IMPACT OF FINANCING ON AGRICULTURAL SECTOR PRODUCTIVITY IN NIGERIA

BY

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NSU/ADM/Ph.D/022/10/11

Ph.D. BUSINESS ADMINISTRATION

MAY, 2017

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A THESIS SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES, NASARAWA STATE UNIVERSITY KEFFI, IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF DOCTOR OF PHILOSOPHY (Ph.D) IN BUSINESS ADMINISTRATION.

DEPARTMENT OF BUSINESS ADMINISTRATION

FACULTY OF ADMINISTATION

NASARAWA STATE UNIVERSITY, KEFFI

NIGERIA

DECLARATION

I hereby declare that this thesis has been written by me and it is a report of my research work. It has not been presented in any previous application for the award of Doctor of Philosophy Degree (Ph.D) in Business Administration. All quotations are indicated and sources of information specifically acknowledged by means of references.

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CERTIFICATION

This thesis titled, “Impact of Financing on Agricultural Sector Productivity in Nigeria” meets the regulations governing the award of Doctor of Philosophy (Ph.D) degree in Business Administration, of Nasarawa State University, Keffi and is accepted for its contribution to knowledge and literary presentation.

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DEDICATION

This thesis is dedicated to my Mother, Mrs. Yudzugwa Zirra L'kanda who passed to the great beyond on 27th May, 1983. She died without eating the fruits of her labour. May her gentle soul rest in perfect peace in the bosom of the Lord. Amen.

ACKNOWLEDGEMENTS

Iam greatly indebted to God Almighty who gave me the Grace, good health and vision to start and complete this work. In the same light, I remain greatly indebted to my proactive and pragmatic chairman supervisory committee Prof. S.B.A. Tende whose resilience and dedication to academic research had greatly propelled me in completing this study. The valuable and in depth contribution of a member of the supervisory committee, Dr. Uche Uwaleke was unprecedented. This really assisted me in the course of this research.

The contributions of the Vice Chancellor of the University, Professor Mohammed A. Mainoma to the early completion of this research is unquantifiable and I sincerely appreciate the fatherly role. In the same vein, I sincerely appreciate the immense role of the External Examiner Prof. S. A. Abdullahi for valuable contributions in getting the work completed.

My profound gratitude also goes to the Dean, School of Postgraduate Studies Prof. S.A.S Aruwa as well as the Dean/Internal Examiner Prof. B.E. Barde for their everlasting support/assistance in getting the work completed on time. I also recognize the immense assistance of Dr. Barr. J.E.I. Abbah, the Head of Department of Business Administration, for getting this work done on schedule.

My enormous gratitude also goes to all the lecturers of the Faculty of Administration in general and Department of Business Administration in particular notably among which include: Dr. C.A. Gbande, Dr. A.D. Zubairu, Ahmed Ibrahim as well as Umar Hassan Umar.

I warmly appreciate the assistance (financially or morally) rendered to me in the course of this work by Ezie Obumneke, A.A. Tumba, Hamman Isa Bakma, Mahmud Haruna, Prof. M.I. Bazza, Alh. Ahmed Hamman, Michael Zirra, Lazarus Zirra, K.K. Yusuf, I.F. Betso, Yakubu Tsala

(Shetiman Mubi), Amos Mbursa Bwala, Ahmed Isa Gidighe, JafedaWaba, Akinjide Akingbade, Ibrahim Tizhe, Grace Ibrahim Tizhe, Adamu Waniyo, Abdulrazak Tumba, Gp Capt. (Rtd) M.T. Tizhe, Peter Wadawasina, Yohanna Thaddeus, Mrs. Augustina Wandamihya, Hon. Ayuba Ngari, Zirra L'Kanda (my father) as well as my Classmates during the course of the study .

I particularly wish to acknowledge the support of my political mentor Distinguished Senator Binta Masi Garba who strongly supported and shaped my political activities. Special regards also go to Gen. (Rtd) M.B. Marwa, Abdulazeez Bello, and Ahmed Bukar Mbaya for their efforts/contributions towards our entire collective struggle to change the plight of our people in the political sphere.

I wish to express my never ending gratitude to my beloved wife Deaconess Na'omi Clifford Zirra and my beloved children; Nyangra Samaila Zirra and Nyagada Esther Zirra who have remained glued to me throughout the demanding period of this study.

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ABSTRACT

Access to credit facilities has been identified as one of the major problems confronting agriculture in Nigeria culminating in low output, despite several agricultural finance policies enacted by various governments over the years. This study thus examined the Impact of Financing on Agricultural Sector Productivity in Nigeria covering the period 1986 – 2014 using Ordinary Least Square (OLS) regression analysis. The study evaluated the impact of credit disbursed to agriculture by the Deposit Money Banks (DMB) through the commercial banks on agricultural sector productivity and the impact of Agricultural Credit Guarantee Scheme Fund (ACGSF) on the agricultural sector productivity. It also investigated the extent to which governments expenditure on agriculture affected agricultural sector productivity and determined the impact of banks interest rate on agriculture on agricultural sector productivity. The findings from the study included that commercial banks credits have no significant impact on agricultural sector productivity in Nigeria while ACGSF has no significant impact on agricultural sector productivity in Nigeria. Also, governments expenditure has significant impact on agricultural sector productivity in Nigeria while interest rates on commercial banks credits to agriculture have not significantly impacted agricultural sector productivity in Nigeria. Based on these findings, it is recommended that: Commercial Banks increase their lending to agriculture by lending through cooperative societies. This would ameliorate inherent risks involved in lending and provide access to high repeated loan amounts. Also, that ACGSF should be recapitalized to sustain agricultural financing and enable beneficiaries have adequate agricultural credit to spur higher productivity while interest drawback programme associated with the scheme be sustained. In addition, the various governments should increase their yearly budgetary allocations to agricultural sector in a consistent manner due to the primary and vital importance it plays in national economy. Since lending rates to agriculture by commercial banks within the period of study were high, there is the need for policy thrust by the government through moral suasion to reduce the interest rate on agricultural loans to enhance high productivity. This could be achieved by the introduction of palliative measures like tax holiday and exemption from taxes from any earnings from agricultural lending.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Finance stands out among the many problems confronting the agricultural sector in Nigeria. This is because the availability of finance is directly linked to other problems facing agriculture; affecting production, transportation, processing and storage. In an effort to diversify her oil base economy, Nigeria is placing much emphasis on financing other sectors most especially agricultural sector and Small and Medium Enterprises sector since they both have the potential to stimulate economic growth through provision of raw materials, food, jobs and increased financial stability.

It is expected that a farmer encouraged with credit will be in a position to improve his operation, use improved implements, seeds, livestock, manpower, transportation and markets for sale of the output and purchase of inputs at good market price. Moreover, the farmer will reap the economies of scale, discover new and cheaper products, create demand where none exists and provide utilities to satisfy a widening market, generate in him the optimism and determination to venture into new fields. Through this, credit will constitute the power or key to unlock latent talents, abilities, visions and opportunities, which will lead to economic development and growth among the rural farmers who benefited from government credit policies. When farmers have adequate access to finance, they can obtain the inputs they require for production processes. Without credit, farmers are forced to produce food and fibre using out-dated inputs and tools, on soils that are characterised by lack of nutrients, as fertiliser use is very rare.

A key source of financing agriculture is farmers' own savings from extra income generated from production and farm sales. Lack of adequate finance forces farmers to use minimal levels of inputs,

and are able to produce agricultural products in only small quantities which can often barely meet their families' basic needs. Under this scenario, the potential for saving is very low, leading to low investment and low levels of income. This vicious cycle of poverty continues until it is broken by an external capital inflow from outside the smallholder farming system. The external source increases investment, which consequently increases output, income and savings.

The sources of the big push described previously are usually in the credit market. In Nigeria, operators/players in the agricultural market can be broadly classified into two categories: formal and informal. Small farmers have more access to informal credit sources than formal rural farm enterprises have, but the local moneylenders who represent the predominant source of credit to small farmers usually charge exorbitantly high interest rates. These high interest rates are counterproductive to the farmers, who lack alternative sources for the loans they need to finance their farm operations. Many farmers lose out when the assets they used to secure a loan are recovered by moneylenders in case of default, leaving the farmers worse off than they were before they acquired the loan. Although the government encourages commercial and merchant banks to increase lending to agriculture, most banks have not done so because of the risks confronting agricultural production in Nigeria. In addition, the loan amounts required by small farmers are lower than the sums that commercial banks prefer to lend. Even when banks do make these loans, processing costs are higher relative to the size of the loan. In such circumstances, agricultural credits are dispensed to the farmers at exorbitant interest rate which could ultimately add to their cost of production and in the long run may affect repayment of the loans.

Omonona (2014) noted that this financial bottleneck preventing small farmers from obtaining access to credit led the Government of Nigeria to create an institutional programme for making

credit available to this vulnerable but productive sector. In 1973, the Nigerian Agricultural Cooperative Bank was integrated into the Nigerian Agricultural Cooperative and Rural Development Bank to create the present Bank of Agriculture. The government encouraged commercial banks to support the Bank of Agriculture's financing of agriculture by opening branches in rural areas. It was hoped that rural people would adopt the practice of banking to enable them to obtain loans to finance their farming.

Another policy stipulated a minimum percentage of total loans to be granted to the agricultural sector, encouraging banks to relax some of their restrictive lending procedures. However, banks preferred to pay a fine rather than to comply with this directive of the Central Bank of Nigeria (CBN). Banks complained of the high risks they incurred in financing smallholder farmers, who usually lacked the right kind of collateral to qualify them for any form of bank credit. Recognising this challenge, the government established the Agricultural Credit Guarantee Scheme Fund (ACGSF) in 1977, which became operational in 1978, primarily as a mechanism which encouraged commercial and merchant banks to lend to farmers, with ACGSF and the banks sharing the risks.

ACGSF was set up primarily to induce banks to increase and sustain lending to agriculture. Under the scheme, bank loans to farmers are guaranteed 75 percent against default by the CBN. Commercial Banks in the country see agricultural finance as development finance and they are generally not pro-development finance.

According to Mafimisebi, Oguntade and Mafimisebi (2008) the establishment of the scheme was aimed at solving the problem of inadequate funding of farm operators by banks and to cushion these financial institutions against the effects of high risks associated with investments in farm

enterprises as well as to raise the productivity and earnings from farm investments so that the incidence of loan repayment default among the farmers will be minimised (CBN, 1977; Ogwuma, 1985; Eyo, 1985; Oguoma, 2002).The aims of the Scheme were: to increase institutionalisation of credit; to decentralise institutional credit agencies; to reduce conditions of borrowing; and to give incentives to banks to give loans to farmers (Isiorhovoja & Chukwuji, 2009).

According to Somayina (1981) approximately 70% of Nigeria's population engages in agricultural production at subsistence level, while agricultural holdings are generally small and scattered. Smallholder farmers constitute 81% of all farm holdings and their production system is inefficient. Small scale (0.1-5.9 ha), medium scale (6.0-9.9 ha) and large scale (>10 ha) are the three broad categories of farm holdings in Nigeria, with the small scale farm holdings predominating the country's agriculture and accounting for about 81% of the total farm area and 95% agricultural output (Shaib, 1997; FMAWR, 2009). The estimated average operational holding is 2 ha per farm family. Further analysis of the working population data indicated that growth rate of agriculture working population seems to be the driver of the growth rate in total working population. For instance the growth rate of agriculture working population dropped from 3.73% in 2003 to1.94% in 2007, while that of the total working population dropped from 4.46% in 2003 to3.25% in 2007 (Ujah & Okoro, 2009). The high correlation between growth rates of total working population and agriculture working population seems to suggest that agriculture holds the potential for tackling unemployment in the country at least in the short run.

Prior to the introduction of Structural Adjustment Programmes (SAP) in Nigeria in 1986, the Nigerian financial sector was characterised by rigid exchange rate and interest rate controls,

mandatory sectorial allocation of bank credit to the private sector, all of which engendered distortion and inefficiencies that resulted to low direct investment.

Oni (1993) opined that the structure of Nigeria agriculture identified three distinct phases namely, the period of agricultural discrimination (1960-1970), the period of government intervention (1970-1985), and the period of the structural adjustment programme (1986- till date). The period of agricultural discrimination was characterised by active discrimination against agriculture. This period was marked by export restrictions and duties on food crops, all of which served as disincentives to domestic agricultural production. During the period of government intervention, agricultural policies attempted to promote rural development and enhancement of food supplies. During the period of the Structural Adjustment Programme (SAP) the policy sought to eliminate price distortion and promote market liberalisation among other things, in a bid to promote healthy growth and development. This study, however seeks to evaluate the impact of financing on agricultural sector productivity from 1986 – 2014 which fell within the period of SAP.

The Nigerian economy is increasingly being globalised by deliberate government actions since July 1986 when the Federal Government began the implementation of the Structural Adjustment Programme (SAP). The SAP sought to deregulate and free the economy from government control with a view to allowing market forces determine the production and consumption decisions of economic agents within the country. The deregulation process, which was accompanied by privatisation and commercialisation of government enterprises, has had far reaching impacts on the entire economy. In particular, deregulation of interest rates affected bank lending to the real sectors of the economy, including agriculture (Soludo, 2008).The deregulation of interest rate led to high

charges on agricultural credit facilities with concomitant effect on productivity leading to obvious call for government to come to the aid of the farmers.

1.2 Statement of the Problem

Waqar (2008) argued that among other factors like soil fertility, land degradation, irrigation problem and old methods of production, the most important problem affecting agriculture is lack of capital or finance. As a result most farmers are unable to adopt modern methods of production and ultimately cannot buy technologies to increase output.

Access to credit facilities has been identified as the direct solution to increasing investment agriculture in Africa. Credit is a crucial factor in agricultural production and in many cases may be a limiting factor in small holder agriculture. According to Miller (1977) credit provides the means for the temporary transfer of assets from an individual or organisation to one which has not. Granting credit facilities to small scale farmers can be used as an antidote to address the vicious cycle of poverty that encompasses low productivity, low income and low productivity cycle in agricultural sector. One of the key drivers for the progress of any sector is the availability of credit or finance. In the case of agriculture, it is not only the availability of credit but also the access to adequate private and public sector credit that matters, since most of agriculturists belong to small and marginal farmer categories.

Credit may be described as a facility extended from the lender to the borrower and is repayable at maturity, which may range from a few days to several years. For a credit transaction to be completed, the borrower must provide some evidence of debt obligation in return for the loan where the loan is based solely on good reputation, financial position of the borrower and trust. Credit can also be extended to the borrower in the form of assets possessed by the lender that is in

cash (Miller, 1977; Abayomi & Salami, 2008). Different policies have been made and implemented in various African countries to enhance farmers' access to credit facilities. The implementations of these agricultural finance policies have suffered setbacks in many instances. Access to credit at the right time and in sufficient quantities are necessary conditions for success for farmers and agribusiness entrepreneurs along agricultural value chain in Africa (Nnanna, 2005).

1.3 Research Questions

i. What impact does credit disbursed to agriculture by the commercial banks has on agricultural sector productivity?
ii. To what extent has Agricultural Credit Guarantee Scheme Fund impacted on the agricultural sector productivity?
iii. What is the effect of governments expenditure on agricultural sector productivity?
iv. What impact do interest rates have on agricultural sector productivity?

1.4 Objectives of the Study

The main aim of this study is to examine the impact of financing on the agricultural sector productivity in Nigeria. The specific objectives are to:

i. Evaluate the impact of credit disbursed by the commercial banks to agricultural sector productivity.
ii. Examine the impact of Agricultural Credit Guarantee Scheme Fund on the agricultural sector productivity.
iii. Investigate the extent to which governments expenditure affects agricultural sector productivity.

iv. To determine the impact of interest rates on agricultural sector productivity.

1.5 Statement of Hypotheses

Hypotheses for this research are stated in a null form as shown below:

H_{01}: Commercial banks credits have no significant impact on agricultural sector productivity in Nigeria.

H_{02}: Agricultural Credit Guarantee Scheme Fund has no significant impact on agricultural sector productivity in Nigeria.

H_{03}: Governments expenditure has no significant impact on agricultural sector productivity in Nigeria.

H_{04}: Interest rates on commercial bank credits have not significantly impacted agricultural sector productivity in Nigeria.

1.6 Significance of the Study

This study would be of immense benefit to a number of people like academics who are interested in furthering their knowledge of agricultural financing and agricultural sector productivity. Also, the study would help the various governments in policy formulation. Equally important is the fact that this study would also be of great benefit to practicing managers in the field of banking who might be willing to consider the usefulness of the study in managing and strengthening their own agricultural firms.

This study is pertinent considering the significant attention given to agricultural development in Nigeria especially in the disbursement of funds. The study would also be useful in the evaluation

of the efficiency and effectiveness of the funding process in relation to productivity with a view to reduce wastages and correct deficiencies in the delivery of these funds to achieve best result of invested funds.

The study attempted to find out the methods and approaches used in the disbursement of funds to arrive at the best approach towards realising improved and higher agricultural sector productivity. It had been observed, however, that only few studies have been done in this area, and it is hoped that this work will contribute towards agricultural development literature in Nigeria on funding agricultural development projects.

1.7 Scope of the Study

This study is limited to the impact of financing on agricultural sector productivity in Nigeria between 1986 and 2014. The period was deliberately chosen to access the Structural Adjustment Programme era (from 1986 to date) on agricultural sector productivity as the policy sought to eliminate price distortion and promote market liberalisation among other things, in a bid to promote healthy growth and development in the economy. This period also covered when the banking sector (the credit extended mainly to the agricultural sector by Deposit Money Banks through commercial banks) as well as public sector financing from the various arms of government were utilised to ensure effective fund mobilisation.

With regards to financing of agriculture in Nigeria, the study covered commercial bank credits, Agricultural Credit Guarantee Scheme Fund, Governments expenditure on agricultural sector and interest rates of commercial banks to agriculture.

CHAPTER TWO

LITERATURE REVIEW

2.1 Conceptual Framework

The conceptual framework analysed the interplay of forces involved in assessing the impact of financing on agricultural sector productivity. Such factors like agricultural finance, agricultural productivity and interest rate were discussed.

There are numerous ways of financing agriculture in Nigeria among which are the Deposit Money Banks (DMB) through the commercial banks, self-financing and government financing through direct budget allocations. The Deposit Money Banks (DMB) through the commercial banks is supposed to be the major organised formal financing sector in agriculture. The snag in their operation involve the high interest rate they charge on agricultural loans while majority of the beneficiaries operate on small scale as a result of their inability to meet the terms and conditions for the granting of loans for their operation. Their loans are short-term and are used to finance annual, biennial, perennial as well as livestock.

Self-financing is presumed to be a major source of agricultural financing; this occurs when a farmer decides to reinvest his saving in agricultural project or expands an already existing one. This attracts a slow process since saving depends on a lot of factors such as economic and fiscal policies. Government, both in federal, state and local level play a major role in financing agricultural projects in Nigeria. In short, they are the father of all other sources of finance. They give loans to farmers either directly or indirectly through some agencies like Ministries of Agriculture, Agricultural Banks and Agricultural Development Programme (ADP).

The other financing group is the informal sector which primarily involves the money lenders and the different savings by the farmers. Their modes of operations at most times are flexible.

It is important therefore to analyse the concept of both agricultural finance and productivity with a view to understanding agricultural productivity and the role of interest rate on lending.

2.1.1 Agricultural Finance

Agricultural finance is the acquisition and use of capital in agriculture. It deals basically with the supply of and the demand for funds in the agricultural sector of the economy. IFAD (2010) defines agricultural finance to all those financial services that focus on on-farm activities and agricultural businesses without necessarily targeting poor people. The crucial role of financing in agriculture cannot be overemphasised. The escalating world population is associated with greater pressure on food demand and the demand for agro-products that are input for further production, thus the need for use of more sophisticated methods capable of yielding greater output is essential. Finance in agriculture is as important for improved productivity as technical input can only be purchased and used by farmers if they have required fund at their disposal.

Literature abounds on the relationship between agricultural finance and agricultural productivity. Zuberi (1989) asserted that agricultural output was low in developing countries. Using Pakistan as a reference, he attributed this to small holdings, traditional methods of farming, poor irrigation facilities, low or misuse of modern farm technology, among others. This resulted in small income and no saving or small saving. Access to finance therefore, was expected to stimulate farm investment, boosting the use of modern inputs, and augmenting farm production. Since farmers, especially in the rural areas were poor, they found it difficult to save, and funds available through informal financial markets were usually costly, while the commercial banks and other formal

sources of funds view the sector as risky for lending. Also, low returns on investment and the long period of pay-back associated with agricultural activities, compared with other non-agricultural activities, limit formal lending. The perceived high risks and long-gestation period is mainly associated to the fact that the sector's output depends on the vagaries of weather.

2.1.2 Agricultural Productivity

Agricultural productivity may be defined in general terms as the ratio of the value of total farm outputs to the value of total inputs used in farm production (Olayide & Heady, 1982). Since one of the main objectives of any society is the attainment of an optimal standard of living with a given amount of effort, any increase in productivity of resources employed in farm production supposed to lead to an increase in the standard of living. Increases in agricultural productivity could therefore contribute to the well-being of the economy as a whole. The ultimate objective of productivity should be to find ways of increasing output per unit of input and of attaining desirable inter-firm, intra-firm, and inter-sector transfers of production resources, thereby providing the means of raising the standard of living.

For many years productivity has been a key issue for agricultural development strategies because of its potential impact on economic and social development. It is generally believed that the surest means through which mankind can raise itself out of poverty to a condition of relative material affluence is by increasing productivity. Productivity improvement creates the wealth that can be used to meet present needs and for investments to better meet the needs of the future. Productivity in its broad sense is a measure of how efficient and effective resources are used as inputs to produce products and services needed by the society in the long run.

2.1.3 Interest Rate

According to Monke and Pearson (1989) the interest rate is the price paid for the use of borrowed capital and an important macro-price of agricultural credit. It is an instrument for credit and monetary control used by the national monetary authorities to regulate the level of macro-economic activity in the country. It is also used to regulate the level of money supply which influences a large number of other phenomena, including the inflation rate.

The cost of loans acquired from these financial services providers is in a form of interest that is charged at various rates. High interest rates are expected to increase the direct costs of production of loan. This effect is felt by all borrowers, while high interests become part of production inputs purchased by farmers. Increases in the interest rates translate into greater financial burden for farmers who hold variable-rate loans.

2.2 Empirical Review/Review of Previous Studies

2.2.1 Review of Related/Relevant Empirical Studies

Several cross-country studies have been carried out across the globe to examine the relationship between financing and agricultural sector productivity, but their data periods, methodologies and findings have mixed results.

2.2.1.1 Commercial Banks Credits and Agricultural Sector Productivity

Udoka, Mbat and Duke (2016) examined the effect of commercial banks' credit on agricultural output in Nigeria. Four research hypotheses were formulated to guide and direct the study. The ex-post facto research design was adopted for the study with data collected from published articles and the Central Bank of Nigeria Statistical bulletin. To estimate the specified equation, the

ordinary least squares regression technique was employed. Based on the finding the following result arose; that there was a positive and significant relationship between agricultural credits guarantee scheme fund and agricultural production in Nigeria. This meant that an increase in agricultural credit guarantee scheme fund could lead to an increase in agricultural production in Nigeria. There was also a positive and significant relationship between commercial banks credit to the agricultural sector and agricultural production in Nigeria. This signified that an increase in commercial banks credit to agricultural sector led to an increase in agricultural production in Nigeria. Again, there was a positive and significant relationship between government expenditure on agriculture and agricultural production in Nigeria while there was a negative relationship between interest rate and agricultural output. This was because an increase in the rate of interest charged farmers for funds borrowed discouraged many farmers from borrowing with resulted less agricultural investment. The study recommended that the positive effect of agricultural credit guarantee scheme fund on agricultural production called for the proper funding of the scheme by the government. To this end, there was the need for the government to continue to guarantee loans lent to farmers as this would encourage the banks to lend more to farmers.

In his study on the impact of commercial Bank's credit to agriculture on Agricultural Development in Nigeria: An Econometric Analysis, Obilor (2013) utilised Agricultural Production output Index as the dependent variable while commercial bank's credit to the Agriculture Sector , Agricultural credit Guarantee Scheme loan by purpose, Government Financial Allocation to Agricultural Sector and Agricultural produce price as the independent variables. He utilised autoregressive and/or moving average estimation based on stationary Time series data. Both Unit Root Test and Dickey –Fuller Test were carried out in addition to ordinary least square and T-statistics. From the statistical computation, analyses and findings of the test carried out, it showed that: The joint

action of commercial banks credit to the agricultural sector, agricultural credit guarantee loan by purpose, government financial allocation to agricultural sector and agricultural products prices are significant factors that can influence agricultural production in Nigeria. It is recommended that farmers should be encouraged to be applying for loans from the participating banks to enhance their agricultural activities and productivity. Results could have been different if actual government expenditure on agriculture rather than allocation was utilised as most of these funds could have been diverted and mis-used.

Kareem, Osisanya and Isiaq (2017) examined the Effect of Commercial Banks Financing and Agricultural sector output in Nigeria for a period of 34 years (1981-2014). Its focus was to describe the trend of Real Agricultural Domestic Product and Commercial Bank Loans to Agricultural Sector; determine the effect of commercial banks financing and agricultural sector output in Nigeria as well as make policy recommendations based on research findings. Secondary data were sourced from Central Bank Statistical Bulletin of various years. The Ordinary Least Square technique was used to estimate the effect of commercial banks financing on agricultural sector output. Augmented Dickey Fuller (ADF) test was conducted to determine the properties of the variables used in the study and also to test for stationarity of the variables. The independent variable is commercial bank loan to agriculture and the dependent variable is real agricultural gross domestic product. The findings revealed that there was a positive relationship between commercial bank loan to agriculture and the real agricultural gross domestic product and this was in line with the apriori expectation of the study. Thus they concluded that the commercial bank financing has significant impact on agricultural sector output in Nigeria. The study recommended that the commercial bank should increase loan facilities to the agricultural sector to sustain food

production for the teeming population of Nigeria. It is however important to monitor the usage of credit right from the input to the output stage to ensure proper utilisation.

Kareem, Bakare, Raheem, Olagumela, Alawode and Ademoyewa (2013) examined the financial factors influencing Agricultural productivity in Nigeria: Macro-economic perspectives. The study sought to determine the factors influencing agricultural production in Nigeria, and also determined the causality between Agricultural outputs and macro-economic variables. Their study adopted regression analysis, descriptive statistics and the Granger causality tests on macroeconomic variables (that is Food import value, Interest rate, Commercial bank loans on Agriculture, GDP growth rate and Foreign direct investment) to find the significant relationship between the different variables chosen. They used Augmented Dickey–Fuller (ADF) unit root and Johansen co-integration test to determine the level of stationarity and equilibrium relationships of the variables.The result showed fluctuations in the trend of variables considered (that is Interest rate, Commercial bank loans to Agriculture, GDP growth rate and foreign direct investment) in relation to the period under review. The result further showed that foreign direct investment: commercial bank loan, interest rate and food import value have positive relationship with Agricultural output. The banks should be encouraged to lend to agriculture at optimum interest rate since high interest discourages productivity more so when modern equipment could be acquired by the beneficiaries.

Kolawole (2013) empirically investigated the impact of finance and some macroeconomic variables on agricultural productivity in Nigeria by employing co-integration and an error correction mechanism (ECM) technique with annual time series data covering the period 1980 to 2011. The results revealed that there was a negative relationship between agricultural value added, interest rate spread, and inflation in the country. By implication, the study deduced that the higher

the level of inflation and interest rate spread in the country, the lower the level of agricultural value added will be. The effect of higher interest rate on agricultural credits to the farmers could lead to low productivity.

A study to examine the impact of banks' and public sector's financing activities on agricultural output in Nigeria was undertaken by Sunny (2014). The study looked at the Nigeria budgetary allocation to the agricultural sector between 1990 and 2007. Analysis was performed using Statistical Package for Social Sciences (SPSS). The study discovered that the joint action of commercial banks' credit to the agricultural sector, government financial allocation to agriculture and agricultural products prices are significant factors that can influence agricultural production in Nigeria. The study recommended that Banks should be encouraged to assist such institutions that are engaged in agricultural financing and that Agricultural financing should be given paramount attention in policy formulation. The lending institutions should be encouraged to grant loans to the farmers at the appropriate time and at optimum rate of interest to safeguard against loan default.

In a study on bank credit and agricultural output in South Africa: A Cobb-Douglas Empirical Analysis was carried out by Chisasa and Makina (2013). They utilised time series data of agricultural output, bank credit, capital accumulation, labour and rainfall from 1970 – 2009. Agricultural output was used as the dependent variable while they determined Ordinary Least Square (OLS) estimates of the Cobb-Douglas production function. It was observed that bank credit had a positive and significant impact on agricultural output in South Africa. With other factors of production kept constant, a 1% increase in credit resulted in 0.6%increase in agricultural output. Capital accumulation was also observed to have a positive and significant impact on agricultural output, albeit lower than that of credit, as a 1% increase in capital accumulation resulted in 0.4%

increase in output, other factors kept constant. In terms of the Cobb-Douglas elasticity, the combined effect of credit (0.6%) and capital accumulation (0.4%) gave constant returns to scale, meaning that doubling the two inputs would double agricultural output.

Enya and Alimba (2008) examined the effect of commercial bank funding on the Nigerian agricultural sector from 1986 to 2005. The result from the OLS multiple regression revealed that, agricultural sector repayment ability, cash reserve ratio and interest rate have the theoretical signs indicating that an increase in interest rate and repayment ability of the agricultural sector causes an increase in the amount of credit by commercial banks to the agricultural sector while cash reserve ratio increases tend to decrease commercial bank funding to the Nigerian agricultural sector. This means that a per cent increase in lending and repayment ability caused a 0.0014 per cent decrease in the supply of agricultural credit while a percentage increase in cash reserve ratio will result in 0.06 per cent decrease in the supply of credit by commercial bank to the Nigerian agricultural sector during the study period. It is further suggested that government should encourage banks to lend at optimum interest rate as an anti-dote to encourage high productivity.

In a study on an appraisal of credit facilities on agricultural output and productivity in Nigeria: 1970-2010 by Ilegbinosa, Watson and Itoro (2012) using secondary data and OLS method of multiple regression, showed that there is a significant relationship between Deposit Money Banks loans and advances and agricultural output. Thus, among other issues, it was recommended that the government of Nigeria formulate policies that will encourage these Deposit Money Banks in the country to provide loans to the farmers at affordable interest rates. This will go a long way to boost the level of agricultural output in the country more so as low interest rate would be a boost to achieve higher agricultural productivity.

The basic role played by institutional credit in agricultural development in Pakistan, was investigated by Malik (1991).This study utilised primary data collected from 54,987 household interviews all over Pakistan. The study utilised total agricultural production as dependent variable and total institutional credit, fertiliser, water availability; tractors were used as independent variable. The investigators used the ordinary least squares estimation to establish the relationship. The results of the study indicated that institutional credit has positive impact on agricultural growth. The use of secondary time series data would have produced a different result as primary data were utilised in this study.

In the study of agricultural credit and agricultural productivity in Nigeria: An empirical analysis by Bashir, Mehmood and Hassan (2010) carried out a study to check the impact of agricultural credit on productivity of wheat crop: evidence from Lahore, Punjab, Pakistan. Primary data were collected through a well-structured questionnaire by dividing the district into three strata. Two villages were selected randomly from each stratum and then out of the list of loanees provided by the United Bank Limited, ten were randomly interviewed from each village. An equal number of non-loanees were also selected for the purpose of comparison. Multiple regression analysis was carried out for making of analysis. Findings showed that agricultural credit played an important role in facilitating the transformation of agriculture and raising the participation of farmers' in production process. Furthermore, it was suggested that farmers' cooperative society be revitalised in the rural economy of Pakistan to look after the interest of the farmers. The formation of the beneficiaries into cooperative societies would enable them operate on economies of scale and reduce incidence of risk.

Munyiri (2010) investigated lending policies and their effects on performance in commercial banks in Kenya. The objective of the study was to establish how lending policies affect commercial banks' performance in Kenya. The study was descriptive survey on 46 commercial banks in Kenya. Primary data was utilised for the study. He used structured questionnaires as the main data collection instrument. Descriptive statistics was used to summarise the data. From the findings, the study concluded that lending policies formulated by the commercial banks affected bank performance through attracting and retaining customers increasing the bank customer base, increase shareholder's value, create customer satisfaction, create competitive advantage, reduce loan loss defaults and increase bank profitability. The study found that there was a relationship between bank lending policy and its profitability.

Ngozi and Anthony (2015) evaluated the impact of agricultural loans, as catalyst for food production in Nigeria: The Problems and Prospects. Data for the study were sourced through secondary means. It was analysed with SPSS using multiple regression and formulated Hypotheses were tested with f-statistics and student t-test. Findings revealed that agricultural loans had significant and positive impact on food production in Nigeria. Hence, there is need to increase and sustain the amount of credits disbursed to the sector if the rate of food production is to meet with the pace at which the population is growing.

Girabi & Mwakaje (2013) undertook a study to investigate the impact of microfinance on agricultural productivity by smallholder farmers in Tanzania with the case study of Iramba District. A total of 98 respondents were selected randomly from credit beneficiaries (CB) and non-credit beneficiaries (NCB). The collected data were analysed through descriptive statistics and multiple regression analysis. Findings revealed that, CB realised high agricultural productivity

compared to the NCB respondents. This is partly because the CB was relatively better in accessing markets for agricultural commodities, use of inputs and adoption of improved farming technologies. The major factors hindering smallholder farmers' access to credit were reported to be lack of information, inadequate credit supply, high interest rates and defaulting. It is therefore suggested that optimum credit at realistic interest rate should be made available to the farmers to ensure high productivity. Also, prompt release of funds by the banks should be advocated as it could reduce the incidence of loan diversion and poor loan repayment.

Oguamanam (2006) examined the impact of commercial bank agricultural credit to agricultural sector in Nigeria using ordinary least square method. He found that commercial banks' loans and advances had positive relationship with the level of agricultural output, Federal government capital expenditure contributed positively to the growth of agricultural output in Nigeria. In the same vein, Enoma (2010) investigated the impact of agricultural credit and economic growth using ordinary least square approach in Nigeria. The result showed that agricultural credit and exchange rate have positive impact on economic growth over the years.

Iqbal (2003) explored that institutional credit could impact production of Agriculture in Pakistan. The study used (1971-2002) time series data while agricultural credit was utilised as independent variable and agriculture production used as dependent variable. Simple linear regression model technique was utilised and the study concluded that impact of agriculture credit on agriculture production was positive and significant. The results could have been different if more independent variables were introduced.

Time series data from international financial statistics (IFS) were utilised by Abid, Mumtaz, Muhammad and Irfan (2015). This study utilised data from 1973 to 2009. For checking of data

stationarity, researchers used Augmented Dickey-Fuller Test (ADF) and Phillips-Peron (PP). After unit root test they applied Johansen`s co integration approach to explore the long run result and then applied Cumulative Sum of Recursive Residual (CUSUM) and Cumulative Sum of Square Recursive Residual (CUSUMSQ) test to check the structural stability of variables. Besides, short term results were found by Error correlation model (ECM).For analysis, Agricultural Gross Domestic Product was taken as dependent variable and total labor force, agriculture credit, number of tractor and total cultivated land used as independent variable and green revolution used as dummy variable. Results revealed that labour force, agriculture credit, cultivated land and number of tractors have significant impact on Agriculture GDP. It could therefore be concluded that with maximum disbursement of credit, new technological adoption could increase agriculture production.

Okulegu (2014) examined Banking sector credit and the performance of the Agricultural sector in Nigeria. The study adopted time series econometrics analysis and descriptive statistics to estimate how the banking sector agricultural credit affects agricultural product performance in Nigeria. The empirical analysis carried out used the econometric tests such as unit root, cointegration, Error correction model and Grange causality test, in which changes in Agricultural Gross Domestic Product (AGDP) was regressed on commercial bank credit to agriculture, agricultural credit guarantee scheme, and government expenditure on agriculture-using annual series data for the period 1981-2011.The data were obtained mainly from CBN statistical bulletin. The result of the analysis showed that the total money stated as Government Expenditure on agriculture in Nigeria was not statistically significant and not theoretical in line. The study recommended that a clear-cut credit policy which ensures a long-term financing of agriculture be encouraged as Short-term,

discriminating policies cause confusion and prevent farmers from investing in agriculture. The resort to long run financing option could greatly aid in policy formulation.

The impact of the supervised Agricultural Credit scheme (SACS) first set up by the Rivers State Government (Nigeria) in 1975 as a tool for agricultural development was investigated by Mbata (1991). A comparative analysis of the productivities of two groups of farmers who borrowed from formal sources and those who borrowed from informal sources were undertaken. Data covered the 1998/89 cropping season. The findings of the study revealed that farmers who had access to the SACS consumed more inputs, obtained higher yields and thus realised greater farm profit per hectare than their counterparts who obtained credit form informal courses. There was therefore a direct impact of the SACS on small scale farmers. It was recommended that through extension services the scope of the SACS should be widened to embrace more farmers in Rivers State in particular and in Nigeria at large. It is however recommended that, to be effective SACS should invent strong recovering strategies of disbursed credit. The beneficiaries under this project should be made to take full advantage of Nigerian Agricultural Insurance Corporation cover.

The institutional credit force on agriculture was investigated by Ahmad (2011). Study used annual data (1974-2008) with the dependent variable being agricultural output while the independent variable was harvest, land, employment strength, and credit and water availability. The researcher employed the ARDL model. The study concluded that agricultural credits have significant impact on agriculture. Different result could have been obtained if more independent variables were used in the study.

The study on the impact of formal credit on agricultural output: Evidence from Pakistan was undertaken by Chandio, Yuansheng, Sahito and Larik (2016) using secondary data from 1996 to

2015. Augmented Dickey Fuller (ADF) test was applied to check the stationarity of the data. Contrarily, the Johansen Co-integration test (Trace Statistic) was used to find out whether there existed a long run relationship between formal credit and agricultural output. The Ordinary Least Square method was used to estimate the impact of formal credit on agricultural output. The empirical regression results indicated that the explanatory variable (formal credit) was statistically with coefficient of 0.860350. This meant that 1% increase in credit will increase the agricultural output by 0.86%. It was clear that the impact of formal credit on agricultural output was positive and significant. Therefore, the study suggested that the procedure of credit should be made simple and flexible and financial institutions should launch crop insurance scheme in case of crop failure by flood, draught, pest attack, and heavy rains. Also Government of Pakistan should support small farmers through credit schemes on affordable interest rate. It would be helpful in raising farm productivity and the standard of living of the small farmers. Results could have been different if more data from the time series like 30 years were utilised for the study.

In a study by Osa-Afiana and Kelikume (2015) on the impact of banking sector reforms and credit supply on agricultural sector: evidence from Nigeria, he examined the impact of the increased discretionary allocation of credit to the private sector due to the banking sector reforms and the various directed funding programs by the regulatory authority on agricultural output in Nigeria over the period of 1986-2013. The study used time series data sourced from World Bank and the Central Bank of Nigeria Statistical Bulletin. The method applied to test the impact of banking sector reforms, agricultural sector credit supply on agricultural sector output in Nigeria was the impulse response functions and the variance decomposition of Vector Error Correction Model (VECM). The results revealed that both the banking sector reforms and credit supply to agricultural sector have positively affected agricultural output in Nigeria. However, the impact of

agricultural credit supply on agricultural output proved to be very weak and insignificant. The study suggests that the discretionary allocation of credit, particularly by the monetary authorities or the banking sector, may not necessarily achieve the goal of massive growth in the agricultural sector. There is therefore an urgent need for institutional and infrastructural reform to make the financing of the agricultural sector more productive. Discretionary allocation of credit to agriculture could have been diverted or mis-used as a result of ineffective monitoring.

The performance of various lenders' agricultural/rural credit programs in Bangladesh was used to assess the relationship between agricultural credit and farm production. It investigated the major challenges and proposed remedial measures for future policy direction by the study conducted by Rahman, Luo and Cheng (2011). The study employed time series data collected from various national and international data sources. Both linear and exponential equations were adopted for analysing the time series data. Pearson Correlation equation was also applied to determine the relationship between credit disbursement and farm production. It was found that the performance of agricultural/rural credit of various lenders improved due to policy shift in recent years and the inclusion of new financial intermediaries- Private Commercial Banks (PCBs) and Foreign Commercial Banks (FCBs). Both the allocation of credit to agriculture and the target attainment had however been found less satisfactory, although agricultural credit and production revealed a strong positive correlation at 1% level. The findings would help policy makers and practitioners to gain better understanding of agricultural/rural financing and lead to better credit policies and programs. Results obtained could be of assistance for policy formulation most especially in the long run.

Fatai and Lawal (2016) investigated the significance of banks credit on the performance of agricultural production in Nigeria using time series data for the period 1970 to 2015. Estimated results were based on the Johansen multivariate co-integration method and Parsimonious Error Correction Model of the Ordinary Least Squares. Methodology revealed inconsistency with economic theory with different levels of statistical significance in the model established. Co-integration test result indicated a long run relationship between agriculture output, banks credit, interest rate and demand deposits. The parsimonious error-correction model indicated that banks credit, interest rate and demand deposits affected agricultural output negatively. The policy framework guiding the sector needed to be sharpened and carefully regimented towards stimulating agricultural production for sustained growth and development. The study called for diversification of the economic base from oil to non-oil, particularly agriculture production.

Agunuwa, Inaya and Proso (2015) carried out a study on the impact of commercial banks' credits on agricultural productivity in Nigeria between 1980 – 2013 to determine the relationship between commercial banks credit and agricultural productivity in the Nigerian economy. The statistical tool of analysis used was the Ordinary Least Squares (OLS) techniques. However the variables were subjected to the Unit Root Test to ensure stationarity before the application of the OLS. On the whole, three hypotheses were tested; all the alternative hypotheses were validated by the OLS result. The t-calculated of commercial banks credit had a value of 6.28 which was greater than the t-critical of 1.96. This was an indication of positive relationship between commercial banks' credit and agricultural productivity. The t-calculated of interest rate on commercial banks credit had a value of -9.38 as against 1.96 t-critical. This was an indication of a negative relationship between interest rate and agricultural productivity. The t-calculated of government spending, as a complimentary variable, had a value of 3.42 as against the 1.96 of t-critical. This, as the case of

hypothesis one, was also an indication of significant positive relationship between government spending and agricultural productivity in Nigeria. Based on the findings, they recommended that the Agricultural Credit Guarantee Scheme should improve on their conditions for credit guarantee in order to make agricultural financing attractive to commercial banks. Furthermore, the study advocated amongst others, that the government should subsidise interest rate to the agricultural sector as an incentive to spur productivity.

Enyim, Ewno and Okoro (2013) examined banking sector credit and performance of the Agricultural sector in Nigeria. The study applied econometric tests such as unit root, co-integration and its implied Error Correction Model and Grange causality test, in which changes in AGDP was regressed on commercial bank credit to agriculture. The result of the analysis showed that the total money stated as Government Expenditure on agriculture was not statistically significant and not theoretically in line. However, the result showed that commercial banks' credit to the agricultural sector has a positive relationship with agricultural productivity. The implication of this study therefore implies that Deposit Money Banks be encouraged to release more funds to the agricultural sector at reasonable cost in order to boost productivity.

Udih (2014) investigated banks credit and agricultural development. The study used primary and secondary sources of information that were extracted from five (5) banks and ten (10) agricultural enterprises in Delta State. A simple random sampling technique through the lottery method was adopted to select the samples. The data were analysed using percentage, mean, and Standard Deviation and Pearson product moment correlation to test the hypotheses. The research findings include: that banks' credits and advances to agricultural entrepreneurs promotes agricultural development and productivity, and that regulated banks' credits to the agricultural entrepreneurs

has no or little impact on the entrepreneurship performance, and thus, suggested that adequate bank credits should be granted to small scale agricultural farmers to increase productivity: and their farms land should be used as collateral instead the of usual banks' loan security to promote entrepreneurship performance.

Toby and Peterside (2014) analysed in their study, the role of banks in financing the agricultural and manufacturing sectors in Nigeria from 1981 – 2010 using both descriptive and inferential techniques. The descriptive results show that Nigeria's commercial and merchant banks lagged behind in financing agriculture when compared to manufacturing. Average bank credit to agriculture, within the period, ranged between 9.0% and 10.1%.Average bank credit to the manufacturing sector ranged between 32.0% and 36.8%. Within the period, average contribution of agriculture to GDP was 33.5% while contribution of the manufacturing sector to GDP averaged 5.4%. The inferential results showed a significantly weak correlation between commercial bank lending and the contribution of agriculture to GDP. Conditions should be made more conducive to the banks to enable them lend more to agriculture.

Nnamocha and Eke (2015) investigated the effect of Bank Credit on Agricultural Output in Nigeria using the Error Correction Mode (ECM). A yearly data (1970- 2013) obtained from the Central Bank of Nigeria was used for the analysis. The results showed that all the variables were integrated of order one I (1) and long-run relationship existed among them. However, following the empirical findings in their study, it showed that, in the long-run bank credit and industrial output contributed a lot to agricultural output in Nigeria, while; only industrial output influenced agricultural output in the short-run.

Nwankwo (2013) examined agricultural financing in Nigeria and its implication on the growth of Nigerian economy using ordinary least square method and quantitative research design. The study revealed that there is no significant relationship between agricultural financing and the growth of Nigerian economy and that the level of loan repayment rate over the years has indeed negatively impacted significantly on the growth of Nigerian economy. Credit is not doubt an important element in agricultural production but it is surely not the indispensible input. There is therefore the need for an appropriate mix like interest rate.

2.2.1.2 Agricultural Credit Guarantee Scheme Fund and Agricultural Sector Productivity

Several empirical evidences exist on the contribution of Agricultural Credit Guarantee Scheme Fund to agricultural productivity in Nigeria. Although, there have been no consensus on the impact of the scheme on agricultural productivity and its overall contribution to economic growth in Nigeria.

Ijaiya, Sanni and Amujo (2016) undertook a study on the Agricultural Credit Guarantee Scheme Fund: Tool for Economic Growth in Nigeria**.** The study evaluated the long-run impact of the ACGSF on agricultural productivity and its contribution to economic growth of Nigeria from 1981 to 2012, using Johasen Co-integration and Granger Causality to analyse the data. The study found that there is a long-run relationship between the variables studied over the period and that the relationship between ACGSF and Loan granted to agriculture by banks is positively significant, implying that the ACGSF is a veritable tool for increasing agricultural productivity and enhancing economic growth in Nigeria. Consequently, the study recommended that the government should incorporate sound control mechanism to monitor loans granted to farmers through the ACGSF, discourage cash disbursement to certain extent (except for working capital) and also improve

agricultural extension services in Nigeria. It is strongly suggested that the disbursement of funds in kind and not in cash could be an anti-dote to eliminate loan diversion. To forestall diversion of funds and ensure proper monitoring under the scheme, it is advisable that the beneficiaries should be formed into cooperative societies.

In a study which empirically analysed Agricultural financing and optimising Output for sustainable economic development in Nigeria by Agbada (2015) agricultural financing was proxy by the endogenous components of government secured ACGSF loans and Output was proxy by Gross Domestic Product. Data were sourced from CBN statistical bulletin, 2012 and analysed using Multiple Regression techniques. Research findings indicated that there was a positive relationship between ACGSF and Output growth in Nigeria, though Agricultural sector contribution to GDP growth was very minimal during the period under review. However, other statistical parameters passed the test of significance. He therefore concluded that there was a positive relationship between the variables though it appeared insignificant. He recommended that Government should take proactive decisions by making deliberate efforts to improve the finances of stakeholders in the Agricultural sector rather than just policies.

Also, he recommended that regulatory authority surveillance on sectorial credit allocation by banks should be strengthened considering the consequences and implications of the shortage of food production for domestic consumption, earnings from agricultural exports and the adverse effects on the living standard of citizenry.

The need to grant more funding under the scheme to the different beneficiaries is critical for its smooth operation. In addition, formation of cooperative societies is an anti-dote for achieving enhanced credit facilities as well as reduced incidence of loan default. The need for the

beneficiaries to take advantage of 100 percent insurance cover under the Nigerian Agricultural Insurance Corporation (NAIC) would go a long way to stem the tide of loan default.

Oyinbo, Damisa and Rekwot (2012) examined the long-run relationship between cocoa production in Nigeria and the ACGSF by conducting a co-integration and causality test on the variables over the period of 1981 to 2011. The study refuted the existence of a long-run relationship between cocoa production and ACGSF because of limited amount of loan guaranteed by the scheme. The study recommended a review in the number and value of loan guaranteed by the scheme for cocoa production. Thus, from the above studies on the influence of ACGSF guaranteed loan on agricultural output and its long run relationship on the contribution of agricultural output to economic growth in Nigeria were not well established. It is recommended that more funds to be granted to the different categories of beneficiaries under the scheme like individual, cooperative societies and corporate bodies in order for each of them to take advantage of economies of scale. Also adequate publicity on the function and operation of the scheme should be enhanced.

Obilor (2013) examined the impact of Agricultural Credit Scheme Fund, agricultural product prices, government fund allocation and commercial banks' credit to agricultural sector on agricultural productivity using OLS regression method and experimental research design. The result revealed that Agricultural Credit Guarantee Scheme Fund and Government fund allocation to agriculture produced a significant positive effect on agricultural productivity, while the other variables produced a significant negative effect. It should however be noted that the scheme despite its good intentions has not be able to reach sizeable number of farmers in the country. This could be attributed to low publicity given to the scheme by the operators. National Orientation Agency (NOA) could be used as a veritable tool in the dissemination of information about the

scheme. It is also recommended that Deposit Money Banks and Central Banks should train agricultural experts to ensure effective performance of the scheme.

Akpan (2012) reported a positive significant relationship between past value of loan guaranteed and real amount of loan guaranteed by ACGSF in Nigeria. He used econometric technique of Augmented Dickey–Fuller (ADF) unit root test, Johansen cointegration test, and Granger causality test. With such increase in liquidity, farmers could broaden their farm investment horizon. Onwumere (2012) and Mafimisebi (2008) also reported a positive significant impact of Agricultural Credit Guarantee Scheme Fund on agricultural productivity in Nigeria. Adequate loan monitory/supervisory visit by officials of the scheme could ensure its smooth operation. There is however the need to enhance the volume of loan granted to the beneficiaries under the scheme.

2.2.1.3 Governments Expenditure and Agricultural Sector Productivity

Idoko (2012) examined the impact of Governments finance on Agriculture on Agricultural Output in Nigeria (1975-2010). Cob-Douglas Production Function was used as the theoretical framework. The methodology employed was the linearised Cob-Douglas function. The variables of the model include Governments Expenditure on Agricultural sector, Commercial banks loans and advances to the Agricultural sector, foreign direct investment on the Agricultural sector, Annual rainfall and Agricultural credit guarantee scheme fund. Ordinary Least Squares econometric technique was used to estimate a multiple regression of Agricultural output against the explanatory variables. The result of the estimated model revealed a positive but insignificant relationship between Government expenditure to the agricultural sector and Agricultural output within the scope of this research. Based on this finding, it is recommended that greater portion of the expenditure on

agriculture be utilised on the development of infrastructural facilities to aid high productivity as well as well entrenched and robust extension services to the farmers to improve output.

A study on the impact of government agricultural expenditure on the growth of the Nigerian economy from 1960 to 2012 was carried out by Shuaib, Igbinosun and Ahmed (2015). The study employed secondary data sourced from National Bureau of Statistics, and Financial Review of Central Bank of Nigeria. It employed E-view 7.2 statistical output as a window in exploring the possible links between government agricultural expenditure and economic growth. The results revealed that government agricultural expenditure has a direct relationship with economic growth which was statistically significant at 5% level of confidence. The study recommended that government should ensure that credit is made available to farmers with relatively low interest rate, intensify effort on how to control inflation rate, increase the budgetary allocation to agricultural sector to 25% as recommended by agricultural development capital budget. In addition, timely release of budgeted funds to the sector should be encouraged.

Adofu, Abula and Agama (2012) carried out a study on the effects of Government Budgetary Allocation to the agricultural sector and its effect on agricultural output in Nigeria, with an attempt at highlighting the quantity and quality of national commitment (through public expenditure/budgetary allocation) to agricultural development over the years. Using government budgetary allocation to the agricultural sector and commercial bank credit to the agricultural sector as their explanatory variables, they examined the effect of government budgetary allocation to the agricultural sector on the output of the agricultural sector. Data were obtained from CBN's statistical bulletin and NBS's Annual Abstract of Statistics. They Employed the OLS regression Technique. The results revealed that budgetary allocation to agricultural sector had significant

effect on agricultural production in Nigeria and that the relationship between them is strong, positive and significant. Thus, the study recommended that budgetary allocation to the agricultural sector should be increased and monitored, to guarantee food security, employment and overall economic growth and development in Nigeria. It should however be noted that budgetary allocation to agriculture most times are diverted by the officials. In light of this it recommended that actual expenditure on agriculture should the yardstick of analysis.

Matthew and Mordecai (2016) investigated the impact of public agricultural expenditure on agricultural output in Nigeria for the period 1981 to 2014 with time series data obtained from the Statistical Bulletin and Annual Reports of the Central Bank of Nigeria, 2014. The Augmented Dickey-Fuller test, Johansen Cointegration test, Error Correction Method (ECM) and Granger Causality test were employed as analytical tools in the course of the study. Agricultural output was explained by public agricultural expenditure, commercial bank loans to the agricultural sector and interest rates as the variables. The Johansen Cointegration test revealed that there exist a long-run relationship between agricultural output, public agricultural expenditure, commercial bank loans to the agricultural sector and interest rates in Nigeria. The study concluded that the negative impact of public agricultural expenditure on agricultural output may have resulted due to discrepancies that existed between the amount allocated to the agricultural sector and the amount actually spent on the sector in the country. Government budgetary allocations make capital available for agricultural production by helping to secure inputs, technology and management, hence promoting increased agricultural production. Government contributions to the agricultural sector therefore enable capital investments that help in the development and growth of the sector.

Iganiga and Unemhilian (2011) investigated the impact of federal government agricultural expenditure on agricultural productivity in Nigeria. The work examined the determinants of agricultural output, this included, total commercial credit to agriculture, consumer price index, annual average rainfall, population growth rate, food importation and GDP growth rate. The Cobb-Douglas model was used to analyse the impacts of these variables on the value of agricultural output. Augmented Dickey–Fuller (ADF) unit root test, Vector Autocorrelation, Johansen co-integration and Vector error correlation model were adopted; the result showed that there was no evidence of the long run relationship. It was found that federal government expenditure was positively related to agricultural output. The work further revealed that investment in agricultural sector was very imperative and this should be complemented with monitored credit facilities, River basins and irrigation facilities should be provided for-all-year round agricultural output. He advised that food importation should be banned to encourage local producers and population control should be intensified in the rural areas. It is worthy to note that most of the annual monetary allocations by government to agriculture hardly reach the target beneficiaries in full. This is as a result of diversions/leakages in the disbursement process. It is therefore recommended that actual expenditure/released funds from the budget to agriculture should be the one to be considered for analysis.

Udoh (2011) examined the relationship between public expenditure, private investment and agricultural sector growth in Nigeria over the period 1970-2008 using the bounds test and autoregressive distributed lag model and error correction model. He found that an increase in public expenditure has a positive influence on the growth of the agricultural output. However, foreign investment has insignificant impact in the short run on agricultural output.

Oyinbo, Zakari and Rekwot (2013) investigated the link between agricultural budgetary allocation and economic growth in Nigeria from an econometric perspective. The results of the analysis showed that the relationship between agricultural budgetary allocation and economic growth in Nigeria is positive but not significant in the long run, while the relationship is positive and significant only for the two-year lagged value of agricultural budgetary allocation. This observed relationship is not unrelated to the low budgetary allocations to agriculture over the years in Nigeria. This implied that there is a need for a significant increase in actual government expenditure to agriculture in order to ensure that the agricultural sector plays a pivotal role in the national transformation of Nigeria.

The need to determine the factors that promote investment decisions in agriculture both on the part of the government and the citizenry in order to put the economy on the part of sustainable growth and development prompted a study by Adesope, Okoruwa and Akintunde (2013). The work involved an analysis of federal government expenditure and monetary policy on agricultural output in Nigeria. The broad objective of the study was to analyse the effectiveness of government annual budgetary allocation to agriculture and the role of monetary policy instruments in the growth of agricultural GDP. Data were sourced from the CBN statistical bulletin (various issues), and the National Bureau of Statistics. The data covered the period 1980-2012 and the method of analysis used was the Ordinary Least Square using E-view. The result of the analysis showed that Agricultural Credit Guarantee Scheme Fund, previous year GDP and Consumer Price Index contributed positively to the growth of agricultural GDP, other variables of note like the interest rate, exchange rate, and government expenditure on agriculture contributed negatively to AGDP growth. The study therefore recommended that government should increase her spending to

agricultural sector, monitor the fund allocated, and provide the necessary infrastructural facilities like good road network, electricity, health and water for the rural populace.

The study concluded by recommending that the CBN should encourage the investor to invest in agriculture by bringing the interest rate down to single digit in order to facilitate investment in agriculture and promote consistent growth of AGDP. It is important that the figure for actual government expenditure rather than budgetary government allocation to agriculture be utilised for the study. This is due to the fact that most of the funds in the budgetary allocation could be diverted by the operators of government. Government should ensure equitable disbursement of credit to the different agricultural sectors as well as infrastructural facilities to achieve high productivity.

Udoh (2008) examined the extent of default among beneficiaries of government sponsored loan scheme in Akwa-Ibom State, Nigeria. The loan performance indices estimate revealed that over 75% of the loans disbursed by Akwa-Ibom State Agricultural Loan Board (AKSALB) in the period under review were still held by 59 percent of the loan beneficiaries. This situation is an indication of high level of loan default among the benefiting farmers. Some factors that could lead to default at the initial stage like adequate credit appraisal, constant monitoring visits as well as provision of insurance cover by Nigerian Agricultural Insurance Corporation (NAIC) may not have been adequately put in place which could have triggered the high default rate.

A study by Ihugba, Chinedu and Njoku (2013) made a modest contribution to the debates by empirically analysing the relationship between Nigeria government expenditure on the agricultural sector and its contribution to economic growth. They utilised time series data from 1980 to 2011 obtained from the Central Bank of Nigeria Annual Report and Statement of Account, Journal of

Food Research and Federal Office of Statistics. They utilised the Engle-Granger two step modeling (EGM) procedure to co-integration based on unrestricted Error Correction Model and Pair wise Granger Causality tests. From the analysis, their findings indicated that agricultural contribution to GDP (Gross domestic product) and total government expenditure on agriculture are cointegrated in the study. Based on the result of granger causality, the study concluded that a very weak causality exist between the two variables used in the study.

Therefore, the policy implication of these findings is that any reduction in government expenditure on agriculture would have a negative repercussion on economic growth in Nigeria (Douillet & Grandval, 2011). For instance, such allocations can enable increased land size and improvement, as well as increased research in agriculture; hence, budgetary allocations thus have both direct and indirect effects on the production level of food and raw materials and consequently affect the standards of living of the people. In other words, lending and budgetary allocations to the agricultural sector should be increased by the government to help improve the performance of the country's economy (Uzomba, Imoisi & Somiari, 2012). This will also promote both local and foreign investments, and agricultural productivity, hence helping to solve economic and food security challenges in the country.

Apart from budgetary allocations to the agricultural sector, government policies have also provided opportunity for commercial banks to be involved in credit provisions to the agricultural sector through the agricultural credit guarantee scheme of the central bank of Nigeria, among other schemes (Ebong, 2007). Specifically, issues of neglect of the agricultural sector characterised by instability in government allocations and insufficient capital to the agricultural sector, as well as inconsistent agricultural policies have received lots of debate since the discovery of oil and gas in

Nigeria. For instance, insufficient capital and inconsistent government policies have been identified as part of the major factors affecting growth and development of the agricultural sector (Aja, Chikaire & Ejiogu, 2010) whereas, capital would not be a problem if adequate funding is made available for agricultural production by the government. Also, allocations to different economic sectors including the agricultural sub-sectors (crops, livestock, fisheries and forestry) are sometimes not released on time, and in some cases diverted and the programmes they were meant for therefore suffer serious neglect and delay.

Agunuwa (2015) using Johansen co-integration approach and multiple regression method also reported a positive significant relationship between government spending and agricultural productivity in Nigeria. This finding invalidated the assertion of several authors such as Ijaiya (2000) and Iwayemi (1994) whom both utilised granger causality test and multiple regression method likened the dismal performances of agricultural sector to the continuous decline in government finance to the sector.

2.2.1.4 Bank Interest Rate and Agricultural Sector Productivity

Ezeanyeji (2014) undertook an assessment of the impact of interest rate deregulation in enhancing agricultural productivity in Nigeria by employing robust statistical analysis, using ordinary least square method. Data from Central Bank Statistical Bulletin covering the period 1986 to 2010 were also examined and the findings from the study showed that interest rate deregulation had significant and positive impact on agricultural productivity in Nigeria within the period under review. Based on the findings, the study recommended a market determined interest rate as a stimulant in enhancing agricultural productivity. It further suggested that interest rate played a significant role in enhancing economic activities and as such, monetary authorities should ensure

appropriate determination of interest rate level that will break the double edge effect of interest rate on savers and local investors. It is further suggested that a realistic interest rate be put in place since higher rate leads to low productivity.

Onyishi, Arene and Ifiorah (2015) undertook a study on an impact of interest rate reform on agricultural finance and growth in Nigeria. They specifically ascertained the factors that determine the aggregate credit volume to agriculture within the period of regulation and deregulation in the Nigerian economy; and determined the periodic effects of macroeconomic financial indicators on agriculture's Gross Domestic Product contribution to the Nigerian economy. Descriptive statistics, Ordinary Least Squares regression technique and Autoregressive Distributed Lag model were used for data analysis. The chow test showed that there was a significant differential impact on the aggregate credit volume to agricultural sector between the regulated and deregulated regimes. Interest rate was an important determinant of aggregate credit volume to the agricultural sector in Nigeria, especially during the deregulated period but monetary authorities should ensure appropriate determination of interest rate level that will break the double-edge effect of interest rates on savers and investors. Low interest rate regime however is a panacea to high productivity.

Eyo (2008) and Udensi, Orebiyi, Ohajianya and Eze (2013) studied macroeconomic environment variables affecting agricultural sector growth in Nigeria, using macroeconomic policies model of credits to the agricultural sector, nominal interest rates on the loan, exchange rate, world prices of agricultural produce, foreign private investment, government expenditure and inflation rate. It was discovered that nominal interest rate is positively related to the index of agricultural sector, but at lower nominal interest rate, credit facilities are no more widely available. The index of agricultural output is also positively related to world prices of Nigeria major agricultural commodities. By

implication it means that world prices enhance agricultural output growth in Nigeria. The need to have lower interest rate to spur productivity is paramount as higher interest rate would make the cost of credit out of the reach of the farmers since return investment under this regime is low.

Empirical evidence based on the Tobit regression estimates by Umoren, Edet and Sunday (2014) showed that some factors namely; age of beneficiaries, family dependency level, total farm cost, total farm income of beneficiaries, time interval between loan application and drawdown, loan duration, government policies, years of farming experience, loan size, other loan schemes, visits by credit officers and the average interest rate paid by the beneficiaries were identified as major factors that influenced default in loan repayment among ACGSF beneficiaries in Akwa-Ibom State. Other factors like non settlement of claims to the participating banks by Central Bank of Nigeria could also have played a pivotal role in loan delinquency. Adequate provisions of insurance cover by Nigerian Agricultural Insurance Corporation (NAIC) would safeguard against loan default.

Amassoma, Nwosa and Ofere (2011) examined the nexus of lending rate, deregulation of interest rate and agricultural productivity in Nigeria using annual data spanning 1986 to 2009.The authors used OLS econometric estimation technique and cointegration and ECM. A long run relationship was revealed among the variables from the cointegration test while the error correction modeling revealed a significant and positive relationship between interest rate deregulation and agricultural productivity. The study further recommended that, interest rate should be market determined so as to serve as a catalyst for improved agricultural productivity. It is also expected that government must make it possible for the financial sector to carry out the policies that will guarantee available credit to the preferred sector, especially every sort of farmers and not bigger borrowers only like

the government alone for the sole aim of boosting the productivity of the Nigerian agricultural sector. It should still however be noted that high interest rate results in low agricultural productivity and government is enjoined to ensure concessionary rate of interest to spur productivity.

There have been many studies on the relationship between bank interest rate and agricultural productivity (Ariyo, 2000; Thirlwall, 1996; Beck, Levine & Loayza, 2006). These studies conclude that agricultural financing has impact on economic growth especially in developing countries. Some studies have attempted to look specifically at long term financing for agricultural sector (Antonio & Agnes, 1994; Mody, 1981; Rao, 1978; Narayan, 1994). They observed that long-term financing for agriculture is urgently needed by developing economies, as the stages of their respective economic development are either still early or well into the transition. Most of the studies mentioned above on this subject matter have employed simple descriptive assessment of some relevant indices. In the short run it is still advisable to maintain low interest rate to ginger productivity, while deregulation of interest rate could be effected over a period of time.

Ogbanje, Yahaya and Kolawole (2012) examined the effect of commercial banks interest rates on the agricultural sector in Nigeria from 1981 to 2007. Growth in agricultural sector was expressed in terms of AGDP. Secondary data for the study were obtained from the Central Bank of Nigeria. Findings revealed that commercial banks loan to the agricultural sector increased substantially from N590.6m in 1981 to N4, 221.4m in 1990, a 614.76 percent increase. From 1991, the loan stock rose from N5, 012.7m to N146, 504.5m in 2000, representing an increase of 2822.67 percent. There was, however, a sharp decline in loan stock from N200, 856.2m in 2001 to N149, 578.9m in 2007. Over the period of study, agricultural GDP showed declining growth rate. Nevertheless,

agricultural GDP grew from N84,428.5m in 1981 to N267,051.7m in 2007. The ordinary least square method, with lagged dependent variable, revealed that commercial banks' loan positively affected agricultural GDP at 0.01 level of probability. Hence, commercial banks' loan has contributed significantly to agricultural development in Nigeria.

Muftaudeen and Hussainatu (2014) empirically investigated the impact of macroeconomic policies on agricultural output specifically on crop production in Nigeria. The Multivariate Vector Error Correction approach was applied to examine both short run and long run relationship between the series over the period of 1978-2011. The research revealed a cointegrating relationship among agricultural output, government expenditure, agricultural credit, inflation, interest and exchange rates. The findings showed that in the long run, agricultural output was responsive to changes in government spending, agricultural credit, inflation rate, interest rate and exchange rate.

The results of impulse response functions suggested that one standard deviation innovation on government expenditure and interest rate reduces the agricultural output thus threatening food security in the short, medium and long term. The result could have been different if actual expenditure on agriculture was utilised instead of budgetary allocation in agriculture which is fraught with diversion of funds meant for agricultural operations.

2.2.2 Review of Previous Studies

2.2.2.1 Commercial Banks Credits and Agricultural Sector Productivity

Various studies in agricultural sector are of the view that increased productivity and improvement in income were greatly influenced by the injection of improved factors of production needed for intensive and extensive land and infrastructural development (Akpan, 2012). Among these major factors of production, loans and advance from the banking system were regarded as panacea for

increased production or productivity in the sector. Finance is a key component in every business endeavour required for the establishment and running of the business. It is the life blood of any business. Funds are required for the purchase of capital equipment such as land and building, machinery and other fixed assets as well as working capital. It is worthy of note that with growth in activities in any business, comes increased financial needs and increased access to funding would facilitate expansion. The agri-business involving primarily food production, distribution, processing, marketing is not an exception (Nyoro, 2002). The provision of the funds at the optimal price and quantity is however important to increase productivity.

Okurut (2006) noted that:

> *The rural poor farmers are excluded from the formal financial system due to the fact that formal banks are either unwilling or unable to serve farmers. These banks face high risk and transaction costs, difficulties in enforcing contracts, and penalisation by the central bank for lending to enterprises that lack traditional collateral. They also lack reliable information on borrowers, appropriate information systems and instruments for managing risk. (pp. 482-497)*

Formation of cooperative societies as well as effective extension/monitory services could address this issue.

Agricultural credit is expected to play a critical role in agricultural development (Duong & Izumida, 2002). Farm credit has for long been identified as a major input in the development of the agricultural sector in Nigeria. The decline in the contribution of the sector to the Nigeria economy has been attributed to the lack of a formal national credit policy and paucity of credit institutions, which can assist farmers among other things. The provision of this input is important because

credit or loan-able fund (capital) is viewed as more than just another resource such as labour, land, equipment and raw materials. It determines access to all of the resources on which farmers depend (Shephard, 2002). The provision of adequate publicity as well as effective extension services to the farmers are also necessary tools for higher productivity.

Finance for agricultural development has an increasing role in contemporary times. According to Nzotta and Okereke (2009):

> *Finance affects economic growth, stagnation or even decline in any economic system. The Nigerian government recognises that finance is an essential tool for promoting agricultural development because the agricultural sector is one of its main sources of sustainability. Access to finance for agriculture is an incentive for increasing the agricultural sector's performance; it stimulates productive growth, and supports the survival of small and new enterprises. (pp. 55-66).*

Nasir (2007) found that Credit plays a pivotal role in development. It helps farmers to undertake new investments and adopt new technologies to increase agricultural yield. Lack of access of the rural poor to institutional loan has negative impact for rural growth and well-being. Institutional loans are normally used for production and investment purposes while informal loans are squandered away on consumption. Being short- term, informal loans do not contribute to rural development, as these cannot be channeled to long-run productive activities. The need for the financial institutions to grant long-time financial need to the farmers is an essential tool for agricultural productivity.

Several studies in this area including Enyim, Ewno and Okoro (2013) have identified poor credit supply as one of the factors accounting for the poor performance of the agricultural sector in Nigeria. According to Obilor (2013) banks precisely the commercial banks, obviously have no keen interest in agricultural finance. In order to encourage the banks, the government established the Agricultural Credit Guarantee Scheme Fund (ACGSF) to provide guarantees against inherent risk in agricultural lending. This measure could not achieve the intended objectives because agriculture being both labour and capital intensive venture requires huge capital outlay (Nwankwo, 2013).

It is important that government plays supportive role like the creation of enabling environment to enable the stakeholders in the agricultural sector improve productivity.

Waqar (2008) discussed the agricultural credit constraint and borrowing behavior of the rural farmers in Punjab. The government of Pakistan introduced many programmes of credit through financial institutions. The effect of these programmes is very low due to unfavourable credit policies. The farmers were facing many problems and obstacles in the way of borrowing. The security or collateral was the major problem. Majority of the small farmers could not borrow due to unavailability of collateral. The farmers could be formed into cooperative societies which could be used in solving the collateral requirements of the farmers.

Manyong (2003) Asserted among the factors identified by respondents as being responsible for the persistence of the financial constraint in Nigeria's agricultural sector to include ineffective financial policies, inefficient financial market, inadequate financial facilities, low credit supply, high risk of lending, corruption, bureaucracy, unstable exchange rates, poor agricultural funding by governments and low returns from farming. Poor financial/ credit policies, coupled with

ineffective policy implementation, are largely responsible for high interest rates and unstable exchange rates which, in turn, tend to engender the persistence of the financial constraint. There is the need for the government to ensure concessionary low interest rate to galvanise the farmers to higher productivity.

Despite the rapid increase in financial lending to the economy, Balogun (2007) asserted that:

> *The share of production sectors of the economy especially agriculture and mining remained low and declined proportionally over time suggesting that the new monies may have been channeled into miscellaneous activities. Yet, agriculture is known to contribute a major share to the GDP even under conditions that it is not getting enough funds. A significant proportion of the production loans go to manufacturing, probably to finance imports of raw materials, machineries and component assembly activities. This further highlights the fact that financial institutions like commercial banks have always found an alternative portfolio investment more lucrative than lending to the agricultural sector. (pp. 12-14).*

It is therefore recommended that more funds should be released by the financial sector to agriculture in other to generate multiplier effect of employment creation as well as food security.

Ojo (2005) observed that the institutional lending system has failed to meet the objective for which they were set up. In his words, only 15 percent of the trading bank credit to agriculture has been covered. The major shortcomings of their transactions he observed are due to the inaccessibility of these funds to rural farmers as a result of the bureaucratic procedures and high service cost, which are very difficult for the farmers to meet. The bureaucracy involved in the processing of credit by

the various institutional lending systems need to be streamlined to make it easier for the beneficiaries.

Akpaeti (2015) investigated the impact of financial sector reforms on agricultural investment in the Nigerian economy using cointegration and vector error correction model. The study revealed that the financial reforms significantly affect agricultural investment in both the short and long-run.
In recognition of the important roles of agriculture in driving economic growth and development, the Nigerian government embarked on promoting increased funding to the sector. Even when it abandoned its mandatory agricultural lending limits for banks in the wake of the reform efforts, the Central Bank of Nigeria (CBN) continued with intervention programs to ensure adequate flow of funds from the banking industry to the agricultural sector. These intervention measures have included moral suasion to encourage discretionary bank lending to the sector and direct agricultural finance programs through the agency of the commercial banks. These CBN directed credit programs that were in operation during the period of the banking sector reforms included the Agricultural Credit Guarantee Scheme Fund (ACGSF), Agricultural Credit Support Scheme (ACSS), Commercial Agricultural Credit Scheme (CACS) and the Nigerian Incentive-based Risk-sharing System for Agricultural Lending (Anyanwu, 2010).

Tyagi (2012) analysed the contribution of agriculture to India's GDP. Agriculture contributes almost about 18 per cent to the country's GDP. The study found that, although the ratio of agricultural credit to AGDP has increased from 5.4 per cent in 1970s to 8.7 per cent in 2001-02, it may be noted that agricultural credit as a proportion to total credit has declined from 20.5 per cent to 10.5 per cent during the same period indicating lower deployment of credit in agriculture. There is therefore the need for enhanced credit to the agricultural sector for higher productivity.

According to Wydick and Kevan (2001):

> *The provision of credit to the poor serves two purposes. First, as borrowed capital is invested in small enterprises, it often results in significant short-term increase in household expenditure and welfare. Secondly, microenterprises credit spurs economic growth in the informal sector through fostering increase capitalisation of business, employment creation, and long-term income growth. (pp. 853-969)*

Ojo (1998) suggested that an effective supply of credit is the most important issue in agricultural credit programme for small farmers in Nigeria. Iheanacho (2006) proposed that effective management of agricultural policies and efforts in raising productivity through improvement in technology, and inflationary control and lowering of agricultural lending rates are important for measuring performance. There should be harmony in policy with a view to stream lining the activities of agriculture development.

Adofu, Abula and Audu (2012) maintained that:

> *The provision of agricultural credit for Nigeria's modern farming business is not enough but if such credits are efficiently utilised it could deliver on increased productivity. Finance plays an important role in the process of agricultural development, and having access to credit facilities for farming purposes is an incentive for increasing the agricultural sector's performance. (pp. 1-5)*

It is important that financial resources be made available to create access for farmers to contribute to agricultural development.

Olagunju (2000) analysed that the lack of a formal national credit policy and the inadequate number of credit institutions in Nigeria is a major cause for the decline in the contributions of agriculture to the economy. There is therefore the need to strengthen formal credit policy to enable the farmers have access to cheap and affordable credit.

Adams and Mortimore (1997) noted that access to finance increases the average inputs of labour and capital which has positive effects on production output. Irrespective of the benefits that can be derived from financing agriculture, there is an inherent risk of loan defaults amongst farmers, which discourages banks from lending to farmers. In Nigeria, Oboh and Ekpebu (2011) used ordinary least square to examine the determinants of formal agricultural credit allocation to the farm sector. The study found out that there is the need to critically assess factors affecting the rate of credit allocation by beneficiaries of Bank of Agriculture. A detailed understanding of these factors may provide necessary information towards designing a more effective and sustainable credit system that can serve poor farmers better.

As Rahji (2008) puts it, credit (capital) is viewed as more than just another resource such as labour, land, equipment and raw materials. In the same way, Shepherd (1979) stated that credit determines access to all of the resources on which farmers depend. Consequently, provision of appropriate macroeconomic policies and enabling institutional finance for agricultural development is capable of facilitating agricultural development with a view to enhancing the contribution of the sector in the generation of employment, income and foreign exchange (Olomola, 1997). 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 noticed by Enoma (2010) 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.

Oshikoya (2002) employed a macro-sectorial model while analysing the impacts of expanded domestic spending of externally borrowed funds directed towards increasing the productivity of a specific sector of the Nigerian economy. The results of model simulation suggested that the important policy priority is to increase the share of agricultural sector's public investment expenditure financed through concessional foreign borrowing as higher investment are required for research, high yielding varieties and anti-diversification programme.

Sohail, Caki and Brooks (1991) studied the relationship between agricultural credits and agricultural output in Pakistan using Vector Auto-Regression. They found that a statistical significant relationship existed between agricultural credits and purchase of agricultural inputs. These inputs significantly correlated to productive growth of agricultural output.

Other studies in Nigeria, Rahji and Fakayode (2009) identified the determinants influencing commercial banks' decision to ration credit in Western Nigeria. Data analysed were from agriculture credit transaction banks in Nigeria. Evidence from the Multinomial Model estimated showed that borrowers are heterogeneous. Furthermore, using the time series simple linear forecasting model, Muftan (2002) examined the trend of commercial banks credits to the agricultural sector and made a forecast of the amount of commercial banks' credit that would be needed to boost the contribution of the agricultural sector to the nation's agricultural output in the

next 10 years (that is from 2003-2012) if policy measures such as low exchange rate and interest rate regimes are put in place. There is need to avoid policy somersault in the agricultural sector in order to achieve efficient productivity.

Isijola (2002) using Pearson Correlation Coefficient revealed a significant relationship between credit supply and agricultural output in Nigeria. He identified commercial banks' loans and advances, Agricultural Credit Guarantee Scheme as the determinant of agricultural credit supply in Nigeria. The contribution of formal lending organisations of credit availability to farmers (Small farmer) is negligible. Yet these farmers cannot do without credit. To fill the lacuna, many of these farmers patronise informal credit association. Olagunju (2000) reported that 54% of farmers obtain credit facilities from relatives, cooperatives as against the 3% who obtain from Deposit Money Banks in South-Western Nigeria. There should therefore be concerted efforts on the part of the government to strengthen effective delivery of formal credit institutions.

Gbenga (2006) argued that there is no consensus that increases in agricultural productivity is a vital pre-requisite for the rapid economic growth and development. Junaka (2005) opined that loans should be given to "real farmers" to enable them break the viscous cycle of low productivity.

Nwankwo (2006) further stated that in Less Developing Countries (LDCs) where agriculture is predominant, with credit facilities the people can easily adjust to changing economic conditions and meet seasonal and fluctuating income and expenditure. Since cash inflow and outflow typically occur at different times, he re-emphasised continuous disbursements of loans to farmers to enable them continue in agricultural production. He observed that most of the agricultural credit obtained from the informal sources also point to the fact that the volume of credit actually obtained is low. And such credit, if could not properly be accounted for, it becomes difficult to know the

volume of the credit. As a result agricultural credit might not have impacted much on productivity by small scale farmers except the medium and large.

Eboh, Ujah and Nzeh (2009) showed that the contemporary economic significance of the agricultural sector is even more remarkable as in the past half a decade, the impressive growth rate of the nation's economy has been driven by the non-oil sector, particularly agricultural sector. There are, however, doubts about the sustainability of the current growth rate. The recent upsurge in agricultural growth rate could have been driven mainly by production of staple crops, while productivity has remained low and internationally uncompetitive, and yields of most crops have actually declined over the past two decades (Mogues, 2008; Eboh, 2006). Strategies should however be continuously devised by the various stakeholders in the sector that would lead to agricultural productivity.

Various Studies have shown that Credit plays an important role in enhancing agricultural productivity of the farmer (Okorji & Mejeha, 1993; Nweze, 1991; Mafimisebi, 2008). The general purpose of the Nigerian Agricultural Credit Guarantee Scheme Fund is to encourage banks to lend to those engaged in agricultural production and agro – processing activities. Thus, the specific objectives of the scheme is the stimulation of total agricultural production for both domestic consumption and export; and the encouragement of financial institutions to participate in increasing the productive capacity of agriculture through a capital lending programme (Olaitan, 2006).

The Nigerian Agricultural Insurance Corporation (NAIC) was established in 1987 with the objectives of providing insurance covers to farmers against natural disasters and other risks associated with agricultural activities. The existence of NAIC has encouraged banks to be more

liberal in providing agricultural credit to farmers. According to Dele (2009) NAIC paid ₦102 million in 2008 as claims to farmers out of the ₦156 million expected to be paid to farmers during the period under review, while the balance of ₦54 million was still being processed for payments. The breakdown of the amount showed that ₦39.8 million was paid for crops, ₦79.7 m for livestock, while ₦22.3 was paid for other forms of claims. Also NAIC underwrote businesses worth ₦20.6 billion during the same period including crops (₦6.5 billion), livestock (₦5.1 billion), and other businesses (₦8.9 billion). This development has put NAIC on the right track to continue to provide the much needed risk management services for the Agricultural Insurance Scheme and other insurance services (Ujah & Okoro, 2009). This scheme ensures that the farmer is brought back to business by NAIC in the event of disaster, while the ACGSF guarantees the lending institution against any default by the farmers.

The poor performance of the agricultural sector which was first noticed about three decades ago became worsened through inadequate capital investment which culminated in the vicious circle of low farm size, low use of modern inputs, low output and low income (Mafimisebi, 2006).This phenomenon became prevalent and its adverse impacts were magnified because small-scale operators, who are regarded as highly unorganised and poor in resource endowment and managerial skills are preponderate in the Nigerian agricultural sector (Akinwunmi, 1999). These inadequacies notwithstanding, the small-holders account for about 95% of agricultural production in Nigeria (Olayide, 1980; World Bank, 1993; 1996). To remedy the problem of persistent low performance of the agricultural sector, there is the need for injection of capital into agricultural activities since the funds required for farm expansion and greater use of modernised and improved inputs could not be provided by the resource poor farmers owing to widening demand-supply gap for investible funds in the rural locales where most of these peasant farmers reside (Olayemi, 1999;

Udoh, 2002 & Mafimisebi, 2006). The financing organisations should be encouraged to lend particularly to the small scale farmers.

From the 1990s, many donors including the World Bank (IBRD/WB), International Fund for Agricultural Development (IFAD), and Food and Agriculture Organisation (FAO), increasingly focused on the sustainable and large scale delivery of financial services for the poor, especially small loans for both farm and off farm activities, savings and micro insurance services, and more recently remittance transfer services (IBRD/World Bank, 2009). In Nigeria, banking services are available to about 40% of the population and more than 70% of the poor do not have access to formal finance (Soludo, 2008). Access to well-designed financial services can help small scale farmers build assets, engage more effectively with markets, and reduce their vulnerability to crisis, especially when access to services is planned as part of household livelihood strategies and sustained over time.

It should be noted ab-initio that the impact of the schemes on the small scale farmers are debatable and unclear, although the popular belief even among small-scale farmers is that the agricultural financing schemes are inaccessible to them. Besides, it is rather difficult to identify, policy wise, which the small scale farmer is in Nigeria. Also, the multiplicity of institutions and schemes should be jettisoned for one functional and effective agricultural credit and insurance institution each that can deliver services to all farmers, whether small, medium or large in scale (Aku, 1999).

Qureshi (1996) reported that:

> *Small scale credit removes financial constraints faced by farmer as it provides incentives to adopt new technologies that would otherwise be more slowly accepted. Thus the availability of credit enables farmers to switch quickly to new technologies which enable*

the achievement of rapid productivity and growth. The possession of adequate credit by the small scale holders would empower each of them and also improve their standard of living. In comparison with some countries, Nigeria's banking sector credit to the private sector cannot be applauded. Nigeria's bank credit to the private sector remains the least, from 2002-2007, among other countries like South Africa, Tunisia, Morocco and Egypt. While bank credit to the private sector in Nigeria increased from 18.4% of non-oil GDP in 2002 to31.4% of non-oil GDP in 2007, that of South Africa increased from 62.4% of GDP in 2002 to 92.1% of GDP in 2007 (CBN, 2009). (pp. 781-801)

Credit is a pre-requisite for any forward looking economic activity. Accessibility to credit facilitates the acquisition and application of state of the art technology and enables such enterprise to be in the driving seat in technology application. This facility is, however, in short supply to smallholder farmers in Nigeria, as it is indeed for most developing countries (Adams & Ladman, 1979; Abraham, 1985; World Bank, 2000). The government is therefore encouraged to put in place necessary strategies to ameliorate this situation with a view to expanding their financial status.

Agricultural sector is situated within the framework of the rural economy and the financial markets. A key feature of the sector is the dominance of smallholding farm families, rural households, agricultural households, or farm households. They cultivate less than 5 hectares.
Hence, they look significant individually but collectively they form the foundation on which the nation's economy rests (Falusi, 1995). The need to aggregate these group of individuals into small help and cooperative groups could definitely enable them to enjoy economies of scale.

Agricultural household models (Singh, 1986; Sadoulet & de Janvry, 1995) suggested that farm credit is not only necessitated by the limitation of self-finance, but also by uncertainty pertaining to

the level of farm inputs and output and the time lag between inputs and output (Duong & Izumida, 2002). The farm household is typically located in an environment characterised by a number of market failures. A frequent cause of market failure is limited access to working capital/credit (Duong & Izumida, 2002). According to Swinnen and Gow (1999) access to agricultural credit has been severely constrained in developing countries. This is because of the imperfect and costly information problems encountered in the financial markets. Such problems are known to be particularly important in agriculture (Stiglitz, 1993). The government and other financial institutions in addition to supplying credit to farmers could also disburse farm inputs in kind instead of cash.

Altunbas (2009) also suggested that monetary policy may influence risk taking behavior via habit formation, whereby banks become less risk-averse during economic expansions. Ioannidou and Penas (2008) also found out that when interest rates are low banks' price the credit risk lower. Moreover, banks tend to reduce credit margin on risky borrowers relatively more than on average.

With effect from 1985, the CBN started stipulating grace period for agricultural loans, which ranged from one year for loans for staple crop production to seven years for livestock production loans. Concessionary interest rate(s) was introduced in 1980 whereby interest charged on loans to farmers was kept below or at par with the Minimum Rediscount Rate (MRR) of the CBN. The Rural Banking Scheme (RBS), Nigerian Agricultural Insurance Corporation (NAIC), and the Agricultural Credit Guarantee Scheme Fund (ACGSF) were other measures used by Government to promote bank lending to farmers (Nnanna, 2005). Despite these strategies, not much was achieved in terms of productivity since there were insufficient funds to meet the need of the farmers.

However, following SAP and economic reforms, lending rates have been deregulated since 1987. Mandatory credit allocation to agriculture was abolished on October 1, 1996. Consequently, the volume of bank lending to the agricultural sector has been shrinking. In more recent times, the Federal Government introduced a new agricultural credit scheme in March 2006. The scheme involved a tax waiver on interest earned by banks on loans to agricultural sector and reduction of interest rate to farmers through government subsidy. It was reported that "the tax relief was based on the agreement by stakeholders that interest rates on agricultural loans be reduced in return for government suspension of tax on such facilities (Nnanna, 2005). The implementation of this guideline was not effective as a result of illiteracy level of most of the beneficiaries.

Okorie (1998) identified poor project supervision, evaluation and management; untimely loan disbursement; diversion of funds; and dishonesty of loan beneficiaries as causes of loan default. A study in India found that defaults were, by and large, willful and mostly large borrowers were responsible (World Bank, 1975; Padmanabhan, 1988). The formation of the beneficiaries into cooperatives societies also safeguards against loan default.

Studies have shown that big farmers have tended to be the major beneficiaries of agricultural credit throughout the world. According to the World Bank (1975) "it is common to find 70 to 80 per cent of small farmers in a given country with virtually no access to such credit". In Nigeria, big farmers have benefited mostly from official farm credit programs and they have also been the greatest defaulters. Given the variety of reasons for credit risks in bank lending to the agricultural sector, it may be necessary to classify them into three broad sources: causes at borrower level, at financial institution level, and at economy level. Such a classification offers a quick checklist and guide to

Credit Risk Managers of banks in dealing with credit risks emanating from bank lending to agricultural firms.

Acharya (2006) argued that the rural credit system assumes importance because most Indian rural families have inadequate savings to finance farming and other economic activities. The need for agricultural credit arises because modern farm technology is costly and the personal resources of the farmers are inadequate. A farmer's inability or least limited ability to save does not allow him to finance his pursuits and raise better production from his farms.

Development of the private sector holds the key to future agricultural and overall economic growth in many world economies. Unfortunately, in Africa private sector lacks capacity because it is relatively young and constrained by the weak economies. The investment climate is unpredictable due to lack of the necessary public and institutional infrastructure, weaknesses in the legal and regulatory environment, and the dominance of the public sector. This has crowded out private sector activity and discouraged the use of domestic savings for domestic investment, especially in agriculture (ADB, 2000).

The agricultural sector in any country plays an important role in its economic growth and development through the contributions made to wealth creation, employment, food production, and income generation. It is therefore expected that there is a positive relationship between lending to the private sector and lending by commercial banks. However, the lending is highly dependent on factors like profitability, liquidity, solvency, information asymmetry and availability of money for lending. With respect to farmers, lending to farmers policy is expected to be affected by the standard of credit to farmers, the credit terms for farmers and the recollection policy of loans to

farmers (Olokoyo, 2011). It is therefore suggested that total package of incentives should be put in place that could enhance productivity in agriculture.

Access to credit is a major and complicated challenge in the agriculture sector. Commercial banks have the need to link their future profitably with the growth of lending to the agricultural segment. This means making agricultural lending a significant integral part of each of the commercial banks' growth strategy. Banks fail to appreciate the potential of the agriculture sector and the problems and realities related to production, products, and the political and economic organisation of the value chain (USAID, 2012). The agricultural sector is composed mainly of primary producers of small size, where the risks are greatest because primary producers have the least negotiating ability among the players in their industry making them mere price takers. The sector is also characterised by inefficient use of resources like water, fertiliser and land leading to low productivity. This sector is susceptible to environmental shocks like changes in weather patterns. The agricultural sector is very capital intensive with low return on investment necessitating long term financing. The sector is a highly knowledge-based sector; rural based with slowly improving poor physical infrastructure. Even the introduction of new technology and new techniques is slow, coupled with lack of attention to financial literacy and to good business management. Its adaptation to changing market conditions on the supply side is also slow (Beck, Demirgüc, Laeven & Maksimovic, 2006). The need for effective extension/monitoring services to the farmers would assist in bridging this gap.

Nott (2003) argued that adequate and timely information enables lenders to set loan terms accordingly. Failure to exchange information between the lender and the borrower brings about information asymmetry between the two parties, and to address this problem, lenders limit their

credit facilities to sectors which they perceive to possess limited information asymmetry (Stiglitz & Weiss, 1981). The need for effective publicity on the loan facilities could effectively affect this issue.

Zhang (2007) suggested that deepening financial intermediation may promote economic growth by mobilising more investments, and lifting returns to financial resources, which raises productivity.
In Africa, a significant proportion of the populations live in the rural areas with agriculture as their major preoccupation and financial constraints in agriculture remain prevalent. Finance to the agricultural sector remains costly and inequitably distributed and this limits the ability of small-scale farmers to grow their productivity.

Awudu and Huffman (2000) and Kimbaara (2005) stated that average production efficiency levels are higher among producers who have access to formal credit. Agricultural credit therefore enhances productivity and promotes standard of living by breaking the vicious cycle of poverty among farmers.

Iqbal (2003) in their study identified three main factors that contributed to agricultural growth as the increased use of agricultural input, technological change and technical efficiency. Technological change was the result of research and development efforts, while technical efficiency referred to the rate at which new technology was adopted and used more rationally and was affected by the flow of information, better infrastructure, and availability of funds and farmers' managerial capabilities. Higher use and better mix of input also required funds. These funds could come either from farmers' own savings or through borrowings. In less developed countries where savings were negligible, agricultural credit appeared to be an essential input along with modern technology for higher productivity.

Jan (2012) pointed out that other associated reasons for low productivity in agriculture included land fragmentation; lack of managerial skills in farmers, which limited their ability to adopt improved farming practices; and insufficient use of modern technology and input. The latter was a function of the inadequate finance available to the farmers, particularly the smallholders. The matter of enhancing agricultural productivity, therefore, largely depended on the availability of finance to farmers.

Abedullah (2009) and Saboor (2009) stated that timely and easy access to credit enables farmers to purchase the required input and machinery for carrying out farm operations and increasing production. Johnson and Cownie (1969) in their study noted that developing countries improved their agricultural output by introducing modern agricultural technology such as chemical fertilisers, recommended seeds, tractors and modern irrigation facilities, among others. But the adoption of such modern agricultural techniques is capital intensive and requires increased financing. Lending institutions, however concentrate on short term loans at the expense of credit for products of long gestation periods. The challenge therefore is to develop products that can accommodate long term funding.

Richard (1990), Khandker and Faruqee (2003) and Khan (2008) provided empirical evidence that institutional agricultural credit played a key role in enhancing farm production. They argued that without doubt, agriculture could be the main medium for improving the socio-economic conditions of the rural people.

Kadidia (2001) in a major review of constraints to agricultural development for Mali, using the Malian National committee of the Partnership to Cut Hunger in Africa, mentioned the lack of

financial resources as one of the major constraints to the growth of its agricultural sector. According to the Committee, one of the key strategies to cut hunger in Mali was to strengthen investments in the rural areas through: financing of hydro-agricultural developments; development of non-bank financial institutions; strengthening of private investments (financing mechanisms, development of alternative collateral, funding guarantees, and insurance mechanisms); facilitate access to credit for producers; strengthening decentralised financial systems; promoting medium and long-term credit on favourable terms; and developing insurance mechanisms to help protect producers' revenues and debt relief for producers.

Studies for Nigeria have also confirmed the positive relationship between finance and agricultural productivity. For instance, Nosiru (2010) showed that micro credit enabled farmers to acquire needed input to increase their agricultural productivity. However, the credit obtained by the farmers in the study area did not contribute positively to the level of output. This was as a result of non-judicious utilisation, or diversion of credits obtained to other uses apart from the intended farm enterprises.

The most useful assessments of the impact on poverty of changes in agriculture are those that followed farming communities' experiences over a long-term period (Lanjouw & Stern, 1998; Hazell & Ramasamy, 1991). These studies showed that agricultural productivity gains have raised rural incomes in two ways: by directly increasing farmers' incomes and, of particular importance to the poorest, by increasing employment opportunities and wages.

In appreciating the role of informal association in the mobilisation of rural savings and economic development in Nigeria, Jerome (1991) posits that these roles are not officially appreciated because of the rudimentary nature of their operations and the lack of legislature guiding and

standardising their operations. The gap unfilled by informal associations is taken over by money lenders. The money lenders charge high interest rate but are willing to lend money at great risk.

Akinleye (2005) observed that there is need for government in developing countries to resolve the problems of agricultural decline in rural areas. Provision of small holder credit remains a major vehicle in arresting this decline. In Nigeria, agricultural credit is necessary to enable the farmers take advantage of new technologies in the form of farm machinery, pay for such items as improved varieties of seeds and livestock, fertilisers, pesticides, labour and other running costs. It is in the realisation of the fact that credit is a critical factor in agricultural development that for most governments in developing countries, the channeling of bank lending to agriculture has increasingly become an important policy instrument for increasing agricultural output particularly among the rural poor (Egbe,1990).

One of the major objectives of the local, state and federal Government has been that of credit provision and efficient management of agricultural credit. This objective was considered necessary by taking into recognition the important role banks play in the supply of funds to farmers for increased agricultural production. The commitment to prudent lending to agricultural sector is an important and crucial issue in the global banking sector today (Ejike, 2013). This brings to bare the need to harness all the necessary channels of credit delivery to the farmers.

For agricultural practice to be meaningful, one of the enabling factors is addressed by availability of adequate credit to finance agricultural production. The agricultural lending market in any country is made up of the participating financial institutions and units that can effectively lend resources to facilitate the production of farm produce, crops and livestock. These markets are

primarily made up of deposit money banks and other financial institutions including government organisations, firms and individuals (Comptrollers Handbook, 1998).

From 1978 to 1989 with sectorial credit allocation to the agricultural sector in place, the result was a consistent increase in the lending portfolios of formal financial institutions to the agricultural sector. This has now been lost to the financial system deregulation as agricultural lending is considered more risky, problematic and unprofitable relative to other sectors. Bank credits to this sector in nominal terms, over the years have increased from about ₦230 million (then about $2.33 million) in 1978 to over ₦262 billion ($2.23 billion) in 2005, but then food imports cost have equally increased (CBN, 2007). There is still the need to strike a balance between the regulation and deregulation of interest rate to boost lending to agriculture.

Rukwaro and Robert (2010) conducted the research on "Interaction between Formal and Informal Rural Credit Institutions in Central Chile". The basic objective of this research was to identify either informal or formal lenders in Central Chile serve as substitutes or complements to credit suppliers for peasants. By using a panel Logit model along with "dummy explanatory variable", they denoted the major determinants which influence informal credit access. The outcomes of this study showed that when endogeneity is given relevant importance, there is reduction in outstanding informal credit by the credit constrained peasants. One argument of the study was that formal credit is selected for investments while informal credit is used for maintaining working capital. It was revealed that since farmers are credit constrained from formal sources and therefore they invest less which determines that in this case peasants will be in need of lesser amount of working capital, subsequently they will borrow fewer amounts from informal institutions.

Ibrahim (2007) found that in Ethiopia informal sector was the main source of credit in rural and urban areas. The study concluded that reducing bureaucracy, transportation cost and other barriers in the way of credit disbursement will enhance the agricultural output. However in most polity, informal sector lack the ability to meet the demands of the beneficiaries. The study by Zeller (1994) determined the loan rationing by formal and informal institutions. It was found that both informal and formal money lenders get information about credit worthiness of borrowers in the same manner. The major thing in this study was regarding the lesser significance of land as a collateral security and its only income level and relationship among borrowers and lenders which lead towards credit availability. Probit model was used by the author and results of this model showed that wealth, risk bearing potential and human capital are major determinants to find either a peasant is credit constraint or not.

A number of studies conducted by Salami (2010) have documented the problems of the agricultural sector in African countries. Aside the problem of poor access to modern technology by the peasant farmers in the African countries, the major bane of agricultural development commonly identified by the above studies among others is low investment or finance. The low investment in agriculture has been perpetuating in the continent in the form of vicious circle. The peasant farmers cultivate small farm land, harvested low yields and remain poor. Access to credit facilities has also been identified as the direct solution to increasing investment agriculture in Africa. Credit is a crucial factor in agricultural production and in many cases may be a limiting factor in small holder agriculture.

Oluwasanmi and Alao (1965) clearly stated the need for credit or the purchase of farm inputs such as improved seed varieties breeds of livestock, fertilisers, insecticides, pesticides, modern

implement, among others. They also stressed the suitability of terms of credit as a necessary condition for fostering agricultural development.

Oyatoye (1981) averred that credit is a major factor necessary for technological transfer in traditional agriculture. According to her, given the availability of inputs needed to improve technology, how rapidly farmers would adopt improved technology depend on additional factors. She further identified efficient source of production credit as one of these additional factors.

Oni (1987) argued that the peasant farmers do not possess enough resources to purchase farm investments. He further stressed that it is necessary to supplement the farmer's personal earnings to facilitate agricultural transformation. Hence the need for credit is universal. While it is needed by the less developed countries to increase productivity per farm worker and per hectare, the developed nations also need it to foster development (Jekayinfa, 1981; Abalu, 1981).

2.2.2.2 Agricultural Credit Guarantee Scheme Fund and Agricultural Sector Productivity

The scheme under the management of the Agricultural Credit Guarantee Scheme Fund (ACGSF) Board and the Central Bank of Nigeria has a take-off fund of ₦100 million subscribed by the Federal Government of Nigeria (60%) and Central Bank of Nigeria (40%). Subsequently, the fund was increased to N1 billion in December, 1999 and later reviewed upward to N3 billion as at early 2006, (CBN, 2007). The fund is expected to provide guarantee on loans granted by financial institutions to farmers for agriculture and agro-allied businesses. According to Section 16 of the ACGSF Act, the liability of the fund is limited to 75% of the amount in default net of any amount realised by the bank from the collateral security provided by the borrower.

However, Njoku (1986); Akinleye, Akanni and Sekunmade (2005) and Nwosu (2010) submitted that ACGSF is faced with the problems of increasing incidence of loan defaults, misinterpretation of personal guarantee, problem of inadequate publicity and other bank related frauds. Agricultural Credit Guarantee Scheme Fund is one of the laudable programmes put in place by the Federal Government of Nigeria to boost agricultural production, generates revenue for the farmers, alleviate poverty and earn foreign exchange for the country. It is also aimed at ensuring food security, rural transportation and improved nutritional health profile of the citizens, (ACGSF manual, 2005). The operators of the ACGSF should embark on intensive publicity for the beneficiaries to be more conversant with their operations. In addition concerted efforts should be made by the stakeholders (majorly Deposit Money Banks and Central Bank of Nigeria) to train experts in agricultural credit to provide extensive monitory and agricultural extension services.

Salvatore and Marco (2006) investigated whether Italy's State-funded guarantee scheme(SGS) for Small and Medium Enterprises(SMEs) was an effective means to overcome the main difficulties faced by small firms in accessing the bank credit market. This meant assessing whether SGS was able to increase credit access for SMEs, reduce credit cost and achieve financial sustainability. Results of their econometric tests provided evidence that the fund's guarantee raised the amount of credit SMEs received from the banking system, and lowered the SMEs borrowing cost to a substantial extent. Furthermore, it limited defaults covered by the guarantee to a very low percentage and mobilised a significant amount of bank loans to the advantage of SMEs by leveraging a relatively small amount of public financial resource. The role of guarantee in stabilising interest rate particularly while lending to cooperative societies is critical. In addition it reduces incidence of loan defaults as well as enabling the beneficiary to have access to more seed money for production.

According to findings by Onoja (2013) immediate past (previous years) credit volume guaranteed by Agricultural Credit Guarantee Scheme Fund (ACGSF past) exerted significant influence on the supply of current credit to the agricultural sector. This demonstrated the relevance of the ACGSF in improving agricultural finance level in the Nigerian economy. In the recent times, most of the African countries have been embarking upon a number of agricultural policies. Most of these policies and reforms were targeted at increasing financing to agriculture. In Nigeria for instance, between 1995 and 1998, the government had embarked on the reform of lending policies through the Agricultural Credit Guarantee Scheme for easier access to agricultural credit. This resulted in a sharp growth in the value of loans guaranteed by the government in subsequent years. However, the bane of the policy is that it suffers from misplaced priorities as many small scale farmers had less access to the fund (Rahji & Adeoti, 2010). This could be attributed to inadequacy of funds earmarked for the scheme as well as poor publicity of the operations of the scheme. The paucity of funds could also be attributed to small amount of credit disbursed to the beneficiaries as a result of poor credit appraisal of the farmers.

According to Zavatta and Douette (2010) a credit guarantee is a commitment by a Credit Guarantee Scheme (CGS) (the ‘guarantor’) regarding the repayment of a loan received by an enterprise (the ‘borrower’) from a commercial bank (the ‘lender’). Credit guarantee places insurance or a cover on debtors in favour of the issuing credit institution (banks). In order to lessen the financing constraints faced by small businesses, governments, NGOs and the private sector have developed initiatives such as credit guarantee schemes (OECD, 2009). Credit guarantee is a powerful business tool that enables banks to offer extensive credit facilities on more favourable terms due to the fact that debtors are credit insured. It also gives confidence to the debtor to explore new business opportunities without the fear of customer's insolvency or payment default.

According to Gudger (1998) a credit guarantee system provides a significantly larger volume of lending to a credit constrained sector that would not have been achieved without such guarantees. Therefore, the guaranteed credit provides insurance for loans in case of default so that the lender recovers their funds easily (Navajas, 2001). Credit guarantees could relieve the risks of lending to small enterprises, as well as provide compensation for low profit margins while they are enhanced to produce more. Among many direct and indirect support measures, the credit guarantee system is seen as one of the most important instruments to achieve national economic policy goals (Khan & Rehman, 2008). In addition to insurance cover, personal character and capacity of most of the borrowers assist great in loan repayment in addition to improved standard of living of the beneficiaries as a result of effective extension services provided.

Credit guarantee schemes aim at sustainability. Szabó (2005) established that credit finance is an effective and efficient tool for promoting entrepreneurship and economic development. Credit guarantee removes the constraints of accessing finance especially for new and small enterprises. Credit schemes can be described as a financial arrangement that indemnifies the repayment of loans while it motivates access to finance through an existing banking procedure (Navajas, 2001). In order to reduce the financial constraints faced by borrowers, governments take the initiative of developing credit guarantee schemes (OECD, 2009). However, credit guarantees can facilitate access to finance only if they are accepted as a valid substitute for other forms of collateral by commercial banks, (Zavatta & Douette, 2010). The resort to personal guarantee as collateral under the scheme had enabled more accessibility to credit by the beneficiaries.

Green (2003) described credit guarantee scheme as an alternative collateral for loans or as an insurance. Seidman (2005) noted that there are different variations to credit guarantee schemes.

First, loan guarantees are different in category as per the amount of losses involved; the percentage of loss to be paid; and the repayment time of the loan. The second variation has to do with the limits of loss coverage provided. The combination of these two variations determines the extent of risk between the guarantor and the lender. The actors involved in credit guarantee schemes are the borrower, the lender and the guarantor. When the borrower fails to meet up with payments, there are three types of possible losses faced by the lender, namely unpaid loan principal, the cost of collecting or selling collateral, and the unpaid interest generated from such loan (Levitsky, 1987). It should be noted however that under Agricultural Credit Guarantee Scheme Fund, the Nigerian Agricultural Insurance Corporation provides 100 percent insurance cover to the beneficiaries to enable them undertake their farming activities. The lending banks are however reimbursed 75 percent of the amount granted to the beneficiaries through the lending banks net of any collateral recovered.

The governance of credit guarantee schemes is an important factor that determines the success of the scheme. According to Doran and Levitsky (1997) the survival of any scheme is determined by how much support it gets from its stakeholders. Credit guarantee stakeholders include the government, the financial institutions, the borrowers and the sector benefiting from the scheme. In most countries the apex bank that is the central banks or the reserve banks are the main governing body of credit schemes. The operations of a credit scheme are in the interest of offering developmental services to new businesses and entrepreneurs, and as such, the national government owes it a responsibility.

From various studies on the Agricultural Credit Guarantee Scheme Fund in Nigeria, it is evident that the scheme has increased the flow of funds to agriculture. However, stakeholders in the

scheme viz: the farmers, lending institutions and government must show greater commitment and dedication for the scheme to achieve its laudable objectives. Farmers should be encouraged to be applying for loans from the participating banks to enhance their agricultural activities and productivity; and also to repay the loans as and at when due (Nweze, 1991)

Nwosu, Oguama, Ben-Chendo and Henri-Ukoha (2010) in their study on the Agricultural Credit Guarantee Scheme: It's Roles, Problems and Prospects in Nigeria's quest for Agricultural Development, reviewed the scheme, its roles since inception, problems and prospects in contributing towards the nation's agricultural development. It concluded that since credit is needed for enhanced productivity and agricultural development, the three tiers of government in Nigeria should give the scheme the necessary support and publicity so that farmers (particularly small scale farmers) can benefit from its laudable objectives. This would go a long way in ameliorating the seemingly dismal output of our farmers. This would address the present situation where by only the Federal Government/Central Bank is the custodian of the scheme.

The credibility of a credit scheme is built by how claims are handled (Levitsky & Prasad, 1987) while the default rate determines the viability of the scheme (Green, 2003). In addition, the success of a scheme is determined by the timely processing of claims (Doran & Levitsky, 1997). Therefore, in order to achieve the proper application of both defaults and claims, a well-designed procedure needs to be inculcated into credit guarantee schemes. The acceptable default rate for schemes is about two percent to three percent (Green, 2003). The accrual of interest makes default payment cumbersome, because it adds an additional amount to the guarantor's liability. This is one of the reasons why banks are not eager to lend to guarantee scheme. Even though they will probably recover their money in the long run, the time value for money will be lost when

recovered. For instance, going by the experiences of some credit guarantee schemes in Africa, lenders (banks) do not have confidence in the guarantees of their central banks because of the delays and disputes involved (Oyen & Levitsky, 1999).

A credit guarantee scheme improves the chances for access to finance. These schemes "provide guarantees to groups that do not have access to credit by covering a share of the default risk of the loan. In case of default, the lender recovers the value of the guarantee" Organisation for Economic Co-operation and Development (OECD, 2010). The invocation of the guarantee in most cases proves cumbersome and in most cases impracticable.

2.2.2.3 Governments Expenditure and Agricultural Sector Productivity

The Food and Agricultural Organisation (FAO) recommends that 25 percent of government capital budget be allocated to agricultural development. This has not been achieved by the various administrations of Nigeria, thereby affecting government programmes and policies for the sector (Iganiga & Unemhili, 2011). Nigeria has also consistently failed to reach the 10 per cent agriculture budget standard of the Maputo declaration, which has led to negative implications for food security (Ochigbo, 2012). Total expenditure on agriculture, as a percentage of overall expenditure, fluctuated from 4.57 per cent between1986-1993, to an average of 4.51per cent per annum between 1994-1998, to 3.53 percent between 1999 – 2005; this reflects intensified efforts by the government to reduce its size (Udoh, 2011). This incessant reduction in agricultural expenditure over the years relative to the overall expenditure of Nigeria has led to inadequate funds for the sector. In this light, (Ujah & Okoro, 2009) emphasised that the inadequate funding of the agricultural sector could never make the sector sustainable. While agricultural spending expressed as a share of total spending is generally low in African countries compared to other

developing countries, Nigeria fares unfavourable even within the African context. Nigerian government should however intensify efforts at least to meet up with the 10 percent Maputo declaration.

Since independence in 1960, successive Nigerian governments have made efforts to address the problem of lack of access to credit to the rural poor. In recognition of the vital role of small-scale farmers in wealth creation, the Government of Nigeria has experimented with various financing initiatives. These are largely subsidised, targeted credit programs to promote agricultural production and improve the lives of smallholders. It was in recognition of the downward trend observed in agricultural productivity that the Federal Government of Nigeria at various periods put in place credit policies and established credit institutions and schemes that could facilitate the flow of agricultural credit to farmers (Adegeye & Dittoh, 1985). Some of the schemes include Bank of Agriculture, The People's Bank of Nigeria, The Community Bank (CB)/Microfinance Banks, Financial Agricultural Cooperatives, Agricultural Credit Guarantee Scheme, and Preferred Sector Allocation of Credits 1970-1996.The current thinking in agricultural finance development suggests a more limited, market-friendly role for government. Direct public interventions are justified if they remove an identified market failure or social constraint. Government interventions in rural financial markets should generally focus on piloting innovations (through seed money) and providing support for institutional development, rather than on introducing large-scale credit programmes through public institutions. In addition, governments still have a huge job to do in creating an enabling legal environment that lets the agricultural financial market operate efficiently (CBN, 2005). The failure of most of these schemes attributed to their poor conception at the initial stage coupled with the fact that government should play secondary role in agricultural business; as

the private sector is well suited for such a role. It should still be reaffirmed that the provision of enabling business environment should be the primary concern of government.

The sole provider of capital resources and financial incentives for the agricultural sector over the years has been the government. According to Nwosu (1999) there have been consistent attempt to increase these support incentives by government through increased budgetary expenditure and provision of available affordable credit facilities. However, he revealed that, over the years, government budgeting provision has served as a critical determinant of the output and performance of the Nigerian agricultural sector. It is however important to ensure that all government budgeted allocation to agriculture be released on time and judiciously applied. The need to ensure accountability in the use of funds for agricultural production would go a long way in uplifting the tumultuous state of agriculture in the country.

When public spending in agriculture in Nigeria is benchmarked relative to public spending in other sectors, the value of the indicator for agriculture is lower than the values of all other sectors, such as industry, construction, trade, and services (Mogues, 2008). Budgetary allocation towards agriculture has consistently been inadequate and short of expectations despite the assumed interests of the respective governments in the past years. For example, only 4% of the federal government's annual total budget has been consistently allocated to agricultural sector since 2006 (Sanusi, 2010). The need for budget discipline by the government particularly in the agricultural sector would go a long way to a higher productivity in the sector.

Central Bank of Nigeria, (CBN, 2011) launched Nigeria Incentive-Based Risk Management System for Agricultural Lending (NISRAL). This is a dynamic, holistic approach that tackles both the agricultural value chain and the agricultural financing value chain. It is regarded as the

monetary authority's innovative approach of combating the challenges of low productivity, poor technology and cultural practices, low research and development, and under-financing of the agricultural value chain. With the current financing level of agriculture standing at about 2% of total banks' lending, NIRSAL has planned to invest USD 500 million (about ₦75 billion) via fixing of the agricultural value chain and encouraging banks to lend to the agricultural value chain through strong incentives and technical assistance. NIRSAL, unlike previous schemes which encouraged banks to lend without clear strategy to the entire spectrum of the agricultural value chain, emphasises lending to the value chain and to all sizes of producers.

In a further bid to increase credit supply to agricultural sector the Federal Government in 2008 created the special fund tagged "The Commercial Agricultural Credit Scheme - CACS" in 2008 with an initial grant of ₦200 billion by the Federal government as part of the deal to make sure banks lend to farmers. The disbursement of the fund was to be handled by three Deposit Money Banks under the supervision of the Central Bank of Nigeria (Asuquo, 2014). The poor participation of Deposit Money Banks in agricultural financing induced the Central Bank of Nigeria to introduce the sectorial allocation system, which many banks hardly complied with as expected by the Central Bank of Nigeria. This mandatory bank credit allocation was abolished in October 1996 following the liberalisation of the financial sector. Banks were rather enjoined to voluntarily provide adequate credit to all sectors of the economy to ensure growth and that rural borrowers were not left out (CBN, 2003). According to Eko (2015) this directive has prompted some banks to maintain certain level of association with farmers. It may still, however, not to be out of place to reintroduce this policy in view of the dwindling fortunes of agriculture today.

Lawal (2011) attempted to verify the amount of federal government expenditure on agriculture in the thirty-year period 1979 to 2007. Significant statistical evidence obtained from the analysis showed that government spending does not follow a regular pattern and that the contribution of the agricultural sector to the GDP is in direct relationship with government funding to the sector. The findings of Aigbokha (2001) showed that government capital allocation and expenditure to agriculture is relatively low and that actual expenditure falls short of budgeting expenditure and the rate of under spending is usually higher for agriculture than for other economic sectors. Emeka (2007) reported that a large proportion of the funds allocated to agriculture do not go directly to farmers. This could be as result of high corruption in the system in which case most of the funds could have been diverted to private hands.

2.2.2.4 Bank Interest Rate and Agricultural Sector Productivity

According to Stiglitz and Weiss (1981) and Chodechai (2004) commercial banks' lending policy is closely related to the interest rate they charge and the interest rate is set in order to avoid adverse selection issues. In another approach, Radevic and Ahmedin (2010) argued that commercial banks are either encouraged or discouraged to lend depending on the collateral provided. This is because the level of collateral is a signal of the level of risk of the borrower. It should however be noted that character and capacity are the main cardinal for lending while collateral though important should take the back seat.

Ewert (2000) on the other hand argued that the level of demand for credit will determine how much credit banks will offer and the interest rate is set just to enable clearance of the credit market. Collateral is considered irrelevant. Interest rate subsidies are controversial. Proponents argue that agriculture is insufficiently productive and profitable to warrant a commercial interest rate, also

considering the high risk and high transaction costs of (small) farm loans. Interest rate subsidies are also justified as farmers' income support, and distribution through financial institutions is relatively easy. Politically, interest rates subsidies are popular. Opponents argue that subsidised lending does little to make agriculture more productive. It might achieve the opposite effect by perpetuating inefficient farm practices. It is also argued that for smallholder farmers, the challenge is not the interest rate, but getting credit in the first place (Milder, 2008). As long as most farmers are still operating at subsistence level, there is still the need for interest subsidies in order to discourage them from patronising money lenders.

During the SAP period, funds were inadequate, the Nigeria currency was overvalued and the monetary and credit aggregate moved rather sluggishly such that the economy was sort of engulfed with a general lull. The introduction of SAP led to some financial regulations like; interest rate, exchange rate and other deregulations (Ogwuma, 1993 & Ojo, 1998). However as a reversal policy, the government in January 1994 expressly introduced some measure of regulation into interest rate management owing to wide variations and unnecessarily high rate under the complete deregulation of interest rates. It is pertinent to know that under the deregulated interest rate system, the market forces of demand and supply plays a very prominent role in the determination of interest rate, that is, banks and their customers are free to negotiate to arrive at a suitable interest rate on both deposit and loans.

Onoja, Onu and Ajodo-Ohiemi (2011) explored the contributions of financial sector reforms and credit supply to the agricultural sector by comparing the effects of reforms policies on access to institutional credits in the agricultural sector of the Nigerian economy before and after the reforms. They found that there was an exponential increase in agricultural credit supply in the economy

after the commencement reform. The study further found that stock market capitalisation, interest rate and the immediate preceding amount of credit guaranteed by ACGSF significantly influenced the volume of credit supplied to the agricultural sector. The outcome of this study implies that there has been an upward trend in agricultural lending after the financial reforms, suggesting that the reforms had a favourable and multiplying effect on agriculture.

Theoretical approaches given by Stiglitz and Weiss (1981); Chodechai (2004); Radevic and Ahmedin (2010) and Ewert (2000) don't seem to agree on what issues determine commercial bank lending in general, let alone lending to the farmers. It should be noted however that for those with enough credit, obtaining the right inputs for farming is easy.

Kenyan studies by Ndung'u (2003); Nguthuku (2008) and Munyiri (2010) focused on factors determining profitability in the formal banking sector which does not effectively lend to farmers. Earlier studies by Rukwaro (2000) studied micro finance institutions focusing on credit rationing and its influence on the operations of small and micro enterprises. The agricultural sector in Kenya plays an important role in the economic growth and development. Farmers in Kenya however, still experience difficulties in accessing credit from the formal financial institutions to increase their performance through modern farming. A study has been done as specified to investigate factors determining lending to farmers by commercial banks in Kenya. The study therefore, sought to find out the determinants of lending to farmers by commercial banks in Kenya, and how they affect the performance of farmers. On the average, it was found that the government should device strategies to ensure that the farmers have access to cheap source of funding most especially from the government and the formal sectors.

Poulton (1998) studied smallholder cash-crop production in liberalised cotton and cashew markets in Ghana, Pakistan, and Tanzania. He investigated the difficulties farmers face in financing seasonal crop inputs and the mechanisms developed by private traders to supply seasonal credit. It emerged from the study that:

> *Farmers' limited access to capital is a critical constraint on crop production. Also, the willingness and ability of the private sector to supply farmers with loans was limited by the high risk of default on loan repayments and the high cost of information on potential borrowers. Such costs were too high to be recovered by the low returns on the normally small loans taken out by farmers. In each country, it was found that "interlocking transactions" had been developed. "Interlocking transactions" are where traders sell inputs or they buy outputs at the same time as providing credit to some farmers. The traders thus simultaneously reduce the cost of obtaining financial information about their farmer customers and increase their volume of business and consequently their profits. Findings suggest that interlocking contracts could become an increasingly effective way of helping smallholder farmers gain access to seasonal credit. However, the system can be limited by a trader's lack of access to capital and if a farmer defaults on the loan repayments by selling his output to another trader instead of the one who lent him money in the first place. Moreover, where traders operate some form of monopoly, they may exploit the "interlocking" system at the farmers' expense. (pp. 85-103)*

It is suggested that insurance and guarantee schemes could be introduced to address the loan loss situation.

Mandatory credit allocation to agriculture was abolished on October 1, 1996. Consequently, the volume of bank funds channeled to agricultural sector decreased forcing the Federal Government to introduce a new agricultural credit scheme in March 2006 in which tax waiver is given on interest earned by banks on loans to agricultural sector and reduction of interest rate to farmers through government subsidy (CBN, 2006a). Other creative measures that would easily reduce interest rate on farming activities could be introduced like consideration of the character and capacity of the borrower.

Several Studies have dealt with credit supply issues in Nigeria like those conducted by Onoja (2012); Akpan (1999) and Oguamanam (2006). Onoja (2012) dealt on contributions of financial sector reforms and credit supply to Nigerian Agricultural sector (1978-2009) and recognised interest rate regulation as a veritable tool for making credit accessible to farmers at affordable levels. It is still being suggested that interest rate regulation which places credit at cheaper interest rate to the farmers remain a veritable tool to high productivity in the agricultural sector.

Difficult credit rules of banking institutions obstruct small and marginal farmers to credit access. Credit rules are very complicatedly formulated and in many cases, these are not clearly apprehended by illiterate and partially educated farmers. The assumption is also supported by the survey conducted by Sarker (2006) where it was seen that 79.2% of very small farmers and 82.9% of small farmers identified difficult credit rules as the reason for not availing bank credit and 78% of all farmers think so. It is suggested that draconian covenants in agricultural lending should be abolished since they are not friendly in boosting productivity.

Alam (1988) identified four types of non-interest cost of institutional loan such as application fees, stamp and documents required in support of loan; form filling and writing; cost of traveling for

loan negotiation; cost of entertaining people who assisted in loan negotiation. He observed that non-interest cost of borrowing falls as loan size increases. Higher non-interest cost of institutional credit for the smaller farmers act as a hindrance to the development of their productive forces. It is suggested that such unnecessary acts could be curtailed if the farmers are organised into cooperative societies where the numerous skills available within the group could be utilised to perform some of the necessary but expensive schedules that attract payment of fees.

Formal sector wants collateral as security of the credit that they disburse to the farmer. Although agricultural productivity depends on the combination of human labor and capital with the productive powers of land, the access to financial capital through institutional credit depends in Bangladesh ultimately to the possession or non-possession of land. Formal Sector also takes socio-economic status of a credit seeker into consideration when it decides to disburse agricultural credit. These make cheap formal credit accessibility more difficult for the marginal, sub-marginal and small farmers who constitute almost 80 percent of the agricultural farmers and make them bound to borrow at an exorbitant interest rate from informal sector. The strong need for collateral in institution sources (government and private commercial banks) in turn imposes many types of formalities on credit seekers that make them finally penchant for taking loan from semi-institutional and non-institutional source. 22% and 6% of Rakub and Grameen Bank farmers respectively mentioned several formalities as constraint in securing agricultural credit (Miah, Alam & Rahman, 2006). The need to perfect simpler process in the packaging of credit facilities to farmers like reduction in the number and volume of application forms to be completed should be addressed as this would go a long way in reducing the bureaucratic red-tape in accessing credit facilities.

From farmer side, lengthy loan processing procedure is cited as another hindrance to formal sector credit access. The acute problem in accessing timely loan assistance remains among small farmer group (71.4%) as they badly need credit but lack ability of submitting required collateral to get sanction of the credit (Sarker, 2006). The same scenarios also exist in another research work where 38% of recipient of agricultural loan from Rakub reported that they did not get credit on time. Similar question raised to recipients of credit from Grameen Bank found no such problem relating to this issue. It therefore presents reason to the question why NGOs and Non-Govt. institution's portion of rural credit market has been changed dramatically over the last few years (Miah, Alam & Rahman, 2006). It is advisable that lending institution should reduce the length of time in processing their agricultural credit facilities to the farmers.

According to Ogwumike, Mahmood, Okpara and Rahji (2009):

> *The introduction of easy access and low interest rate credit is the quickest way for boosting agricultural production. The argument is that the agricultural sector depends more on credit than any other sector of the economy because of the seasonal variation in the farmers' returns and requirement in transformation from subsistence to commercial farming. The provision of credit has increasingly been regarded as an important tool for raising the income of the rural populace, mainly by mobilising resources to more productive uses. (pp. 45-71)*

The need to provide variety of credit facilities to the farmers is sine qua non to accessing credit at cheaper rates of interest.

Another major finding of the study revealed that there is no significant relationship between interest rate variations and growth in agricultural productivity in Nigeria. This finding is in line

with the study undertaken by Philip, Nkonja, Pender and Oni (2009) that discovered that a favourable interest rate regime for agricultural credits contributes to the growth of agricultural productivity. This by implication means that the lower the interest rates for agricultural production, the higher the growth of the sub sector. It is still following the principle of the lower the interest rate available for agricultural production the higher the productivity most especially due to economies of scale.

However, Ogunfowora (1993) attributed most of the short comings on institutional credits in Nigeria to factors such as, ineffective supervision or monitoring, insufficient funds, political interference, cumbersome and time consuming loan processing, large loan defaults and absence of financial projections. The need to have feasibility report even with less details could address some of these deficiencies.

Nwankwo (2006) however, believed that interest rate deregulations will definitely lead to more efficient allocation of financial resources because interest rate would now reflect scarcity and relative efficiency in different use. That is, only efficient investors would have access to scare financial resources (Mckinnon, 1973 & Shaw, 1973). With the subsistence nature of agricultural production in Nigeria, it therefore became difficult for the sector to access the resources. While such an assertion could be true, the majorly subsistence nature of agricultural services in Nigeria could portray danger and the government should not shy away from granting some concessions to agricultural production.

The classical economist however stipulated the rate of interest as the major determinant of savings (Olusoji, 2003; Chete, 1999; Mckinnon, 1973 & Shaw, 1973). They are all of the view that the rate of interest is the factor that brings the demand for investment and willingness to save into

equilibrium with one another and was also collaborated by (Umoh, 2003). It should be noted that higher interest leads to higher savings and conversely low investment in the agricultural sector.

2.3 Theoretical Framework

2.3.1 Keynesian Public Expenditure Hypothesis

Keynesian economics (Keynesianism) are the various theories about how in the short run, and especially during recessions, economic output is strongly influenced by aggregate demand (total spending in the economy). In the Keynesian view, aggregate demand does not necessarily equal the productive capacity of the economy; instead, it is influenced by a host of factors and sometimes behaves erratically, affecting production, employment, and inflation (Hunt, 2004).

The theories forming the basis of Keynesian economics were first presented by the British economist John Maynard Keynes during the Great Depression as specified in the General Theory of Employment, Interest and Money (Keynes, 1963 & 2008). He declared that government should increase expenditure (in this study expenditure on agricultural sector), with a view to stimulating the growth of the economy. Keynes argued that an economy could languish indefinitely with high unemployment if aggregate demand is inadequate. Nelson (2006) noted that increased government expenditure, on the other hand, would not only boost demand directly but would also set off a chain reaction of increased demand from workers and suppliers whose income had been increased by the government's expenditure. Similarly, a tax cut would put more disposable income in the wallets of consumers, and that too would boost demand. Keynes contented, then, that the appropriate fiscal policy during periods of high unemployment was to run a budget deficit. These ideas flew in the face of the conventional wisdom that budget deficits were always bad.

Keynesian economists often argue that private sector decisions sometimes lead to inefficient macroeconomic outcomes which require active policy responses by the public sector, in particular, monetary policy actions by the central bank and fiscal policy actions by the government, in order to stabilise output over the business cycle (Fletcher,1989). Keynesian economics advocates a mixed economy – predominantly private sector, but with a role for government intervention during recessions.

This theory is aligned to this study particularly to investigate the extent to which governments expenditure affected agricultural sector productivity in Nigeria.

2.3.2 The Supply-leading Theory

The conventional view of the supply-leading hypothesis postulates that financial development causes economic growth. In a world with frictionless transaction, information and monitoring costs, no financial intermediaries are needed. If transaction, information and monitoring costs are sufficiently high, no exchange among economic agents will take place. The desire to reduce those costs and enable exchanges led to the emergence of financial institutions and markets that make up the financial sector.

The theory posits that a well-developed financial sector provides critical services to reduce transaction, information and monitoring costs and increase the efficiency of intermediation. It mobilises savings, identifies and funds good business projects, monitors the performance of managers, facilitates trading and the diversification of risks, and fosters exchange of goods and services. These services lead to efficient allocation of resources; lead to a more rapid accumulation of physical and human capital; and lead to faster technological innovation. This eventually results into faster and long-term economic growth (Schumpeter, 1911).

The supply-leading theory is related to this study since it provides one of the possible explanations of how development in the financial sector affects economic growth. This relates to the emergence of financial institutions such as commercial banks and their role in agricultural productivity,

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter described the methodology and procedures that were used to carry out this study. The type of research design that was used was described and justified as well as the sources of data meant for the study. The technique and research procedures are also described as well as the model specification.

3.1 Research Design

The research design adopted for this study is the ex post facto research design. Kerlinger and Rint (1986) explained that in the context of social science research, an ex post facto investigation seeks to reveal possible relationships by observing an existing condition or state of affairs and searching back in time for plausible contributing factors. Ex post facto research can be viewed as an experimental research in reverse.

The ex post facto research design was used to determine the relationship between the dependent and independent variables with a view to establishing a link between them.It also tested hypotheses concerning the relationships, as well as combining the theoretical consideration with empirical observation.

3.2 Methods of Data Collection

This study used secondary data. These were data in published forms such as the CBN Annual and Quarterly Reports, the CBN Statistical Bulletin (2014), data on the banks credit to agricultural sector, interest rates, agricultural production index, number and value of loans guaranteed by the Agricultural Credit guarantee Scheme Fund (ACGSF) between 1986 and 2014.

3.3 Technique for Data Analysis

In order to investigate the relationship between agricultural financing and agricultural sector productivity in Nigeria, the study employed the Ordinary Least Square (OLS) regression method.

The study conducted unit root tests using Augmented Dickey-Fuller (ADF) to ascertain the stationarity of the data before carrying out the cointegration test so as to establishing the existence of long-run cointegration relationship. The study employed bound test approach to validate or test for the presence of Co-integration.

3.3.1 Model Specification

The model specifications here are formulated to test the four hypotheses as stated as follows:

$$\log AGDP = \beta_0 + \beta_1 \log CBCA + \mu_t \quad (1)$$

$$\log AGDP = \beta_0 + \beta_2 \log ACGSF + \mu_t \quad (2)$$

$$\log AGDP = \beta_0 + \beta_3 \log GEA + \mu_t \quad (3)$$

$$\log AGDP = \beta_0 + \beta_4 AIR + \mu_t \quad (4)$$

Where:

AGDP = Agricultural sector contribution to GDP (Agricultural sector productivity index). The natural logarithm of Agricultural sector productivity measured in millions of naira for aggregate agricultural sector productivity and the subsectors of crop, livestock, forestry and fishery

CBCA = Commercial Banks Credits to the Agricultural Sector. The natural log of the amount of credit disbursed by commercial banks to agricultural sector.

ACGSF = Agricultural Credit Guarantee Scheme Fund by purpose. The natural log of the amount of credit finance provided under the ACGSF was defined as the value of loans guaranteed in favour of farmers for agricultural purposes. Since finance is important for production and the scheme was established to provide guarantee on loans granted by banks to farmers for agricultural

sector productivity, an increase in this variable would enable farmers to afford the necessary equipment, skills, expertise, land and raw materials required for agricultural sector productivity. Consequently, a positive relationship between the natural log of ACGSF and productivity was expected.

GEA = Governments expenditure on Agricultural sector. Captured the total governments expenditure on the agricultural sector in Nigeria. The natural log of the amount of governments expenditures to the agricultural sector.

AIR = Rates of interest charged on agricultural credits offered by the commercial banks. This variable represented the rates of interest charged on loans offered by the commercial banks. In other words, it was the cost of credit finance. High interest rates discouraged farmers from borrowing as much funds as they would need for their farming activities because of the increase in the cost of loan. If the interest rate on the loan was reduced, farmers would be able to borrow enough funds for production. A low interest rate on farm credit was an incentive for loan borrowers; it encouraged more investments in agricultural sector productivity. Hence, agricultural sector productivity would increase because the cost of finance was reduced. Thus, overall an inverse relationship between agricultural sector productivity and interest rate was expected.

β_0 = The intercept or autonomous parameter estimate

$\beta_1 - \beta_4$ Represents the coefficients of Commercial Banks Credits to the Agricultural Sector, Agricultural Credit Guarantee Scheme Fund by purpose, Governments expenditure on Agricultural sector, and Rates of interest charged on credits offered by the commercial banks

μ_t = disturbance term.

3.4 Justification of Methods

The study adopted simple linear regression analysis (Bivariate) to evaluate the hypotheses of this study. The Ordinary Least Square (OLS) method or the classical linear regression model was the econometric technique adopted in this study which covered the time series of the period 1986 – 2014. The preference of the use of Ordinary Least Square (OLS) estimation method was because the computational procedure was simple compared to other econometric techniques. The Ordinary Least Square estimator has smaller variance than any other linear unbiased estimator; they are linear and normally distributed, efficient, consistent and symmetrically unbiased (Koutsoyiannis, 1979). Therefore, the Ordinary Least Square (OLS) is said to be the Best Linear Unbiased Estimator (BLUE).

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 Data Presentation

The data presented represented values of both the dependent variable depicted by Agriculture contribution to Gross Domestic Product (AGDP) and the various independent variables represented by Commercial Banks Credits to Agriculture (CBCA), Agricultural Credit Guarantee Scheme Fund by purpose (ACGSF), Governments Expenditure on Agricultural sector (GEA) as well as rates of Interest charged on Agricultural credits by Commercial Banks (AIR) between the period 1986 – 2014.

Table 4.1: Data on Agricultural Contribution to GDP at Current Basic Prices (N' Billion), Agricultural Commercial Banks Credits (Loans and Advances) (N' Billion), Value of Loans Guaranteed under the ACGSF Operations (N' Thousand), Governments Expenditure on Agriculture (N' Billion), Agric. Sector Rates of Interests (%) **1986 – 2014**

Year	Agricultural contribution to GDP at Current Basic Prices (N' Billion)	Agricultural Commercial banks Credits(Loans and Advances)(N' Billion)	Value of Loans Guaranteed under the ACGSF Operations (N' Thousand)	Governments Expenditure on Agriculture(N' Billion)	Agric sector Rates of Interests (%)
1986	39.93	1,830.30	68,417.40	1,120.59	10.5
1987	57.58	2,427.10	102,152.50	2,205.85	17.5
1988	86.58	3,066.70	118,611.00	2,211.70	16.5
1989	120.06	3,470.50	129,300.30	4,078.10	26.8
1990	122.23	4,221.40	98,494.50	3,743.70	25.5
1991	144.7	5,012.70	79,107.40	3,353.70	20.01
1992	217.42	6,978.90	91,953.10	2,792.67	29.8
1993	350.05	10,753.00	80,845.80	20,148.51	18.32
1994	528.95	17,757.70	104,463.00	28,286.09	21
1995	940.3	25,278.70	164,133.10	44,659.60	20.18
1996	1,275.75	33,264.10	225,519.50	119,421.66	19.74
1997	1,445.15	27,939.30	242,028.30	171,671.98	13.54
1998	1,600.58	27,180.70	219,144.20	203,753.60	18.29
1999	1,704.82	31,045.70	241,839.00	382,896.97	21.32
2000	1,801.48	41,028.90	361,449.00	117,844.38	17.98
2001	2,410.05	55,846.10	728,545.40	266,822.35	18.29
2002	2,847.11	59,849.70	1,050,982.30	225,326.95	24.85
2003	3,231.44	62,102.80	1,151,015.00	109,175.65	20.71
2004	3,903.76	67,738.60	2,083,744.70	177,855.34	19.18
2005	4,752.98	48,561.50	9,366,392.90	286,028.25	17.95
2006	5,940.24	49,393.40	4,195,099.68	292,120.85	17.26
2007	6,757.87	149,578.90	4,087,447.94	418,509.14	16.94
2008	7,981.40	106,353.80	6,497,958.93	569,685.91	15.14
2009	9,186.31	135,701.30	8,328,565.78	528,445.20	18.99
2010	10,310.66	128,406.00	7,840,496.63	440,463.15	17.59
2011	11,593.43	197,822.90	10,028,988.81	427,669.88	16.02
2012	13,413.84	291,305.40	9,332,484.23	354,300.01	16.79
2013	14,709.10	348545.1	9,256,676.80	387,951.00	16.72
2014	14563.32	401433.9	12,456,250.87	389,425.23	16.55

Source: CBN Statistical Bulletin, 2014

4.2 Data Analysis and Results

4.2.1 Pre-Estimation Diagnostics Tests

The pre-estimation tests that were carried out included descriptive statistics, unit root tests as well as co-integration test.

4.2.2 Descriptive Statistics

The descriptive statistics of the data collected for the study is presented in Table 4.2:

Table 4.2: Basic Descriptive Statistics Relating to the AGDP, CBCA, ACGSF, GEA, and AIR

	AGDP	CBCA	ACGSF	GEA	AIR
Mean	7.287323	10.39438	13.51197	11.16890	18.96396
Median	7.496365	10.62203	12.79788	12.08873	18.29250
Maximum	9.596222	12.90280	16.33773	13.25284	29.80000
Minimum	3.687205	7.512235	11.13338	7.021611	10.50000
Std. Dev.	1.832657	1.547126	1.925374	2.072814	3.930264
Skewness	-0.4998	-0.288129	0.250590	-0.82734	0.806522
Kurtosis	2.004366	2.121544	1.399811	2.083189	4.198707
Jarque-Bera	2.405175	3.333709	3.397574	4.324066	4.880226
Probability	0.003416	0.013321	0.012905	0.012091	0.087151
Sum	211.3324	301.4371	391.8471	323.8982	549.9547
Sum Sq. Dev.	94.04166	67.02077	103.7979	120.3036	432.5153
Observations	29	29	29	29	29

Source: *Computed by the Author using E-views 9.0*

Table 4.2 indicated that the agricultural sector contribution to GDP (AGDP) in Nigeria during the period of 29 years (1986-2014) had minimum and maximum values of 3.68% and 9.59% respectively. The average value of the AGDP during the period was 7.28% with standard deviation of 1.83%, implying that the data deviated from the both sides of the mean by 5.45%. This suggested that the data for the AGDP was not widely dispersed during the sample period, because the standard deviation was less than the mean value. The coefficient of skewness of -0.49 suggested that the data was negatively skewed and did comply with the symmetrical distribution assumption. As with skewness, the larger the absolute value of the index of kurtosis, the more

extreme is the characteristics. The kurtosis value gave an average value of 2.00 which showed that the data was reliable. However, the probability value of Jaque-bera of 0.003 also implied that the Gausian distribution assumption of normal data had been met.

The descriptive results also showed that the Commercial banks credits to agricultural sector (CBCA) during the period had minimum and maximum values of 7.51% and 12.90% respectively. The average value of the CBCA during the period was 10.39% with standard deviation of 1.54%, indicating that the data deviated from both sides of the mean by 8.85%. This suggested that the data for the CBCA variable was not widely dispersed from the mean during the sample period, because the standard deviation was less than the mean value. The coefficient of skewness of -0.288% implied that the data was negatively skewed and met the symmetrical distribution assumption. Since the value of kurtosis is close to zero, the distribution is normal which suggest slight deviation from a normally shaped curve. The Kurtosis value of 2.12 further confirmed the reliability of data since the value was above 1.9. The p-value of Jaque-bera of 0.013 on the other hand implied that the Gausian distribution assumption of normal data had also been met.

Table 4.2 also showed that the ACGSF during the period had minimum and maximum values of 11.13 % and 16.33% respectively. The average amount of loans by ACGSF during the period was 13.51 % (which was relatively high) with standard deviation of 1.92%, implying that the data deviated from both sides of mean by 11.59%. This suggested that the data from the ACGSF variable was not widely dispersed from the mean during the sample period, as the standard deviation was found to be low. The coefficient of skewness of 0.25 suggested that the data was positively skewed and had not complied with the symmetrical distribution assumption. As with skewness, the larger the absolute value of the index of kurtosis, the more extreme was the

characteristics. Kurtosis value of 1.39 showed that the data was not well spread. However, the p-value of 0.01 for Jarque-Bera on the other hand implied that the Gausian distribution assumption of normal data was also met.

Furthermore from Table 4.2, the governments expenditure on agriculture (GEA) during the period had minimum and maximum values of 7.02% and 13.25% respectively. The average amount of governments expenditures during the period was 11.16% with standard deviation of 2.07%, implying that the data deviated from both sides of the mean by 9.09%. This suggested that the data from the governments expenditure on agriculture was not widely dispersed from the mean during the sample period, as the standard deviation was found to be low. The coefficient of skewness of -0.82 suggested that the data was negatively skewed and had complied with the symmetrical distribution assumption. The larger the absolute value of the index of kurtosis, the more extreme is the characteristics. The value of Kurtosis was 2.08 which showed that the data was reliable and well spread. Since the value is close to zero, the distribution is normal which suggest slight deviation from a normally shaped curve. However, the p-value of 0.012 for Jarque-Bera on the other hand implied that the Gausian distribution assumption of normal data was met.

Finally, Table 4.2 showed that the Interest rate on commercial banks credits (AIR) during the period had minimum and maximum values of 10.50% and 29.80% respectively. The average amount of interest rates charged during the period was 18.96 % (which was quite high) with standard deviation of 3.93%, implying that the data deviated from both sides of the mean by 15.03% This suggested that the data from the AIR variable was not widely dispersed from the mean during the sample period, as the standard deviation was found to be low. The coefficient of skewness of 0.806 suggested that the data was positively skewed and did not comply with the

symmetrical distribution assumption. The value of Kurtosis was 4.19 which showed that the data is well spread and reliable. The p-value of 0.08 for Jarque-Bera on the other hand implied that the Gausian distribution assumption of normal data was met.

4.2.3 Unit Root Test

Macroeconomic time series data are generally characterised by stochastic trend which can be removed by differentiation. Unit root test therefore is a test of stationarity or non-stationarity of series of data used in the model. This was to find out if the relationship between economic variables was spurious or nonsensical. This test was conducted by adding the lagged values of the dependent variable so that the error term was serially uncorrelated.

As was the case with similar studies, the Augmented Dickey-Fuller (ADF) test was used to ascertain whether the four variables of the study exhibited unit root property. This was to find out if the relationship between economic variables were spurious or nonsensical.

The Augmented Dickey Fuller (ADF) was stated in their generic form as follows:

$$\Delta X_t = \beta X_{t-1} + \sum_{j-1}^{p} \delta \Delta X_{t-j} + \varepsilon_t \qquad (5)$$

$$\Delta X_t = \alpha_0 + \beta X_{t-1} + \sum_{j-1}^{p} \delta \Delta X_{t-j} + \varepsilon_t \qquad (6)$$

$$\Delta X_t = \alpha_0 + \alpha_1 t + \beta X_{t-1} + \sum_{j-1}^{p} \delta \Delta X_{t-j} + \varepsilon_t \qquad (7)$$

The lagged terms were included to ensure that the errors were uncorrelated. The lag length proceeded down to the appropriate lag by examining the Akaike Information Criterion (AIC) and Schwarz Information Criterion (SIC). The null hypothesis was that the variable *X* was a non-stationary series (H0: $\beta = 0$) and was rejected when β was significantly negative (Ha: $\beta<0$). If the calculated ADF statistic was higher than McKinnon‘s critical values, then the null hypothesis (H0) was rejected and the series was stationary or integrated of order zero I (0). Alternatively, non-

rejection of the null hypothesis implied non-stationarity leading to the conduct of the test on the difference of the series until stationarity was reached and the null hypothesis was rejected.

Table 4.3: Summary of Unit Root Test Results

Variable	Order of Integration	ADF Test Statistics	Critical ADF Test Statistics
AGDP	I(0)	-4.547407	(-4.339330)*
CBCA	I(0)	-3.911156	(-3.612199)**
AIR	I(0)	-5.301721	(-4.323979)*
ACGSF	I(1)	-5.593788	(-4.339330)*
GEA	I(1)	-4.323975	(-3.644963)**

Source: Authors Computation, 2017 (Eview-9.0): Note: MacKinnon critical values for the rejection of hypotheses of unit root are in parenthesis in Columns 1 and 2 and the tests included intercept with trend; * *significant at 1%; ** significant at 5%;*** significant at 10; Mackinnon critical*

From table 4.3, it could be observed that all the variables were found stationary at levels, that is they were integrated at order zero {I(0)}. However, AIR and AGDP (which were found stationary at levels) were found to be stationary at 1% level of significance. At this order of integration, their ADF test statistics -5.301721 and -4.547407 are greater than their critical test statistics of (-4.323979) and(-4.339330) at 1% significant level respectively. CBCA was also found stationary at level, but at 5% level of significance. At this order of integration, its ADF test statistics of -3.911156 was greater than the critical test statistics of -3.612199.

The result however showed that governments expenditure on agricultural sector (GEA) and (ACGSF) were all stationary at first difference. Since all the variables were found to be stationary at different orders, it was safe and the study employed bound test approach to validate or test for the presence of Co-integration.

4.2.4 Result of Co-integration Test

Table 4.4 presented the result of the Co-integration test. The result revealed that there was an existence of co-integration among the variables. The f-statistics value of 5.724 was greater than the

lower and upper bound values at 5 and 10% level of significance. Hence, there was a sufficient proof of the existence of a long-run equilibrium relationship between financing and agricultural sector productivity in Nigeria between 1986 and 2014. The result thus showed that financing had long run sustainability on agricultural sector productivity growth within the period under study.

Table 4.4: Result of Cointegration Test

Date: 08/31/16 Time: 21:05
Sample: 1986 2014
Included observations: 29
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	K
F-statistic	5.724511	2

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	3.17	4.14
5%	3.79	4.85
2.5%	4.41	5.52
1%	5.15	6.36

Source: Authors Computation, 2017 (Eview-9.0)

4.2.5 Statistical Test of Hypotheses

The four hypotheses earlier formulated under the introductory section of this study were tested by the use of t-test statistical tool. The level of significance for the study was 5%, for a two tailed test. The decision rule was that we accepted the null hypothesis if the critical t-value (±1.96) was greater than the calculated value, otherwise reject the null hypothesis. That was, using the student *t*-test (*t*-statistic), we said that a variable was statistically significant if t^* (*t*-calculated) was greater than the critical t- value of ±1.96 under 95% (or 5%) confidence levels and it was statistically insignificant if the t^* was less than the tabulated value of ±1.96 under 95 %(or 5%) confidence levels.

H_0: $\beta_1 = 0$ (Null hypothesis)

H_1: $\beta_1 \neq 0$ (Alternative hypothesis)

4.2.5.1 H_{01}**:** Commercial Banks Credits have no Significant Impact on Agricultural Sector Productivity in Nigeria.

Model one: $AGDP = \beta_0 + \beta_1 CBCA + \mu_t$ (1)

Table 4.5: Regression Result on Commercial Banks Credits and Agricultural Sector Productivity

Dependent Variable: LOG(AGDP)
Method: Least Squares
Date: 05/18/17 Time: 16:03
Sample: 1986 2014
Included observations: 29

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-4.833624	0.421096	-11.47869	0.0000
LOG(CBCA)	1.166105	1.069311	1.09052	0.4210

R-squared	0.969081	Mean dependent var	7.287318
Adjusted R-squared	0.967936	S.D. dependent var	1.832666
S.E. of regression	0.328164	Akaike info criterion	0.675865
Sum squared resid	2.907673	Schwarz criterion	0.770161
Log likelihood	-7.800046	Hannan-Quinn criter.	0.705398
F-statistic	4.112585	Durbin-Watson stat	1.957585
Prob(F-statistic)	0.421211		

Source: Authors Computation, 2017 (Eview-7.0)

$AGDP = -4.83 + 1.16CBCA \quad ----------2$

$SEE =$ 0.42 1.06

$t* =$ -11.47 1.09

$F* =$ 4.11; Prob(F-statistic)=0.421

$R^2 = 0.9690; Adj.R^2 = 0.9679$

$DW = 1.95$

Test of Hypothesis One: H_{01}

From the regression result in table 5, it was observed that the calculated t-value for Commercial banks credits was 1.09 whilst the tabulated value was 1.96. Since the t-calculated was less than the t-tabulated (1.09 < 1.96) it thus fell in the acceptance region and hence, we accepted the first null

hypothesis (H_{01}). The conclusion here was that Commercial banks credits have no significant impact on agricultural sector productivity in Nigeria.

The ANOVA F-Statistic

The F-statistics which was used to examine the overall significance of regression model equally showed that the result was insignificant, as indicated by a very low value of the *F*-statistic, 4.11 and it was insignificant at 5.0 per cent level. That was, the probability value of 0.421 was greater than 0.05.

The R^2 (R-Square)

The coefficient of determination (R-square), used to measure the goodness of fit of the estimated model, indicated that the model was reasonably fit in prediction. The R^2 (R-square) value of 0.9690 showed that Commercial banks credits have a very good impact on agricultural sector productivity in Nigeria. It indicated that about 96.90 per cent of the variation in agricultural sector productivity was explained by Commercial banks credits, while the remaining unaccounted variation of 3.1 percent was captured by the white noise error term.

Serial Correlation

Durbin Watson (DW) statistic was used to test for the presence of serial correlation or autocorrelation among the error terms.

The null hypothesis was:

$H_0 : \rho = 0$ That is, the $\mu's$ are not autocorrelated with first order scheme. This hypothesis was tested against the alternative hypothesis;

$H_1 : \rho \neq 0$ That was, the $\mu's$ are autocorrelated with a first-order scheme.

Therefore, if there was no autocorrelation, $\rho = 0$ and $DW \approx 2$.

The model also indicated that there was no autocorrelation among the variables as indicated by Durbin Watson (DW) statistic of 1.95. This showed that the estimates were unbiased and could be relied upon for policy decisions.

4.2.5.2 H_{02}: Agricultural Credit Guarantee Scheme Fund (ACGSF) has no Significant Impact on Agricultural Sector Productivity in Nigeria

Model Two: $AGDP = \beta_0 + \beta_2 ACGSF + \mu_t$ (3)

Table 4.6: Regression Result on Agricultural Credit Guarantee Scheme Fund and Agricultural Sector Productivity

Dependent Variable: LOG(AGDP)
Method: Least Squares
Date: 05/18/17 Time: 16:05
Sample: 1986 2014
Included observations: 29

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.421464	1.034123	4.275568	0.0002
LOG(ACGSF)	0.866549	0.600399	1.443287	0.2314

R-squared	0.828800	Mean dependent var	7.287318
Adjusted R-squared	0.822460	S.D. dependent var	1.832666
S.E. of regression	0.772204	Akaike info criterion	2.387335
Sum squared resid	16.10006	Schwarz criterion	2.481632
Log likelihood	-32.61636	Hannan-Quinn criter.	2.416868
F-statistic	3.117106	Durbin-Watson stat	2.217212
Prob(F-statistic)	0.231444		

Source: Authors Computation, 2017 (Eview-7.0)

$AGDP = 4.42 + 0.866 ACGSF$ ----------(4)

$SEE =$ 1.03 0.60

$t* =$ 4.27 1.44

$F* =$ 3.11; Prob(F-statistic)=0.2314

$R^2 = 0.8288; Adj.R^2 = 0.8224$

$DW = 2.21$

Test of Hypothesis Two: H_{02}

Mores so, from the regression result in table 6 the calculated t-value for activities of Agricultural Credit Guarantee Scheme Fund was 1.44 and the critical value was 1.96 under 95% confidence levels. Since the t-calculated was less than the critical value (1.44 < 1.96) it also fell in the acceptance region and hence, we accepted the second null hypothesis (H_{02}). The conclusion here was that Agricultural Credit Guarantee Scheme Fund (ACGSF) has no significant impact on agricultural sector productivity in Nigeria

The F-Statistic

The F-statistics equally showed that the overall result was insignificant, as indicated by the value of the *F*-statistic, 3.11 and it was insignificant at the 5.0 per cent level. That was, the probability value of 0.2311 was greater than 0.05.

The R^2 (R-Square)

Furthermore, the coefficient of determination (R-square), used to measure the goodness of fit of the estimated model, indicated that the model was also reasonably fit in prediction. The R^2 (R-square) value of 0.8288 showed that Agricultural Credit Guarantee Scheme Fund has a very good impact on agricultural sector productivity in Nigeria. It indicated that about 82.88 per cent of the variation in agricultural sector productivity in Nigeria was explained by Agricultural Credit Guarantee Scheme, while the remaining unaccounted variation of 17.12 percent was captured by the white noise error term

Serial Correlation

The model also indicated that there was no autocorrelation among the variables as indicated by Durbin Watson (DW) statistic of 2.21. This showed that the estimates were unbiased and could be relied upon for policy decisions.

4.2.5.3 H_{03}: Governments Expenditure has no Significant Impact on Agricultural Sector Productivity in Nigeria.

Model three: $AGDP = \beta_0 + \beta_3 GEA + \mu_t$ (5)

Table 4.7: Regression Result on Governments Expenditure and Agricultural Sector Productivity

Dependent Variable: LOG(AGDP)
Method: Least Squares
Date: 05/18/17 Time: 16:05
Sample: 1986 2014
Included observations: 29

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.171196	0.555053	3.911695	0.0006
LOG(GEA)	0.846862	0.048890	17.32178	0.0000

R-squared	0.917442	Mean dependent var	7.287318
Adjusted R-squared	0.914385	S.D. dependent var	1.832666
S.E. of regression	0.536240	Akaike info criterion	1.658002
Sum squared resid	7.763935	Schwarz criterion	1.752298
Log likelihood	-22.04102	Hannan-Quinn criter.	1.687534
F-statistic	300.0442	Durbin-Watson stat	1.640661
Prob(F-statistic)	0.000000		

Source: Authors Computation, 2017 (Eview-7.0)

$AGDP = 2.17 + 0.84GEA - - - - - - - - - - - - - - - - 6$
$SEE = \quad 0.55 \quad 0.04$
$t* = \quad 3.91 \quad 17.32$
$F* = \quad 300$; Prob(F-statistic)=0.00000
$R^2 = 0.9174; Adj.R^2 = 0.9143$
$DW = 1.64$

Test of Hypothesis Three: H_{03}

The calculated t-value for Governments expenditure was found to be 17.32 and also by rule of thumb, the tabulated value was ±1.96 under 95% confidence interval levels. The calculated t-value for Governments expenditure was found to be greater than the tabulated value (that was; 17.32 > 1.96), we thus, rejected the third null hypotheses (H_{03}) and accepted the alternate hypothesis and concluded that, Governments expenditure has a significant impact on agricultural sector productivity in Nigeria**.**

The F-Statistic

The F-statistics which was also used to examine the overall significance of regression model equally showed that the result was significant, as indicated by a very high value of the *F*-statistic, value of 300 and it was significant at the 5.0 per cent level. That was, the probability value of the F-statistic 0.0000 was less than 0.05.

The R^2 (R-Square)

The coefficient of determination (R-square), used to measure the goodness of fit of the estimated model, indicated that the model was reasonably fit in prediction. The R^2 (R-square) value of 0.9174 showed that Governments expenditure has a strong impact on agricultural sector productivity. It indicated that about 91.74 per cent of the variation in agricultural sector productivity was explained by Governments expenditure, while the remaining unaccounted variation of 8.26 percent was captured by the white noise error term

Serial Correlation

Durbin Watson (DW) statistic was used to test for the presence of serial correlation or autocorrelation among the error terms.

The model also indicated that there was no autocorrelation among the variables as indicated by Durbin Watson (DW) statistic of 1.64. This showed that the estimates were unbiased and can be relied upon also for policy decisions.

4.2.5.4 H_{04}: Interest Rates on Commercial Banks Credits have not Significantly Impacted Agricultural Sector Productivity in Nigeria.

Model Four: $AGDP = \beta_0 + \beta_4 AIR + \mu_t$ (7)

Table 4.8: Regression Result on Interest Rates and Agricultural Sector Productivity

Dependent Variable: LOG(AGDP)
Method: Least Squares
Date: 05/18/17 Time: 16:06
Sample: 1986 2014
Included observations: 29

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.506251	1.681183	5.654501	0.0000
AIR	-0.117007	0.086868	-1.346954	0.1892

R-squared	0.062965	Mean dependent var	7.287318
Adjusted R-squared	0.028260	S.D. dependent var	1.832666
S.E. of regression	1.806585	Akaike info criterion	4.087226
Sum squared resid	88.12122	Schwarz criterion	4.181522
Log likelihood	-57.26477	Hannan-Quinn criter.	4.116758
F-statistic	1.814284	Durbin-Watson stat	2.121479
Prob(F-statistic)	0.189193		

Source: Authors Computation, 2017 (Eview-7.0)

$AGDP = 9.50 - 0.11AIR \text{ ---------- } 8$

$SEE =$ 1.68 0.08

$t* =$ 5.64 -1.34

$F* =$ 1.814; Prob(F-statistic)=0.1891

$R^2 = 0.0629; Adj.R^2 = 0.0282$

$DW = 2.12$

Test of Hypothesis Four: H_{04}

The calculated t-value for Agricultural Interest rates was found to be -1.34 and also by rule of thumb, the tabulated value was ±1.96 under 95% confidence interval levels. The calculated t-value for agricultural interest rate was found to be less than the tabulated value (that was; -1.34 < -1.96), we thus, accepted the fourth null hypotheses (H_{04}) and concluded that, Interest rates on commercial banks credits have not significantly impacted agricultural sector productivity in Nigeria

The F-Statistic

The F-statistics which was also used to examine the overall significance of regression model equally showed that the result was insignificant, as indicated by a very high value of the *F*-statistic, 1.814 and it was insignificant at the 5.0 per cent level. That was, the probability value of 0.1891 was greater than 0.05.

The R^2 (R-square)

The coefficient of determination (R-square), used to measure the goodness of fit of the estimated model, indicated that the model was not reasonably fit in prediction. The R^2 (R-square) value of 0.0629 showed that Interest rates on commercial banks credits agriculture have a poor impact on agricultural sector productivity. It indicated that about 6.29 per cent of the variation in agricultural sector productivity was explained by Interest rates on commercial banks credits, while the remaining unaccounted variation of 93.71 percent was captured by the white noise error term

Serial Correlation

Durbin Watson (DW) statistic was used to test for the presence of serial correlation or autocorrelation among the error terms.

The model also indicated that there was no autocorrelation among the variables as indicated by Durbin Watson (DW) statistic of 2.12. This showed that the estimates are unbiased and could be relied upon also for policy decisions.

4.3 Discussion of Findings

It was discovered from the analysis that commercial banks credits had not significantly impacted agricultural sector productivity in Nigeria thus showing the inability of farmers in accessing formal bank credits. It was also an indication that Commercial banks have not made any reasonable contribution to agricultural sector productivity. This was in line with the study by Toby and Peterside (2014) whose results showed a significantly weak correlation between Commercial Bank lending and the contribution of agriculture to GDP.

Nwankwo (2013) in his findings revealed that there was no significant relationship between agricultural financing and the growth of Nigerian economy and that the level of loan repayment rate over the years had indeed negatively impacted significantly on the growth of Nigerian economy. This finding was in line with one of the hypothesis postulated for this study that commercial banks credits have no significant impact on agricultural sector productivity. Credit is no doubt an important element in agricultural production but it is surely not the indispensible input. Other studies such as Juma (2007) and Haruna (2007) also provided evidence of the failure of formal financial institutions to meet the credit requirement of farmers.

Also, ACGSF was found not to have significant impact on agricultural sector productivity in Nigeria during the periods under study. This was due to lack of sufficient credit facilities to grant the farmers and the neglect of the sector by the government who had found solace in oil. (Nwankwo (2013) observed that Agricultural Credit Guarantee Scheme Fund (ACGSF) has not

achieved the intended results because agriculture being both labour and capital intensive venture required huge capital outlay and due to inherent risk involved in agricultural lending.

Oyinbo, Damisa & Rekwot (2012) findings refuted the existence of a long-run relationship between cocoa production and ACGSF because of limited amount of loan guaranteed by the scheme. Thus, from the above the influence of ACGSF loan on agricultural output and its long run relationship to the contribution of agricultural output to economic growth of Nigeria were not well established. This was in agreement with the expected postulation that there is no significant impact between agricultural output and ACGSF.

The results from one of the hypothesis of this study revealed that Governments expenditure on agricultural sector between 1986 and 2014 has had significant impact on agricultural sector productivity in Nigeria. This was expected because increase in government expenditure would translate into increase in agricultural extension services, infrastructure, power supply and supporting agro-based institutions such as input manufacturing plants, agro- training and equipment leasing centres which would invariably enhance agricultural sector productivity. Also, increase in government expenditure would imply improvement in agricultural operating environment. The finding was in agreement with the work of Udoka, Mbat, and Duke (2016) whose results indicated that there was a positive and significant relationship between government expenditure on agriculture and agricultural production in Nigeria.

Obilor (2013) showed that government financial allocation to agricultural sector is a significant factor that could influence agricultural production in Nigeria. This was in line with the expectation in one of the theoretical postulation that governments expenditure to agriculture led to agricultural

productivity. It should however be noted that actual governments expenditure on agriculture could give a better result in view of leakages that occur to budgetary allocations to agriculture.

A study by shuaib, Igbinosun and Ahmed (2015) revealed that government agricultural expenditure had a direct relationship with economic growth, while Iganiga and Unemhilian (2011) found out that federal government expenditure on agriculture had positively impacted on agricultural productivity. These work further cemented one of the findings of this study of the positive contribution of governments expenditure to agricultural productivity.

The positive relationship between Nigerian budgetary allocations to agricultural sector and agricultural output was further strengthened by Sunny (2015) who also recommended that agricultural financing should be given paramount attention in policy formulation. This was also in line with one of the postulations of the study that governments expenditure on agriculture has a significant impact on agricultural productivity in Nigeria. The study by Udoh (2011) further confirmed a positive influence on the growth of agricultural output which consolidated one of the hypotheses used in this study that governments expenditure on agriculture had positive effect on agricultural productivity.

Furthermore, Adofu, Abula and Agama (2012) revealed that budgetary allocation to agricultural sector had significant impact on agricultural production in Nigeria and that the relationship between them was strong, positive and significant. This finding was in line with theoretical expectation that an increase in governments expenditure on agriculture will cause an increase in the value of agricultural sector productivity.

Llegbinosa (2012) also reported a positive significant relationship between government capital expenditure and agricultural productivity growth performance in Nigeria, while Agunuwa (2015) reported a positive significant impact on government expenditure and agricultural productivity in Nigeria. These results were also in consonant with expectation of this study that governments expenditure on agriculture has a significant effect on agricultural productivity.

Furthermore, Interest rate on commercial banks credits to agricultural sector had not significantly impacted agricultural sector productivity in Nigeria. The finding was in agreement with the work of Udoka, Mbat and Duke (2016). The result indicated that there was a negative relationship between interest rate and agricultural output which also confirmed theoretical postulations. This is because an increase in the rate of interest charged farmers for borrowed funds discourage them from borrowing and thus less agricultural investment as farmers find it difficult to borrow at high interest rate. This finding was in line with theoretical expectation that a decrease in interest rate on agricultural lending will cause an increase in the value of agricultural sector productivity. This result agreed with Nwankwo (2013) whose study revealed that there was no significant impact on agricultural financing and the growth of Nigerian economy and that the level of loan repayment rate over the years had indeed negatively impacted significantly on the growth of Nigerian economy. Kolawole (2013) further deduced that the higher the level of inflation and interest rate spread in the country, the lower the level of agricultural value added would be. This is in line with the theoretical postulation that interest rate had no significant effect on agricultural productivity.

In the same vein, one of the major factors hindering smallholder farmers` access to credit was reported to be high interest rate as reported in the study of Girabi and Mwakaje (2013) which was

also in agreement with one of the postulation of the study that interest rate has no significant impact on agricultural productivity.

Another major finding of the study revealed that there was no significant relationship between interest rate variations and growth in agricultural productivity in Nigeria. This finding was in line with the study undertaken by Philip, Nkonja, Pender and Oni (2009) that discovered that a favourable interest rate regime for agricultural credits contributes to the growth of agricultural productivity. This by implication meant that the lower the interest rates for agricultural production, the higher the growth of the sub sector. In situations where funds are available, the high interest rate being charged on bank loans; banks' lopsided method of disbursing loans; poor policy implementation, and paucity of funds have been identified as some of the critical challenges facing the country's farmers. This finding was also in line with the study by Abdulrahman (2013) which showed that loan to small scale entrepreneurs have a positive impact on economic performance while Interest rate had a negative impact on economic growth.

One of the postulation of the study that interest rate has no significant effect on agricultural productivity, tallied with the findings of Okoruwa, Adesope and Akintunde (2013) that interest rate contributed negatively to agricultural GDP growth. In the same light, the study by Agunwa (2015) further confirmed the positive significant relationship between government spending and agricultural productivity in Nigeria which is in line with one of the hypothesis of this study.

CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 Summary

This study was undertaken to evaluate the impact of financing on agricultural sector productivity in Nigeria. To achieve the objectives, the study utilised ex post facto research design which revealed possible relationships by observing an existing condition and sought back in time for plausible contributing factors. Secondary data obtained mostly from CBN statistically bulletin and CBN annual and quarterly reports were utilised for the study.

The statistical tool of analysis utilised was the Ordinary Least Square (OLS) technique. The variables were subjected to unit root test using Augmented Dickey-Fuller (ADF) to ascertain the stationarity of the data. Thereafter, the co-integration test using the bound test approach to determine the existence of co-integration among the variables was carried out before the application of OLS.

On the whole, the four hypotheses were tested. All the three null hypotheses in respect of the impact of commercial banks credits to agriculture, the impact of ACGSF on agricultural sector and Impact of interest rate by commercial banks on agriculture were validated while the impact of Governments expenditure on agriculture as the alternate hypothesis was validated.

From the study, some issues emerged in favour of the agricultural sector productivity. The Nigerian economy has huge potential for growth especially from its agricultural sector's perspective. In this age of market liberalisation, globalisation and expansion of agri-businesses, agricultural sector productivity plays a vital role in food security, economic sustainability as well as export driven potentials.

It was discovered from the analysis that commercial banks credits had not significantly impacted agricultural sector productivity in Nigeria thus showing the inability of farmers in accessing formal bank credits. It was also an indication that Commercial banks have not made any reasonable contribution to agricultural sector productivity. This confirmed the postulation which identified poor credit supply as one of the factors accounting for the poor performance of the agricultural sector in Nigeria.

However, ACGSF had not adequately improved agricultural sector productivity within the period under study. This could be ascribed to several factors like inadequate seed money plugged into the ACGSF, while there is the need to provide extensive extension services as well as adequate publicity to enable the beneficiaries realises their potentials.

It was discovered from the analysis that agricultural sector productivity had a direct relationship with Governments expenditure on the agricultural sector. An increase in governments expenditure would imply improvement in agricultural operating environment. This was expected because increase in governments expenditure would translate into increase in agricultural infrastructural development. This could as well translate to provision of extension services to boost agricultural sector productivity.

There was no gainsaying therefore that agriculture remained the core sector of the Nigerian economy which can contribute significantly to the development of the economy if adequately funded and harnessed. The study further re-affirmed the fact that one of the most important functions of banks and other financial institutions were to make credit available to the investors at affordable rate of interest most especially to the agricultural sector. This is because low credit or

high lending rate will amount to low level of investment which could translate to low agricultural sector productivity.

5.2 Conclusion

This study concluded that financing had been effective in enhancing agricultural sector productivity and it should be continued in Nigeria. Knowing full well that the agricultural sector has a multiplier effect on any nations' socio-economic sector because of the multifunctional nature of agriculture, policy makers should bear in mind that a strong and an efficient agricultural sector requires large infusion of credit to finance productivity. However, going by the findings of this study, the provision of agricultural credit is a powerful tool for food production, employment generation, foreign exchange earnings and provision of raw materials to industries. Therefore, agricultural sector productivity should be promoted.

5.3 Recommendations

The following recommendations are made based on the finding of the study:

i. Commercial banks should be encouraged to increase their lending to the agricultural sector as a priority sector since on the average from the finding of this study, only 10.39% of all formal credit went to agricultural lending. As a way of ensuring production efficiency among rural farmers, they should be encouraged to form cooperative societies to enable them have access to farming inputs and thus enjoy economies of scale. This would also ameliorate inherent risk involved in lending as well as enable beneficiaries' access to high repeated loan amounts.

ii. The results from this study indicated that Agricultural Credit Guarantee Scheme Fund (ACGSF) loans were not adequate for farmers to increase output in Nigeria. The ACGSF

beneficiaries should be made to take compulsory comprehensive Nigerian Agricultural Insurance Corporation (NAIC) cover in addition to the guarantee cover provided by CBN to the commercial banks to safeguard against risk, with a view to having enhanced repeated loans.

In addition, it is further recommended that the various stakeholders in the ACGSF should strengthen farm extension services as well as provide adequate publicity on its operations with a view to increasing higher productivity. Also, the interest drawback programme associated with the scheme should be sustained.

Finally, to further enhance agricultural sector productivity, the ACGSF should be recapitalised which would involve the National Assembly amending the operating guidelines of the scheme.

iii. Governments at all levels should increase their yearly budgetary allocation to the agricultural sector in a consistent manner due to the primary and vital importance it plays in the national economy. With proper monitoring of fund, it would contribute more significantly to the economy of the country.

In view of the persistent cry to give priority to agricultural sector and the urgent need to diversify the economy (since from the findings of this study there were adequate budgeted/disbursed funds by governments toward agricultural sector productivity), the government should intensify efforts in providing adequate extension services (in the form of seminars, workshop and trainings to farmers) on the effective use of modern technology to improving agricultural productivity.

iv. Since lending rates to agriculture within the periods of study under review were high (on the average 18.96%), there is the need for policy thrust by the government through moral suasion to reduce the interest rate on agricultural loans so as to enhance high productivity.

The Government could introduce some palliative measures to the Commercial Banks like tax holiday and exemptions from taxes from any earnings from agricultural lending to get their buy in.

This would ensure one of the fastest steps to enhance high productivity in the agricultural sector and consequently the desired step toward the diversification of the economy.

5.4 Limitations of the Study

The limitations of this study are that the findings are applicable to Nigeria within the period of study and it is not established whether the results are applicable outside Nigeria or not. The findings are as accurate as the secondary data utilised and the analysis model used. The limitations concerning the accuracy of these data also contribute to the limitation of this study.

The other limitation of the study involved the fact that budgeted governments expenditure to agriculture figures were utilised not minding the fact that various leakages/diversions occur along the line before the funds could be utilised by the farmers and other stakeholders.

In addition, the SAP period 1986 to date was utilised for the study which mainly involved the liberalisation of the economy; results which would differ drastically when the economy was partially/fully regulated.

5.5 Suggestions for Further Study

There is the need to carry out further research to identify and ascertain the impact of Bank of Agriculture (BOA) on agricultural productivity in Nigeria. Also it is further suggested that the study be extended to examine the impact of financing to agricultural sector productivity under the period of partial/full regulation of the economy.

More so, further researches should be undertaken in the area of investigating the contribution of infrastructural development on Agricultural productivity in Nigeria.

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