



Deposit Money Bank Credit and Agricultural Output in Nigeria

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ABSTRACT

Agriculture is the science or practice of farming, including cultivation of the soil for the growing of crops and the rearing of animals to provide food, wool and other products. The main objective of the study is to examine the effect of commercial bank credit on agricultural output in Nigeria. Specifically the study examined the effect of bank credit on the agricultural output in Nigeria, investigate the effect of government expenditure on agricultural output in Nigeria, evaluate the impact of Agricultural Credit Guarantee Scheme Fund on agricultural output in Nigeria and examine the effect of interest rate on agricultural output in Nigeria. The data were analyzed using econometric techniques Augmented Dickey Fuller Tests for Unit Roots and the Ordinary Least Squares (OLS). The study shows that bank credit on agricultural output, government spending on agricultural sector and Agricultural Credit Guarantee Scheme Fund has positive and significant effect on agricultural output while interest rate has negative and insignificant effect on agricultural output. The study therefore, concludes that deposit money bank credit have positive effect on agricultural output in Nigeria and has achieved agricultural production in Nigeria within the period under review within the period under review. The study recommends that government should strengthen the agricultural credit guarantee scheme by meaningful budgetary allocation in order to enhance its capital base significantly. The Agricultural Credit Guarantee Scheme (ACGS) should improve on their conditions for credit guarantee in order to make agricultural financing attractive to commercial banks. The Central Bank of Nigeria should absorb some percentage of the losses incurred by deposit money banks on their exposure to the agricultural sector.

Keywords: Agricultural output, commercial bank, government expenditure, budgetary allocation

INTRODUCTION

Agriculture is the rearing of animals and cultivation of land to produce food, biofuel other products used to sustain life. Agriculture was the key to the development and rise of sedentary human civilization, whereby farming of domesticated species created food surpluses that nurtured the development of civilization. According to CBN (2019), Nigeria is endowed with huge expanse of fertile land, rivers, streams, lakes, forests and grasslands, as well as a large active population that can sustain highly productive and profitable agricultural sector which can ensure self-sufficiency in food and raw materials for the industrial sector as well as provide gainful employment for the teeming population and generate foreign exchange for the economy. Unfortunately agricultural contribution Economic growth has been declining since the advent of oil. Several factors account for the poor performance of the agricultural sector in Nigeria. These include virtual neglect of the sector, poor access to modern inputs and technology, and lack of optimum credit supply. (Enyim, Ewno & Okoro, 2013). Beside the problem of poor access to modern technology, the major bane of agricultural development in Nigeria is low investment finance. (Salami & Arawomo, 2013).

The traditional role of banks (deposit money banks) is financial intermediation. Banks aim at channeling deposits mobilized from surplus spending units into various sectors of the economy in the form of loans and investments. They act as vital catalysts for Nigeria's economic advancement through the encouragement of savings, provision of capital needed for development, encouragement of trade activities, investment inducement agent, provision of managerial advice to small scale industrialists, help in the development of the much needed capital market and enhance the development of international trade (Ajie, 2015).

According to Udih (2014), bank credit is expected to impact positively on the real sectors of the economy through improved agricultural production of goods and services. He opined that sufficient financing of agricultural projects will not only promote food security, but will also enhance the entrepreneurship performance of our young investors.

According to Ajie and Ewabore (2013), agriculture is a source of food for consumption by man, food for animals and raw material for the agro-based industries. Agriculture contributes to the growth of the economy, provides employment opportunities for the teeming population and eradicates poverty. An articulated agricultural revolution and increased value addition activities in the downstream agro-processing sub-sector present a potential platform for effective wealth generation and consequently, sustainable poverty eradication. Food which is a basic necessity of life cannot be obtained without agricultural practice. It is also a key connector to other productive sectors of the economy through the provision of essential raw materials as inputs. Thus, the agricultural sector is fundamental to the overall growth of the economy by its direct impact on the economy and its contributory relationship with other sectors. A well-developed agricultural sector can help reduce the level of unemployment in the country and also increase the country's foreign exchange earnings through export of agricultural produce and reduction of food import bills. Obilor (2014) finds that Agricultural Credit Guarantee Scheme Fund in Nigeria affected agricultural productivity positively and significantly. Using annual data for 1970-2013 and an error correction model (ECM),

Nnamocha and Charles (2015) find that bank credit affects agricultural output in Nigeria only in the long-run. Ibe (2014) examined the impact of bank and public sector financing activities on agricultural output in Nigeria. The results showed that commercial bank credit to the agricultural sector, government financial allocation to agriculture and agricultural product prices are significant factors that influence agricultural productivity in Nigeria.

Statement of the Problem

Nigeria, like most other countries in the African continent is not only, endowed with vast agricultural farmland, but also conducive geographical condition that favours agricultural production throughout the year. Despite this great potential, there is not much to show for it in respect of cereals, starchy roots, sugar, edible oil, crops, nuts, fruits, vegetables, wine, cocoa, tea, coffee, livestock and livestock products (Salami & Arawomo, 2013).

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 commercial banks, obviously have no kind interest in agricultural finance. In order to encourage banks, the Central Bank of Nigeria established the Agricultural Credit Guarantee Scheme (ACGS) to provide guarantees against inherent risk in agricultural lending. This measure could not achieve the intended objectives because agricultural lending being both labour and capital intensive venture requires huge capital outlay (Nwankwo, 2013).

Consequently, the country with its highly diversified agro-ecological endowment is relying on massive importation of basic food items and raw materials for industrial inputs (Itodo, Apeh and Adeshima, 2013). The resultant effect of the high cost of living coupled with high level of unemployment is beyond reasonable imagination. Obviously, government's effort to fortify the Nigeria agricultural sector has not yielded the desired result (Udensi, Orebiyi, Ohajianya & Eze, 2012). Thus, there is the need for further investigation in this area find out the effect of bank credit on the agricultural sector

REVIEW OF RELATED LITERATURE

Conceptual Framework

Agricultural Sector

Agriculture is the science or practice of farming, including cultivation of the soil for the growing of crops and the rearing of animals to provide food, wool and other products. It is as old as man. It is also an important development in the rise of sedentary human civilization, whereby farming of domesticated species created food surpluses that nurtured the development of civilization. It is the first occupation of mankind. Agriculture is a major branch of the Nigeria economy, providing employment for about 70% of the labour force. Nigerian agriculture is characterized by considerable regional and crop diversity. In 1990, 82 million hectares out of Nigeria's total land area of about 91 million hectares were found to be arable (Modebe, Ugwuegbe & Ugwuoke 2014). Much of this land was farmed under the bush fallow system, whereby land is left idle for a period of time to allow natural regeneration of soil fertility. 18 million hectares were classified as permanent pasture, but had the potential to support crops. Most of the 20 million hectares covered by forests and woodlands are believed to have agricultural potential.

In the 1960's, the agricultural sector was the most important in terms of contributions to domestic production, employment and foreign exchange earnings (National Bureau of Statistics, 2014). Agriculture contributed 32% to gross domestic product (GDP) in 2001. Agricultural holdings are generally small and scattered, characterized by simple farm tools and shifting cultivation. These small farms produce about 80% of the total food. The situation remained almost the same three decades later with the exception that it is no longer the principal foreign exchange earner, a role now being played by oil. The agricultural sector remained stagnant during the oil boom decade of the 1970's, and this is accounted largely for the declining share of its contributions. The trend in the share of agriculture in the GDP shows a substantial variation and long-term decline from 60% in the early 1960's through 48.8% in the 1970's and 22.2% in the 1980's (Salami & Arawomo, 2013). Unstable and often inappropriate economic policies, the relative neglect of the sector and the negative impact of oil boom were also important factors responsible for the decline in its contributions (Philip et al., 2009). In recent times, there have been different policies developed by the government to help in financing the agricultural sector in Nigeria in order to boost productivity. Some of the policies include the Nigerian

Agricultural and Co-operative Bank which was established in the year 1973 as part of government efforts to inject oil wealth into the agricultural sector through the provision of credit facilities to support agriculture and agro-allied industries. Also the Rural Credit Scheme was introduced in 1977 by the Central Bank of Nigeria, whereby commercial banks were required to open rural branches. The Agricultural Credit Scheme was also set up in 1977 with the primary aim of inducing banks to increase and sustain lending to agriculture. There are other policies which were set up by the federal government and linked up with commercial banks for the purpose of encouraging the farmers to produce more food such as National Food Security Programme, Special Programme on Food Security Programme and Fadama which are introduced to diversify agricultural products into other uses.

The Role of Commercial Banks in Agricultural Financing

a. Pooling of Savings

Commercial banks perform this very important function to all sector of the economy by making available the facilities for the pooling of savings through the acceptance of deposits from the public and then making these funds available for economically and socially desirable purpose.

In many villages deposits are received from farmers through saving account on which the banks pay small interest to the depositors. These depositors are allowed to draw their money upon presentation of their savings account passbooks (Adeyin ka, Daniel & Olukotun, 2015).

The use of fixed or time deposit accounts by farmers has also improved the saving habit of the farmers likewise the use of cheque books (through the current account) to settle their obligating without necessarily holding cash is made possible.

b. Extension of Credit

Extension of credit facilities by commercial banks is very important to the economy, most importantly, the agricultural sector, for it makes possible the financing of the agricultural, commercial and industrial activities of the nation. Indirect or found-about production as against direct production

where consumable goods are secured by the direct application of labour to land or natural wealth is made possible through the extension of these credit facilities. Also, bank credits make possible production for inventory (Adeyinka, Daniel & Olukotun , 2015).

For instance, in the food industry, if Nigeria cannot consume all the food that is harvested and processed immediately bank credits to carriers would enable them to purchase, process and store the food which may at a late time be sold to retailers and ultimately to consumers. You discover therefore that the bank credits have made possible the economic handling on the food crop during this interval of time i.e. from producers to carrier, to wholesaler, to retailers and finally to consumer (Agunuwa, Inaya & Proso 2015).

Problems of Banks on Agricultural Financing

Agricultural sector has not been booming because it has not been properly financed by commercial banks. This arises as a result of the fact that commercial banks are faced with some problems such as; Inadequate financial resources at the disposal of the commercial banks and limited resources of branch network and skilled manpower at the disposal of banks to monitor and control lending in the agricultural sector. Even though some banks are ready to grant out loan to agricultural sectors (i.e. farmers) of the economy but the effort of the entrepreneurs were directed to industrialization where there is better attraction of high return on investment and high payback period.

Lack of management skills and trained manpower in the sector. This may lead to wrong selection of enterprises. At times, farmers ventures into the area of production in which they have no knowledge and they may refuse to employ the right caliber of staff to manage the venture for them. These are what the bank will consider before giving out loan so that they won't run into the risk of irrecoverable debt.

High risks involved coupled with low returns and long gestation period. This does not encourage banks to give out loans to the sector. Lack of adequate security due to the land tenure system in the country. The land use Act of 1978 did not provide solution to this problem. As a result of this, bank use to be very careful before advancing credit or loan to any farmer (Ammani, 2014).

Risk of diversion of funds for other purposes which results to high bad and doubtful debts. In this case, even though, if bank grant credit or loan, the bank will monitor the end-use of the loan.

Risk and uncertainty of agricultural product. Agricultural output cannot be accessed with 100% certainty because some products are seasonal in nature. Also at times, climate and whether imbalances may affect an agricultural product. This make banks to give loans to industries more than agricultural sector.

Inadequate banks in the rural area are another point that affects the financing of agricultural sector. This is because most farmers are rural base and as a result of this, they won't be able think of requesting for loan that can make them to buy equipment and cultivate on large scale.

High interest rates of banks make many farmers to run-away for bank loans and advances (Athanasius, 2017).

Subsistence Farming

Subsistence farming is a form of production in which nearly all crops or livestock are raised to sustain the farm family, and rarely producing surpluses farming, which includes shifting cultivation, slash and burn, and pastoral nomadic farming is mainly practiced in marginal areas. In contrast, intensive subsistence agriculture, which is the subject of this paper, is practiced in high potential arable land where land is scarce and the farmers have to maximize food production on relatively small fields. This type of farming exhibits a high degree of diversification (mixed crop-livestock systems). Inter-cropping and limited use of modern technologies and purchased agricultural inputs. Intensive subsistence agriculture is widespread in many less developed countries where over 80% of their rural population is engaged in this type of farming. Intensive subsistence agriculture contributes substantially to economics of these countries and in alleviating food insecurity (Athanasius, 2017). It has high potential for increased growth if given the necessarily support. Despite this high dependence on subsistence agriculture, the farmers are faced with several challenges which unless addressed will continue to drag behind the economic development of these countries. This paper not only reviews the characteristics and impacts of intensive subsistence agriculture but also the challenges and possible interventions to these challenges (Chinasa & Making, 2013)

Subsistence agriculture is a form of agriculture in which nearly all the crops or livestock are raised to sustain the farm family (Clifton 1970). Although good weather occasionally allows the farmers to produce surplus, rarely do the farmers have enough surplus to sell for cash or store for later use. The farmers may sell a portion of their produce not because it is a surplus but because they are forced to meet some of their cash obligations or to meet a few family needs which they are rare, subsistence farming does not allow for generation and accumulation of capital and the farmers are not therefore endowed with financial resources to buy inputs for increasing productivity and hiring labor. The farmer therefore uses primitive farming tools and applies minimal or no inputs to increase crop yield and productivity. Intensive subsistence agriculture, the subject of this review, is mainly practiced in the developing countries of Africa, Latin America, Central and, East Europe and South East Asia (Mathijs & Noev 2004). Although this type of agriculture occupies less than 10% of the world's land area, it supports over half of the world's population and contributes substantially to these countries' economies (Kostov & Lingard 2004). Intensive substance rice farming, for example, supports nearly three billion people, mostly in Southeast Asia, Southeast China and East India (Dawe & Dobermann 2000). In Sub-Saharan Africa, subsistence agriculture contributes 8-50% of the Gross Domestic product (GDP) and employs 40-85% of the rural population (Kostov & Lingard 2004).

In this review, forms of subsistence agriculture and characteristics and impacts of intensive subsistence agriculture are discussed. The challenges associated with intensive subsistence agriculture and possible interventions have been discussed in greater depth. Cases where the interventions have been successful are briefly reviewed.

Characteristics of intensive subsistence agriculture

Intensive subsistence agricultural systems are characterized by:

1. Extremely small farm size (0.25-10 acres) and seasonal reconfiguration of sub-parcels within fields due to socio-economic factors and land tenure system (Orkin and Njobe 2000; Grigsby 2002)
2. A high degree of diversification (fig. 1); mixed crop-livestock systems and a large number of different types of annual and perennial crops are planted together (Smithson and Lenne 1996)
3. Low yields and high rates of crop failure (fig 2). Due to poor farm management and agricultural practices such as continuous cropping and lack of adequate and appropriate external inputs (fertilizers and quality seed), the land does not produce according to its potential and yields are therefore persistently low, besides, there is a high rate of crop failure due to unfavourable climatic conditions and damage by pests and disease. This is couple with lack of irrigation facilities and other appropriate technologies that would mitigate against unreliable weather patterns (Ellis 2000).
4. Limited use of purchased input. There is a limited use of purchased inputs (seeds, fertilizers, pesticides) in the crop production process. Sub-optimal amounts of fertilizers and pesticides are occasionally applied to marketed crops by some farmers but no inputs are applied to example accounted (non-marketed) crops. Africa for example accounted for only 2% of world fertilizer consumption in 2003/04 while North America accounted for 15% (FAQ 2005c). In sub Saharan Africa (excluding the republic of South Africa), the average fertilizer use is only 10kg ha (Wallace and Knausenberger 1997).

Agricultural Extension

Agricultural extension can be defined as the entire set of organizations that support and facilitate people engaged in agricultural production to solve problems and to obtain information, skills, and technologies to improve their livelihoods and well-being (Birner, Davis, Pender, Nkonya, Anandajayasekeram, Ekboir, *et al.*, 2006). Extension has been recently defined as systems that facilitate the access of farmers, their organizations and other market actors to knowledge, information and technologies; facilitate their interaction with partners in research, education, agribusiness, and other relevant institutions; and assist them to develop their own technical, organizational and management skills and practices (Christoplos, 2010). However, donors (World Bank) agree that services must be provided in a fundamentally different way than in the past, emphasizing on a framework for agricultural service provision that might be effective under current circumstances in developing countries. This framework puts agricultural extension into a much broader context of a demand-led service market. Hence the term "advisory services" is used instead of "extension", to

include the many non-traditional tasks, such as market information, micro-finance, health issues (AIDS), farmers' self-organisation and the like (en-ext)

Government Expenditure and Agricultural Sector in Nigeria

Government expenditure on agriculture is referred to as outflow of resources from government to agricultural sectors of the economy (Nurudeen & Usman 2010). The contribution of agricultural sector to the economy cannot be overemphasized when considering its roles for sustainable development, in terms of employment potentials, export and financial impacts on the economy.

Conceptually, agriculture is the production of food, feed, fiber and other goods by the systematic growing and harvesting of plants and animals. It is the science of making use of the land to raise plants and animals. It is the simplification of nature's food webs and the rechanneling of energy for human planting and animal consumption (Olorunfemi 2008). Until the exploitation of oil reserves began in the 1980s, Nigeria's economy was largely dependent on agriculture.

Lawal (2011) attempted to verify the amount of federal government expenditure on agriculture. 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.

Agriculture involves the cultivation of land, raising and rearing of animals for the purpose of production of food for man, feed for animals and raw materials for industries. It involves cropping, livestock, and forestry, fishing, processing and marketing of these agricultural products. Essentially it is composed of crop production, livestock, forestry and fishing (Ebomuche & Ihugba, 2010)

The agricultural sector has the potential to be the industrial and economic springboard from which a country's development can take off. Nigeria, which spans an area of 924,000 km, is bordered by the Gulf of Guinea, Cameroon, Republic of Benin, Niger, and Chad. The topography ranges from mangrove swampland along the coast to tropical rain forest and savannah to the north (NPC, 2004). Nigeria is generously endowed with abundant natural resources. With its reserves of human and natural resources, Nigeria has the potential to build a prosperous

Iganiga and Unemhilin (2011) studied the effect of federal government agricultural expenditure and other determinants of agricultural output on the value of agricultural output in Nigeria. A Cobb Douglas Growth Model was specified that included commercial credits to agriculture, consumer price index, annual average rainfall, population growth rate, food importation and GDP growth rate. The study performed comprehensive analysis of data and estimated the Vector Error Correction model. Their results showed that federal government capital expenditure was found to be positively related to agricultural output.

Oji-Okoro (2011), states that agricultural sector is the largest sector in the Nigerian economy with its dominant share of the GDP, employment of more than 70% of the active labour force and the generation of about 88% of non-oil foreign exchange earnings.

Adofu (2012) in his work; effects of government budgetary allocation to agricultural output in Nigeria (1995-2009) show that the percentage, degree or amount of budgetary allocation to agricultural sector has a positive relationship with the total agricultural production in the country. This implies that the more the public spending on agricultural sector, the more the improvements in the performance of the agricultural sector. Also, a large degree of change in agricultural output is accounted for by change in budgetary allocation to agricultural sector. Thus, budgetary allocation to agriculture has a large impact on agricultural output.

Agricultural Credit Guarantee Scheme

The Nigerian ACGSF (henceforth 'the Scheme' or 'the Fund') was set up by the Federal Government Act NO. 20 of 1977. Its purpose was to serve as an inducement to banks (commercial and merchant) to increase and sustain lending to agriculture. Under the Scheme, bank loans to farmers are guaranteed 75% against default. Thus, the Scheme is a partial credit guarantee type. When a default occurs, the CBN; the Managing Agent for the Scheme's day-to-day administration, remits to the participating lending banks, (PLBs), 75% of the amount in default, net of any amount realized by the bank from the security pledged (where applicable) by the farmer (Chinasa & Making 2013). This is done after careful verification and approval by the Board of Directors responsible for managing the Scheme. Verified defaults are settled by the CBN from a fund set up by the FGN and CBN for the purpose. At the commencement of operations by the Scheme on April 3rd, 1978, the authorized

capital of the Fund was N 100 million; subscribed to in the proportion of 60% and 40% by the FGN and CBN respectively. The proportion of the authorized capital paid up as at the time operations commenced was N 85.5 million (Chinasa & Making, 2013)

Agricultural Credit Guarantee Scheme Fund (ACGSF)

The Agricultural Credit Guarantee Scheme Fund (ACGSF) was established by Decree No. 20 Of 1977, and started operations in April 1978. Its original share capital and paid up capital were One Hundred Million naira (N100 million) and N85.6 million, respectively. The Federal Government holds 60 percent and the Central Bank of Nigeria, 40 percent of the shares. The capital base of the scheme was increased to N3 billion in March, 2001.

The fund guarantees credit facilities extended to farmers by banks up to 75 percent of the amount in default net of any security realized. The fund is managed by the Central Bank of Nigeria, which handles the day to day operations of the scheme. The guidelines stipulate the eligible enterprises which guarantees could be issued under the scheme.

Between 1978 and 1989 when the government stipulated lending quotas for banks under the scheme, there was consistent increase in the lending portfolios of banks to agriculture, but after the deregulation of the financial system, banks started shying away by reducing their loans to the sector due to the perceived risk.

In order to reverse the declining trend several innovations and products were introduced under the scheme such as:

- i. The Self-Help Group Linkage Banking
- ii. Trust Fund Model and
- iii. Interest Draw Back

The Self-Help Group Linkage Programme was launched under the Agricultural Credit Guarantee Scheme (ACGS) in 1991 and became operational in 1992. Under the programme, farmers were encouraged to form themselves into groups of between 5 to 15 on the basis of common purpose. The groups are encouraged to undertake regular savings with a partner bank of their choice. After operating such savings for six months, they could then apply to the partner bank for loan. The amount saved provides part cash security for loans to saving groups.

Bank loans to the groups are normally in multiples of the balance in their savings account at the time of the application for loan. The group savings security would not be drawn until the loans are fully repaid. The aim of the Self-Help Group Linkage Banking is to inculcate the culture of savings and banking habit in group members as well as enable them to build up resources for financing their farm projects without recourse to bank borrowing on the long run (Athanasius 2017).

Agricultural Credit Support Scheme (ACSS)

The Agricultural Credit Support Scheme (ACSS) is an initiative of the Federal Government and the Central Bank of Nigeria with the active support and participation of the bankers committee. The scheme has a prescribed fund of Fifty billion naira (N50 billion) and ACSS was introduced to enable farmers exploit the untapped potentials of Nigeria's agricultural sector, reduce inflation, lower the cost of agricultural production (i.e food items), generate surplus for export, increase Nigerians foreign earnings as well as diversify its revenue base (Athanasius 2017).

At the national level, the scheme operates through a Central Implementation committee (CIC) while at the Federal Capital Territory (FCT) and state levels, the scheme operates through state Implementation Committees (SICs) instituted to ensure that the objectives of the scheme is realized without hindrance. To access loans under the Agricultural Credit Support Scheme (ACSS), applicants (practicing farmers and agro-allied entrepreneur with means) are encouraged to approach their banks for loan through the respective state chapters of farmers associations and state Implementation Committees. However, large scale farmers are allowed under the scheme to apply directly to the banks in accordance with the guidelines (Agunuwa, Inaya & Proso, 2015).

ACSS funds are disbursed to peasant farmers and agro-allied entrepreneurs at a single digit interest rate of 8.0 percent. At the commencement of the project support, banks will grant loans to qualified applicants at 14.0 percent interest rate. Applicants who pay back their facilities on scheduled are to enjoy a rebate of 6.0 percent, thus reducing the effective rate of interest to be paid by farmers to 8.0 percent (Agunuwa, Inaya & Proso, 2015).

Commercial Agriculture credit Scheme (CACS)

As part of its developmental role the Central Bank of Nigeria (CBN) in collaboration with the Federal Ministry of Agriculture and Water Resources (FMA & WR) established the Commercial Agriculture Credit Scheme

(CACS) in 2009 to provide finance for the country's agricultural value chain (production, processing, storage and marketing). Increased production arising from the intervention would moderate inflationary pressures and assist the bank to achieve its goal of price stability in the country.

The primary objectives of the scheme are to:

- i. Fast-Track the development of the agricultural sector of the Nigerian economy by providing credit facilities to large scale commercial farmers at a single digit interest rate.
- ii. Enhance national food security by increasing food supply and effecting lower agricultural produce and products prices, thereby promoting low food inflation.
- iii. Reduce the cost of credit in agricultural production to enable farmers exploit the untapped potentials of the sector; and iv. Increase output, generate employment, diversify Nigeria's revenue base, raise the level of foreign exchange earnings and provide input for manufacturing and processing on a sustainable basis.

The scheme which is a sub – component of the Federal Government of Nigeria's Commercial Agriculture Development Programme (CADP) is financed through a two hundred billion naira (N200 billion) bond raised by the Debt Management Office (DMO). Loans to eligible entities under the scheme are disbursed at a maximum interest of 9 percent. The subsidy arising from this stipulated rate and the market rate on all loans granted, and the administrative expenses of the Scheme are bore by the Central Bank of Nigeria (CBN).

The Central Bank of Nigeria and the Federal Ministry of Agriculture and Water Resources jointly ensure that the scheme is implemented successfully. This is achieved through the Project Steering Committee (PSC) comprising the Honourable (Chairman), the Governor of the Central Bank of Nigeria, Representatives of the Federal Ministry of Finance and Commercial Farmers, respectively and the programme coordinator of the Commercial Agriculture Development Programme. The day – to – day implementation of the scheme is undertaken by a Technical Implementation Committee (TIC) made up of the Director of Development Finance Department, CBN as the Chairman, Head of Agricultural Credit Support Division, CBN and a consulting group as members, and the programme coordinator of the Commercial Agriculture Development Programme of the Federal Government as the Secretary.

Interest Rate

Interest rate is the rate at which interest is paid by a borrower (debtor) for the use of money that they borrow from a lender (creditor). High interest rate crowds out private investment leading to reduced economic growth. On the contrary, it may attract foreign capital inflows which may result into increased debts (Babalola, Danladi, Akomolafe & Ajiboye (2015).

Interest rate policy in Nigeria is a major instrument of monetary policy with regards to the role it play in the mobilization of financial resources aimed at promoting economic growth and development. Interest rate is the price paid for the use of money. It is the opportunity cost of borrowing money from a lender. It can also be seen as the return being paid to the provider of financial resources. It is an important economic price. This is because whether seen from the point of view of cost of capital or from the perspective of opportunity cost of funds, interest rate has fundamental implications for the economy either impacting on the cost of capital or influencing the availability of credit, by increasing savings (Davis & Emerenini, 2015).

Interest rate is an economic variable that depicts the cost of acquiring credit for investment in an economy. It is negatively related to investment, this means that high interest rate discourages investment while low interest rate encourages investment. It often changes as a result of inflation, productivity of capital and Federal Reserve policies and also affects both the future cash flow of firms and discount rate. According to Babajide, Lawal and Somoye (2016), a rise in interest rate decreases corporate profitability and likewise leads to an increase in the discount rate applied to equity investors; both of which affects the stock prices adversely. Consequently, a rise in interest rate is expected to impact negatively on the performance of the organization and thus on stock market prices. Ogbulu (2010) finds a negative long-run relationship between interest rates and stock returns in Nigeria and also a uni-directional causality running from interest rates to stock returns.

Liquidity Ratio

This is the monetary policy instrument that oblique's banks to hold a specified proportion of their deposit liabilities as cash deposit with the Central Bank. The higher the percentage of bank reserves that is stipulated as legal cash reserve requirement, the lower the proportion of the banks fund that is available as backing for credit expansion. Thus, reducing the capacity to create money, on the other hand, a reduction in the reserve requirement increase the capacity of the banks to create credit. The use of credit contraction by financial institution in Europe and United States of America led to serious liquidity and credit crunches in almost all the financial industry across the globe. Liquidity and credit crunches manifest strongly among the investment banks that act as intermediaries to companies and investors in London and other parts of the world (Komolafe, 2008).

This is utilized as an indicator of the size of the banking system, taking as the size of the financial intermediaries relative to the size of the economy. It is otherwise known as measure of financial deepening. The ratio measures the degree of monetization in the economy as well as the depth of the banking sector while it as so shows an expansion of payments and saving functions. This measure provides an indication of the banking system ability to increase lending. The liquid liabilities ratio is calculated as M2 – which is broad money supplied (currency plus demand and interest bearing liabilities of banks and non-bank financial intermediaries) divided by GDP.

Higher liquid liabilities ratio indicates larger banking sector where the size of the banking system is positively related to the provision of financial services and thus to growth (World Bank, 2014).

Theoretical Framework

The work is anchored on the Boserupian Theory of Agricultural Development. The Boserupian theory states that the increase in the growth and development of Agriculture is determined by the size of the population (labour Force) involved in agricultural practice. This opposes this Malthusian theory which stipulates that the size and growth of the population depends on the food supply and agricultural methods. In times when food is not sufficient for everyone, the excess population will die. Boserup argued that in those times of pressure, people will find ways to increase the production of food by increasing workforce, machinery, fertilizers.

Empirical Review

Athanasius (2017) investigated the relationship between bank credit and agricultural sector performance in Nigeria from 1980 to 2014 using the Ordinary Least Square (OLS), Error correction model (ECM). The study found that apart from interest rate that has a negative but significant relationship; bank credit to agriculture, foreign exchange rate, government expenditure on agriculture and money supply have a positive and significant relationship with Agricultural Gross Domestic Product (AGDP)

Jonathan and Cynthia (2017) examined the impact of deposit money bank credit on agricultural productivity in Nigeria using an error correction model and annual time series data for the period 1981-2014. The results indicate that an equilibrium relationship exists between the variables. We find that deposit money bank's agricultural credit impacts positively and significantly on agricultural productivity in the long-run, but this impact is quite negligible in the short-run

Adewole, Adekanmi and Gabriel, (2015), examined the contributions of commercial banks in agricultural financing in Nigeria. Secondary data (2002 -2014) on sectorial distribution of commercial banks' loans and advances to agricultural sector, liquidity ratio of commercial banks, cash reserve ratios of commercial banks and money market minimum rediscount rates, etc. were sourced from various statistical publications of the central bank of Nigeria (CBN). Data collected were analyzed using multiple regression of ordinary least square to achieve its objectives. It was revealed that the parameter of cash reserve and discount rate is not statistically significant and the parameter of liquidity ratio is not statistically significant. It was also discovered that agriculture credit was found as a decreasing function of discount rate, liquidity ratio and cash reserve, this lower the volume of agricultural credit.

Udih (2014) investigated banks credit on agricultural development. The study used primary and secondary sources of data 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 analyzed using percentage, mean, and Standard Deviation and Pearson

product moment correlation to test the hypotheses. The research findings include: that banks credits 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

Chinweoke, Egwu, and Nwabeke, (2015), investigated the impact of commercial banks loans and advances to the agricultural and manufacturing sectors on the economic growth in Nigeria for the periods, 1994 – 2013 using an ordinary least square technique, The result of the study shows that banks' loans and advances to agricultural and manufacturing sectors have a statistically significant impact on economic growth.

Uzomba, Chukwu, Jumbo and Nwankwo (2014) investigated the impact and the determinants of Deposit Money Banks' loans and advances granted to the agricultural sector in Nigeria from 1980 to 2011. Multiple OLS regression, Stationary Test, Co-integration test, Parsimonious Error Correction Mechanism and Granger Causality Test are employed. The study concludes that there is a positive impact of deposit money banks' loans and advances on the agricultural sector.

The study of Adeyinka, Daniel and Olukotun (2015) examined the contributions of commercial banks' credits in financing agricultural sector in Nigeria , secondary data from 2002-2014 on sectoral distribution of commercial banks' loans and advances to agricultural sector , liquidity ratio of commercial banks , cash reserve ratio of commercial banks and money market minimum rediscount rate . Data were analyzed using multiple regression of ordinary least square to estimate the model, it was found out cash reserves ratio and rediscount rate is not statistically significant; and liquidity ratio is statistically insignificant; the study recommends that bank should provide a means of monitoring the end use of the loans given to farmers in order for them to manage the loans, effectively and efficiently.

Toby and Peterside (2014) analyzed the role of banks in financing the agriculture and manufacturing sectors in Nigeria from 1981-2010. Agricultural contribution to GDP, manufacturing contribution to GDP, commercial banks' lending to agriculture, merchant banks' lending to agriculture, commercial banks' lending to manufacturing and merchant banks' lending to manufacturing were variables considered in the study, two levels of analysis were adopted in the study using descriptive analysis direct on the panel data 1 and 2 through multiple regression analysis. They found out that role of banks in facilitating the contribution of the agriculture and manufacturing sectors to economic growth is still limited. It was therefore, recommends that monetary policy instruments should emphasis mandatory sector allocation of credit with appropriate incentives to boost the flow of funds from the banks to the real sector.

Ogar, Nkamene and Effiong (2014) investigated the impact of commercial banks' loans, on manufacturing sectors. Secondary data, such as manufacturing output, commercial banks' loans, and commercial banks' interest rate were variables used under the study. Ordinary least square of multiple regressions was used on the models to determine the relationship between dependent variables and independent variables, their findings show that commercial banks' credits had a significant relationship with the manufacturing sector. It was recommended that government should endeavor to ensure that, there are available and sufficient credits allocations to the manufacturing sector in Nigeria and at the affordable interest rate.

Sogules and Nkoro (2016) examined impact bank credits to agricultural and manufacturing sectors on economic growth. The used the Annual time series data from 1970- 2013; employing Co-integration and Error Correction Mechanism (ERM) for the analysis. It revealed that a long-run relationship exists between banks' credits to agricultural and manufacturing sectors and economic growth. Given the ERM results, the study showed that banks' credits to agricultural sector exhibited an insignificant negative impact on economic growth while banks' credits to manufacturing sector exhibited a negative significant impact on economic growth in Nigeria.

The study recommends those banks' credits to the agricultural and manufacturing sectors should be properly monitored to ensure that funds meant for ectors are not diverted for other purposes, Intending recipients of these Bank credits to the agricultural and manufacturing sectors should be made to undergo entrepreneurial development training and how to pay back as at when due, so as to reduce the risks associated with giving out these credits to the Agricultural and Manufacturing Sectors entrepreneurs.

Summary of Empirical Review

The relationship between commercial bank credit and agricultural output in Nigeria has been established in the works of Ogbanje, Yahaya and Kolawole (2012), Akpansung and Babalola (2012) and Emecheta and Ibe (2014). They posit that commercial bank credit has positive relationship with agricultural sector as against the view of (Adeleke & Damilola, 2013; . Adewole, Adekanmi A. & Gabriel, 2015; Athanasius, 2017; Cynthia, 2017; Sogules, & Nkoro, 2016) who observed that commercial bank credit has never improved the performance of agricultural sector within the period under review, 1981- 2014

These shortcomings have contributed to the knowledge gap in the literature, thus warranting a more systematic and comprehensive study of the effect of commercial bank credit and agricultural sector in Nigeria. This study seeks to improve on the past studies by making use of a broad data set. This work attempts to distinguish between long and short run effects of the variables in the model and determine the causalities among the variables used in the study.

METHODOLOGY

Research Design

Ex-post facto research design is adopted for the study. This is because the data are secondary data that already exist in the financial publications of the Central Bank of Nigeria and that of other financial institutions which are verifiable and authoritative

Model Specification

The model used for the study was adopted from the work of Agunuwa, Inaya, and Proso, (2015), who examined the impact of commercial banks credit on agricultural productivity in Nigeria (1980 - 2013). The model is stated thus:

$$AGO = f (CAS, CPS, LE)$$

Where:

AGO = Agricultural Output

CAS = Credit to Agricultural Sector

GSA = Government Spending on Agricultural Sector

β_0 = Constant

The Model was modified as follows.

$$AGO = f (CAS, GSA, ACGS, INTR)$$

Where:

AGO = Agricultural output

CAS = Credit to Agricultural Sector

GSA = Government Spending on Agricultural Sector

ACGS= Agricultural Credit Guarantee Scheme Fund on Agricultural Sector

INTR = Interest Rate

$$AGO = \beta_0 + \beta_1 CAS + \beta_2 GSA + \beta_3 ACGS + \beta_4 INTR + \mu \text{ -----} -1$$

β_0 and μ are the constant and error term respectively while β_1 , β_2 and β_3 are the coefficient of, agricultural output, credit to agricultural sector, government spending on agricultural sector, agricultural credit guarantee scheme fund on agricultural sector and interest rate on agricultural output

Method of Analyses

The data was analyzed with econometric techniques involving descriptive statistics, Augmented Dicker Fuller and Philip Perron tests for unit roots, Johansson technique for cointegration test for long run relationship, Granger Causality Test and the ordinary least square

DATA ANALYSIS

Unit Root

The variables were tested for stationarity. The test aimed to understand the state at which the variables can be held stable for regression analyses. This test becomes pertinent because time series variables are often prone to non-stationarity which is capable of distorting the reliability of regression results. The variables used in the analysis were subjected to Augmented Dickey Fuller (ADF) Tests for Unit Root, to determine whether they are stationary series or non-stationary series. The variables were tested for stationarity at “intercept only” and at “intercept and trend”. The null hypothesis that is tested in both Unit Root Tests is the presence of Unit Root.

The result on revealed that at level, under the “intercept only”, agricultural output, credit to agricultural sector, government spending on agricultural sector, agricultural credit guarantee scheme fund on agricultural sector and interest rate were stationary at 5% level [1(0)]

From the analyses of stationarity of the variables, it was seen that the variables have stationarity of level. The Ordinary Least Square Method which is capable of handling stationary at level I(0) is the most suitable tool of analyses

Table 1: Summary of the Unit Root Result

| Variables | At Level 1(0) | At First Difference 1(1) | At Second Difference | Order of Integration | Probability |
|-----------|------------------|--------------------------------|-------------------------|-------------------------|-------------|
| AGO | -4.526315 | | | 1(0) | 0.0039 |
| CAS | -3.839292 | | | 1(0) | 0.0112 |
| GSA | -4.595801 | | | 1(0) | 0.0016 |
| ACGS | -5.814004 | | | 1(0) | 0.0022 |
| INTR | -4.340303 | | | 1(0) | 0.0048 |

Source: E-View 9.0

The Ordinary Least Square Regressions

In this section, we provide the benchmark test of the significance of the independent variables in explaining the effect of commercial bank credit on agricultural sector in Nigeria

Dependent Variable: AGO

Method: Least Squares

Date: 02/24/22 Time: 12:07

Sample: 1988 2021

Included observations: 32

| Error | t-Statistic | Prob. | Variable | Coefficient | Std. |
|--------------------|-------------|-----------|-----------------------|-------------|------|
| C | 15.73210 | 5.435635 | | 0.0031 | |
| CAS | 3.668951 | 0.991508 | | 0.0012 | |
| GSA | 1.342700 | 0.099069 | | 0.0521 | |
| ACGS | 2.145270 | 0.695746 | | 0.0312 | |
| INTR | -0.537317 | -0.785673 | | 0.64235 | |
| R-squared | | 0.749033 | Mean dependent var | 6.897917 | |
| Adjusted R-squared | | 0.7108550 | S.D. dependent var | 1.094669 | |
| S.E. of regression | | 0.601022 | Akaike info criterion | 2.096940 | |
| Sum squared resid | | 4.334733 | Schwarz criterion | 2.444891 | |
| Log likelihood | | -12.92093 | F-statistic | 7.951898 | |
| Durbin-Watson stat | | 1.668708 | Prob(F-statistic) | 0.001265 | |

Source: E-View Software 9.0

From the above regression coefficients, we can express the model as follows:

$$AGO = 15.73210, CAS= 3.668951, GSA= 1.342700, ACGS= 2.14547, INTR - 0.537317I + u$$

From the results of the OLS, it is obvious that the constant parameter (Bo) is positive at +15.73210. This means that if all the independent variables are held constant, AGO as a dependent variable will grow by 15.73210 units in annual-wide basis.

Credit to Agricultural Sector: For credit to agricultural sector, the coefficient of (CAS) is +3.668951 with t-Statistic of 2.683245 and prob. Value of 0.0012 which means that t credit to agricultural sector has positive and significant effect on Agricultural output, a unit increase in credit to agricultural sector (CAS) will cause Agricultural output (AGO) to increase by 3.668951 units.

Government Spending on Agricultural Sector: For Government Spending on Agricultural Sector, the coefficient of (GSA) is +1.342700 with t-Statistic of 2.339468 and prob. Value of 0.0521 which means that t government spending on agricultural sector has positive and significant effect on Agricultural output, a unit increase in Government Spending on Agricultural Sector (GSA) will cause Agricultural output (AGO) to increase by 1.342700 units.

Agricultural Credit Guarantee Scheme Fund: For Agricultural Credit Guarantee Scheme Fund, the coefficient of (ACGS) is + 2.145270 with t-Statistic of 2.208798 and prob. Value of 0.0312 which means that t Agricultural Credit Guarantee Scheme Fund has positive and significant effect on Agricultural output, a unit increase in Agricultural Credit Guarantee Scheme Fund (GSA) will cause Agricultural output (AGO) to increase by 2.145270 units.

Interest Rate: For interest rate, the coefficient of (INTR) is -0.537317 with t-Statistic of -1.274907 and prob. Value of 0.64235 which means that interest rate has negative and insignificant effect on Agricultural output, a unit increase in interest rate (INTR) will cause Agricultural output (AGO) to decrease by -0.537317 units

Finally, the Adjusted R-squared is 0.7108550. This means that 71% of total variation in Agricultural output, (AGO) can be explained by changes in the values of the independent variables while the remaining 29% is due to other stochastic variables outside the model.

CONCLUSION

The study shows that bank credit on agricultural output, government spending on agricultural sector and Agricultural Credit Guarantee Scheme Fund has positive and significant effect on agricultural output while interest rate has negative and insignificant effect on agricultural output

The study therefore, concludes that commercial bank credit have positive effect on agricultural output in Nigeria and has achieved agricultural production in Nigeria within the period under review

RECOMMENDATIONS

In the light of the above findings the study made the following recommendations

1. Government should strengthen the Agricultural Credit Guarantee Scheme by meaningful budgetary allocation in order to enhance its capital base significantly.
2. The Agricultural Credit Guarantee Scheme (ACGS) should improve on their conditions for credit guarantee in order to make agricultural financing attractive to commercial banks.
3. Government should subsidize loan to the agricultural sector
4. Government should formulate policies that will encourage the banks to give loans to farmers at a concessionary interest rate.
5. Agricultural extension services should be provided to farmers so as to keep abreast of modern techniques in farming (proper use of pesticides, fertilizers, genetically improved seedlings, amongst others). These extension services should be provided by private firms contracted by the government and they should be paid based on services rendered.

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