ANALYSIS OF TREND, DIRECTION AND GROWTH RATE OF AGRICULTURAL GROSS DOMESTIC PRODUCT (GDP) IN NIGERIA UNDER THE PERIOD OF UNINTERUPTED DEMOCRACY (1999-2020)

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ABSTRACT

This study examined trend, direction of growth and growth rate of agricultural GDP under the period of uninterrupted democracy in Nigeria. Annual time series data on agricultural GDP growth rate, agricultural expenditure, inflation rate, exchange rate, population growth rate, interest rate, private investment, public investment, and foreign direct investment collected from the records of Central Bank of Nigeria (CBN) and National Bureau of Statistics (NBS) were analysed using descriptive statistics and inferential statistics (ADF and growth model). The ADF test showed that all the variables were stationary at first difference and Johansen co-integration test showed one co-integrating equation using the trace statistics. Trend analysis showed that, between 1999 and 2000, there was a decrease in agricultural GDP from 26% to 21.4%and a sharp increase of 24.5% to the peak of 37% from 2001 to 2002. It experienced a sharp decrease from 2003 to 2006, remained constant between 2006 and 2007, and then increased slightly from2007 to2009, before it suffered a decline from 2009 to 2014, and increase from 2015 to 2020. The result showed instantaneous growth rate to be -1.7% and a compound growth rate of -3%. The direction of growth of agricultural GDP decelerated over the period under review. Thus, the government should improve its expenditure on agriculture in order to boost the growth in this sector, as well as its contribution to the growth of the domestic economy, and government expenditure needs to be closely monitored to ensure its proper full implementation.

Key words*:* Trend, direction of growth, growth rate, agricultural GDP

INTRODUCTION

One of the major challenges facing mankind is to provide an equitable standard of living, adequate food, clean water, safe shelter and energy, a healthy and secured environment, an educated public and satisfying job for this and future generations (Ewubare and Eyitope, 2015). It is not an overstatement to assert that the growth and development of any nation depend, to a large extent, on the development of agriculture.

Generally, the sector contributes to the development of an economy in four major ways-product contribution, factor contribution, market contribution and foreign exchange contribution (Ewubare and Eyitope, 2015). In realization of this, the government has embarked on various policies and programmes aimed at strengthening the sector in order to continue performing its roles, as well as measures for combating poverty. Notwithstanding the enviable position of the oil sector in the Nigerian economy over the past three decades, the agricultural sector is arguably the most important sector of the economy.

Agricultural production in Nigeria has suffered many setbacks such as the existence of land tenure system, inadequate/improper irrigation system, limited research and development, high farm input cost, inaccessibility to credit facilities, and inefficient obtaining and allocation of fertilizers, insufficient storage facilities and improper access to market, all culminate into low agricultural productivity and performance with high post-harvest losses and wastes. Correspondingly, in the agrarian sector, value-added per capita has increased by less than 1% per year over the previous 20 years (Asaleye *et al*., 2020). Nigeria is estimated to have lost $10 billion in annual export opportunities from cash crop alone owing to a steady decrease in these commodities' production (Asaleye *et al*., 2020). Although, the major factor identified for low economic performance in developing countries, among others, is inadequate investment (Lagakos and Waugh, 2013; Gollinn *et al*., 2014; Asaleye *et al*., 2019).

The agricultural expenditure as a percentage of total government expenditure increased from 3% in 1980 to 16.8% in 1985 (Central Bank of Nigeria, 2015). The spending on agriculture remained unstable with averaging 4.5% yearly between 1994 and 1998 and 3.5% between 1999 and 2005 while the average ratio of government recurrent spending on agriculture as a proportion of total government expenditure from 1981 to 2008 was 2.5% (Central Bank of Nigeria, 2019). Nevertheless, the unprecedented increase in crude oil prices witnessed between 2010 and 2015 gave the government an apt opportunity to increase investment in agriculture thereby, achieving relative stability in expenditure pattern between 2010 and 2015 (Central Bank of Nigeria, 2019). Contrariwise, the sector's contribution to gross domestic product nosedived from an average of 30.7% during the period of 2006 and 2010 to an average of 21.7% between 2011 and 2015 (Central Bank of Nigeria, 2015). More so, the improved agriculture's expenditure performance of 24% from 2009 to 2010 that is ₦55 billion and ₦178 billion respectively was short-lived due to unanticipated fall in crude oil prices between 2015 and 2016 culminating into decreased government agricultural spending (Central Bank of Nigeria, 2019; NBS, 2016) as Nigeria

witnessed a negative growth rate of 2.24% at the tail end of 2016 and this has mandated the present government to strengthen diversification efforts with agriculture at the forefront of its development efforts (Akanbi *et al*., 2019).

Nigeria consistently had been spending over the years without equivalent rate of economic growth. Data show that output of Nigeria agricultural production has been fluctuating for some years and the sources of these shocks may not be clear (Adeyemi, 2018). This has led to heavy importation of food crops to meet up with the country consumption over the years. In 2018, the federal government spent ₦172.8 billion on agriculture, representing 2% of its total budget of ₦8.6 trillion for the year. In 2017, of the ₦7.3 trillion budgets for the year, the federal government voted only ₦123 billion (1.6%) for agriculture. The central government spent ₦75.8 billion (1.26%) on agriculture in 2016 out of its total budget of ₦6 trillion. ₦29.6 billion of the amount was for bureaucratic expenses, leaving N46.17 billion for agricultural service (Nurudden, 2018). This was N 164.9 billion representing 1.56% in 2019 and N138.46billion representing 1.34% in 2020

Agriculture, which accounted for 20.85% of GDP in 2017, grew to 21.2% in 2018, this was 21.91% in 2019 and 24.14% in 2020 (O'Neill, 2022). It is expected that as the public expenditure expands, output is expected to expand also, because public expenditure should be translated into output growth. In Nigeria, the key challenge for the government has been to increase productivity of all agricultural and horticultural crops in the country to keep pace with the growing need of the population. However, efforts on the part of agricultural sector have not yet produced the desired outcome; this is partly due to the inconsistency in agriculture policies, low expenditure on agriculture and problem of food insecurity among others.

Uremadu *et al.* (2018) studied the effect of government agricultural expenditure on agricultural output using time series data from 1981 to 2014; Richard *et al.* (2019) studied the effects of fiscal policy on real sector growth in Nigeria, focusing on government capital expenditure and its effect on the growth of the agricultural sector in Nigeria. Kenny (2019) investigated the role of agricultural sector performance on economic growth in Nigeria. However, none of these research efforts were directed at the analysis of trend, direction and growth rate of Agricultural GDP in Nigeria under the period of uninterrupted democracy (1999-2020). This is the gap the researchers intended to fill.

It was guided by the following objectives:(1) examine the trends of the agricultural GDP growth in Nigeria from 1999 to 2020, (2) ascertain the direction and growth rate of agricultural GDP in Nigeria from 1999 to 2020.

LITERATURE REVIEW

Theoretical Framework: Neo-classical growth theory

The most popular theory of economic growth is the Solow model. This theory was put together by Solow and Swan (1956a). Solow and Swan (1956b) postulated that Ceteris paribus (all things being equal), economic growth is determined by many factors which includes amongst others, scarcity assumptions, capital stock, labour and growth rate of population.

Solow model further postulated that Capital accumulation per worker can only be achieved with increased saving/investment rates. Hitherto, the increased capital per worker will consequently leads to more output per worker (Romer, 2010).

They expressed that increased population or high population growth will exert negative effect on economic growth. This submission is based on the fact that higher population growth will mean that saving in the economy will be shared by the higher population, thereby depleting the savings which is needed in order to keep the capital-labour ratio at a steady state. If there is no change in technology, research, development and innovation, a rise in capital for each worker would not be facilitated by a comparing addition in yield per labourer as an after effect of unavoidable losses. The deepen capital would cut down the rate of profit for capital.

Review of related empirical studies

Trend and direction of agricultural GDP growth in Nigeria

Agriculture is at centre of the Nigerian economy providing the main source of livelihood for the majority of Nigerians. The farming sector of this West African country employs about 70% of the entire country labour force. Agriculture in Nigeria is the foundation of the economy as it keeps the people stable in what they do (Megan, 2018). The important benefits of the agricultural sector in Nigeria's economy include: the provision of food, contribution to the gross domestic product (GDP), provision of employment, provision of raw materials for agro-allied industries, and generation of foreign exchange earnings). A sectoral analysis of the real GDP indicated that the agricultural sector contributed to about 20.63 percent of the GDP, in 2015 compared with19.99% percent in 2014 The growth rate of the contribution of the agricultural sector to the GDP was 20.98 percent in 2016, it has

marginal decrease in 2017 when it was 20.85 percent. The agricultural sector GDP increased to 21.2 percent in 2018 grew to 21.91 percent in 2019 and increased again to 24.14percent in 2020. Though the growth rate in agricultural GDP continue to rise, the food security status of Nigerians continued to decline (O'Neill, 2022).

The trend of government spending has persistently traced the boom-burst syndrome. For instance, the total expenditure growth rate was 37.9% in 2008, then dropped to 6.4% in 2009 and increased to 21.5% in 2010, and then started declining from 12.3% in 2010 to -2.3% in 2012 (CBN, 2012). The growth of the GDP on aggregate basis was 6.0% in 2008, 7.0% in 2009, 8.0% in 2010, 7.4% in 2011 and 6.6% in 2012 (CBN, 2012). According to the Nigerian National Bureau of Statistics (2018) report, on an annual basis the agricultural GDP grew by 14.27% in 2018 higher than 11.29% recorded in 2017. The sector contributed 21.42% to nominal GDP in 2018. In real terms, the agricultural sector annual growth rate for 2018 was 2.12%, which was lower than the 3.45% recorded in 2017(CBN, 2012). Nigeria experienced an economic downturn between 2015 and 2018 and yet to recover from a negative GDP growth rate.

The dismal performance of the agricultural sector in terms of its contribution to Nigeria's yearly total revenue in the last three decades prompted the government to initiate several agricultural schemes and programs to enhance agricultural productivity in Nigeria, which include the River Basin Development Authorities, National Accelerated Food Production Project, Agricultural Development Project, Operation Feed the Nation, Green Revolution, National Directorate of Food, Roads and Rural Infrastructure, Agricultural Credit Guarantee Scheme Fund, the National Special Programme for Food Security, Root and Tuber Expansion Project, and the National Fadama I and II programme among others.

METHODOLOGY

The study area is Nigeria. Nigeria is a West African country lying between longitudes 3^0E and 15^0E and latitudes 4^0 and 14^0N. The capital of the country is Abuja, which is geographically located in the North Central part of the country. Nigeria, which is the most populous country in Africa, has an estimated population of over 200 million in 2020 (UN 2022). It is situated in the Gulf of Guinea and it is bordered by Benin Republic to the West, Republic if Cameroon and Chad to the East and Niger Republic to the North. The lower course of the Niger River flow southward part of the country in the Gulf of Guinea, with Swamps and Mangrove forest bordering the Southern part (Oyinbo and Rekwot, 2013).

Nigeria has a tropical climate with two distinct seasons; the dry and the wet seasons. It comprises the following ecological Zones: Mangrove Swamp, Rainforest, Guinea Savannah, Sudan Savannah and Sahel Savannah. Its terrain is divided into the South low lands merging into Central hills and Plateau, mountains in the south and plains in the North. There are arable crops which occupy 33.02 percent of the total land cover; permanent crops occupy 3.14 percent, while others occupy 63.84 percent (Udah and Nwachukwu, 2015). Above 70 percent of Nigeria's population is engaged in agriculture (NBS, 2016). The major agricultural crops produced in the country include cocoa, cotton, palm-oil, maize, rice, sorghum, millet, groundnut, cassava, yam and rubber. The major livestock reared are cattle, sheep, goat, pig, and poultry.

Method of data collection

Data for this study were obtained from secondary sources. The data were obtained from the records of Central Bank of Nigeria (CBN) publications and annual reports, National Bureau of Statistics (NBS) database, Federal Ministry of Agriculture and Rural Development, Food and Agriculture Organization Statistics (FAOSTAT) and World Bank database. Variables for which data were collected include: agricultural GDP growth rate, government agricultural expenditure, inflation rate, exchange rate, population growth rate, real interest rate, export rate, private investment, public investment, and foreign direct investment.

Variables of Interest and Unit of Measurement

The variables were measured as follow:

Gdr_{t-1} = agricultural GDP growth rate (%)

Gea_{t-1}= Govt. Total Expenditure on Agricultural Sector (in dollars and converted to NGN naira)

Fdi_{t-1}= Foreign Direct Investment (in dollars and converted to Nigeria naira)

Inf_{t-1}= Inflation (%)

Rir_{t-1}= Real Interest Rate (%)

Ex_{t-1}= Export (in dollars and converted to Nigeria naira)

Pri_{t-1}= Private Investment (in dollars and converted to Nigeria naira)

Pi_{t-1}= Public Investment (in dollars and converted to Nigeria naira)

Pop_{t-1}= Population Growth Rate (%)

μ_t = error term.

Data analysis technique

Data for this study were analysed using both descriptive and inferential statistics. Descriptive statistics such as mean, graphs and tables were used to analyzed the objectives also growth model. The unit root test of all variables was carried out.

The augmented Dickey Fuller (ADF) method was used to test for the presence of unit root in each variable (an indication for non-stationarity).

Model Specification

Growth model: Growth model that was used to ascertain the direction and growth rates of variables of interest is as specified:

$\ln Y_t = \alpha + \beta_{Gea}t + \mu_t$ ..... (1)

$\ln Y_t = \alpha + \beta_{Fdi}t + \mu_t$ ..... (2)

$\ln Y_t = \alpha + \beta_{Inf}t + \mu_t$ ..... (3)

$\ln Y_t = \alpha + \beta_{Rir}t + \mu_t$ ..... (4)

$\ln Y_t = \alpha + \beta_{Ex}t + \mu_t$ ..... (5)

$\ln Y_t = \alpha + \beta_{Pri}t + \mu_t$ ..... (6)

$\ln Y_t = \alpha + \beta_{Pi}t + \mu_t$ ..... (7)

$\ln Y_t = \alpha + \beta_{Pop}t + \mu_t$ ..... (8)

$\ln Y_t = \alpha + \beta_{Gdr}t + \mu_t$ ..... (9)

Where:

Y_t = Agricultural GDPA Growth

α = Intercept

β = Vector of the trend variable μ in the econometric error term

β_{Gea}, β_{Fdi}, β_{Ifl}, β_{Rir}, β_{Ex}, β_{Pri}, β_{Pi},β_{Pop}, β_{Gdr} = coefficients of the variables for government expenditure on agriculture, Foreign direct investment, inflation, real interest rate, export, private investment, public investment, population growth rate, and GDP agricultural growth rate. μ_t is the error term

The parameter that will be of utmost interest in the equations 1-9 will be coefficients of βs and the slope of these will indicate whether positive or negative to show their relationship with agricultural growth.

Multiplying b by 100 will give the instantaneous growth rate (IGR) at a point in time.

$IGR = \beta \times 100$---------- (10)

β = is the least-square estimate of the slope coefficient.

Taking the antilog of β subtracting 1 from it and multiplying the difference by 100 gives the compound growth rate (CGR) over a period of time. The compound growth rate (CGR) in percentage in each of the 9 cases can be recovered from the equations in the following manner:

CGR = $(e^{\beta i}-1)*100$ ---------- (11)

Where β = coefficient of the trend variables in the respective cases.

If β is positive and statistically significant, there is acceleration in growth, if β is not statistically significant; there is stagnation in the growth process.

Augmented Dickey Fuller test (ADF): Following Oyinbo and Rekwot (2013) the Augmented Dickey Fuller (ADF) model with the constant term and trend can be specified as follows:

$$\Delta Y_t = \alpha_0 + \alpha_1 t + \beta Y_{t-1} + \sum_{i=1}^{p} \delta_i \Delta Y_{t-i} + \varepsilon_1 - - - - - - - (12)$$

Where: Y_t is the value of the variable of government expenditure on agriculture, foreign direct investment, inflation, interest rate, export, private investment, public investment, population growth rate and GDP growth rate). α_0 is the constant, α_1 is the coefficient of the trend series, p is the lag order of the autoregressive process, Y_{t-i} is the lag value of order one of Y_{t-i} and$\varepsilon_1$is the error term.

RESULTS AND DISCUSSION

Unit root test for stationarity

Table 1 presents test of stationarity using Augmented Dickey-Fuller test (ADF) for government agricultural expenditure, foreign direct investment, inflation rate, interest rate, export, private investment, public investment, and population growth rate. The ADF test result indicates that all variables were not stationary at level but stationary on first difference, that is they integrated of order one [1(1)]. The result implies that the level forms of these variables exhibited random work or have multiple means of co-variances or both. However, first difference of variables is co- integrated or stationary.

Table 1: Augmented Dickey-Fuller Unit Root Test Result

Variables	Level		First difference		Decision
	t-statistic	Probability	t-statistic	Probability	
GDPGA	-1.792838	0. 8980	-5.399702	0.0001***	1(1)
EXPD	-2.451872	0. 2460	-5.054892	0.0001***	1(1)
FDI	-1.957173	0. 6600	-5.810594	0.0000***	1(1)
INF	-3.307748	0. 3420	-4.625983	0.0002***	1(1)
IR	-3.715150	0. 1680	-6.269987	0.0001***	1(1)
EXPT	-2.426603	0. 3050	-5.172579	0.0001***	1(1)
PRI	-1.746005	0. 9790	-5.651239	0.0000***	1(1)
PBI	-2.910730	0. 4930	-6.217134	0.0000***	1(1)
PGP	-1.527636	0.1461	-4.691889	0.0003***	1(1)

***,** and*indicate stationary at 1%, 5% and 10% level of significance respectively
Source: Author's computation, 2021

Descriptive Statistics of Variables Used in the Analysis

The descriptive statistics showing the mean, median, minimum, maximum, standard deviation, skewness, kurtosis, and Jarque-Bera test on the variables used for the analysis are presented in Table 2. The means of the variables show their average values from 1999 to 2020. Looking at the standard deviations, the highest volatility during the period of study was exhibited by private investment (PRI) (₦6887.865billion), followed by the export (EXPT) (₦5412.924), and population growth rate had the lowest volatility (0.066023%). There was no substantial gap between the maximum and minimum of population growth rate (PGR) while there were substantial gaps between the maximum and minimum values of other variables (GDPGA, EXPD, FDI, INF, RIR, EXPT, PRI, PBI) which gave support to volatility.

Regarding the results, agricultural GDP (₦1.602898billion), agricultural expenditure (₦1.122649billion), foreign direct investment (₦0.427927billion), inflation rate (0.031839%), export (₦0.754336billion), private investment (₦3.987448billion) and public investment (0.305532) showed positive skewness to the right tail, while real interest rate (-0.787865%) and population growth rate (-0.315101) showed negative skewness to the left tail which implies that the distribution has a long left tail and a deviation from normality.

In addition, expenditure (₦2.806704billion), foreign direct investment (₦2.069156billion), inflation (2.052941%), expenditure (₦2.052941billion), public investment (₦2.174998billion) and population growth rate (1.661614%) are platykurtic, that is , distribution is shorter, and tails are thinner than the normal distribution, while agricultural GDP (5.201745%), interest rate (3.208836%) and private investment (₦17.69436billion) are leptokurtic with longer distribution and fatter tail. This means that investors could not be encouraged, as more risk averse investors might prefer assets and markets with platykurtic distribution because those assets are less likely to produce extreme results. Regarding Jarque-Bera probability test for normality, it was consistent with the outcome provided by both statistics of kurtosis and skewness. The Jarque-Bera probability values of expenditure (₦0.108398billion), foreign direct investment (₦0.496812billioin), inflation rate (0.674235%), real interest rate (0.348986), export (₦0.361687billion), public investment (₦0.630567billion), and population growth rate (0.383875%) were greater than 0.05 which shows normal distribution while agricultural expenditure (₦0.001337billion) and private investment (₦0.000000) were non normal distribution with less than 0.05. The reason for this was because the extreme values were less than that of the normal distribution.

Trend of Agricultural (Gross Domestic Product) Growth

The trend of agricultural GDP is presented in Figure 1. The result showed that agricultural GDP growth kept fluctuating from 1999 to 2020. It could be due to the changes in government with changes in their policies in the period under review. Specifically, the graph showed that, from 1999 to 2000, there was a decrease in agricultural GDP from 26% to 21.4%. Agricultural GDP witnessed slight increase from 2000 to 2001 and a sharp increase between the periods of 2001 and 2002, from 24.5% to the peak of 37%. The Agricultural GDP experienced a sharp decrease from 2003 to 2006, remained constant between 2006 and 2007, and it then increased slightly from the period of 2007 to 2009, before it suffered a decline from 2009 to 2014, and finally continued to increase from 2015 to 2020. This could be due to personal consumption expenditure which is in line with the findings of Uwakaeme (2015)who reported that, consumer spending contributes almost 70% of the total production in Nigeria.

The decrease experienced from 1999 to 2000 implies that the agricultural GDP during this period was low and this could lead to increase in price of agricultural commodity resulting from pressure on the meager quantity available to the consumers. To curb this problem, government could provide credit facilities and subsidize farm inputs to the farmers to boost their output (Kenny, 2019). The agricultural GDP being trended upwards to the peak of 37% increase in 2002 could be as a result of introduction of National Special Programme on Food Security in January 2002.

Table 2: The Summary of Descriptive Statistics of the Study

	GDPGA	EXPD	FDI	INF	RIR	EXPT	PRI	PBI	PGP
Mean	24.36667	158.0705	590.6790	11.76667	6.290000	9044.438	3622.015	6815.462	2.637619
Median	23.90000	76.66000	518.5400	12.10000	6.450000	8173.310	2885.760	6861.200	2.650000
Maximum	37.00000	505.7700	1328.650	18.00000	13.60000	21598.11	33126.12	9132.230	2.720000
Minimum	20.00000	10.04000	117.2300	5.400000	-5.600000	1904.300	154.8100	5104.190	2.530000
Std. Dev.	4.328895	164.8588	367.6112	3.689896	4.892734	5412.924	6887.865	1154.409	0.066023
Skewness	1.602898	1.122649	0.427927	0.031839	-0.787865	0.754336	3.987448	0.305532	-0.315101
Kurtosis	5.201745	2.806704	2.069156	2.052941	3.208836	2.779949	17.69436	2.174998	1.661614
Jarque-Bera	13.23421	4.443888	1.399088	0.788354	2.105448	2.033950	244.5827	0.922273	1.914878
Probability	0.001337	0.108398	0.496812	0.674235	0.348986	0.361687	0.000000	0.630567	0.383875
Sum	511.7000	3319.480	12404.26	247.1000	125.8000	189933.2	76062.31	143124.7	55.39000
Sum Sq. Dev.	374.7867	543568.3	2702760.	272.3067	454.8380	5.86E+08	9.49E+08	26653187	0.087181
Observations	21	21	21	21	20	21	21	21	21

Note: GDPGA = Government Agricultural Expenditure, FDI = Foreign Direct Investment, INF = Inflation rate, RIR = Real Interest rate, EXPT = Export, PRI = Private investment, PBI = Public investment, PGR =Population growth rate

Source: Author's computation, 2021

Table3: Estimated Trend, Growth and Direction of the Agriculture (GDP)

Model	Det.	Coefficient	T-statistic	Prob	AdjR^2	AIC	F-statistic	DW	IGR (%)	CGR (%)	Status
Linear	@Trend	-0.435844	-3.487336	0. 0025	0.358183	5.41544	12.16151 (0.002465)	1.139586			
	Constant	29.16095	18.58208	0. 0000							
Quadratic	@Trend	-0.204854	-0.382216	0.7068	0.329858	5.49980	5.922203 (0.010561)	1.151725			
	@Trend^2	-0.010500	-0.443763	0.6625							
	Constant	28.27549	11.04576	0. 0000							
Semi log	@Trend	-0.017043	-3.808373	0. 0012	0.403051	-1.24382	14.50372 (0.001187)	1. 073677	-1.7	-3.	Decelerati
	Constant	3.367572	59.93088	0. 0000							

Source: Author's computation from E-view (2021)

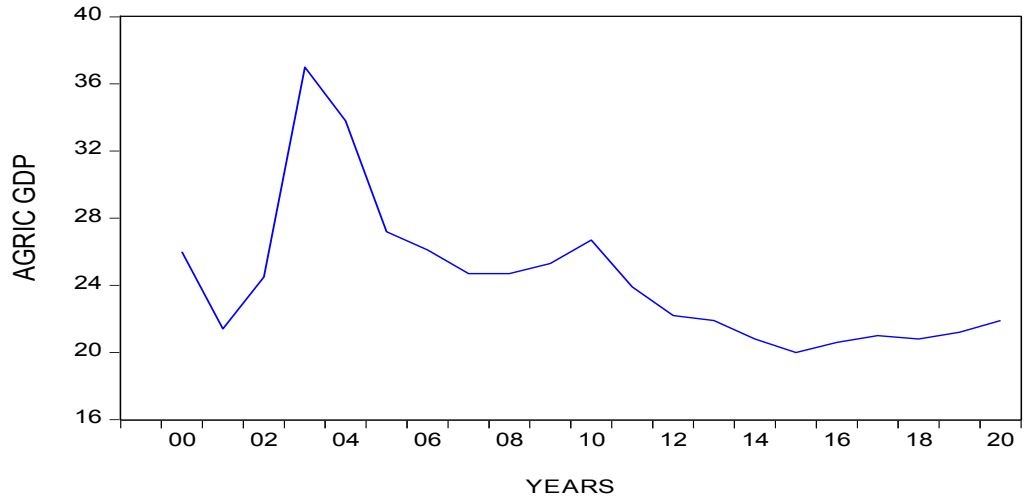

Figure 1: Trend of Agricultural GDP

The sharp decrease from 2003 to 2006 of agricultural GDP could be an indicator that the National Special Programme on Food Security needed to be reviewed because law of diminishing returns had set in where farmers felt there was enough agricultural produce in the previous years. Another reason might be due to fall in prices of agricultural produce which could discourage farmers in producing more (Normal law of supply).

The increase of agricultural GDP between 2008 and 2009 could be as a result of National, Special Programme on Food Security (NFSP) issued in 2008. The trends in government allocation to agriculture according to Richard et al (2019) continued to experience fluctuations until the year 2008, where it experienced yet again another drastic rise up to ₦65.4 billion from the ₦17.92 billion allocated in 2006 and ₦32.48 billion in 2007. Yet again, the agricultural expenditure allocated steeply dropped in the year 2009 to ₦22.44 billion after which it continued to experience fluctuations.

The declining trend of agricultural GDP from 2009 to 2014 could be related to the agricultural expenditure allocated steeply dropped in the year 2009 to ₦22.44 billion after which it continued to experience fluctuations as a sign of less attention given to the agricultural sector by the government (Richard,2019).More so, the improved agriculture's expenditure performance of 24% from 2009 to 2010 that is ₦55 billion and ₦178 billion respectively was short-lived due to unanticipated fall in crude oil prices between 2015 and (Central Bank of Nigeria, 2019; NBS, 2016).

The increasing trend of agricultural GDP from 2015 to 2020 could be the result of Nigerian government banning the importation of rice in the year 2015, The 2015 to 2017 economic crisis that hit Nigeria and the decline in the international revenue in the international oil price (CBN Statistical Bulleting, 2016) which might have made Nigeria to think of diversifying the national economy, thereby giving more attention to the agricultural sector.

Generally, the increase and decrease in Agricultural GDP could be due to policies and programmes initiated by different political regimes as reported by Patrick (2017) that in order to revamp the agricultural sector, the federal government had embarked on and implemented several agricultural policies and programmes. Inconsistency in government policies and programmes and lack of continuity could account for the fluctuations in Agricultural GDP over the period under review. It can also be deduced that the introduction of different policies and programmes by different governments as an effort to curb the challenge of food insecurity in the country does not go simultaneously with the needed use of advanced technology in agricultural food production in the country. Uremadu *et al.* (2018) reported that over 70% of the Nigerians engaged in the agricultural sector were mainly at a subsistence level.

Growth Rate and the Direction of Agricultural GDP

The result of the growth rate and direction of growth is presented in Table 2. Semi log function was chosen among the functions. The reason for choosing semi log function was because it gave the lowest Akaike information criteria (-1.243823) which indicates the goodness of the model and high adjusted R^2 value. The result of the direction of growth GDP showed that the coefficient of agricultural GDP (-0.017043) was negative (decelerating growth) and significant at 1% probability level. This implies that the Agricultural GDP value decelerated over the period under review. This could be due to inconsistency in government agricultural targeted programmes on agricultural production in Nigeria. Other reasons may also include corruption and lip-service paid to the implementation of laudable agricultural policies by successive administrations, as observed by Ogen (2007) who said that agricultural policies become meaningful if well implemented and are free from effect of corruption. The analysis of trend revealed an adjusted coefficient of determination (Adjusted R-square) of 0.4031 implying that about 40.31% of the variations in the value of agricultural GDP is explained by the trend model. The instantaneous growth rate (IGR) and the compound growth rate (CGR) of agricultural GDP were -1.7% and -3% respectively. The result is consistent with the findings of Aidi *et al.* (2016) who found a negative growth rate in agricultural sector in Nigeria.

CONCLUSION

From the results obtained, government agricultural sector expenditure in Nigeria plays a key role for the growth of agricultural GDP. It is clearly seen that the highest volatility during the period of study was exhibited by private investment (PRI), followed by the export (EXPT), and population growth rate (PGR) had the lowest volatility. There was no substantial gap between the maximum and minimum of population growth rate (PGR) while there were substantial gaps between the maximum and minimum values of other variables (GDPGA, EXPD, FDI, INF, IR, EXPT, PRI, PBI) which gave support to volatility. Agricultural GDP growth experienced deceleration during the period under the study which could probably be attributed to lack of focus, sign of less attention given to the agricultural sector by government and high level of corruption in the society. It can be concluded that given the right atmosphere and environment, agriculture holds the key to the Nigeria GDP. Government should not only increase agricultural sector budget allocation, but should properly monitor its expenditure in the sector as the backbone of the economy. Since government revenue is a key factor in determining the size of public sector, the revenue base should be expanded beyond oil sector to include other unexploited solid minerals, agricultural exports and other avenues that could increase the revenue base.

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