insecurity as a dependent variable is captured by the deficit in per capita calorie intake. The results showed that 12% of shock to food insecurity is explained by the oil revenue but the effect is insignificant. The effect of food import is positive but insignificant explain only 6% concluding that food imports is weak in alleviating food insecurity. Domestic food production appeared to be the most important variable in explaining food insecurity in Nigeria. About 85.2% of food problem in the country would be solved by promoting domestic food production. The per capita income does not explain food insecurity in the country owing to the fact that it is ranked one of the poorest countries in the world. He recommended that policies should be geared towards increased domestic food production, increased income and proper use of the oil proceeds.

Elamin et al (2003) examined the impact of commercialization of agriculture on commercialization played in increasing food production and reducing hunger which affect most of the people especially in the rural areas. OLS regression results showed that commercialization index showed positive impact on food supply for the Sudan dry land sector and traditional farming but negative impact for the mechanized farming. The elasticity of food with respect to commercialization of agriculture is 1.01, 0.47 and 0.42 for Sudan, traditional and mechanized dry land farming respectively. He recommended that the state of infrastructure should be improved.

4. DATA AND METHODOLOGY

Secondary data are used in this study and it was sourced from Central Bank of Nigeria (CBN), National Bureau of Statistics, Food and Agricultural Organization (FAO) World Bank. The variables in the model include food security (proxied by per capita calorie intake), agricultural commercialization (proxied by percentage of cash crops in total agric output), domestic food production, food import, food export, per capita income and inflation. Econometric analysis using OLS regression method is adopted to determine the impact of commercialization and other important variables on food security.



Model Specification

The model in this study is specified following Babatunde (2009) with some modifications. Food security as a dependent variable is regressed on commercialization and other instrumental variables. In its implicit form, the model is given as:

$$\text{FOODSEC} = f(\text{AGRCOMM}, \text{FOODOUT}, \text{FOODIMP}, \text{FOODEXP}, \text{PINCOME}, \text{INFLATION})$$

In stochastic form, it is given as:

$$\text{FOODSEC} = a + b_1 \text{AGRCOMM} + b_2 \text{FOODOUT} + b_3 \text{FOODIMP} - b_4 \text{FOODEXP} + b_5 \text{PINCOME} - b_6 \text{INFLATION} + u \dots \dots \dots (1)$$

Where:

FOODSEC = food security (proxied by per capita calorie intake)

AGRCOMM = agricultural commercialization

FOODOUT = domestic food production

FOODIMP = food imports

FOODEXP = food exports

PINCOME = per capita income

INFLATION = inflation

a = intercept

b₁-b₅ = coefficients

u = disturbance term

5. RESULTS AND DISCUSSIONS

Table 1: Commercialization and food security

Variable	Coefficient	Std Error	t-stat	Probability
AGRCOMM	0.279064**	0.122315	2.281519	0.0433
FOODOUT	0.631707*	0.146442	4.313701	0.0002
FOODIMP	0.135357*	0.047922	2.824527	0.0123
FOODEXP	-0.025338	0.020088	-1.261350	0.2180
PINCOME	0.098233	0.067342	1.458718	0.1255
INFLRATE	-0.257171*	0.071636	-3.589969	0.0041
R ²	0.86			
Adj R ²	0.84			
D.W statistics	1.893			
F-statistics	519.703			

Source: Researcher Computation with Eviews software

Note: *,** denote significance at 1 and 5 percent



Table 1 shows the impact of agricultural commercialization and other explanatory variables on food security (per capita calorie intake). The results show a positive relationship between agricultural commercialization and food security. A 1 percent increase in agricultural commercialization, other things being equal, increases food security by 0.27 percent and the coefficient is significant at 5%. The explanation here is this, increased commercialization brought about large revenue to farmers which can be used to purchase the required inputs for increased food production. In addition, revenue generated from the sales of cash crops provides a means to access a variety of food stuffs in the market thus improving both the quality and the quantity of food taken by farmers.

Again, domestic food production significantly increases food security. The results shows that a 1 percent increase in the domestic food production increase food security by 0.63 percent. In other words, 63 percent variation in food security level is explained by domestic food production. The vast majority of Nigerians are engaged in agricultural sector which provide the source of food and employment. Therefore, increased food production provides more food on table thus improving the food security status of the people.

Food import is also found to have a positive and significant impact on food security. The results shoes that a 1 percent increase in food imports increase food security by 0.13 percent. In other words, 13 percent of variation in food security is explained by food import. Food imports compliment domestic food production to add to a large amount of food available in the market.

A negative relationship was revealed between food exports and food security. A 1 percent increase in food exports reduces food security by 0.02 percent but the impact is not significant. In other words, only 2 percent in the food security variation is explained by food exports.

There is a positive relationship between per capita income and food security. A 1 percent increase in per capita income increase food security by 0.09 percent and but the coefficient is not statistically significant even at 10%. This shows that increase in per capita income does not guarantee food security if majority of the people do not benefit from. Nigeria experience large increase in economic growth in recent periods but unemployment, hunger and poverty are on the increase because it is only the few wealthy individuals that receive the bulk of the income. The largest contributing sectors to this growth are the oil and gas,



telecommunications and large manufacturing where only the few wealthy individuals invest and take almost all the benefits.

A negative relationship is revealed inflation and food security. A 1 percent increase in inflation reduces food security by 0.25 percent with a significant impact. Inflation increase cost of living and reduce investment in agriculture. Large amount of land is left fallow because inputs are costly and many food surplus farmers turn out to be net buyers of food.

6. CONCLUSION

Food security in Nigeria is influenced by many factors among which include domestic food production, food import and agricultural commercialization. Domestic food production, commercialization and food import proved to be the most important factors that increase food security in Nigeria. Also, contrary to expectation, agricultural commercialization promoted food security in the country. Inflation seriously reduced food security as it eats off the purchasing power of people thereby reducing their food consumption. Measures to increase domestic food production and commercialization are very crucial in ensuring food security in the country in addition to equitable distribution of income. Such measures may include provision of subsidized inputs to farmers, extension services, access to credits and more equitable distribution of income. Policies that reduce inflation and promote commercialization are also important.

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