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## **Role of Agriculture in Economic Growth & Development: Nigeria Perspective**

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# **Role of Agriculture in Economic Growth & Development: Nigeria Perspective.**

**By**

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## **ABSTRACT**

**The study explored empirically the role of agriculture in development of Nigeria between 1981 and 2012. The study is borne out of the curiosity to examine the role agriculture plays in the development of a nation having being neglected in this part of the world over a considerable period of time by the government and policy makers while the whole attention is paid on the crude oil. The term-paper takes analytical and quantitative dimension. The quantitative technique is employed in a multivariate study with the adaptation of the Solow Growth model that include Capital proxy by Gross Capital Formation (GCF), labour proxy by post secondary school enrolment, Agricultural Output and Economic Growth and Development proxy by RGDP. Restricted Error Correction Model is used with the aid of Econometrics View Package (e-view). The study reveals that the Agriculture plays a significant role in economic development of the nation. In addition, the sector has been neglected to the extent that its contribution to the GDP has been dwindling since 90's. Consequently, the barriers to the agricultural sector performances were identified and the necessary policy recommendations were proffered.**

## **1. 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 figures is 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 through 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 focused its attention on the agriculture sector development 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 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 to check inflationary tendency of workers wages where inadequate food supply may lead to rising food prices as a result industrial unrest as worker 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 reasons. So, it is needful of agricultural sector to provide food beyond the subsistence level (marketable surplus). In a nutshell, the prominent role expected to be of agricultural sector in developing country like Nigeria cannot be over emphasized. There is no gain saying that agricultures play significant role in the development process. Consideration of the role the sector plays as the way of life in the developing countries like Nigeria and the critical role expected of the agricultural sector makes it imperative to study the sector and look at the policy implication for the achievement of socio-economic objectives of the nation. This study 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 stylised fact and the econometrics analysis. Section five, identified the barriers to agricultural performances and proffers necessary recommendations.

## **2. CONCEPTUAL REVIEW AND STRUCTURAL CHANGE IN AGRICULTURAL SECTOR.**

### **The concept of Agriculture**

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 economies 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.

## **Development**

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 misconceived

by many to mean economic growth. This concept is more than a sustained increase in per capita income. This view is myopic because the concept does not consider if the increase in per capita income trickle-down. If the sustained increase 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 increase in income per capita 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'. The recognition of the role that agriculture plays in the development of any country necessitates the decision to include the provision as the first and core objective to be pursued by all the leaders in the world.

### **Structural Change in the Agricultural Sector**

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%). 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 per cent 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. In the recent years, with the reflections of the transformation agenda on the sector there has been improvement in the agriculture sectors performances. Besides the budgetary allocation to ensure efficient performance of the sector the grant and the loan from the multilateral institution like African Development Fund (AFDB) which amounted to the sum of \$38 million and \$152 million respectively. This support programme to the sector was made to cater for smallholder farmers and rural entrepreneurs that are into the production, processing, storage and marketing of selected commodity value chains. The recent strides by the federal government of Nigeria to ensure the sector take up its responsibility to provide the agricultural needs (food provision at marketable surplus) of the nation and promotion of the industrialisation of the nation include \$230million World Bank and French Development Agency credit facility. FADAMA III project allocation of the credit facility of \$200 million from World Bank is another effort in the recent years.

**The role of agriculture to economic development will be viewed under the following:**

Provision of food for the rapid growing population (FOOD CONTRIBUTION ROLE)

Increasing demand for industrial products and thus necessitating expansion of secondary and tertiary output. (PROMOTION OF INDUSTRIALISATION)

Providing additional foreign exchange earnings for the import of capital goods for development through increased agricultural exports (FOREIGN EXCHANGE CREATION ROLE)

Increase rural income to be mobilised by state (CAPITAL ACCUMULATION).

Provident productive employment (EMPLOYMENT GENERATION)

Improvement of welfare of the rural people (SOCIO-ECONOMIC ADVANCEMENT)



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 in the emerging activities. 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. In physical terms, the net quantity of resources transferred includes goods (consumer goods, intermediate inputs, and investment goods) and primary factors (labour and capital services). To this, net surplus of products and factors contribute financial flows into agriculture that constitute the net savings of agriculture. These net savings can be accrued either in domestic currency, constituting the domestic agricultural surplus, or in foreign currency, constituting the foreign agricultural surplus. These net savings can in turn be extracted from agriculture through a variety of visible and invisible transfer mechanisms. Visible transfers include taxes, payment of rents to urban landlords, voluntary transfers from agricultural to non-agricultural households, savings of agriculture invested in non-agriculture, and net transfer of the balance of current accounts of agriculture. Invisible transfers occur through the terms of trade for agriculture. Direct transfers can also occur through government intervention employing price regulation, export taxes, and import subsidies. Indirect invisible transfers can come to play through overvalued of real exchange rates which depress the domestic price of tradable agricultural goods. As Kuznets 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” (Kuznets, 1964). 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.

### 3 METHODOLOGY

This sections looks into the methodology and the theoretical framework. The study looks at the Stylised facts briefly. The Econometrics analysis is carried out to determine the significant of role of Agriculture in the development objectives. The prominent role agriculture plays in the development of any nation is examined through the model of complementarities between the agricultural sector itself and the industrial sector of the economy.

#### **Model of Complementarities between Agricultural Sector and Industrial Sector.**

First of all, the study first examined the condition when agriculture emerge from the subsistence status to the status where it started producing food at marketable surplus, providing capital and labour for the industrial sector; and, its foreign exchange provision role. The model below explains how the agriculture contributes significantly to the industry through the complementary role.

Therefore: Supply Side Analysis

$$AG = f(IGa, L_e) \quad (3.1)$$

$$IGa = f(Pi/Pa) \quad (3.2)$$

AG = Growth in Agric Sector

$L_e$  = Labour Efficiency (This is constant)

IGa = Investment Goods by Agriculture

Pi = Price of Investment goods acquired from Industry (Capital Provision Role for ind. )

Pa = Price of Agric Product (This is the reward receive for supplying industrial inputs)

$(Pi/Pa) \downarrow \rightarrow \uparrow IGa = \delta IGa / \delta AG > 0$  (the higher the agriculture Investment the higher the agriculture growth)

$$\delta AG / \delta IGa > 0.$$

$$IG = f(I_i, Effk) \quad (3.3)$$

$P_i/P_a \uparrow \rightarrow \text{Ind } G \uparrow$

Therefore,  $\delta IG / \delta P_i/P_a > 0$

Note if  $P_i$  fall below  $P_a$  Industry sector will not have incentive to attract Labour from the Agric sector. Agric sector always play labour supplying role for industrialisation of the economy having increased its own labour productivity. The combination of this role is known as factor contribution role it plays in the development process.

### Theoretical 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:

$$Y(t) = f(K(t), A(t), L(t)) \quad (3.2.1)$$

$Y(t)$  = 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.

Basic assumptions guiding this theory:

- 1) Constant return to scale, in its two argument, doubling the quantities of capital and effective labour (e.g doubling K and L with A held fixed) doubles the output. Multiply both variable by any non negative constant ‘C’ cause the change in output by the same factor  $f(CK_{(t)}, CAL_{(t)}) = C f(K_{(t)}, A_{(t)}L_{(t)})$  for  $C > 0$
- 2) The second assumption is that other inputs are not relatively important i.e. the model neglects natural resources.

The intensive production function assumed that Inada condition is satisfied.

$$f'(K_{(t)}) > 0 \quad \text{and} \quad f''(K_{(t)}) < 0$$

Hence, the specific example of production function is the Cobb Douglas function

$$Y = f(K_{(t)}, A_{(t)} L_{(t)}) = K_{(t)}^\alpha A_{(t)} L_{(t)}^{1-\alpha} \quad (3.2.2) \quad 0 < \alpha < 1$$

$$Y/AL = K/AL^\alpha (AL/AL)^{1-\alpha} \quad (3.2.3)$$

$$Y/AL = y \quad \text{and} \quad K/AL = k. \quad (3.2.4)$$

$$\text{Therefore, } y = k^\alpha \quad (3.2.5) \quad y_t = f(k_t)$$

This production function is very useful for the framework of the research at hand and shall be adapted to incorporate the variables of analysis in this study.

Movement of Labour / knowledge, Capital over time

$$\text{Growth rate of Capital} = \Delta K/K \quad \Delta K = K_{(t)} - K_{(t-1)} \quad (3.2.6)$$

$$\text{Growth rate of Labour} = \Delta L/L \quad \Delta L = L_{(t)} - L_{(t-1)} \quad (3.2.7)$$

Labour is growing at the rate **n**

$$\text{Growth rate of knowledge} = \Delta A/A \quad \Delta A = A_{(t)} - A_{(t-1)} \quad (3.2.8)$$

Knowledge is growing at the rate **g**

$$\text{Therefore, } k = K_{(t)} / A_{(t)} L_{(t)} \quad (3.2.9)$$

Using Quotient Rule to derive the fundamental Solow equation model from equation 3.2.4

$$\text{Hence, } \frac{\Delta k = \Delta K_{(t)}(A_{(t)}L_{(t)}) - (\Delta A_{(t)}L_{(t)}) K_{(t)} - (A_{(t)} \Delta L_{(t)}) K_{(t)}}{(A_{(t)}L_{(t)})^2}$$

$$\Delta k(t) = \frac{\Delta K_{(t)}}{A_{(t)}L_{(t)}} - \frac{\Delta A_{(t)} K_{(t)}}{A_{(t)} (A_{(t)}L_{(t)})} - \frac{\Delta L_{(t)} K_{(t)}}{L_{(t)} (A_{(t)}L_{(t)})}$$

Note:  $\Delta K_t = sY_{(t)} - dK_{(t)}$ ,  $\frac{\Delta A_{(t)}}{A_{(t)}} = g$ ,  $\frac{\Delta L_{(t)}}{L_{(t)}} = n$  and given that  $Y/AL = f(k)$

$$\frac{\Delta k(t)}{A_{(t)}L_{(t)}} = \frac{sY_{(t)} - dK_{(t)} - k_{(t)}g - k_{(t)}n}{A_{(t)}L_{(t)}} = sf(k_{(t)}) - dk_{(t)} - g(k_{(t)}) - n(k_{(t)})$$

$$\Delta k(t) = sf(k_{(t)}) - (n+g+d)k_{(t)} \quad (3.2.10) \quad (\text{Key equation of Solow model})$$

$f(k(t))$  is output per unit of effective labour

$sf(k_{(t)})$  is actual investment per unit of effective labour

$(n+g+d)k_{(t)}$  is breakeven investment.

### **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

$$Y(t) = K_{(t)}^\beta AG_{O(t)}^\lambda (A_{(t)}L_{(t)})^\gamma . \quad (3.2.11)$$

Note:

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

$A_{(t)}$  and  $L_{(t)}$  enter the model multiplicatively, hence  $A_{(t)} L_{(t)}$  is effective Labour proxy by Enrolment of Post Primary School, Capital at period  $t$  proxy by Gross Capital Formation

$AG_O$  is the Agricultural output.

Log both sides of the equation 3.3

$$\ln Y(t) = \beta \ln K_{(t)} + \lambda \ln AG_{(t)} + \gamma (\ln A_{(t)} + \ln L_{(t)}) \quad (3.2.12)$$

Differentiating both sides with respect to time, we obtain the following:

$$gy = \beta gk + \lambda gAG + \gamma (n+g) \quad (3.2.13)$$

At the balance Growth Path (BGP) rate of growth of Y and growth of K is the same.

Hence,  $g_y = \beta g_k$

Therefore,  $g_y = g_k = \beta g_k$ .

$$g_y - \beta g_y = \lambda \Delta G + \gamma (n+g)$$

$$\frac{g_y(1-\beta)}{1-\beta} = \lambda \frac{(g\Delta G)}{1-\beta} + \frac{\gamma(n+g)}{1-\beta}$$

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

### 3.3 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:

$$PCGDP = f(GCF, ENR, AGO) \quad (3.2.15)$$

#### Model Specification

The study employed Error Correction Model to determine the impact of Agric play substantial role on Economic development.

$$\ln RGDP_t = \alpha_1 + \beta_2 \ln GCF_t + \gamma_3 \ln ENR_t + \lambda_4 \ln AGO_t$$

PCGDP = Gross Domestic Product per capita 2000 US Dollar

GCF= Gross Capital Formation

ENR= Post-primary school Enrolment

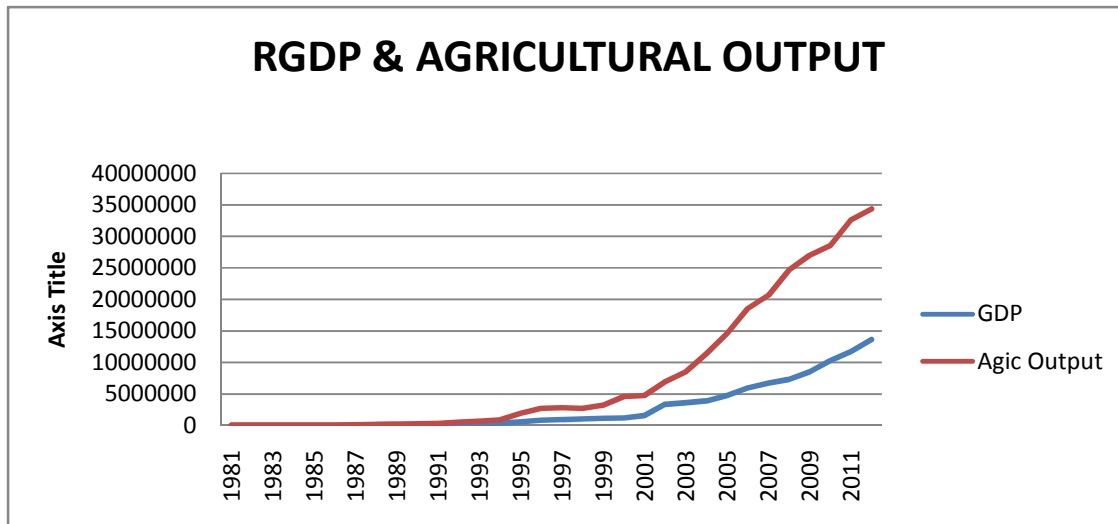
AGO= Agricultural output

## 4 DATA ANALYSIS

### 4.1 Stylised facts

The figure below presents the trend of agricultural output and the Economic growth of Nigeria from the year 1981 to 2012. The GDP value before the year 1993 was negligible while it is seen from the charts and the table that as at that period and earlier period, the share of agriculture in the GDP value is very high. It is seen from the graph that from 2005 the agricultural output as a low share or contribution to the Real GDP. This is depicted by the continuous high rise of the GDP at a rate that is significantly higher than the agricultural output value. This is a reflection that there are others factors that accounts for the increase in Real GDP other than Agricultural output contribution. The reason for this is glaring; the contribution of crude oil is definitely accounts for this difference. It is important to mention that due to the high contribution of the crude oil to the GDP government has neglected the sector. The previous and current Government have taken a bold and giant step to revive the sector in to avoid over reliance on diminishable fossil fuel that is the pivotal of the economy in present time.

**Fig: 1 REAL GDP and AGRICULTURAL OUTPUT**



## 4.2 Econometrics Analysis

This section presents the Unit root test conducted on the variables. As the first step, to diagnose the stationary status of the variables in order to determine the appropriate test and estimation model to employ.

### 4.2.1 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.

**Table 4.2: Unit Root test applied to variables**

Variables	ADF TEST Critical Values		ADF Test Statistic	Prob- Values	Decision Rules
LNGDP	1%	-3.679322	-3.596894	0.0122	I(1)
	5%	-2.967767			
LNGCF	1%	-3.711457	-4.048571	0.0045	I(1)
	5%	-2.981038			
LNENR	1%	-3.984974	-3.984974	0.0047	I(1)
	5%	-3.679322			
LNAGO	1%	-3.670170	-3.816726	0.0070	I(1)
	5%	-2.963972			

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 the variables attained stationarity. LNGDP, LNGCF, LNER and LNAGO attained the stationarity by first level of differencing at one percent level of significance. The results of this test necessitate the performance of



Cointegration test in order to confirm the existence of long run association among the variables.

#### 4.2.2 Cointegration Test

Having differenced the time series, it is certain that it is no more on the long run status. Therefore it is necessary to conduct Cointegration test for the model to determine if there is long-run association among the variables.

**Table 4.3: Presentation of Johansen Test of Cointegration**

Hypotheses: Number of Cointegrating Equations	Eigen Value	Max- Eingen Stat	0.05 Critical Value	Prob. Value	Trace Statistic	0.05 Critical Value	Probability Value
0*	0.918505	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

Source: computed by author; see appendix

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

\* denotes rejection of the hypothesis at the 0.05 level

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

There is 2 cointegrated equation at the 0.05 level. The implication of this is that there is long run relationship or association among the variables; consequentially, this necessitates the use of restricted VAR i.e. Vector Error Correction Model.

#### 4.2.3 Vector Error Correction Estimate

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

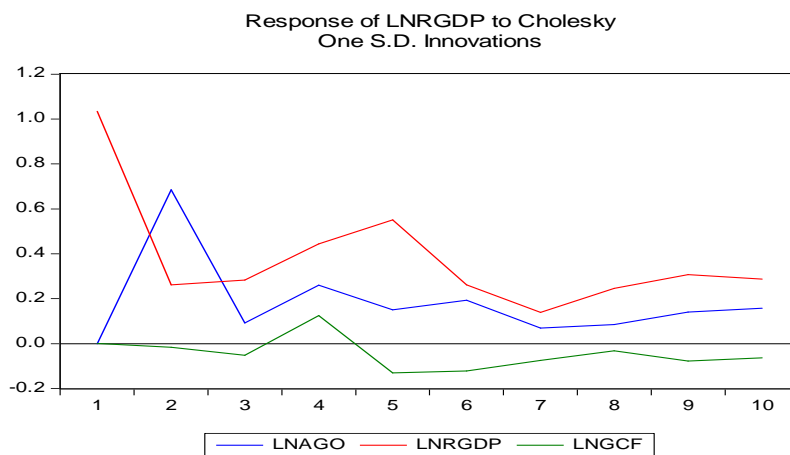
$$D(\text{LNGDP}) = 0.566406 + (0.445505)D(\text{LNGDP}(-2)) + (-0.142801)D(\text{LNGCF}(-2)) + (-4.127226)D(\text{LNENR}(-2)) + (-2.773700)D(\text{LNAGO}(-2)) - 0.720128 \text{ecm1t-1} + \text{e1t}$$

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 cointegrating 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 (GDP). The ECM value of -0.720128 indicates the speed of restoring the equilibrium in the short-run.

#### 4.2.4 Impulse Response Function

Analysis of Impulse response function will be suitable to depict the significant role play by the Agriculture in the development of Economy.

##### Response of Economic Growth to Shock from Agriculture Output.



The IRF shows that economic growth responds to the agriculture output in the positive region. This indicates the significant role play by agricultural sector.

#### 4.2.5 Analysis of Variance Decomposition

##### 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

#### Variance Decomposition of LNRRGDP

Period	S.E.	LNRRGDP	LNRRCF	LNRRNR	LNRRGO
1	1.033874	100.0000	0.000000	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

The variance decomposition analysis reflected the significant role plays by the agricultural sector in the development process. It is seen from the decomposition of economic growth proxy by RGDP the Agricultural sector is attributed to the largest percentage of the decomposed value of 29.20.

Most importantly, from the decomposition of agricultural sector it is seen that the sector play major role to economic development as the economic growth received larger decomposed value as large as 61.32. This is to say 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 lean on the agriculture sector.

## **5 BARRIERS AND POLICY RECOMMENDATION**

### **Barriers to the Performance of Agriculture**

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

The land use and tenure system remain largely the same in spite of the land use act. In order to improve the performance of agricultural sector in promoting development objective, the land use act should be revisited by government and made more favourable to the farmers.

The employment of low – productivity primitive technology persists in Nigeria agricultural sector 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 likelihood that productivity and output will fall.

Ineffective Government support, government merely plays lip service to agricultural development efforts through 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 Nigeria still imports substantial food items like rice, wheat, poultry products and milk products. The government credit support continues to fail and that is why changes are continually being made to the credit institutions and policies.

The political instability and insecurity to life and property exert a heavy toll on the agricultural sector. 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 development will not be encouraging

### **Policy Recommendations**

For the sector to continue to play its major role in the development process, the following recommendation will be offered:

Agricultural friendly government policies and policy orientation must be put in place. There must be favourable change in government attitude. 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 pursue without any subjugation.

Nigeria possesses abundant arable land, about 90% of which is unutilised. Government must ensure that it enforces the provisions of the land Use Act, and 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 centres. With irrigation facilities, half of the year becomes available for farming activities, apart from the fact that irrigation permits proper control of water to maximise yield unlike the unpredictable rainfall. Government should ensure and make provision for efficient irrigation and optimal water resource management.

Suitable rural infrastructure development should be made priority by the government. This must take into consideration the special needs of rural areas and agricultural sector. For instance, in term transportation, the vehicles like 'Keke NAPEP' will be more suitable for them, as the maintenance cost will be low and it will be easy for the farmers to transport their goods and output.

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