DOMESTIC FOOD SUPPLY IN NIGERIA: EFFECTIVENESS OF GOVERNMENT SPENDING

Zakaree S. Saheed
Department of Economics, Nigerian Defence Academy, Kaduna
E-mail: zakss_1@yahoo.co.uk+234 8039370901

Abstract
The Food and Agriculture Organization of the United Nations, has it that of the estimated 925 million hungry people in the world, 239 million of them were in Sub-Saharan Africa. This is in spite of its abundant land, and other natural resources that could guarantee adequate food supply. In many less developed countries, including Nigeria, more than half of the citizens’ incomes is spent on food. Hence, to ensure adequate domestic food supply, the government of Nigeria put in place many agricultural policies, and expanded annual spending on the agricultural sector. The objective of this paper, therefore, was to examine the effectiveness of government expenditure in improving domestic food supply in Nigeria, using Ordinary Least square approach. Empirical finding indicated that government expenditure in agriculture with a coefficient of just -0.0098, had a negligible and statistically insignificant effect on domestic food supply in Nigeria. Based on the finding, policy recommendations were proffered that agricultural budget should be tightly monitored to ensure its full implementation. Moreso, government should encourage agri-business, and the youths, especially fresh graduates should be equipped to practice scientific farming. Government should also provide infrastructure and social amenities in the rural areas to encourage the rural population which is very essential for food production in Nigeria.

Keywords: Effectiveness, government expenditure, domestic, food supply

Introduction
An absolute poverty or deprivation is considered as inability to attain minimal standards of consumption to satisfy basic physiological needs, which most directly expressed in not having enough to eat, as observed by the World Bank(2009). As a cause of poor health, low levels of energy, and even mental impairment, hunger can lead to even greater poverty by reducing people’s ability to work and learn, in turn leading to even greater hunger, and according to estimates of the Food and Agriculture Organization of the United Nations, in 2010 there were 925 million hungry people in the world, and 239 million of them were in Sub-Saharan Africa.

In many parts of the world’s poorest countries, food accounts for more than half of household expenditures, and increased food prices seriously reduce both access to food and the ability to purchase other necessities. Experts estimate that rising food prices have driven about 44 million people into poverty in developing countries. When food security is increased, nutrition and health improve, which in turn promotes productivity. At the same time, it decreases a country’s dependence on imported food, which often cannot be obtained without sufficient and stable levels of foreign exchange (Jemaneh and Okyere, 2012).

Recent evidence from the International Food Policy Research Institute (IFPRI) showed that promoting agricultural growth may reduce poverty, promote overall economic growth and achieving the first Millennium Development Goal of halving the number of poor people by 2015 in developing countries (Diao and Dorosh, 2007). Among the people of West Africa, it is believed that when the problem of hunger is resolved, a major part of poverty has been eliminated, hence any effort towards eradicating hunger is a target towards alleviation of poverty (Saheed, 2014). The role of the government in economic management is performed through the formulation and implementation of economic policy generally and fiscal policy in particular. As recognized by the new growth theory, public spending is an important factor for self – sustaining productivity gains and long term growth. For instance, government expenditure can contribute to agricultural growth (and hence poverty...
alleviation), it has indirectly created rural non-farm jobs and increased wages. While economic growth alone often reduces poverty only by increasing mean consumption, government expenditure on agricultural reduces poverty both by increasing mean consumption and improving distribution of income (Fan, Zhang and Zhang, 2000; Van de Walle, 1996; Galal, 2003 cited in Udoh, 2011).

However, Cuesta, Edmeades and Madrigal, (2011), were of the view that domestic food supply is a complex phenomenon involving multiple factors. In Nigeria, for instance, food supply could be influenced by a number of trends including: Government expenditure on agricultural sector, agricultural credit fund (loan); food and animal importation; growing urbanization and movement of labor away from rural areas; and the climatic conditions.

In order to revamp the agricultural sector, the federal government of Nigeria had embarked on and implemented several agricultural policies and programmes some of which are defunct or abandoned, and some restructured while others are still in place. In a broad sense, the objectives of the new agricultural policy include: The achievement of self-sufficiency in basic food supply and the attainment of food security; Increased production of agricultural raw materials for industries; Increased production and processing of export crops, using improved production and processing technologies; Generating gainful employment; Rational utilization of agricultural resources, improved protection of agricultural land resources from drought, desert encroachment, soil erosion and flood, and the general preservation of the environment for the sustainability of agricultural production; Promotion of the increased application of modern technology to agricultural production; and, Improvement in the quality of life of rural dwellers (FGN, 2001).

Within the period of observation, according to the Central Bank of Nigeria (2011), the government increased its expenditure on agriculture by 26.95 percent from N792.24 million in 1981 to N1,005.76 million in 1985. In 1990, the government agriculture expenditure attained N2,016.5 million, or an increment of 100.5 percent from the previous figure. The expenditure further increase by 207.57 percent to attain N6,202.1 million in 1995. Between 1995 and 2000, the government expenses on agriculture rose to N12,087.48 million or an increment of 94.89 percent. As at 2005, there was a sharp increase in government agriculture expense which attained N96,265.0 million or an increase of 696.40 percent, while there was a slight increment of about 10.34 percent in government total expenditure on agriculture, which attained N106,217.95 million in 2010.

Agricultural activities are majorly labour intensive, which in Nigeria, lies in the rural areas. Hence food supply also depends on the rural population who are the main producers of food for the entire population. Within the period of observation, the Nigerian population as at 1988 was 89.85 million of which 61.29 million are in rural areas. The entire population of the country stood attained 154.5 million or a growth of about 71.9 percent in 2010, while the rural population within the same period attained 79.53 million, or a growth of just 29.76 percent. Hence, the growth of labour force needed in the rural area to produce food is less compare to the growth rate of the entire population. The amounts of food that can to be supplied domestically can also be affected by climate change, particularly, changing and erratic rainfall patterns, which may reduce farm yields or outputs.In Nigeria within the period of observation, according to the Nigerian Meteorological Agency rainfall statistical report, the mean annual rainfall in Nigeria ranges between 1, 200 millimeters and 1, 500 millimeters per year. Whereas, erratic weather interferes with processing of agricultural produces, and increased frequency of major storms may causes damage to livestock, crops and even the farm land.

**Literature review**

This section discusses relevant literature and theoretical framework on the linkage between government expenditure and food supply. There have been many studies on government expenditure and food supply, and many researchers have directed the focus of their studies on
government expenditure as well as food supply both within and outside Nigeria. For instance, Mapfumo (2012) investigate how government expenditure on agriculture affects economic growth and poverty reduction in Zimbabwe from 1980-2009, using a log linear growth regression model. The results from this study suggest that spending more on agricultural research and development can improve economic growth and ultimately reduce poverty. However, the major defect of this study is that it focused only on Zimbabwe economy, which may not be applicable to Nigeria. More so, the study considers the effect of agricultural spending on economic growth as well as poverty alleviation, and not on food supply, as a dependent variable.

In Bolivia, Cuesta, Edmeades and Madrigals (2011), explores the reduction of food insecurity in Bolivia by adopting a supply side approach to analyze the role of agricultural spending on vulnerability to food security. The vulnerability to food here is captured by welfare outcomes, weather conditions and agricultural potential for all 327 municipalities. An econometric result from this study indicates that levels of public agricultural spending are positively associated with high vulnerability.

Armas, Osorio, and Blanca (2010) analyzes the trends and evolution of public spending in the agriculture sector in Indonesia, as well as its impact on the growth of agriculture during the period 1976–2006. The result of the analysis shows that public spending on agriculture and irrigation has a positive impact on agriculture growth, whereas public spending on fertilizer subsidies had the opposite effect. Like Mapfumo’s, this study focused only on Indonesia’s situation, hence may not be relevant to the Nigerian economy. The study’s use of disaggregate approach on the public agriculture spending with focus on irrigation and fertilizer subsidies as the main explanatory variables for agricultural growth may not be appropriate enough considering the fact that irrigation and fertilizer subsidies are only few of the many variables that can explain agricultural output.

In analysing the relationship between Agricultural resource and economic growth in Nigeria, Olajide, Akinlabi and Tijani (2012), employ Ordinary Least Square regression method and come up with the findings which indicate that a positive cause and effect relationship exist between gross domestic product (GDP) and agricultural output in Nigeria. Adofu, Abula and Agama (2012) employ the OLS regression technique to examine the effects of government budgetary allocation on agricultural output in Nigeria. Their results revealed that the government budgetary allocation to agricultural sector has a strong, positive and significant impact on agricultural production in Nigeria. However, this study considered only government budgetary allocation and commercial bank credit as explanatory variables to agricultural output.

Udoh (2011), on his part, investigated the relationship between public expenditure, private investment and agricultural output growth in Nigeria over the period 1970-2008. The error correction model adopted reveals that increase in public expenditure has a positive influence on the growth of the agricultural output.

This study identifies some gaps in the literature reviewed, which it proposes to address. For instance, though some of the earlier researchers study the effect of government spending on agricultural output (Cuesta, Edmeades and Madrigals, 2011; and Armas, Osorio, and Blanca, 2010), they focus on government spending as the only explanatory variable for agricultural output. Moreso, they did not consider Nigeria in their study. Some authors in Nigeria have also written...
on expenditure and agricultural output in Nigeria (Olajide, Akinlabi and Tijani, 2012; Adofu, Abula and Agama, 2012; Udoh, 2011; and Igwe and Esonwume, 2011). However, their study reflects the effect of government expenditure as the only explanatory variable for agricultural output in Nigeria. Though other authors (Igwe and Esonwume, 2011) consider other variables like total land cropped, total annual rainfall and total population as explanatory variables for crop output, however, the study was limited to only a section of the country. Hence, this study proposes to address these gaps. Using aggregated approach, this paper considers total government agriculture expenditures, bank loan, food importation, total rural population, and total annual rainfall as important variables that affect food supply in Nigeria. (Igwe and Esonwume study did not include bank loan and food importation in their model).

Sources of data
Data used in this study are mainly secondary source which include Nigeria government expenditure, agriculture credits guarantee funds and food importation obtained from the Central Bank of Nigeria Statistical Bulleting and the National Bureau of Statistics (NBS), Abuja; the rural population data was obtained from the World Bank reports; while the average annual rainfall for the country was calculated from the annual rainfall in each state of the federation obtained from the Nigerian Meteorological Agency.

Model specification
Based on the foregoing analytical considerations of the study, literature review and theoretical framework, the study adopts a model as follows:

\[ DFS = f(GEA, FI, RP, AAR, \ldots) \] (1)

In stochastic form equation (3) becomes:

\[ DFS = \beta_0 + \beta_1 GEA + \beta_2 FI + \beta_3 RP + \beta_4 AAR + \varepsilon \] (2)

Where:

- DFS = Domestic Food Supply
- GEA = Government Expenditure in Agricultural Sector
- FI = Food Importation
- AAR = Average Annual Rainfall
- \varepsilon = Error term

Prior to estimation of the model, standard econometric tests, that is, stationarity tests were conducted to tests for its stochastic properties through unit root tests in order to avoid estimating spurious regression results, while co-integration test was used to analyze the relationship between government expenditure and exchange rate.

Data analysis
Table 1: Results of Stationarity (unit root) test.

<table>
<thead>
<tr>
<th>Variables</th>
<th>ADF-Statistic</th>
<th>Critical Values</th>
<th>Order of Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOGDFS</td>
<td>-7.249544</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOGGEA</td>
<td>-6.754053</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOGRP</td>
<td>-7.924657</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOGAAR</td>
<td>-5.86440</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Computed from Eview 7.0

The stationarity test is employed to investigate the time series properties of the data to be analysed, in order to establish whether the variables are stationary or non-stationary. The use of non-stationarity series may lead to spurious regression.
where, otherwise, unrelated series may be presented as related.

The unit root test result shown in the table 1 above indicates that log DFS is stationary at first difference at either 1 or 5 percent confidence levels. Meanwhile, the log of GEA, the log of RP, and the log AAR were also stationary at the same first difference at either 1 or 5 percent confidence level.

Table 2: Regression Result

<table>
<thead>
<tr>
<th>Dependent Variable: DFS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method: Least Squares</td>
</tr>
<tr>
<td>Date: 10/16/14 Time: 09:00</td>
</tr>
<tr>
<td>Sample: 1988 2010</td>
</tr>
<tr>
<td>Included observations: 23</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEA</td>
<td>-0.009192</td>
<td>0.063193</td>
<td>-0.145461</td>
<td>0.8859</td>
</tr>
<tr>
<td>RP</td>
<td>4.385842</td>
<td>1.450366</td>
<td>3.023955</td>
<td>0.0070</td>
</tr>
<tr>
<td>AAR</td>
<td>-1.149937</td>
<td>0.725905</td>
<td>-1.584142</td>
<td>0.1297</td>
</tr>
<tr>
<td>C</td>
<td>-28.87263</td>
<td>17.24330</td>
<td>-1.674426</td>
<td>0.1104</td>
</tr>
</tbody>
</table>

| R-squared | 0.814512 | Mean dependent var | 11.64747 |
| Adjusted R-squared | 0.785224 | S.D. dependent var | 0.367591 |
| S.E. of regression | 0.170356 | Akaike info criterion | -0.545080 |
| Sum squared resid | 0.551403 | Schwarz criterion | -0.347603 |
| Log likelihood | 10.26842 | Hannan-Quinn criter. | -0.495415 |
| F-statistic | 27.81076 | Durbin-Watson stat | 1.350823 |
| Prob(F-statistic) | 0.000000 |

DFS = \beta_0 + \beta_1 GEA + \beta_2 RP + \beta_3 AAR + \epsilon

= 28.81076 - 0.009192 GEA + 4.385842 RP - 1.149937 AAR

(1.67442) (0.14546) (3.02395) (1.58414)

Findings and discussion

The result of analysis shows a robust adjusted R-square of about 0.8145, which implies that about 81.45 percent change in the dependent variable (DFS) is explained by the explanatory variables GEA, RP, and AAR. The t-Statistics values of each of the explanatory variables shows 0.14546 for GEA, 3.02395 for RP and 1.58414 for AAR, while the F-statistic value is high at 27.81076. Furthermore, the coefficient of various variables stand as -0.00919 (GEA), 4.3858 (RP) and -1.1499 (AAR). This implies that a change of one percent in Government expenditure on agriculture will bring about a change of 0.01 percent in domestic food supply in Nigeria. Meanwhile, a change of one percent in rural population and average annual rainfall will lead to a change of about 4.39 percent and 1.15 percent respectively, in domestic food supply in Nigeria.

Investigation in this study reveals that Government expenditure on agriculture (GEA) has a negative and statistically insignificant impact on the domestic food supply. The negative impact can be attributed to a long delay in implementation of government budget and disbursement of capital to the farmers in the rural areas, which tend to affect their farming activities that are majorly seasonal.

The findings in this study also show that rural population has a positive and statistically significant impact on the domestic food supply.
Since most agricultural activities lies in the rural areas, and food production in Nigeria is labour intensive rather than capital, hence, domestic food production will depend on the population of the rural dwellers who work in the farm to produce food for the entire population. An increase in the population of the rural dwellers who engage in farming will lead to increase in domestic food supply. However, continuous rural-urban migration will reduce rural population, and very few people would be left to work in the farm, which might reduce domestic food supply.

Furthermore, the findings also indicate that domestic food supply in Nigeria is affected by climate change as indicated by the statistically significant impact of average annual rainfall on domestic food production in Nigeria. For instance, changing and erratic rainfall patterns make it difficult for farmers to plan their operations, may reduce the cropping season and can lead to low germination, reduced yield and crop failure, as observed by Nwajiubah, (2012) cited in Saheed (2014).

Conclusion
Based on the results obtained from data analysis, it is observed that even though there has been increase in the trend in government spending in the agricultural sector, however, the effectiveness of these spending has been very insignificant in relation to domestic food supply in Nigeria, considering the fact that a change of one percent in government spending on agriculture can only affect domestic food supply by 0.01 percent.

Based on this finding, it is recommended that agricultural budget should be tightly monitored and ensured its full implementation for the purpose for which its budgeted. The disbursement of credit facilities to the farmers should also be monitored to ensure that the farmers were not exploited by the banks agents, while the utilisation of the fund by the farmers should also be monitored so that fund is not diverted from the target. Furthermore, the government, Non-governmental Organisations(NGOs) and the private sectors should invest more in agribusiness and make available to farmers, modern farm implements like ploughs, ridgers and other farm implements at minimum cost possible. Lastly, government must provide infrastructure and social amenities in the rural areas to encourage the rural population which is very essential for food production in Nigeria.

References


Sustainable Development. 2011; vol. 2 No.4, p. 86-91.


