

AGRICULTURE, ECONOMIC GROWTH AND DEVELOPMENT NEXUS: VAR VARIANCE DECOMPOSITION EVIDENCE FROM NIGERIA

M. A. Salako

Department of Banking and Finance, Moshood Abiola Polytechnic, Abeokuta, Nigeria

Adedina Lawrence

Department of Business Administration, Moshood Abiola Polytechnic, Abeokuta, Nigeria

dinason0007@gmail.com

Yusuf Sulaimon Aremu 

Department of General Studies, Moshood Abiola Polytechnic, Abeokuta, Nigeria

yusufsulaimonaremu@yahoo.com

S. O. Egbekunle

Department of General Studies, Moshood Abiola Polytechnic, Abeokuta, Nigeria

Abstract

This research paper empirically explored the Agriculture, Economic Growth and Development Nexus in Nigeria. The objective of the study is to examine the place of agriculture in the economic growth and development of Nigeria. The quantitative technique is employed in a multivariate model VAR model with emphasis on the Variance Decomposition Analysis with the aid of Eview 7. The study revealed that the sector has been neglected and the whole attention is paid on the crude oil which has caused dwindling of agricultural sector contributions to Economic growth. Realization of this, made the policy makers to commit huge resources and efforts to the sector lately in order to resuscitate it. The study finds out that efforts directed to resuscitate the sector have not translated commensurately to the desirable development of the sector as the positive change experienced in the sector is lopsided in favour of crop production.

The study concludes that agriculture is a life-wire of the economy. A set of policy directions were offered to unlock the sector to be economically functional; capable of catalyzing the industrialization need of the nation and contribute to meaningfully to development objective of the nation.

Keywords: Agricultural sector, Crop Production, Livestock, Forestry, Fishing, Economic Growth, Variance Decomposition Analysis

INTRODUCTION

According to Jerzy W. (2013) agriculture is that kind of activity which joins labour, land or soil, live animals, plants, solar energy and so on; the Minister of Agriculture is the Minister of the beginning of life. So people who are involved with that kind of activity are involved in something special. In recognition of this prominent role the Minister of Agriculture and Federal Government of Nigeria has taken a giant stride to treat agriculture as serious political, economic and investment issue in Nigeria. Majority of people in Nigeria live and work in rural area. Almost 75% are rurally based compared to less than 25% in urban area. Similarly, over 58% of the labour force engaged in agriculture. In Nigeria, the sector contributes about 55% of gainful employment and almost 40 % of the share of GDP, before the discovery of oil, this sector contributed as high as between 75 – 80% of the GDP. Nevertheless, this current figure for the GDP share of agriculture sector is quite high when we compared it with the average of 27% for low income nations in Sub-Sahara Africa (WDI, 2010).

In terms of pace of the sector development and contribution to the industrialization, the agricultural sector in this part of the world is still lagging behind because of its failure to produce the food to the level of marketable surplus to feed itself, the other sectors (above subsistence level) and provide the inputs required for the industrial development of the nation and consequent growth in foreign exchange earnings though export and conservation of foreign exchange through imports substitution of competitive imports. As long as it has been established that developing countries like Nigeria has comparative advantage over the other countries in the production of agricultural output than the industrialized countries, it is important to emphasize that there is need for such economy to focus its attention on the agricultural sector liberation so that it can spur development of the nation. This is the only sector that provides the ready-made means for country like Nigeria to facilitate industrial development because all the other sectors directly or indirectly depend on agriculture output either for food to sustain their workforces or as crucial input in their production process. Meanwhile, the sector can do this by

supplying relatively cheap food to the urban industrial sector which will go a long way in checking inflationary tendency of workers' wages where inadequate food supply may lead to rising food prices as a result industrial unrest as workers continue to demand for increase in wages to meet basic needs of life. Importation of food is not viable for any ambitious country for several reasons which might be political, economical and strategic. So, it is needful of agricultural sector to provide food beyond the subsistence level (marketable surplus). In a nutshell, the prominent roles expected to be of agricultural sector in developing country like Nigeria cannot be over emphasized. There is no gain saying that agriculture plays significant role in the growth and development process. Consideration of the reality that the sector plays the role of a way of life in the developing countries like Nigeria and the fact that this sector of the economy, as imperative it is, has not been receiving adequate attention by Government officials, political office holders and policy makers to the extent that there is excessive reliance on the non-renewable crude oil as the means of sustaining the national needs demand serious attention of the researchers in one hand. At the other hand, to the best of the researchers knowledge, many studies that have worked on this issue suffered one methodological problem or the others most especially omission of variables bias by excluding the important variables in the analysis of agricultural productivity viz a viz the economic growth which are Labour and Capital (Adegbenro H., 2010; Onunze M. T, 2012; Olajide et al, 2013; Olajide, 2013; Muhammad L. and Atte O., 2006; Abogan O. P. et al., Uma K.E. et al., 2013 etc). The consideration of these justified the serious commitment given to this conference paper. This paper is structured into five sections, section two reviews the key terms of the study and the roles play by the sector. Section three presents the methodology and framework of the model while section four carried out the analysis. Section five, identified the barriers to agricultural performances and proffers necessary recommendations.

LITERATURE REVIEW

Conceptual Literature

Agriculture is a way of life that involves production of animals, fishes, crops, forest resources for the consumption of man and supplying the agro-allied product required by our sectors. It is seen as the inherited and dominant occupation employing about 70% of Nigerians. Though, subsistence agriculture is practiced in this part of the world, it will not be an overstatement to say that it is the life-wire of the economy of developing countries. The sector has the following as its component: Crop production: this involves the cultivation of different crops which may be food crops or cash crops. Food crops are mainly for consumption like yam, cassava, rice, beans maize, tomato, cocoyam, millets corn etc. The cash crops are only meant for sale either locally

or export to generate foreign exchange. They include cocoa, rubber, cotton, palm oil, palm kernel, groundnut etc. Livestock, this involves rearing of domestic animals for consumption. Such animals include goat, ram sheep etc. Forestry this concerns the preservation and maintenance of economic trees or plants. It also involves the extraction of various form of resources associated with forest. We derived a lot from such plants preserved and they include timber for plywood, furniture building of houses, boat manufacture of papers, electric pole etc. Other resources like wild life, roots and herbs. Fishing, this involves breeding and catching of fish from the river for domestic consumption and commercial purpose. In fact, there are some countries that specifically focus on this subsector as one of the means of generating revenue.

For the purpose of this study it is important to look at the systems of agriculture prevailing in this part of the world, they include: Peasant farming: this involves cultivation of a small scale (acres of land). This is also called subsistence agriculture because it is provided to meet domestic needs and survival or to eke out living from their farm produce. The size of the of the land used by peasant farmers is determine by the size of their family, land and the number of the size of the family interested in agriculture. Rudimentary agriculture equipment such as hoes, cutlasses, and axes etc which are crude in nature are usually used. Plantation farming: this is the system that involves the use of a large estate of land permanently planted with economic or commercial crops. Such crops planted on plantation farming include cocoa, tea, cotton, sugar, tobacco, rubber, sugarcane, palm tree, coffee and other commercial crops. In plantation farming land could be owned by government, private, individuals or corporate bodies. Mechanized equipment and modern inputs are mainly used in plantation farming. Mechanization is the extensive use of machine and the other type of advanced and mechanical devices in agricultural production. Mechanized agriculture ensures large scale production because the use of human labour is replaced with that of machines such as tractors, ploughs, harvesters and other engine driven devices. This is highly capital intensive.

Growth and Development Concepts

The term development may mean different things to different people, it is important for the study to provide the working definition or core perspective on its meaning, without such perspective the direction of the discourse might not be well appreciated. This concept has been misconstrued by many to mean economic growth. This concept is more than a sustained increased in per capita income. This view is myopic because the concept does not consider if the increase in per capital income trickle-down. If the sustained in per capita income brings about the desirable social changes, and improve the functioning, capability of individual, we will say there is economic development. Though, the sustainable increase in income per capita

(Economic Growth) must have occurred before there can be development. The role of agriculture can best be appreciated by referring to the pact signed by 189 leaders in the world at Washington, tagged the Millennium Development Goals. The first provision of this target is 'Reduce Hunger and Poverty' (Michael and Stephen, 2006). The recognition of the role that agriculture plays in the development process of any nation necessitates the inclusion of this item in Millennium Development Goal Provision as the first and core objective to be pursued by all the leaders in the world.

Empirical Literature

Muhammad L. and Atte O. A. (2006) investigated An Analysis of Agricultural Production in Nigeria. The study used descriptive statistics and regression analysis as the methodology of the study. It was revealed that the agricultural productivity is important for the growth of the economy.

Olukoya Ogen (2007) researched on The Agricultural Sector and Nigeria Development: Comparative Perspectives from the Brazilian Agro-industrial Economy (1960- 2011) the study used expository method in its approach and revealed that successive Nigerian government has been paying lip service to agricultural development. it further emphasized that agricultural sector is the engine of growth in virtually all the developed economies.

Onunze M. T. (2012) carried out empirical investigation on the Impact of Agricultural Development on Nigeria Economic Growth. The study employed Ordinary Least Square (OLS) Method as the method of its analysis. The research work finds out that the productivity of the agricultural sector has positive impact on economic growth in Nigeria.

Gbaye et al.(2013) research on agricultural exports and economic growth in Nigeria with the objective of determining the relationship between the agriculture product and economic growth in Nigeria. The study discovered that there is elastic relationship between the agricultural export and economic growth in Nigeria.

Olajide et al (2013) empirically examined the Agriculture Resources and Economic Growth in Nigeria with the objective of discovering the relationship that exist between agriculture and economic growth in Nigeria. Ordinary Least Square Method was employed to analyze the study. The study revealed that agricultural sector has been neglected during the period of oil boom, and it was further revealed that there is positive cause and effect relationship between Gross Domestic Product and agricultural sector in Nigeria.

Abogan O. P. et al (2014) investigated Non-Oil Export and Economic Growth in Nigeria between the period of 1980 and 2011. The study employed Error correction model. The study revealed that non-oil export and economic growth are co-integrated in the long run and predicts

imminent collapse of Nigerian non-oil sector. More so, policies on non-oil export during the period do not sufficiently encourage non oil export, thus reduce their contributions to growth.

Nadira M. I. and Aminu M. F. (2014) explored the Impact of Agricultural and Credit Guarantee Scheme Fund (ACGSF) on Economic Growth in Nigeria (1978-2011) with the objectives of analyzing the impact of credit to this sector on the accomplishment of growth objective. The study used Vector Auto regressive model to evaluate the interrelationship among the variables. The study revealed that improved and efficient credit programme is required in the sector so that productivity of the sector can increased and promote economic growth.

Having review the empirical work carried out on the related studies it was found that much has been done. And, the review exposed the study to the fact that most of these studies one way or the others suffered methodological problem which must have reflected in the result of the analysis. This research at hand takes proper consideration of this and worked to fill this gap in the existing literatures.

Uma K.E. et al., (2013) appraised the influence of Agriculture on Economic Growth: Empirical evidence from Nigeria spanning 1970 to 2009. The objective of the study was to examine the effect of Crop Production, Livestock, Forestry and fishing on the economic growth of Nigeria. The study employed the Method of Ordinary Least Square in its analysis. the study found that the contribution of the livestock, fishing, and crop production were insignificant while only contribution of forestry is significant.

Yusuf S. A. (2014) carried out empirical investigation on the Role of Agriculture in Economic Growth & Development: Nigeria Perspective with objective of discovering the importance of Agriculture in the economic growth and development in Nigeria. The study employed Restricted Error Correction Model in a multivariate study. It was revealed that the sector has been neglected since 90's and it contribution to the GDP has been dwindling.

Responsibilities of Agriculture to Economic Growth and Development

Food Contribution Role: Provision of food for the rapid growing population. For the sector to meet up with these great challenges it has to produce food up to marketable surplus. In order words, the sector must be producing its output beyond the estimated current growth of Nigeria population.

Industrialization Promotion Role: Increasing demand for industrial products and thus necessitating expansion of secondary and tertiary output. In fact, the forward linkage roles of this sector in the economy needs to be outstanding in order to be able to salvage the nation from relieving it of the continuous need of scarce foreign exchange through effective industrial

input import substitutions role. The other sectors of the economy must rely significantly on the sector as the sure source and ready-made means of their production input.

Foreign Exchange Creation Role: Providing additional foreign exchange earnings for the import of capital goods to stimulate productivity through increased agricultural exports. The most reliable means of earning foreign exchange is the agricultural sector through the exportation of its output. The reason for this is not far-fetched; Agricultural output is a renewable product considering the fertility of the Nation's farm land, while the crude-oil which we rely so much on is non-renewable product. As we continue to fetch it, it is diminishing in supply. Hence, in the opinion of the researchers the ability of this non-renewable resource to sustain the Nigeria economic growth and development in the long run is doubtful.

Capital Accumulation Roles: this role is greatly appreciated by the government and its agencies that was the reason why they took the initiative of establishing of the People's bank and micro finance banks to be mobilizing savings in the rural areas. The major source of increase in the rural income to be mobilized is through agriculture. In a nut shell, agriculture also plays capital accumulation roles in the country.

Employment Generation Roles: Provident productive employment. There is no gain in emphasizing the employment generation role of this sector. It has been established that almost 75% of Nigeria populations dwell in rural places. And, the major section of the informal sector participants falls under this section of the population and they don't have any other source of livelihood than Agricultural sector. Actually, not all those who falls under this section of population hold cutlass and hoes or operate tractor and planter but one way or the other they rendered services chiefly for aiding and facilitating agricultural production like digging fish ponds, transportation of farm produces, watchman services on the farm yards etc.

Labour Provision Role: For Other Sector Of The Economy: the fact that Marginal Productivity of Labour in Labour surplus society like Nigeria is zero is still controversial considering the theory of Rodan Rosestein (Jhingan, 2006). The facts remain that in Nigeria, most of the casual labours that were employed in the urban regions of Nigeria like Lagos, Port Harcourt, Kano, Ibadan etc are all migrated from the farm in rural places to render mental and physical efforts to these industries in urban regions of Nigeria.

Socio-Economic Advancement: Improvement of welfare of the rural people should first come to mind. The general belief is that larger proportions of the rural population are dependants. Considering their age, majority of them are above 65 years old, while some are infants. Consequently, they depend on their working class to feed and sustain. In the reality of Nigeria context, this provides means for those that migrated to the urban areas in search of job

to regularly provide the means of living to their dependants at the rural places which in turn lead to the advancement of living standard of their dependants in their respective villages.

Characterizing the role of agriculture in economic development have been classical themes in development economics (Michael and Stephen, 2001). More specifically, for countries that want to industrialize, like Nigeria, agriculture is commonly the main source of resources that can be captured for investment. Hence, successful industrialization requires a solution to the problems associated with the generation, transfer, and use of an agricultural resource surplus. Generation of a growing surplus demands a rising productivity of resource use in agriculture. This is achieved by successful agricultural and rural development, most particularly through total factor productivity enhancing technological and institutional changes.

As Kuznets (1964) put it in his classical study of the role of agriculture: “One of the crucial problems of modern economic growth is how to extract from the product of agriculture a surplus for the financing of capital formation necessary for industrial growth without at the same time blighting the growth of agriculture” (Fashola, 2005). Finally, successful industrialization requires efficient use of the surplus transferred. Availability to industry of a surplus of agricultural resources effectively transferred is only a necessary condition, not a sufficient one. Industrialization strategies that make effective use of this surplus still have to be devised and implemented, and this has occurred highly unevenly across countries, with many countries taxing their agricultures of a surplus without industrializing successfully for that matter.

METHODOLOGY

The study takes quantitative dimension in its analysis and Restricted Error Correction Mechanism is employed to analyse RGDP, Agricultural output in a multivariate study that include Labour and Capital as specified in the extension of Solow Growth Model.

Conceptual framework

However, the Solow version of Neo classical is more suitable for this study due to its dynamism. The Solow model focuses on four variables: Output (Y), Capital (K), labour (L), and “knowledge” or the effectiveness of labour (A). At any point, the economy has some of amount of capital, labour and knowledge Romer (2009). These are combines to produce output. The production function takes the form:

$$Y_{(t)} = f (K_{(t)}, A_{(t)}, L_{(t)}) \quad (3.1)$$

$Y_{(t)}$ = output at time t, $K_{(t)}$ = capital at time t, $L_{(t)}$ = labour at time t, $A_{(t)}$ = knowledge at time t.

$A_{(t)}$ and $L_{(t)}$ enter the model multiplicatively, hence $A_{(t)} L_{(t)}$ is effective labour

Note, there is technology progress if the amounts of knowledge (A) increase.

A Baseline Case: Economic Growth, Agriculture

The analysis is extended to incorporate the Agricultural factors as they affect economic growth.

Thus the production function 3.1, becomes

$$Y(t) = K(t)^\beta \text{AGO}(t)^\lambda (A(t)L(t))^\gamma \quad (3.2)$$

Note:

$Y(t)$ is economic growth proxy by GDP Per Capita Constant 2000 US Dollar

Labour proxy by Enrolment of Post Primary School. It enter the Model multiplicatively $A(t)$ and $L(t)$

Capital (K) at period t proxy by Gross Capital Formation

AGO is the Agricultural output.

Therefore, the extended version of the Solow growth model indicates that Agriculture is one of the determinants of the economic growth and development.

The Functional Form of the Model

For the purpose of the research work the relationship among the dependent and independent variables is presented as follows:

$$\text{PCGDP} = f(\text{GCF}, \text{ENR}, \text{AGO}) \quad (3.3)$$

Model Specification

The study employed Error Correction Model to determine the impact of Agriculture on economic growth:

$$\Delta \text{PCGDP}_t = \alpha_1 + \sum_{i=1}^{p-2} a_i^{\text{RGDP}} \Delta \text{PCGDP}_{t-i} + \sum_{j=1}^{p-2} \beta_j^{\text{RGDP}} \Delta \text{GCF}_{t-j} + \sum_{k=1}^{p-2} \gamma_k^{\text{RGDP}} \Delta L_{t-k} + \sum_{l=1}^{p-2} \lambda_l^{\text{RGDP}} \Delta \text{AGO}_{t-l} + \phi_1 \text{ECM}_{1t-1} + e_{1t} \quad (3.4)$$

RGDP = Gross Domestic Product per capita 2000 US Dollar

GCF= Gross Capital Formation

ENR= Post-Primary School Enrolment

AGO= Agricultural output

A α = constant term, a = PCGDP coefficient, β = GCF coefficient, γ = Labour Coefficient, λ = Agricultural Output coefficient. ϕ = Speed or rate of adjustment P = lag length of Error Correction Model, e = White Noise Disturbance Error Term.

Sources of Data

The source of secondary data employed in the descriptive analysis of the study is Central Bank of Nigeria (CBN) Statistical Bulletin 2014, the data spanning 1981 to 2013. However, the

researchers gave more investigative attention to the period the researchers adjudged as the period of resuscitation of the agricultural sector 2008 - 2013. The post primary school data and gross capital formation data were sourced from World Bank Development Index (WDI, 2013) spanning 1981 and 2013.

ANALYSIS AND FINDINGS

Descriptive Analysis

The sector has an insignificant average annual growth of 0.8% during the decade of 1959/60 and 1969/70 and a decline of -0.7% on the average through the 70/81 decade; implying a stagnation more or less during the two decades 1960- 1980. Considering the period 1970 to 85 before the Structural Adjustment Programme (SAP), the growth rate was a little above zero (0.3%) (Fashola, 2005). In 1985-2000 there were significant growth rate of 3.9%. The decades of 1981 to 1990, when foreign exchange earnings decline sharply. The sector witnesses a significant growth rate of 4.1%. Any growth rate of agricultural sector that did not exceed population growth of 2.5 to 3.0 percent is considered insignificant if not disastrous, as it would lead to starvation or food insecurity. Consideration of the decades of 1990-2000, the sector is not performing appreciably with an annual growth rate of 3.3 % slightly exceeding the population growth rate of 2.5%. The initial impact of SAP seems to have promoted more rapid agricultural development but later slow down.

Examination of the structural change in the sector shows that the performance of the constituent sub-sectors of crops, livestock, forestry and fishing varied significantly. Crops, which constituted by far the largest sub sector with a share of 78% in 1959/60, had a growth performance slightly better than the average for the whole sector, and so were able to increase his share of 80% in year 2000. Livestock and fishing seemed to have good potentials to grow remarkably but lack consistency, as growth rate fluctuated widely. For instance, livestock with an initial share of 9.5% and 6% annual growth rate in the post SAP era. Its growth during the whole period was better than average for the whole sector, and so was able to increase its share to 12.6 % in the year 2000.

For the period 1970 -1985, however its growth rate was quite negative (- 4.4, - 7.8%). On the role, the fishing subsector also had a larger growth rate than the average for the whole agricultural sector and thus increased its share of the agricultural sector from 3.1% in 1959/60 to 4.6% in year 2000, and continuous effort of the fishing subsector of agriculture also increased to 6.2% in the year 2010. The forestry sub-sector performed worst, with negative growth rates throughout except for the slightly positive growth of 0.7% during the post SAP era (Fashola, 2005) in a nut shell, between the period of 1997 and 2006 the contribution of

agriculture to economic growth hover 4.1% (CBN, 2006). While the contribution of the sector between 2008 and 2013, the remarkable period that the sector witnesses the giant stride actions/policies by enunciating the political will of the government to revive the sector through the policies like 7 Point Agenda of Yaradua administration and the Transformation Agenda of Jonathan administration are tabulated below.

Table 1: Contribution of Agricultural Sector and subsectors to RGDP expressed in Percentage (2008-2013).

Agricultural sector & Subsectors / Years	2008	2009	2010	2011	2012	2013
% Agric Contribution to GDP	32.85	37.05	30.34	30.99	33.09	34.69
% Crop Production to GDP	29.28	33.08	27.06	27.59	29.51	30.83
% Livestock to GDP	2.1	2.35	1.95	2.02	2.13	2.31
% Forestry to GDP	0.4	0.45	0.37	0.37	0.38	0.41
% Fishing to GDP	1.05	1.2	0.97	1.00	1.06	1.14
Crop Production as % of Agricultural Output	89.14	89.27	89.18	89.05	89.20	88.85
Other subsectors as % of Agricultural Output	10.86	10.73	10.82	10.95	10.80	11.15
Growth Rate of Agric Contribution to GDP	-	12.8	-18.11	2.14	6.78	4.84

Source: CBN statistical bulletin; computed by Researchers.

From the table above it is clear that the percentage contribution of Agriculture to GDP in 2008 increases from 32.85% to 37.09% in 2009 and plummet to 30.34% in 2010. This may not be unconnected with the discontinuous of Yaradua Administration which strongly emphasize the revival of the sector as one of the term of reference of its reign.

In 2011 the contribution of the sector also picked up and improved slightly to 30.99%, showing the commitment of the new administration of President Jonathan who articulated several policies and allocated sizeable proportion of the national budget with the aim of bringing back the old glory of the sector. In reality, the sector has been contributing increasingly to the GDP of the nation.

It is obvious from the table that after the negative growth rate of the sector's contribution to GDP it has been contributing positively to the economic growth of the nation. The crop production subsector is another interesting case. This subsector has not contributed less than 88% to the Agricultural output of the nation. While, the other subsectors; livestock, forestry and fishing contribute less than 12% to the Agricultural output. In fact, the same dwindling story that characterized the agricultural set in as the growth rate of agriculture contribution to GDP falls from 12.8% in 2008 to 4.84% in 2013.

Econometrics Analysis

Due to the properties of most time series, it is important to carry out the Unit root test on the series in the Vector Autoregressive (VAR) model. If the series are stationary, the results obtained from the VAR model are valid. However, if the series are non stationary, it is important to conduct Co-integration test to verify whether the time series are co-integrated or not. The Johansen Co-integration test has been found to be reliable and it is adopted in this study. If the Johansen Co-integration test indicates the existence of long run equilibrium in the model, then the VAR model gives the long run causality in the equation of the model. Correspondingly, the short run dynamics of the model are captured with the Vector Error Correction Model which implies the short run adjustment.

Test for Stationarity

This section presents the Unit root test conducted on the variables. As the first step, to diagnose the stationarity status of the variables in order to determine the appropriate test and estimation model to employ. Augmented Dickey- Fuller (ADF) test is used.

Table 2: Unit Root test applied to variables

Variables	ADF Test Critical Values	ADF Test Statistics	Prob - Value	Decision Rules
LNRGDP	1%	-3.679322	0.0122	I(1)
	5%	-2.967767		
LNGCF	1%	-3.711457	0.0045	I(1)
	5%	-2.981038		
LNENR	1%	-3.984974	0.0047	I(1)
	5%	-3.679322		
LNAGO	1%	-3.670170	0.0070	I(1)
	5%	-2.963972		

Source: Computed by Author from E-View7

The unit root test conducted on the variables, the variables found to be non stationary at level. A further test of stationarity by first level of difference shows that the variables attained stationarity. LNRGDP, LNGCF, LNER and LNAGO attained the stationarity by first level of differencing at one percent level of significance. The result of these tests necessitates the performance of Co-integration test in order to confirm the existence of long run associationship among the variables.

Co-integration Test

Having differenced the time series, it is certain that they are no more on the long run status. Therefore it is necessary to conduct Co-integration test on the model to determine if there is long-run relationship among the variables.

Table 3: Presentation of Johansen Test of Co-integration

Hypotheses: Number of Co-integrating Equations	Eigen Value	Max- Eingen Stat	0.05 Critical Value	Prob. Value	Trace Statistic	0.05 Critical Value	Probability Value
0*	0.91851	72.70914	0.0000	0.0136	115.7070	47.85613	0.0000
1*	0.657074	31.13162	0.0015	0.0928	42.99786	29.79707	0.0009
2	0.31977	11.17471	0.1457	0.8227	11.96087	15.49471	0.1588
3	0.026745	0.786166	0.3753	0.3788	0.786166	3.841466	0.3753

Trace test and Max-Eingen test indicates 2 co-integrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinn-Haug-Michelis (1999) p-values

There are 2 co-integrated equations at the 0.05 level. The implication of this is that there is long run relationship or among the variables. Consequently, this necessitates the use of restricted VAR i.e. Vector Error Correction Model.

Vector Error Correction Estimate

The VECM estimated values of the coefficients for Error Correction Equations is as follows:

$$D(\text{LNRGDP}) = 0.566406 + (0.445505)D(\text{LNRGDP}(-2)) + (-0.142801)D(\text{LNGCF}(-2)) + (-4.127226) D(\text{LNENR}(-2)) + (-2.773700)D(\text{LNAGO}(-2)) - 0.720128 \text{ ecm1t-1} + \text{e1t}$$

LNGDP error correction equation was chosen to test and confirm the long run causality as reflected in table 4.5 below, the C(1) is 1-period lag residual of the co-integrating equation. This is the error correction term. The C (1) is negative, as expected, and it is significant with the prob. Value of 0.000. Hence, there is long run causality from the explanatory variables agricultural output to Economic Growth (RGDP). The ECM value of -0.720128 indicates the speed of restoring the equilibrium in the short-run.

Analysis of Variance Decomposition

Table 4: Variance Decomposition of LNAGO

Period	S.E.	LNRGDP	LNGCF	LNENR	LNAGO
1	0.171223	48.75921	4.908736	18.09021	28.24184
2	0.295370	55.66293	2.976749	18.39367	22.96664
3	0.392137	59.70424	1.728789	18.05914	20.50784
4	0.453745	59.67975	1.345928	17.63829	21.33603
5	0.501773	59.31221	1.306729	17.24232	22.13875
6	0.554609	59.65727	1.408041	16.33386	22.60082
7	0.612644	60.27956	1.414608	15.25563	23.05020
8	0.668172	60.75217	1.399263	14.30668	23.54189
9	0.718952	61.05036	1.404580	13.61034	23.93472
10	0.766279	61.35216	1.406612	13.10722	24.13400

In the short run, e.g. in the period 3 or 4, impulse or shock to RGDP account for about 59.70 and 59.67 percent variation in Agricultural output in Nigeria. In the long run, at period 10 shock to RGDP account for 61.35% variation in Agricultural output.

In the short run e.g. in the period 3 and 4, impulse or shock to Agriculture sector account for about 20.50% and 21.33% variation in the Agricultural output in Nigeria. In the long run, at period 10 shock to agricultural sector accounted for 24.13% variation in Agricultural output. This is known as own shock.

Table 5: Variance Decomposition of LNRGDP

Period	S.E	LNRGDP	LNGCF	LNENR	LNAGO
1	1.033874	100.0000	1.000000	0.000000	0.000000
2	1.267451	70.76909	0.017299	0.010335	29.20328
3	1.303241	71.65627	0.176110	0.055459	28.11216
4	1.411052	71.01842	0.929649	0.692820	27.35911
5	1.539168	72.49913	1.499058	2.049472	23.95234
6	1.581518	71.37978	2.017204	2.419907	24.18311
7	1.595732	70.87740	2.204044	2.974312	23.94424
8	1.621739	70.90964	2.171840	3.465198	23.45332
9	1.664456	70.72453	2.278936	4.022661	22.97387
10	1.700965	70.56139	2.320940	4.266190	22.85148

Source: Computed by Authors from Eview7.

In the short run e.g. in the period 3 and 4, shock to Agricultural output accounted for about 28.11% and 27.36% variation in RGDP (Economic Growth). While, the analysis revealed that in short run the shock to RGDP itself accounted for about 71% variations in its fluctuation. In the long run, at period 10 shock to Agricultural sector accounted for 22.85% variation in RGDP.

DISCUSSIONS AND CONCLUSION

From the percentage analysis of the study between 2008 and 2013, it is revealed that agricultural output has been dwindling and started resuscitating from 2011 and afterwards contributes significantly to the economic growth. The study finds out that despite all the efforts directed to resuscitate the sector in the last 5 years, the improvement in the sector is lopsided as only the Crop production contributes about 89% of Agricultural output to GDP (Economic Growth) while the other 3 subsectors (livestock, forestry and fishing) contribute about 11% of Agriculture output to Economic growth.

From the Econometric Analysis of VAR Variance Decomposition, Capital and Labour that are conventional determinants of the economic growth contribute less to economic growth as shown in the decomposition value of these variables and the values of their respective shock as they cause variations in economic growth. The reason for these is obvious; labour cannot be productive without food. More so, the inputs that labour will work on depend on the output of agricultural sector. Furthermore, the material input that capital will work on or process depends chiefly on the productivity of the agricultural sector.

The variance decomposition analysis reflected the significant role plays by the agricultural sector in the growth and development process of the economy. It is seen from the variance decomposition of economic growth proxy by RGDP that the Agricultural sector contributes the largest percentage of the decomposed value of 29.20. This is to say that all the above discussion on the role of agriculture in the development of the nation is not by chance. It indicates that all the sectors in the economy rely on the agriculture sector.

At last it could be concluded that agriculture doesn't only play significant roles on economic growth and development; it is also a life-wire of the economy.

ISSUES OF CONCERN

The transformation agenda which orchestrated agriculture resuscitation as priority has not brought about desirable balanced development in agricultural sector. Despite all the efforts of the Government /CBN that involved pronouncement of reform to privatize fertilizers and seeds procurements; agricultural franchise model; stimulation of financial sector to invest on agricultural sector; increment of loan to the sector to the tune of N25Billion in 2013 and default rate was zero; launching of \$100Million Agricultural Financing fund; attraction of USD 4 Billion private sector investment (AgroNigeria, 2014) the sector has not performed commensurately to the imputed efforts and resources. Besides the budgetary allocation to ensure efficient performance of the sector, the grants and the loans from the multilateral institution like African Development Fund (AFDB) which amounted to the sum of \$38 million and \$152 million

respectively; there are support programmes to the sector to cater for small-holder farmers and rural entrepreneurs that are into the production, processing, storage and marketing of selected commodity value chains. Other recent strides by the Federal Government of Nigeria to ensure the sector takes up its responsibility include \$230 million World Bank and French Development Agency credit facility; FADAMA III project allocation of the credit facility of \$200 million from World Bank (Danielle Fuller, 2011) in fact, all these are yet to be trickled down.

All these gigantic moves have not translated commensurately to the desirable development of the agriculture sector as the positive change experienced in the sector is lopsided in favour of crop production alone. And, in the face of these efforts, the sector is still beleaguered with the Marketing problems as the price of rice is still higher compare to the half of decade ago and smuggling is still the order of the day; storage and processing challenges still persist; infrastructural inadequacies is main challenge of the rural areas - would Youth Empowerment Agricultural Programme (YEAP) be a reality?

It is observed that the prospect of agricultural sector is still bleak unless remedial policy measures take place. The trends of agricultural output expansion, productivity and foreign exchange earnings have been sometimes declining sometimes stagnant and at best growing at negligible rate.

The land tenure system remains largely the same in spite of the land use act. The employment of primitive technology persists in Nigeria agricultural sector and predominated by peasant farmers. It is difficult to experience significant increase in productivity. In fact, with the unceasing rural to urban migration, old men, women, and children are largely left behind with the resultant effect on fall in agriculture output. Ineffective Government support, various governments merely play lip services to agricultural development. Declaration of laudable objective of food self sufficiency has always been orchestrated over the decades through various strategies like 'Operation Feed the Nation' of the 70's, Green Revolution of the early 80's, Better-life for rural women' of the 80's, Family Economic Advancement Programme (FEAP of the 1990s etc.) despite these Nigerians are still importing and smuggling substantial food items like rice, wheat, poultry products and milk products. The political instability and insecurity to life is the order of the day. Life and agricultural properties like farm land were destroyed by insurgency in the North East for almost 4 years. Cattle herders are always clashing with the crop farmers in the agricultural rich middle belt. Considering all these major problems, if remedial policies are failed to be put in place the contribution of the sector to the promotion of economic growth and development will be a ruse despite all the committed national and global resources to make this sector a working one.

POLICY RECOMMENDATIONS

For the sector to continue to play its major roles in the economic growth and developmental process, the following recommendations are offered:

First of all, it has been discovered from the analysis above that change of government always bring along change in policy and programme. This is not helpful to development of Agricultural sector because it scuttles the promising developmental programmes already in place. Consequently, the study is making a recommendation that the ongoing programme and reform by Jonathan administration on Agriculture (Agriculture Transformation Agenda) should be continued by the in-coming administration of President Muhammad Buhari. The ongoing reform in the sector is gradually yielding positive results and this can be credited to the effort of the current Minister of Agriculture of the nation. If at all, the incoming administration would wants to change the Chief Accounting Officer of this ministry, he should be replaced with the down-to-earth committed technocrat in the sphere.

The transformation agenda of Nigeria is a right action in the right direction as agricultural sector is given a considerable developmental attention. This study is now recommending that the provision of the transformation agenda should be rigorously pursued by the in-coming administration come May 29, 2015 without any subjugation. Nigeria possesses abundant arable land, about 75% of which is unutilized. Government must ensure that it enforces the provisions of the land Use Act in such manner that it would discourage harassment of agricultural investors or farmers with right of occupancy conferred by the state.

Due to the fact that there is a long dry season (six months more or less) during which period farmers are idle and seek gainful employment in urban centers. With irrigation facilities, half of the year becomes available for farming activities, apart from the fact that irrigation permits proper control of water to maximize yield unlike the unpredictable rainfall. Consequently, Government should ensure and make provision for efficient irrigation and optimal water resource management in order to promote efficient working of agricultural sectors. Suitable rural infrastructure development should be made priority by the government so that the achievement of YEAP objectives can be a reality, because no youth wants to stay and work in dulling environments. This must take into consideration the special needs of rural areas viz-a-viz agricultural their agricultural needs. For instance, in term of transportation, the vehicles like tricycle 'Keke NAPEP' will be more suitable for the ruralites, as the maintenance cost will be relatively low and it will be easy for the farmers to transport their goods and outputs. The problem of insurgency has wrecked havoc to agricultural sector most especially at North Eastern part of the country and the country as a whole. This sector has lost Billions of Naira by the destruction of farm lands and produces by the insurgency. The government should contain

this insurgency practice to be able to make this agricultural promising region contributes meaningfully to the agricultural needs of the nation. The credit facilities donated and supplied by the multilateral institutions and Federal Government of Nigeria respectively should be judiciously administered in collaboration with the bodies like various states chambers of commerce because they represent organ of business communities that could identify true farmers. The farmers' friendly and favourable credit policies and guidelines should be put in place and enforced by Central Bank of Nigeria (CBN) to promote accessibility of farmers to credit facility at low cost.

LIMITATION OF THE STUDY

The study is limited on the ground that the various agricultural programmes that have been instituted by the governments since the 7-point agenda (President Yaradua regime) were not properly investigated to determine to what extent all these agricultural programmes have promoted the achievement of the objectives the industrialization need, poverty reduction, and growth & development of the nation.

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