

THE IMPACT OF AGRICULTURAL PRODUCTIVITY ON ECONOMIC GROWTH IN NIGERIA (1991-2015)

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ABSTRACT

This research work examined the impact of agricultural productivity on economic growth in Nigeria from 1991-2015. The data for this study were mainly from secondary sources as CBN, NBS etc. The econometric method of ordinary least square (OLS) and cointegration techniques was employed. The study used Augmented Dickey-Fuller (ADF) method for detecting the presence of unit root amongst the research variables (RGDP, AGRL, EXR, /AT and INF). The study found out that all of the variables were stationary at their first difference. Furthermore, the study employed the Johansen's cointegration test to ascertain the long-run relationship that exists among the variables in the study and discovered that there is a long-run relationship between the variables in the study between 1991 and 2015. The result revealed that Agricultural productivity has an impact on economic growth. Based on the findings, Government should recruit competent, well trained persons, and if necessary set up new Agricultural extension department in other to educate farmers on proper yield. Finally, government should also increase loan to farmers to cut across many in the country and interest rate to loan on Agriculture should be at low rate to farmers while exchange rate should also be government priority in other to reduce the cost of Agricultural input.

Keywords: Agricultural Productivity, Economic Growth.

Introduction

The agricultural sector has the potentials to shape the landscape, provide environmental benefits such as conservation, guarantee sustainable management of renewable natural resources, preserve biodiversity and contribute to the viability of rural area development, the relationship between agriculture and growth, especially in Nigeria cannot be overemphasized. Invariably, reducing poverty, improving nutrition and general well-being of the population would imply improving livelihood of this majority and this hinges critically on the performance of agricultural sector. For example, using World Development Indicator (WDI) data from Nigeria for selected periods, there is a strong positive correlation between food production and primary school enrollment ratio and gender equality while there is a strong

negative correlation between food production and child mortality rates. This gives some evidence on the importance of agriculture in economic development.

The growth of agricultural sector in Nigeria was not smooth. Anyanwu (1967) held that during colonial period between 1861 to 1960, attention is given to agricultural research and extension services. Among the activities that were done was the establishment of a research station in Lagos by Sir Claude M. Donald in 1893. Landmark of 10.4Km was acquired by the British Cotton Growing Association (BCGA) in 1988 for experimental purpose strictly for cotton and was named "Moor plantation" in Ibadan. In 1912, the department of agriculture was established in each of the Southern and Northern Nigeria, but the activities of the department were virtually suspended between 1912 and 1921 as a result of the First World War and its aftermath. The period between 1929 and 1945 was a difficult one for the agricultural sector of Nigeria. This was the period of great depression when the world prices on commodities fluctuated. This affected the agricultural sector negatively because the volume of agricultural product increased but the value did not increase proportionally.

The period of 1929 to 1945 marked the period of export boom, because countries were just recovering from the Second World War and these countries needed to develop. They depended on primary introduction for the beginning stage of industrialization. They needed to revitalize their industrial sector demanding primary goods. Prices of primary products rose higher again because there were speculations that there would be a third world war due to the outbreak of the Korean War. However after this period, there came another period of price instability. This made the reliance on agriculture and its products to fall, leading to the establishment of a market board. This board bought these products from the local farmers and sold them overseas.

In spite of all the period, Nigeria made great revenue from agriculture. In the pre independence era, the agricultural sector contributed most to the GDP of Nigeria. Helleiner (1966) said that in 1929, export production amounted to 57% of Nigeria's revenue of which agriculture contributed about 80% of the export. On attainment of political independence in 1960, the trend was still very much the same; the Nigerian economy could reasonably be described as an agricultural economy, because agriculture served as the engine of growth of the overall economy (Ogen2003). According to Alkali (1997), Nigeria was the world's largest producer of cocoa, largest exporter of palm oil during the period. And was also a leading exporter of other major commodities such as cotton, groundnut, rubber and hides and skins. Between 1964 and 1965, agricultural output accounted for 55% of GDP and employed 70% of the adult work force (Matton 1981) In 1970, agricultural export crops like cocoa, groundnut, cotton, rubber, oil palm, palm kernel etc. accounted for an average of between 65% and 75% of Nigerian foreign exchange earnings and provide the most important source of revenue for the federal as well as state government through export products and sale taxes (Ekund 1973). Despite the reliance of Nigerian peasant farmers on traditional produced 705 of Nigerians exports ad 95% of its food needs (Lawal, 1997).

However, the 1967 and 1970 civil war in Nigeria coincided with the oil boom era, which resulted in extensive exploration and exportation of petroleum and its strong agriculture in favour of an unhealthy dependence on oil (United States Department of States). Ever since then, Nigeria has been witnessing extreme poverty and insufficiency of basic food items. The

agricultural sector contributions According to the information above, it is quite clear that the agricultural sector as one of the Nigerian economy has really got a lot to contribute to the economic growth of the country.

Objective of the Study

The main objective of this study is to determine the impact of agricultural productivity on economic growth. This will specifically seek to achieve the following

- I. To determine the impact of agricultural credit on the economic growth in Nigeria.
- II. To determine the input capital formation on agricultural output in Nigerian.

Research Questions

This research work is aimed at answering the following questions:

- i. What is the impact of agricultural output on economic growth?
- ii. What is the effect of agricultural sector on employment creation?

Research Hypothesis

For the purpose of this study, the following hypotheses were tested.

- I. H_0 : agriculture has no significant impact on economic growth in Nigeria.
- II. H_0 : Agriculture has no significant effect on employment creation in Nigeria.

Scope of the Study

This research work focuses on the impact of agricultural output on the economic growth in Nigeria between the period of 1991 to 2015.

Significance of the Study

The importance of this study stems from the role of agriculture in Nigeria economy based on its size, potential and prospects. Because 70% of the Nigerian population is more productive in the agricultural sector, economic growth will be almost impossible to achieve without developing the sector. Furthermore, the importance of agriculture to the Nigerian economy is evident in the nation's natural endowment.

Literature Review

Several studies have focused on understanding the association between agriculture and economic growth, yet there is some disagreement, while some researchers have argued that agriculture should be the foundation of economic growth (Gollin, parente and Rogerson, 2002; Thirtle, Lin and Piesse. 2003), others claim that the linkages agriculture has with other sectors are too weak and its innovative structure inadequate for promoting economic growth (Ranis and Fei, 1961; Jorgenson, 1961).

However, the relationship between the agriculture sector and other sector should not be a competition but rather be viewed as interdependent where supply and demand in sectors can be accommodated through strengthened linkages (Adelman, 1984; Sabry, 2009). For instance, industry is an important sector and every economy that strives for development should work toward strengthening its industries (Lewis, 1954). Nonetheless, the position of agriculture in the strive for industrialization should not be ignored as the case has been in

Nigeria. As argued by advocates of agriculture-led growth (ALG), development of the agriculture sector is a prerequisite for industrialization through increase in rural incomes and provision of industrial raw materials, provision of a domestic market for industry and above all the release of resources to support the industry (Schultz, 1964; Timmer, 2004). Neglect of the agriculture sector in favour of the industrial sector will lead to slow economic growth and inequality in income distribution.

Therefore, despite the fact that agriculture may be unable to single-handedly transform an economy, it is a necessary and sufficient condition in kick-starting industrialization in the early stages of development (Byerlee, Diao and Jackson, 2005). The contribution of agriculture to economic growth can be examined through the roles of the sector in the economy. Johnson and Mellor (1961) summarized these roles in five inter-sectoral linkages; food, labour, market, domestic savings and foreign exchange. The most basic of these roles is, perhaps the supply of food for both domestic consumption and export. Direct contributions of food production can be through income generated from sales of farm produce and returns from economic activities related to production; or indirectly from increased capacity to partake in any form of economic activity through improved diet. Anyawu, Ibekwe and Adesope (2010) using correlation matrix find that production of major staples in Nigeria contributed significantly to GDP growth (except wheat) between 1990 and 2001. Also, as observed by Timmer (1995), the agriculture sector contributes to economic growth through provision of better caloric intake and food availability. The attainment of global food security and reduction of hunger hinges largely on this singular role. According to FAO (2005), agriculture can facilitate the attainment of all 8 MDG's through the direct or indirect linkages to food availability and poverty reduction. In 2008, UNDP reported that the 12.6% reduction recorded in the proportion of underweight children between 1990 and 2008 can be attributed largely to growth in agriculture sector in Nigeria (UNDP, 2008). Furthermore, as population increases, failure to increase food supply in proportion to increased demand has negative effects on industrial profit, investment and economic growth (Johnston and Mellor, 1961).

Hazel and Roell (1983) assert that in the early stages of development, rising incomes of rural/farming households is essential to providing market for domestically produced goods and services via strengthened purchasing power. The most direct contribution of agriculture to economic growth, according to Irz et al. (2001), is increase in incomes of farmers and therefore their purchasing power. Results of several studies, including Gallup et al. (1997), Irz et al. (2001) and Thirtle et al. (2001) show that an increase in agriculture growth results in an increase in the income level of the poorest of the population also results from cross-country regressions among developing countries show that \$1 increase in GDP result in significantly more poverty reduction when the growth is in agriculture rather than other sectors (Lipton, 2012). This sectoral growth increases the incomes and therefore purchasing power of farmers resulting in a vibrant domestic market for other sectors, hence growth in the economy.

An offshoot of income growth is increased domestic savings, both at micro and macro levels as observed in developed economies like Japan, Taiwan South Korea, Hong Kong and recently, china (Harbaugh, 2004). Agriculture therefore contributes to economic growth by increasing the incomes of majority of the population thereby strengthening their saving capacity. Results from an IFPR1 publication on Ethiopia's growth and transformation plan shows

that increased domestic savings is imperative to the achievement of higher total productivity (GTP) (Engida et al., 2011). Using Tobit regression model on multi-stage data from Kwara State, Nigeria, Obayelu (2012) finds that domestic saving is low among rural dwellers/farmers in Nigeria. He highlights the effects of high expenditure on food, which is a consequence of low income due to low productivity on saving capacities of the farming households in the study. This implies that domestic savings largely influences the growth path of the economy.

The sector is also in a position of making surplus available to industries, As productivity in the agriculture sector increases, surplus labour and capital is created and diverted to investment in industrial sector resulting in economic growth (Ike, 1982). This facilitates the industrialization process and eventually the transformation of the economy as postulated by the structural development advocates (Awokuse, 2008).

Theoretical Framework

Classical theorist led by Arthur Lewis' in 1950s viewed economic development as a growth process of relocating factors of production, especially labour from an agricultural sector characterized by low productivity and the use of traditional technology to a modern industrial sector with higher productivity. The continuation of agriculture to development was passive. Agriculture acted more as a source of food and labour than a source of growth (Lewi's. 1954). Although passive, agricultural development was seen as necessary for successful economic transformation for two reasons.

- 1) To ensure the supply of food and prevent rising food prices and real wages from undermining industrial development.
- 2) To utilize land as an additional free source of growth that would not compete with resource for industrial growth Lewi's (1954).

The solow-swan neoclassical growth theory and its extensions is a popularly adopted framework for analyzing the process of economic growth and development. Assuming a constant return to scale aggregate production functions expressed as:

$$1. Y_t = K_t B_t L_t$$

Where Y, K, L and B represent real GDP per capital, real gross capital, labor and the Hicks-neutral productivity term, respectively. The contribution of agriculture to aggregate economic growth could be modeled via its effects on total factor productivity or as an intermediate input in the industrial production sector (Timber, 1995: Ruttan, 2000). Early development theories viewed agriculture as an important source of Resources to finance the development of the industrial sector. Thus, agricultural production growth serves as an engine of growth for the overall economy.

Hwa (1988) argues that agriculture is an engine of growth and added agriculture to the standard solow-swan growth equation as a measure of linkage between the rural and industrial sector of the economy. Similarly, he also include additional determinant of growth (expert and inflation rate) thathave been found to be robust in explaining aggregate productivity growth (Hwa 1988, Barro and Lee 1994). Thus B, in equation 1 is assumed to be a function of agriculture (A), export (X) and inflation (P), a proxy for other macroeconomic factors.

2. $B = f(A_t, X_t, P_t) = AXP$ next substituting equation (2) into (1) yield the following.
3. $sY_t = K_t^\alpha L_t^\beta = A_t^\delta = X_t^\phi = P_t^\gamma$ taking natural log of equation (3) and including an error term yield;
4. $\ln Y_t = \alpha \ln K_t + \beta \ln L_t + \delta \ln A_t + \phi \ln X_t + \gamma \ln P_t + \varepsilon_t$.

According to the export-led growth, export growth is a measure of out war orientation and could also serve as a proxy for internationally competitive cost structure. Export expansion can be a catalyst for output growth both directly, as a component of aggregate output, as well as indirectly through efficient resource allocation greater capacity utilization, exploitation of economies of scale and stimulation of technological improvement due to foreign market competition (Helpman and Krugman 1985, Awokuo, 2005). Also, higher level of investment (gross capital formation should stimulate growth while agricultural productivity is expected to have a positive effect on aggregate economic growth. Similar to Hwa (1988), export expansion is expected to have a positive effect on growth while macroeconomic instability, captured by high inflation rates, should have a negative effect on economic growth.

It has been observed by researchers Chidi, Marc, that countries at the early stages of development depend almost fully on agricultural growth for employment, foreign exchange, government revenue and food supply to the teemed population. In this sense, agricultural growth is the key impetus to the growth of underdeveloped and developing countries (Enoma Anthony 2010, Business and Economic journal, volume 2010),

The Arthur Lewis Model is based on the surplus labour. Lewis is of the view that underdeveloped countries have unlimited supply of labor which occur at a subsistence wage. His analysis was based on two sectors which are the traditional/agricultural sector which is characterized by negligible or zero marginal product and the capitalist/modern/industrial sector into which the surplus labor from the subsistence sector is gradually transferred. He opined that economic development will take place when there is a transfer of surplus labor from the traditional subsistence sector to the modern sector. It was also implicit in this theory that capitalist will always re-invest all their profit that is derived in the modern sector. It was also assumed that wages in the industrial sector is constant and determined as a free premium over the subsistence level of wages, Todaro and Smith (2006).

Rostow's Stages of Growth Theory

Rostow identified five stages of economic growth namely;

- (i) traditional society
- (ii) precondition for take-off
- (iii) The take offstage
- (iv) The drive to maturity and
- (v) The age of high mass consumption.

A traditional society has been defined as "one whose structure is developed within limited production functions based on pre-Newtonian science and technology and pre-Newtonian attitudes towards the physical world" Rostow(1960). The society is therefore unscientific with

people engage in subsistence agriculture. The pre-condition for take-off period is characterized by the change in the attitudes of the people towards development. The major feature here is technological revolution in agriculture.

The take-off stage is the interval when resistance to steady growth is overcome. The feature of take-off stage is an increase in the ratio of saving and investment to material income from 5% to 10%. Ujo (2004). The drive to maturity stage is characterized by the application of modern technology in resource utilization adoption of new production techniques, High level of investment, high level urbanization etc.

Age of high mass consumption is mainly characterized by rural-urban migration, extensive use of automobiles, extensive use of consumer goods and gadgets, agricultural modernization.

The Harrod-Domar Model

The Harrod-Domar growth model is relevant to this study because it recognizes saving and investment to be important for economic growth. The theory emphasized the mobilization of domestic and foreign saving in order to generate sufficient investment to accelerate growth. According to the theory, the investment will first, create income. This income will definitely affect the price level. Secondary, it will augment the productive capacity of the economy by increasing its capital stock (Jhingan, 1997). This will then affect positively the GDP of the economy. Thus, the theory favored both the CPI and GDP which are the major variables in the research model.

This is one of the traditional growth theories. One of the principal strategies of development necessary for any take-off was the mobilization of domestic and foreign saving in order to generate sufficient investment to accelerate economic growth. The economic mechanism by which more investment leads to more growth can be described in terms of the Harrod-Domar Model/fodaro and Smith[2006]. The Harrod-Demar model is often referred to as the AK model because it is based on a linear production function with output given by the capital stock K times a constant, often labeled A .

Problems Associated With Agricultural Development

The place of agriculture in Nigeria's economy has remained critical even the decades since political independence. As documented by Anyawu (1997) agriculture sector played a dominant role in the generating of large proportion of the nation's Gross National Product (GNP) in the 1960s, She asserted that agriculture accounted for over 42% of commodity export earnings and about 74% of total government revenue within the period under review. Corroborating with the above is Obadan (2000), when he observed that the production of the agricultural products from independence to the early 1970s accounted for 96.4% of total export earning while non-oil product accounted for 7.3% of total exportation. However, this situation changed drastically the beginning of the 1970s agricultural output stated decline rapidly at time which not only coincided with the end of Nigerian civil war, but also with the period of oil boom of 1970s (UK Pong, 1991).

Nigeria once a major exporter of certain food commodities such as cassava, groundnut, palm oil and palm kernel, etc., now is a major importer of food commodities. From the year

2001 to 2007, Nigeria imported a total of 160, 209.10 in 2001 and the importation had been within this range until it was increase to 290,650.89 in 2007 worth of food and lives animals (CBN Annual Report and Statement of Accounts, 2017). Idachaba (2004), argued that the dwindling agricultural production in Nigeria is a confirmation of the unattractiveness of agriculture as a result of low returns and compensation being paid to farmers which tend to discourage increased production. In other words, food marketing farmers most involves a lot of cost and in Nigeria these cost are so high that lowering the cost through efficient marketing system may be as important as increasing agricultural production (Ahumed and Rustagi, 1987).

As Reardon et al (1998) pointed out. the main agricultural environment associated problems relate to population pressure on natural resources and this includes

- i. Soil Erosion and Loss of Fertility as small holder seek to intensify production by adding labour to existing agricultural land without corresponding increase in capital (chemical, organic inputs, land conservation and infrastructure).
- ii. Loss of biodiversity and the damage of natural ecosystems as small holders seek to enhance agriculture production by clearing forests and expanding into fragile ecosystems.

According to P.A Ekuneye (2010), some major problems confronting Nigeria agriculture are poor infrastructural facilities such as poor feeder roads and road network, storage facilities, rural electrification etc. power manpower development, socio cultural factor like the land tenure system, poor government/regulatory policies. Poor state of agricultural development can lead to a situation of deficit food supply and higher demand for food which consequently leads to higher food importation to supplement domestic food production.

Impact of Food Importation by Ekuneye (2010)

Itemized the impacts of food importation on domestic would supply as follows;

1. Affects household food consumption and demand patterns by heightening the taste for foreign food (e.g. foreign rice, fruit juice).
2. Link with this change is growing dislike for source local food (yarns, cocoyam). Impacts on domestic Producers and Consumer Price:
 1. Reduces domestic producer price; reduces farm income.
 2. Reduces farm income which is a disincentive to production; source farmers (young/inexperience ones) leave
 3. Reduces consumer Price; leading to consumer sovereignty, (farmer is price taker)

Empirical Review

Having argued that economic growth in Nigeria depends to a large extent on growth in the agriculture sector, empirically investigating the sectors contributions to growth is important both to assess past efforts and justify future investment. The empirical analysis in the next sections will be aimed at providing evidence on the sources of growth in the Nigerian economy.

To further do justice to this, we will evaluate the agriculture sector by investigating the sources of its growth and the subsectors that require further attention based on already highlighted potentials relative to their past contributions. Using social accounting matrices, Vogel (1994), examined the strength of agriculture as a factor of growth for 27 countries. He discovered the agriculture through its linkages leads to positive integration of the sector with

the broader economy and in all 27 countries, agriculture served as a great source of economic growth in the early stages of development and its significance begins to diminish as the countries started advancing industrially. Collin et al (2002), showed the importance of agriculture in the early stages of development. Analyzing data for 62 countries for the period of 1960 to 1990, the authors found that growth in agricultural productivity was quantitatively important in understanding growth in GDP Per worker. Both the Gross Section and panel data analysis showed that countries experiencing increase in agricultural productivity were able to release labour from agriculture into other sectors of the economy

Ravallion and Datt (1996) found out there is a strong evidence that agricultural development causes reduction in poverty in the urban and rural communities. Thorbecke and Jung (1996) using social accounting matrix for Indonesia found that the agricultural sector contributes the most to overall poverty reduction.

Using data from 1985 to 1996 for China, Fan et al (2005) estimated an econometric model to compare the relative contributions of rural and urban agricultural growth to poverty reduction in those areas. The authors discovered that higher growth in agriculture reduced both rural and urban poverty.

Based on data from a broad sample of developing countries in the early 1970 and mid-1980s, Bourguignon and Morison (1998), using cross-country regressions for each time period separately and therefore the pooled data observed that increasing agricultural productivity was the most effective path for many countries to reduce poverty and inequality. Thomas Malthus stated that food is necessary to the existence of man. An economy cannot develop well if its populace is starved as the productivity of the labour force will be below optimum.

Agriculture makes important contribution to national food security and macroeconomic stability. At the macro level, inadequate and irregular access to food reduces labour productivity and decreases investment in human capital (Bliss and Stern 1978; Strons, 1986; Fogel 1994).

Yand and Zhu (2004) used growth theory to capture the inter-temporal dynamic of the development process. The author demonstrated that without agricultural productivity, a traditional economy cannot overcome the fixed supply of natural resources and thus, cannot generate sustained economic growth. Regardless of how fast the non-agricultural sector grows stagnant agricultural production during the early stages of development prevents the structural transformation from a traditional to a modern economy.

Emphasizing the importance of agriculture generally Gunnar Myrdal (1977) notes that "it is the agricultural sector that battle for long-term economic development", this assertion has been supported by both historical and contemporary development experience. In the classical tradition, (1777-1823) Richardo noted that the problem of diminishing returns to agriculture would set a limit to the growth of other sectors of the economy. The validity of Malthusian law of population rests on agricultural stagnation in the face of growing human numbers. As is in many developed countries, initial development push has always been agriculture driven. The federal government efforts in ensuring agricultural development have been through many policy programs, which were designed to ensure that the impact of agricultural development is felt in the desired areas of this vast country.

Several large scale agricultural projects in Nigeria specializing in the production of grains, livestock, diaries and animal feeds, to mention but a few, were established (Fasipe, 1990). Sugar factories were also established Numan, Lafiayi and sunti (Lawal, 1997).

The Nigerian agricultural and cooperation bank (NACB) was established in 1973 as part government effort to invest oil wealth into the agricultural sector through the provision of credit facilities to support agriculture and agro-allied business (Olagunju, 2000). By 1995 the bank had granted the sum of \$3,179.6 million as loan to the private sector.

- The River Basin Development Authority (RBDA) was conceived in 1963 and was to cater for the development of land and mineral resources potentials of Nigeria.

- Operation Feed the Nation (OFN) was commissioned in the 1970s with the main aim objectives of:

1. Mobilizing the nation towards self-sufficiency and self-reliance in food
2. Encouraging the sector of population which relies on buying food.
3. Encouraging general pride in agriculture through the realization that a nation which cannot feed itself cannot be proud etc.

The OFN which was launched in 1976 to generate public awareness of the importance of agriculture to national development be it in conventional crop farms fish farms, backyard gardens or poultry did not realize the objectives of reducing or eliminating food imports and achieving self-sufficiency so in 1980 it was replaced with the Green Revolution Programme.

The Directorate of Food, Road and Rural Infrastructure (DFRRI): This was established by the federal military government in 1986 and was intended to bring development to the rural areas where over 70% of the population reside and work principally as farmers.

The man of date give to DFRRI is as follows:

- i. To improve the quality of life and standard of living of the people in the rural areas.
- ii. To use the enormous resources of the rural areas to lay a solid formation for the security, socio-economic growth and development activities of the rural areas to those of the local government areas: the states and the federal government.
- iii. To ensure a deeply rooted and self-sustaining development. Process based on effectively mobilized mass participation.

The literature is replete with studies that analyze the agriculture sector of the Nigerian economy. It gives evidence of a positive relationship between agriculture sector investment and GDP growth Iganiga and Unemhilin (2011) and Oji Okoro (2011) found that agricultural output is significantly influenced by government capital expenditure. Iyoha and Oriakhi (2002) identified the sources of economic growth in Nigeria using the growth accounting model and found that agriculture contributes more than expected to GDP growth. According to the research this indicates a lag in the nation's industrialization process. They also find that the share labour involved in agriculture is too high and suggest that labour be reallocated the other sectors to accelerate economic growth. Recently Olajide et al, (2012) used ordinary least squares (OLS) regression method to analyze the relationship between agricultural resources and economic growth in Nigeria between 1970 and 2010. They found a positive causal relationship between GDP and agricultural output in Nigeria.

Evaluation of Literature Reviewed

According to Igkodo (1984), research on agriculture shows that, "it is the act and rearing of animals for man's use. He also emphasized that agriculture is also the production of fibre for industries processing farm produce, packaging and marketing of farm products". This definition is quite encompassing and embracing as it covers all activities that ensure man's survival.

However, the aspect of research and training that is so vital in production was missing in the definition.

Method of the Study

Data Required

The data required for this research is a secondary data. It is a time series data collected from Central Bank of Nigeria (CBN) and statistical bulletin.

Sources of Data

Data for this study were obtained from the Central Bank of Nigeria (CBN), statistical bulletin, which comes from the National Bureau of Statistics,

Method of the Data Collection

The method of data collection is from journal publications, statistical bulletin from Central bank of Nigeria.

Method of Data Analysis

The method of data analysis on the impact of agriculture on Nigeria Economic Growth is the ordinary least square. The long-run coefficients are estimated using the associated co-integration model proposed by Johanson et al.

Granger causality list will be used to test for cause and effect between agriculture and domestic product (GDP)

Specification of the Model

This research shall employ econometric method.

According to Modallid (1992), this method gives the best technique for the verification and reputation of theories. It also provides quantitative estimation of the relationship among variables without much subjective judgment. The specification of economic theory or any available information relating to the phenomenon being studied (Koutsoyiannis 1997). Hence, the specification of the model adopted for this investigation is implicitly stated as follows;

Model i

$$ECGT = F(AGD, CFN, INF, RIR) \dots \dots \dots (1)$$

Equation (1) can be stated in mathematical model as;

$$GDP = B_0 + B_1 AGD + B_2 CFN + B_3 INF + B_4 RIR + UI \dots \dots \dots (2)$$

Where:

$$GDP = Ag - Credit + cap form + Inf + u +$$

$$GDP = + B_0 + B_1 Ag cred + B_2 Cap form + B_3 Inf + U$$

U, represent other factors that may determine agricultural output which are not captured in the model.

Model ii

This equation can be stated in mathematical model as:

$$UMP = B_0 + B_1 AGD + B_2 CFN + B_3 + INF \dots\dots\dots(5)$$

This equation can be stated in econometric mode! as:

$$UMP - B_0 + B_1 AGD + B_2 CFN + B_3 INF + U \dots\dots\dots (6)$$

Where:

UMP –Unemployment Rate

ADG - Agricultural Development

CFN – Capital Formation

INF – Inflation Rate

Justification for the Technique Adopted

The econometric method adopted is the ordinary least square (ols) which is considered to be the most convenient method because it is simple to use. The Granger causality test is used to test for cause and effect between Agriculture and economic growth. The contegration model will be used to test the long run relationship among variables.

Data presentation and analysis

Table 1 Data on RGDP, AGRL, EXR, INTR and INF

Table 4.2.1 is the data used for the estimation from which

| Year | RGDP | AGRL | EXR | INTR | INF |
|------|----------|----------|----------|------|------|
| 1991 | 236729.6 | 144.70 | 4.536733 | 20.1 | 12.7 |
| 1992 | 267550 | 217.42 | 17.29843 | 25.7 | 44.8 |
| 1993 | 265379.1 | 350.05 | 22.05106 | 32.8 | 57.2 |
| 1994 | 271365.5 | 528.95 | 21.8861 | 20.3 | 57 |
| 1995 | 274833.3 | 940.30 | 21.8861 | 20.3 | 72.8 |
| 1996 | 2754451 | 1,275.75 | 21.8861 | 24.8 | 29.3 |
| 1997 | 281407.4 | 1,445.15 | 21.8861 | 17.6 | 10.7 |
| 1998 | 293745.4 | 1,600.58 | 21.8861 | 18.3 | 7.9 |
| 1999 | 302022.5 | 1,704.82 | 92.69335 | 21.3 | 6.6 |
| 2000 | 310890.1 | 1,801.48 | 102.1052 | 18 | 6.9 |

| | | | | | |
|------|----------|-----------|----------|-------|-------|
| 2001 | 312183 | 2,410.05 | 111.9433 | 26 | 18.9 |
| 2002 | 329178.7 | 2,847.11 | 120.9702 | 20.6 | 12.9 |
| 2003 | 356994.3 | 3,231.44 | 129.3565 | 19.6 | 14 |
| 2004 | 433203.5 | 3,903.76 | 133.5004 | 18.9 | 15 |
| 2005 | 477533 | 4,752.98 | 132.147 | 17.8 | 17.8 |
| 2006 | 527576 | 5,940.24 | 128.6516 | 17.3 | 8.2 |
| 2007 | 561931.4 | 6,757.87 | 125.8331 | 17 | 5.4 |
| 2008 | 595821.6 | 7,981.40 | 118.5669 | 15.22 | 11.5 |
| 2009 | 634251.1 | 9,186.31 | 148.9017 | 18.6 | 12.6 |
| 2010 | 761696.8 | 10,310.66 | 150.66 | 17.59 | 13.8 |
| 2011 | 806444.4 | 11,593.43 | 153 | 16.02 | 10.9 |
| 2012 | 816749.7 | 13,413.84 | 151.7 | 14.74 | 12.2 |
| 2013 | 823675.3 | 14,709.10 | 187.30 | 16.8 | 12.4 |
| 2014 | 842676.2 | 15,567.98 | 190.70 | 19.4 | 13 |
| 2015 | 855678.9 | 16,987.45 | 197.50 | 22.6 | 10.24 |

Source: Computed by Author

The result of the ordinary least square (OLS) as contain in table 1 above answered the main objective of the study the impact of Agricultural productivity on economics growth in Nigeria from the analysis its shows that 79.02070 unit increase in Agricultural credit famers will led to 1 unit increase in Real gross national product. The implication of this is that unit increase in Agricultural loan to famers by 79.0202070 units will lead to 1 unit increase in economic growth in Nigeria.

Analysis of the result of the ordinary least square (OLS) as contain in table 1 above also reveal that 2.147-08 unit increase in capital formation will result to 1 unit increase in real gross domestic product which is the proxy for economic growth. Also as revealed by the analysis in table 4 above that 4304.455 unit reduction in the rate of interest rate will result in to 1 unit increase in real gross domestic product or economic growth. The analysis as contain in table 4 above also reveals that an reduction in interest rate by 2.907.89 will lead to a 1 unit increase in real gross domestic product this shows that as interest rate on loan to famers reduces more famers will access loan which will burst productivity , the analysis further reveals that a reduction by 5397.598 in the rate of inflation will result in to 1 unit increase in real gross domestic product The R- Square of shows 0.966264that 96.7 percent of the variable capture in the model help explain the relationship between Agricultural productivity and economic growth in Nigeria and only 3.3 percent of the variable not captured in the model do affect economic growth. The Durbin-Watson statistic value of 1 .634206 shows the presence of Auto correlation

among the variable which inform to carry unit root test on the variable to test their stationarity condition using Augmented Dickey-Fuller unit root test.

Summary

This study examines the impact of Agricultural productivity on economic growth in Nigeria secondary source of data collection was employed to source data for the period of (1991-2015), which were analyzed Augmented Dickey-Fuller test for unit root (ADF), and Ordinary least square method. Based on the result of the findings it is reveals that.79.02070 increase of Agricultural loan will lead to a unit increase I the economic growth in Nigeria, also an increase of 2.147-08 in capital formation will lead to 1 unit increase in economic growth in Nigeria. Further findings reveals that a reduction in exchange rate with 4304.455 will lead to a unit increase in economic growth while a reduction in interest rate with 2.907.89 will lead to 1 unit increase in economic and finally a reduction in the rate of inflation by 5397.598 will also lead to 1 unit growth rate. Nigeria. The result indicate that there is causal relationship between non- oil export and economic growth.

Conclusion

In conclusion the result of the finding reveals that Agricultural productivity has an impact on economic growth. The study further provides answer to the following research questions as follows:

- (i) That Agricultural sector has provided more employment to Nigeria than any other sector of the economy.
- (ii) That capital formation has significant impact on Agriculture in Nigeria.

Recommendations

By way of recommendations, government at all levels and key actors involve in policy formulation should be more realistic and holistic in adopting measures. The government should do well to tackle the problem of Agriculture in Nigeria since it provide more income as well as employment to Nigeria's ignorance, unemployment, discrimination, corruption and crime.

Government should accelerate the pace of development. Development in this context consists of creating an economy with relevant social, economic and physical infrastructure for business operations and industrial growth, to provide gainful employment, high level of educational facilities, and medical care for the people.

Government should recruit competent, well trained persons, and if necessary set up new Agricultural extension department in other to educate famers on proper yield

Governments at all levels should ensure subsidy in Agricultural product example fertilizers and improve seed for famers.

Government should also increase loan to famers to cut across many in the country and interest rate to loan on Agriculture should be at low rate to famers while exchange rate should also be government priority in other to reduce the cost of Agricultural input.

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