TITLE PAGE

THE IMPACT OF AGRICULTURAL DEVELOPMENT ON NIGERIA ECONOMIC GROWTH (1980-2010)

A PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF BACHELOR OF SCIENCE (B.Sc.) DEGREE IN ECONOMICS

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CERTIFICATION

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DEDICATION

This work is humbly and wholly dedicated to the ever Supreme God, Commander in Chief of the whole universe for his love, guidance, care and infinite mercies throughout my stay in the school and also through our blessed mother, “Mirror of Justice”.

Furthermore, to the whole Angels and Saints of God most especially my guardian Angel who has been at work ever since my birth.

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I say may God continue to bless you. Amen.

Onunze Martin T.

ABSTRACT

In recent decades, the main and potential contribution of agriculture to economic growth has been a subject of much controversy among development economists. As some contend that agricultural development is a pre-condition for industrialization, others strongly object it and argue for a different path. Taking advantage of ordinary least square method (OLS), the research carried out by means of secondary data and using the independent variables. Agricultural Development (AGD), Capital Formation (CFN) Inflation Rate (INF), and Interest Rate (INT) to re-examine the question of whether agriculture could serve as an engine of Economic growth in Nigeria. The result gotten from the empirical analysis shows that the productivity in agricultural sector has appreciably impacted positively on the economic growth in Nigeria.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Agriculture is the foundation and bedrock upon which the development of stable human community has depended on throughout the whole universe such as rural and urban communities. It is concerned with the husbandry of crops and animals for food and other purpose. The study of the history of economics provides us with ample evidence that can agricultural revolution is a fundamental pre-condition for economic development. The agricultural sector has the potentials to be the industrial and economic springboard from which a country's development can take off. Indeed, more often than not, agricultural activities are usually concentrated in the less developed rural areas where there is a need for rural transformation, redistribution, poverty alleviation and socio-economic development.

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 areas development. Through its spheres of activities at both the macro and micro levels, the agricultural sector is strategically positioned to have a high multiplies and linkage effect on any nation's quest for socio-economic and industrial development. The growth of the agricultural sector in Nigeria was not smooth. Anyanwu (1967) held that during the colonial period between 1861 to 1960, attention was 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 Mc.Donald in 1893: Landmark of 10.4 km was acquired by the British Cotton Growing Association (BCGA) in 1899 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 then 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 princes 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 1945 to 1945 marked the period of expert boom, because counties were just recovering from the Second World War and these countries needed to develop. They depended on primary production for the beginning stage of industrialization. They needed to revitalize their industrial sector by 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 Nigeria economy could reasonably be described as an agricultural economy, because agriculture served as the engine of growth of the overall economy (Ogen 2003). According to Alkali (1997) Nigeria was the world's second 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 workforce (Matton, 1981). In 1970, agricultural export crops like cocoa, groundnut, cotton, rubber, palm oil, palm kernel, etc. accounted for an average of between 65% and 75% of Nigerian foreign exchange earnings and provided the most important source of revenue for the federal as well as state government through expert products and sale taxes (Ekund are 1973). Despite the reliance of Nigerian peasant farmers on traditional tools and indigenous farming methods, these farmers produced 705 of Nigerian's exports and 95% of its food needs (Lawal, 1997).

However, the 1967 to 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 state, 2005). Ever since then, Nigeria has been witnessing extreme poverty

and insufficiency of basic food items. The agricultural sector contributions now accounts for less then 5% of Nigeria's GDP (Olagbaju and Fashola, 1996). It is against this backdrop that we set out to research on the impact of agricultural development on Nigeria economic growth.

As noted earlier, the neglect of the agricultural sector and the dependence of Nigeria on a mono-cultural crude oil based economy had not augured well for the well-being of the Nigerian economy. It becomes therefore imperative to study the impact of agricultural development on the Nigeria economic growth.

1.2 Statement of Problem

The agricultural sector has suffered from years of poor management, inconsistent and poorly implemented government policies, government neglect and lack of basic infrastructure. Agriculture accounted for 30% of the GDP in 2010 (World Factbook, January 9, 2012).

Nigeria is no longer a major exporter of cocoa, groundnut, rubber and palm products. Coca production

mostly from obsolete varieties and over-aged trees are stagnant at around 150,000 tones annually. There is also a decline in groundnut, palm oil and other major export crops (United States Department of State, 2005). The decline in agricultural production was largely due to the rise of oil shipments (A.B Sekumade 2009).

Because of this backdrop, agriculture has not kept up with the rapid population growth and Nigeria once a large net exporter of for now imports most of its food requirements. Dependence on oil is not only the cause of the under-development of the Nigerian agricultural sector, but also:

1. The Nigerian agriculture is characterized and surrounded by bunch of illiterate farmers who live in rural areas, producing over 90% of the total food consumed and other agricultural products and with regards to their educational status giving little or no room for improvement through scientific research.

And also more than 90% of the consumed food in Nigeria is provided by the small-scale farmers.

2. The Nigerian agriculture lacks storage facilities and these have led to so much wastage and high cost of storage. This hinders the availability of source perishable agricultural produce through the year, therefore hindering agricultural development.
3. Another negative force is Dependence on weather which affects the increase in agricultural produce. Nigeria Agriculturists or farmers still depend on rainfall only to produce instead of the use of irrigation that supplies water all through the year.
4. The problem of finance: The agricultural sector is poorly financed in Nigeria. They do not get credit easily from financial institutions, like commercial banks. The agriculturists find it difficult to finance projects which are capital intensive. The commercial banks cannot grant loans easily to a small scale

farmer because of low produce and low profit which results to a failure in paying back the loan.

5. In addition, the dependence on imported foods has disincentive investment in local farming.

Also, soil infertility is one of the problems of agriculture in Nigerian. Most of the farmable land in Nigeria contains soil that is how to medium in productivity. According to the food and Agricultural Organization of the United Nations (FAO), with proper management, the soil can achieve medium to good productivity. The movies problem that affects soil fertility is soil erosion. Wind erosion, strong winds expose seeding lings and crops root system by blowing away loose, fine grain soil particles in drifts, which can cover crops.

Another type of erosion that affect soil fertility is water erosion. There are two types of water erosion: Splash erosion and rill erosion. Splash erosion occurs when rain drops impact the soil and rill erosion occurs

when channels of water carry soil downstream. This (water erosion) is reduced when the soil is covered with a canopy.

6. Food processing problem is estimated that about 20 to 40% of the yearly harvest is lost during processing. The primary cause is the lack of efficient harvesting techniques.

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

This research work therefore is aimed at answering the following questions:

(i) What is the effect of agricultural output on economic growth?

(ii) What is the effect of agricultural sector on employment creation?

1.3 Objectives of the Study

The broad objective of this study is to determine the impact of agricultural development on economic growth in Nigeria.

1. To determine the impact of agricultural sector on the economic growth in Nigeria.
2. To determine the effect of agricultural sector on employment creation in Nigeria

1.4 Statement of Hypothesis

For the purpose of this study, the following hypothesis is tested;

1. H_0; Agricultural development has no significant impact on economic growth in Nigeria.
2. H_0; Agricultural development has no significant effect on employment creation in Nigeria.

1.5 Significance of the Study

The significance of this study depends on the fact that with improved economy Nigeria stands to gain in its effects toward development. This work attempts to answer

the question: What is the relevance of agriculture in economic growth? The cause of agricultural backwardness and how the present state of our agricultural productivity will be improved.

This will form the basis upon which suggestions and contributions will be made as to how the full potentials of agriculture can be harnessed.

This work stands to benefit:

i. Nigeria as a whole: The research work intends to bring firth ways to increase agricultural output both for the purpose of consumption and exportation which ultimately will bring an increased favorable balance of payment (BOP) for the nation.

ii. This work will be advantageous to schools (staffs and students) and will help them understand the importance of farming no matter how small the scale of production may be.

1.5 Scope and Limitations

This research work focuses on the impact of agricultural development on the economic growth of Nigeria between the period of 1980 to 2010.

There are some factors or constraints which hinder my achieving the whole intension of this work, these constraints are; time factor, poor finance, environmental constraints like free movement to research outside the school premises etc.

CHAPTER TWO

LITERATURE REVIEW

2.1 Theoretical Literatures

Classical theorists led by Arthur Levis' in 1950s viewed economic development as a growth process of relocating factors of production, especially labor 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 labor than a source of growth (Levis 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 princes and real wages from undermining industrial development and

2. To utilize land as an additional “Free” source of growth that would not compete with resources for industrial growth. Levis (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). $Y_t = K_t L_t B_t$

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 (Timmer, 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 linkages between the rural and industrial sector of the economy. Similarly, we also include additional determinants of growth (experts and inflation rate) that have 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), exports (X) and inflation (P), a proxy for other macroeconomic factors.

(2) $B = f(A_t, X_t, P_t) = A\ X\ P$ Next, substituting (2) into (1) yields the following:

(3) $Y_t = K^{\propto}{}_t = L^{\beta}{}_t = A^{\delta}{}_t = X^{\phi}{}_t = P^{Y}{}_t$

Taking natural logs of equation (3) and including an error term yield:

(4) $\text{In } Y_t = \propto \text{In} k_t + \beta \text{In} L_t + \delta \text{In} A_t + \phi \text{In} X_t + \gamma \text{In } P_t + \Sigma_t$

According to the export-led growth literature, exports growth is a measure of outward 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; Awokus 2008). 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, (4, 10) 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).

2.1.1 Agricultural Linkages and Economic Growth and Development

Hayami and Ruthan (1985) revealed that agricultural productivity growth requires fostering the linkages between the agricultural and non- agricultural sectors.

According to Adelman (1984), because of the strong growth linkage effects, agricultural development can lead to a wider economic growth in many countries even open economics during the early stages of industrialization.

Carvantes – Godoy and J. Dewbree (2010) are also of the view that agricultural development plays a vital role in poverty reduction and economic transformation. Agricultural growth reduces poverty through direct impacts on farm

incomes and employment while indirect impacts are through linkages.

The importance of intersectional linkage in the growth process had already been widely recognized.

Hirschman (1958) was one of the theorists to emphasize linkage effect in the growth process although his analysis focused mainly on the backward and forward linkages created by investment in industrial sectors.

2.1.2 Problems Associated with Agricultural Development

The place of agriculture in Nigeria's economy has remained critical even the decades since her political independence. As documented by Anyanwu (1997) agricultural 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 percent of commodity export earnings and about 74 percent 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 percent of total export earning while non-oil product accounted for 97.3 percent of total exportation.

However, this situation changed drastically the beginning of the 1970s. Agricultural output started to decline rapidly at a time which not only coincided with the end of Nigeria civil war, but also with the period of oil Boom of 1970s and severe drought of 1977 (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 increased to 290, 650.89 in 2007 worth of food and live animals. (CBN Annual Report and Statement of Accounts 2007).

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 by farmers mostly in the immediate post-harvest period usually involves a lot of costs and in Nigeria these costs are so high that lowering the costs 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:

1. Soil erosion and loss of fertility as small holders seek to intensify production by adding labor to existing agricultural land without corresponding increase in capital (chemical, organic inputs, land conservation and infrastructure).
2. 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 Okuneye (2010), some major problems confronting Nigeria agriculture are poor infrastructural facilities such as poor feeder roads and road network, storage facilities, rural electrification, etc. poor 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.

2.1.3 Impact of Food Importation by Ekuneye (2010)

Impacts on domestic food supply:

1. Affects household food consumption and demand patterns by heightening the taste for foreign food (e.g foreign rice, fruit juice).
2. Linked with this change is growing dislike for source local food (Yams, cocoa yam).

Impact on domestic producers and consumers price:

1. Reduces domestic producer price; reduces farm income
2. Reduces consumer price: leading to consumer sovereignty. (Farmer is price taker)
3. Reduces farm income which is a disincentive to production; source farmers (young/inexperienced ones) leave.

Macroeconomic Impact:

1. Commercial food import is demanding on the economy (see table 2.0) below. What is spent on foreign exchange to import food with local substitutes could be used in direct investment in agriculture to achieve higher result.

Table 2.0

Food import Bill (₦b and US $b) 1990 – 2001

Currency	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Naira	3.47	7.79	11.74	1.395	16.77	88.35	75.95	1000.64	102.16	103.49	120.05	195.87
US$	0.43	0.91	1.46	1.73	2.09	10.99	9.45	12.52	12.71	12.88	14.35	24.36

Source:

1. CBN statistical Bulleting and Annual Report (various issues)
2. CBN, Annual Report and statement of account 2000. Dollar conversion is in constant (1990 factor)
3. Food import bills are worsened by declining foreign exchange rate, this fans local inflation.

2.2 Empirical Literature

Using social accounting matrices, Vogal (1994) examined the strength of agriculture as a factor of growth for 27 countries. He discovered that 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.

Work by 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 labor from agriculture into other sectors of the economy.

2.2.1 Agriculture and Poverty Reduction

Based on 33 household survey in India from 1957 to 1990, Ravallion and Dati (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 there for the pooled data observed that increasing agricultural productivity was the most effective path for many countries to reduce poverty and inequality.

2.2.2 Agriculture and Nutrition

As 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 labor 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 labor productivity and decreases investment in human capital (Bliss and Sterm 1978, Strons 1986, Fogel 1994)

Yand and Zhu (2004) used growth theory to capture the inter-temporal dynamic of the development process.

The authors demonstrate 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, Gunner 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). Ricardo noted that the problem of diminishing returns to agriculture would set a limit to the growth of other sectors of the economy. In the same vain, the validity of Malthusian law of population rests on agricultural stagnation in the face of growing human numbers. As is in many developed

countries, the 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, daries and animal feeds, to mention but a few, were established (Fasipe 1990). Sugar factories were also established of numan, Lafiagi and Sunti (Lawal, 1997).

The Nigerian Agricultural and Co-operative Bank (NACB) was established in 1973 as part of government efforts to invest oil wealth into the agricultural sector through the provision of credit facilities to support agriculture and agro-allied businesses (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) were conceived in 1963 and were 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 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 to growing its own 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, Roads 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 mandate given to DFRRI is as follows:

1. To improve the quality of life and standard of living of the people in the rural areas
2. 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.
3. To ensure a deeply rooted and self-sustaining development process based on effectively mobilized mass participation.

Finally, table 2.1 is the contribution of agriculture to the national economy.

Table 2.1

Indicate of the contribution of Agriculture to the National Economy.

Period	**Indicators**			
	Agric GDP as % of total GDP	Index of agric production	Agric exports as % of total exports	Share of agric in total employment
1970	n.a	126.0	75	75
1975	n.a	104.3	6.4	64
1980	34.7	93.5	3.7	60
1985	40.3	104.6	2.3	58
1990	39.0	167.5	2.2	56
1995	38.6	216.8	1.6	55
1996	39.0	224.8	1.3	54
1997	39.4	234.1	1.6	54
1998	40.4	242.4	n.a	53
1999	40.4	252.0	n.a	52

n.a = not available

Source: Akande (1998), (CBN, 1997) and (CBN, 2000)

In conclusion, as already pointed out, the main objective of the research is a detailed study of the impact of agricultural development to economic growth and development.

2.3 Limitation of Previous Studies

There are source problems and limitation in the former research on this study. Some of these limitations are:

According to Ighodo (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 of 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.

According to (Gerdien Meijerink and Pim Roza, April 2007) on the research study captioned "The role of Agriculture in economic development". The study although is quit elaborating on the role agriculture play in economic development. But the study did not look at the role of local supply of food crops which we can call "local Agriculture" (as opposed by the "new Agriculture") in rural development and for small farms; the future of small farms, poor rural households and remote (or marginal) areas who are often excluded from the "new Agriculture"

All these are very necessary because, it is where the new agriculture is rooted from.

CHAPTER THREE

3.0 RESEARCH AND METHODOLOGY

The methodology adopted in this study is the linear regression employing the technique of ordinary least square (OLS). The choice of OLS is guided by the fact that it has optimal properties which include, linearity, neutrality. Sufficient least variance and mean square error.

These desirable properties of estimators can be obtained from any techniques but minimum variance property distinguishes the ordinary least square (OLS) estimators as the best when compared with other linear neutral estimators from econometric techniques. This particular property of smallest variance is the reason for the popularity of the OLS method. (koursoyiannis 1997)

3.1 Area of Study and Coverage

This study covers the relationship between agricultural development and economic growth in Nigeria for the period 1990 – 2010.

3.2 Model Specification

This research shall employ econometric method. According to Modalla (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 econometric model is always based on 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)..... (1)

Equation (i) can be stated in econometric form as:

$GDPR = \propto_0 + \propto_1 AGD + \propto_2 CFN + \propto_3 INF + \propto_4 RIR + Ei$ .. (2)

$\propto_1 >_0$; $\propto_2 >_0$; $\propto_3 <_0$ and $\propto_4 <_0$

Where:

ECGT - Economic Growth

AGD - Agricultural Development

CFN - Capital Formation

INF - Inflation Rate

RIR - Real Interest Rate

Σ - A stochastic variable

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

$\propto_0$ = Autonomous Agricultural Output

$\propto_1, \propto_2, \propto_3, \propto_4,$ = Parameters of the slope.

Model II

UMP = F (AGD, CFN, INF)…… (3)

This equation can be stated in econometric form as:

UMP = $\beta_0 + \beta_1$ AGD + β_2 CFN + β_3 INF…… (4)

$\beta_1 <_0$; $\beta_2 <_0$; $\beta_3 >_0$

Where:

UMP - Unemployment Rate

AGD - Agricultural Development

CFN - Capital Formation

IFN - Inflation Rate

3.3 Data Sources

The data that shall be used is secondary data. They are the time series data on the included variables. The data shall be sourced from the Central Bank of Nigeria (CBN) Statistical bulletin (2010).

3.4 Method of Evaluation

In this section, the researcher would proceed with all the evaluation of the results. The evaluation will be based on three criteria; economic criteria, statistical criteria and econometrics criteria.

- **Economic Criteria:** This evaluation consist of deciding whether the estimates of the parameters are theoretically meaningfully, and statistically satisfactory. The signs and magnitude of the parameters estimates will be examined to know whether they are in conformity with their criteria expectation. Economic criteria will help the researcher to know when they are deviating from what is actually required. Statistical criteria; under this we shall use the:

(i) t-test

(ii) R^2

(iii) F-test

The t- test

This is used to test the statistical significance of individual estimated parameter. In this research, t-statistics is chosen because the population variance is known and the sample size is less than 30 (n<30)

Decision Rule

Reject the null hypothesis if the calculated value of t is (i.e t > t tab) with N-K degree of freedom at the chosen level of significance, otherwise accept the alternative hypothesis, meaning that the parameter is significant. In this study the chosen level of significance will be 5 percent (5%).

The R^2

This is also known as co-efficient of multiple determinations. It means the percentage of the total variation of the dependent variable (GDPR) explained by

the regression plan, that is, by changes in explanatory variable. (AGD, CFN, INF, INT). The value of R^{-2} lies between 0 and 1. The higher the R^{-2}, the better the goodness of fit of the regression plan to the sample observation and the closer the R^{-2} to zero, the worse the fit (Gujarati, 2004)

The F- test

This is used to test for the overall significance of regression plan (model). The test aims at finding out whether the joint influence of the explanatory variable on the dependent variable is statistically significant.

Decision Rule:

If F calculated (F^*) is greater than f-tabulated (i.e F^*) is greater than f-tabulated (i.e $F^* >$ F tab). With the chosen level of significance with k-1 and N-K degree of freedom, we reject the null hypothesis, that is, we accept that the regression model is significant. But if $F^* <$ F tab, we accept null hypothesis, that is, we accept that the regression model is not significant with K-1 and N-K degree of

freedom. The chosen level of significance in this test is 5 percent (5%).

- **Economic Criteria:** We shall test for auto-correlation using the Durbin-Watson test for multi co-linearity, normality and Hetroskedasticity.
- **Durbin-Watson** test is determined by the theory of econometrics. It is used to test for the percentage of first auto-correlation. The level of significance used is 5 percent.

Decision Rule:

Accept the null hypothesis if $du<d^{*}<(4-du)$ that is, there is no auto-correlation of first order. These are the guiding principles throughout this study.

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF RESULTS

4.1 Presentation of Result

The empirical results are presented in a table which shows the estimated parameters, the t-statistics and other diagnostic tests of equations.

Table 4.1.1 Dependent Variable, Real GDP

Variable	Co-efficient	Standard	t-Statistics	Probability
Constant	71628.78	16376.34	4.373918	0.002
AGD	1.677488	0.238463	7.034573	0.000
CFN	0.057177	0.023324	2.451458	0.0213
INF	73.77304	242.7442	0.303913	0.7636
INT	1427.570	1065.479	1.339839	0.1919

The model has the following results

R^2 = 0.986336

F statistics = 469.2038

Durbin Watson D* = 1.310335

No of observations = 31

4.1.1 Analysis of Results Based on Economic criteria

(A) **Agricultural Development (AGD)**

From the findings, there is positive relationship between agricultural development (AGD) and Real Gross Domestic Product (GDP), the coefficient of AGD is 0.1677488 which implies that a unit change in agricultural development will change real GDP by 0.1677488. or 0.168.

(B) **Capital Formation (CFN)**

There is a positive relationship between capital formation (CFN) and the real GDP from the findings, the coefficient of CFN is 0.057177 which implies that a unit change in capital formation will change real GDP by 0.057177.

(C) **Inflation (INF)**

From the findings, there is also a positive relationship between inflation rate and the real GDP. The coefficient of INF is 73.77304 which implies that a unit change in inflation rate will change real GDP by 73.77304.

(D) **Interest Rate (INT)**

According to the result of the findings, there is a positive relationship between interest rate and real GDP. The coefficient of INT is 1427.570 which implies that a unit change in interest rate will change real GDP by 1427.570.

4.1.2. Summary of the Aprior Signs

From our results obtained in the regression, the result is expected to follow the economic aprior expectation of magnitude and sign. Thus, table 4.1.2. Below shows the outcome of the signs of the parameters and expected signs.

Variable	**Expected**	**Obtained**	**Conclusion**
AGD	Positive	Positive	conforms
CFN	Positive	Positive	conforms
INF	negative	Positive	does not conform
INT	negative	Positive	does not conform

4.2 Analysis Based on Statistical Criteria (1st Order Test)

4.2.1 Coefficient of multiple determinations (R^2):

From the result, the value of the coefficient of determination R^2 is 0.986336 which implies that 98.6% of the variation

in real GDP is explained by the independent variables (Agricultural development, capital formation, inflation rate and interest rate).

4.2.2. Test of Significance of the Parameter (t-test)

The student t-test is used to determine the significance of the individual parameter estimate. To achieve this, we have to compare the calculated t-value in the regression results with the tabulated t-value at n-k degree of freedom (DF) and at 5% significant level

H_0: $\beta = 0$ (not significant)

H_1: $\beta \neq 0$ (statistically significant)

Note: The null hypothesis assumes equality of the coefficient of the parameter with zero (0) which is not usually significant for the economy as a whole. But the alternative hypothesis (H_1) assumes inequality of the coefficient of parameter (β) with zero which is always statistically significance for the economy as a whole.

Decision Rule:

Reject H_0 if t-cal > t-tab and accept if otherwise.

From the data, n = 31-5 = 26

From statistical table, critical t-tabulated at 5 percent significance level is equal to 2.056. The result of the regression analysis is summarized in table 4.2.1. Below.

Variable	t-Calculated	t-tabulated	Decision Rule	Conclusion
AGD	7.034573	2.056	reject	significant
CFN	2.451458	2.056	reject	significant
INF	0.303913	2.056	accept	not significant
INT	1.339839	2.056	accept	not significant

From the table above the coefficient of Agricultural Development (AGD) and capital formation (CFN) are significant while that of inflation rate (INF) and interest rate (INT) are not significant.

Conclusion

we conclude that Agricultural development (AGD) and capital formation (CFN) have significant impact on real GDP while inflation rate (INF) and interest rate (INT) have no significant impact on real GDP in Nigeria in the period under study.

4.2.3 The F-statistics test

The test is conducted to determine if the independent variables in the model are simultaneously significant or not.

k-1 = 5-1 = 4

n-k = 31-5 = 26

table 4.2.3 below analysis the result

t-calculated	t-tabulated	decision rule
469.2038	2.7426	Reject

From the table, since t cal > t-tab i.e. 469.2038 > 2.7426, we therefore reject the null hypothesis (H_0) and accept the alternative hypothesis (H_1) and conclude that all coefficients are not simultaneously equal to zero, i.e. the independent variables are simultaneously significant.

4.3 Econometrics Test or (2nd Order Test)

4.3.1. Test for Autocorrelation

This test is aimed at ascertaining if the error terms are correlated. To achieve this, we assume that the values of the random variable (Vi) are temporarily independent by employing the technique of Durbin-Watson (DW) test.

Null Hypothesis	**Decision**	
No positive autocorrelation	reject	$0 < d < d_l$
No positive autocorrelation	no decision	$d_l \leq d \leq du$
No negative autocorrelation	reject	$4-d_l < d < 4$
No negative autocorrelation	no decision	$4-du \leq d \leq 4-d_l$
No autocorrelation	do not reject	$Du < d < 4-du$
(positive or negative)		

Where d_l = lower limit

du = upper limit

d or d = Durbin Watson

using n = 31 and k = 5

d_l = 1.090

du = 1.025

d = 1.310335

du < d < 4 – du

1.025 < 1.310335 < (4-1025)

1.025 < 1.310335 < 2.975

Decision Rule:

There is no autocorrelation since 1.025 < 1.310335 < 2.975, therefore we accept the null hypothesis.

4.3.2 Heteroskedasticity Test

This test is basically on the variance of the error term. If helps to ascertain whether the variance of the error term is constant or not.

H_0 = Homoskedasticity

H_1 = Heteroskedasticity

Decision Rule

Reject null hypothesis (H_0) if the probability of F-statistics is less than 0.05 or accept if otherwise; the result, probability value of f-statistics is 0.017436. Since 0.017436<0.05, we reject the null hypothesis (H_0) and conclude that there is Heteroskedasticity in the model.

4.3.3. Normality test

The normality test adopted is the jargue –Bera (JB) test of normality. The J.B. test of normality is an asymptotic or large sample, and it is based on the OLS residuals. This test computes the Skewness and kurtosis measures of the OLS residuals and it follows the chi-square distribution (Gujarati, 2004).

Hypothesis

H_0 = $\beta_1 = 0$ (The error term follows a normal distribution)

H1 = $\beta_1 \neq 0$ (The error term does not follow a normal distribution).

The normality test follows chi-square distribution with 2 degree of freedom (df) at 5% level of significance.

Decision Rule:

Reject null hypothesis (H_0) if probability of f-statistics is less than 0.05 and accept if otherwise.

From the result obtained from Jarque-Bera (J.B) test of normality.

J.B = 11.56731

i.e. x^2- cal = 11.56713

$\therefore$ x^2- tab = 5.99147

Therefore, we reject H_0 and conclude that the error term does not follow a normal distribution since x^2-cal $>x^2$-tab.

4.3.4 Multi-Collinearity Test

Multi-collinearity test means the existence of a perfect linear relationship among the explanatory variable of a regression model (Trisch 1934)

Using the Correlation Matrix Result

	GDP	AGD	CFN	INT	INF
GDP	1.0000	0.991443	0.962869	0.123859	-0.272016
AGD	0.991443	1.0000	0.957961	0.126316	-0.287288
C.FN	0.962869	0.957961	1.000000	-0.058171	-0.305955
INF	0.123859	0.126316	-0.058171	1.0000	0.281731
INT	-0.272016	-0.28.7288	-0.305958	0.281733	1.0000

Decision Rule

From the rule of thomb, if correlation coefficient is greater than 0.8, we conclude that there is multi-collinearity but if the correlation coefficient is less than 0.8, there is no multi-collinearity.

Conclusion

Multi-collinearity only exist between AGD and GDP, CFN and GDP, CFN and AGD.

CHAPTER FIVE

SUMMARY RECOMMENDATION AND CONCLUSION

5.1 Summary

The study examined the impact of agricultural development on economic growth of Nigeria and unemployment rate in Nigeria over the period of 1980 to 2010. The study employs ordinary least square (OLS) method of estimation.

The finding shows that agricultural development in Nigeria has positive impact on the economic growth in Nigeria.

From the result of this finding, all the variables in the model including the care variable (Agricultural development) proved significant, which show that agricultural development has positively impact on the economic growth in Nigeria over the period under study.

5.2 Policy Recommendation

From the findings and careful investigation of the contribution of agricultural development towards economic

growth, it is therefore necessary to make the following policy recommendation to the government and all the agencies in-charge of economic growth in Nigeria thus:

Considering the fact that agricultural development from the result of our findings, has been impacted positively to the growth of the economy in Nigeria,

The following recommendations were made:

- The government needs to develop a modernized policy to help the sector to keep growing steadily as time moves on.
- Government should help the agricultural sector as far as it is concerned by encouraging commercial production of non-staple cash crops, particularly those that result in robust links to the non-farm sector, as this will be the major means to increase and improve employment for the rural poor.
- Influencing international policy processes will be important, but primarily to ensure access to

developed country markets for more processed and high quality products from developing countries.

- Since agriculture has positive impact on the Nigerian economy, the government should see that a higher percentage of allocations are invested on agricultural sector so that the economy will keep on growing in an increasing rate.
- The government should endeavour to increase an improved storage infrastructure to help the sector on the finished product in other to avoid wastage of agricultural products especially perishable products.
- The government should make policies that will enhance and support the small farmers to increase productivity to cope with producer services for example through improved varieties.
- The rural poor farmers will be best assisted by improving their access to health and education services to improve their human skills and through measures that increase their mobility so that they

can move to take up opportunities in growth areas as they occur.

5.3 Conclusion

Under normal circumstances, agricultural development provides opportunities for economic growth. From the findings, agricultural development has provided the opportunities for economic growth within this year under study (1980 to 2010).

In conclusion, from the findings, agricultural development impacted positively on the economic growth in Nigeria from the year 1980 to 2010.

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