

Trend Analysis of Budgetary Allocation to Agricultural Sector in Nigeria

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Introduction

Agriculture continues to dominate the economy of Nigeria in terms of contribution to gross domestic product, job creation, poverty reduction and provision of raw materials. A large proportion of agricultural labour force in Nigeria engaged in subsistence farming rather than modern agriculture. It has greater capacity for absorbing large number of unemployed youth and covers way for overall growth and development (Ajakaiye, 2016). Both theoretical and empirical studies have shown that public spending to agriculture has a significant impact on output and the general performance of the economy (Ahungwa et. al, 2014; Olomola *et al.* 2014). Therefore, government continue to allocate a significant amount of resources to this sector through lending, subsidies and financing of various programs and policies under numerous sub-sectors aimed at transforming the agricultural sector.

However, the sector has not yielded up to the level of expectations. According to Ita *et al.* (2013), there was instability in the way budgets were allocated to the agricultural sector. Oyinbo et. al (2013) conclude that the relationship between agricultural budgetary allocation and economic growth in Nigeria is positive but not significant in the long

run. Therefore, it is vital to examine the nature of trend of budgetary allocation to agricultural sector in Nigeria.

Objective

The foremost objective of this study is to examine the trend of budgetary allocation to agricultural sector in Nigeria using annual data between 1981 and 2014. Study basically intends to find the reason for positive but insignificant long run relationship as mentioned in previous literature (Oyinbo et. al, 2013) between agricultural budgetary allocation and economic growth in Nigeria, since the agricultural production mainly stimulate the factors of Nigerian economic growth.

Methodology

This study adopted a simple econometric analysis, the well-known ‘Chow test’ to test whether there is a structural break within the pattern of government expenditure for agriculture in Nigeria after 2001. This test examines whether a single regression for whole data series is more efficient than two separate models for sub samples of the same series of data.

$$AP_t = \beta_0 + \beta_1 GEA_t + u_t \quad (1)$$

Where AP for agricultural production in Nigeria, GEA for government expenditure on Nigerian agriculture, u is for unexplained factors and t is for time period from 1981 to 2014. Then two separate models for the assumption of the presence of structural break in 2001 can demonstrate as below.

$$AP_t = \alpha_1 + \alpha_2 GEA_t + u_{1t} \quad (2)$$

$$AP_t = \lambda_1 + \lambda_2 GEA_t + u_{2t} \quad (3)$$

Here t is from 1981-2000 for model (2) and t is from 2001-2014 for model (3). When the estimated parameters of two separate models before and after the break are similar ($\alpha_1 = \lambda_1$ and $\alpha_2 = \lambda_2$), model (2)

and (3) can use as a single model. Therefore, model (1) is more efficient than using separate models. When results proven that the two sub samples are more efficient than the single data series, then there is a structural break. Regression Sum of Squares (RSS) from all models and F-statistic of main model are used to determine the efficiency.

$$F = \frac{RSS_1 - (RSS_2 + RSS_3) / k}{(RSS_2 + RSS_3) / (n - 2k)} \quad (4)$$

The data for the study were sourced from Central Bank of Nigeria Statistical Bulletins from 1981 to 2014. Series of data was limited to 1981 due to lack of availability of data for agricultural production in Nigeria. Graphs and tables are used for descriptive purposes of the analysis.

Results and Discussion

Figure 1 shows that the share of total government expenditure to agriculture had been trending up without any severe change till 2000. Afterwards, the pattern has been drastically changed due to a sudden improvement of the amount of government expenditure in 2001.

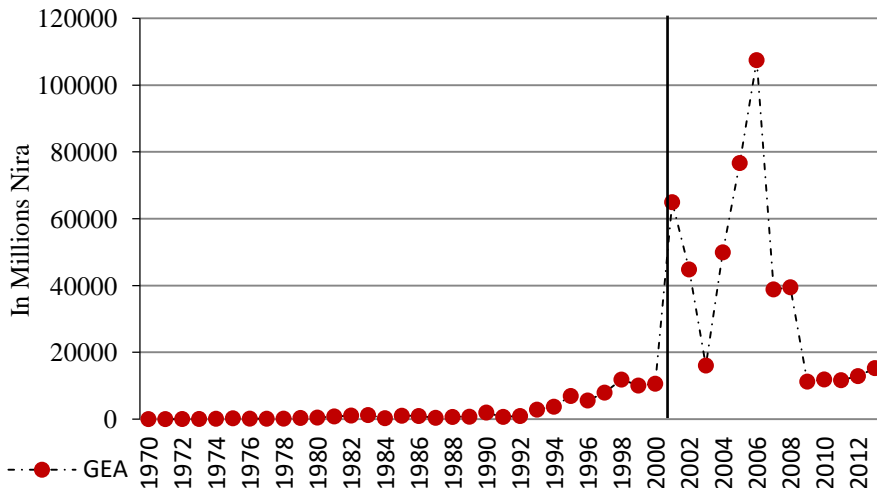


Figure 1: Total government expenditure to agriculture in Nigeria

It is clear that the relative dynamics of expenditure had been varying over different years up to 2014. This seems like a structural break of the data series with more dynamics in later on. Therefore, it was imperative to identify the reason for this completely different behaviour of expenditure to agriculture. It may be a qualitative change in the properties of the government expenditure. Therefore, results of the ‘Chow test’ can be used as below to identify whether there is a structural break or not.

Table 1: Results of Chow Test

Model	F Statistics	t Statistics	R-Squared
$AP_t = \beta_0 + \beta_1 GEA_t + u_t$ <i>t from 1981-2014</i>	3.3	1.82	0.0962
$AP_t = \alpha_1 + \alpha_2 GEA_t + u_{1t}$ <i>t from 1981-2000</i>	326.08***	18.06***	0.9477
$AP_t = \lambda_1 + \lambda_2 GEA_t + u_{2t}$ <i>t from 2001-2014</i>	5.66**	-2.38**	0.3396

*** and ** for 99 per cent and 95 per cent confidence levels respectively

As mentioned in the results of ‘Chow test’, single regression for whole data series is less efficient than two separate models for sub-samples from 1981-2000 and 2001-2014. In addition to that estimated parameters ($\alpha_1 = -53636$ and $\alpha_2 = 166.12$ for model 2. $\lambda_1 = 1.05e+07$ and $\lambda_2 = -79.49$ for model 3) are totally different from each other for two separate models.

Table 2: Results of Chow Test (Estimated Parameters)

Model	Num: of Observations	Constant (β_0, α_1 and λ_1)	Regressor (β_1, α_2 and λ_2)
$AP_t = \alpha_1 + \alpha_2 GEA_t + u_{1t}$ <i>t from 1981-2000</i>	20	(-53636.9)	166.12
$AP_t = \lambda_1 + \lambda_2 GEA_t + u_{2t}$ <i>t from 2001-2014</i>	13	1.05e+07	(-79.49)

Conclusion

Empirical results of this study are statistically proven the existence of structural break of the government spending on agriculture sector of Nigeria. Therefore, the period before 21st century has shown a smooth and robust positive trend of budgetary allocation to agricultural sector. However, by this time period despite the role of agricultural sector play in the growth process of Nigeria economy, priorities was given to the sector in development strategies and agricultural sector was not funded sufficiently. In fact, it is lower than spending in other key sectors such as education, health, and water. However, the relationship between government spending on agricultural sector and agricultural production was found to be negative in the study period.

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