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Commercial Banks Credit and Agricultural Development 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 development in Nigeria. The specific objectives are to: Examine the effect of bank credit on the agricultural output in Nigeria, Assess the effect of government expenditure on agricultural output in Nigeria, Examine 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 using secondary data collected from the Central Bank of Nigeria Annual Reports and Statement of Account. The data were analyzed using econometric techniques Augmented Dickey Fuller and Philip Perron tests for Unit Roots and the Ordinary Least Squares (OLS) Technique. The study shows that credit to agricultural sector, government spending on agricultural sector and agricultural credit guarantee scheme fund have positive and significant effects 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 increased agricultural production in Nigeria 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. This will further boost the confidence of lending banks and enhance agricultural production in Nigeria
Keywords: commercial banks credit and agricultural development in Nigeria

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 (2015), 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 to

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 teaming 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.

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 to find the effect of bank credit on the agricultural development in Nigeria

Objective of the Study

The main objective of the study is to examine the effect of commercial bank credit on agricultural development in Nigeria. The specific objectives are to:

1. Examine the effect of bank credit on the agricultural output in Nigeria
2. Assesses the effect of government expenditure on agricultural output in Nigeria
3. Examine the impact of Agricultural Credit Guarantee Scheme Fund on agricultural output in Nigeria
4. Examine the effect of interest rate on agricultural output in Nigeria

Research Hypotheses

The following hypotheses are formulated to guide the study:

Ho_1: Credit to the agricultural sector does not exert significant effect on agricultural output in Nigeria

Ho_2: Government expenditure does not have significant affected on agricultural output in Nigeria
Ho_3: Agricultural Credit Guarantee Scheme Fund does not have any significant effect on agricultural output in Nigeria
Ho_4: Interest rate does not have any significant effect on agricultural output in Nigeria

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).

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

Agricultural Credit Guarantee Scheme

The Nigerian ACGSF (henceforth ''the Scheme'' or ''the Fund'') was set up by the Federal Government Act N0. 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. 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.

For the purpose of administering the Scheme, the country, with its then nineteen (19) State structure was divided into four zones. They were Bauchi Zone (covering Bauchi, Borno, Gongola and Plateau States); Enugu Zone (covering Anambra, Benue, Rivers, Imo and Cross River States); Ibadan Zone (covering Kwara, Ogun, Ondo, Oyo, Bendel and Lagos States) and Kano Zone (covering Kano, Sokoto, Niger, and Kaduna States).Despite the official recognition of six geo-political zones for political purposes in the early 1990, the earlier four zones for the purpose of administration of the Fund subsists. The only difference now is that the then nineteen States classified into four zones have since metamorphosed into 36 courtesy of states creation exercises in 1987, 1991 and 1996. Thus, more states have been included under each zone and the names of many of the erstwhile states have changed

Agricultural Credit Guarantee Scheme Fund

The Agricultural Credit Guarantee Scheme Fund (ACGSF) was established by Decree No. 20 0f 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 for 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.

Commercial Agriculture Credit Scheme

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 bored 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.

Commercial Agriculture Credit Scheme is operated in two tranches of one hundred billion naira (N100 billion) each. The first phase of the tranche ran from May to December, 2009, while the second tranch commenced in February, 2010.

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.

Theoretical Framework

The work is anchored on the bank lending credit channel theory which explains that central banks' policy changes affect the amount of credit that deposit money banks issue to agricultural sector, which in turn affects the real economy. The Bank Lending Channel explains that monetary policy works by affecting bank assets (loans) and liabilities (deposits) so that monetary policy besides shifting the supply of deposits also shifts the supply of bank loans. The banking lending channel stated that monetary policy also affects the external finance premium by shifting the supply of the intermediated credit, especially loans from commercial banks. It indicated that if supply of bank loans is disrupted for some reason, bank dependent borrower may not be necessarily shut off but incur cost of finding lenders. Therefore, a reduction in the supply, relative to other forms of credit is most likely to increase external finance premium and reduce real activity

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.

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 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 sectors 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.

Nnamocha, and Charles (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 analysis 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 this 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.

METHODOLOGY

Research Design

Ex-post facto research design is adopted for the study. This is because the data are secondary data which were sourced from the Central Bank of Nigeria Statistical Bulletin and CBN Annual Reports and Statement of Accounts, Nigeria Bureau of Statistics (NBS) for the period under review.

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

β0 = 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

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

Table 1: The Unit Root Test

	At Level				
Variables	**Augmented Dicker Fuller Test**		**Philip and Peron Test**		**Decision**
	t-Statistic	**Prob.**	**Adj. t-Stat**	**Prob.**	
AGO	-5.133424	0.2339	-1.996650	0.0003*	Stationary at level
CAS	-7.156835	0.6783	-1.023858	0.035*	Stationary at level
GSA	-4.109778	0.0036*	-4.046948	0.0042*	Stationary at level
ACGS	-8.662571	0.0000*	-9.114547	0.0000*	Stationary at level
INTR	-2.364762	0.1603	-2.364762	0.0243*	Stationary at level

The result of the unit root test shows that all the variables (AGO, CAS, GSA, ACGS, INTR) attained stationarity at level. This is indicated with the probabilities of the test values which are below 0.05 levels of significance.

Granger Causality Test

This is used to check for causality between two variables. In this case our aim is to test for a causal relationship between commercial bank credit and agricultural sector in Nigeria. The rule states that if the probability value is between 0 and 0.05 there is a causal relationship.

Pairwise Granger Causality Tests

Null Hypothesis:	Obs	F-Statistic	Prob.	Remark
CAS does not Granger Cause AGO	32	1.28346	0.2970	No causal
AGO does not Granger Cause CAS		1.18583	0.3243	relationship
GSA does not Granger Cause AGO	32	0.71888	0.4984	No causal
AGO does not Granger Cause GSA		1.54511	0.2356	relationship
ACGS does not Granger Cause AGO	32	2.01232	0.1575	No causal
AGO does not Granger Cause ACGS		0.79163	0.4656	relationship
INTR does not Granger Cause AGO	32	0.18032	0.8362	No causal
AGO does not Granger Cause INTR		0.28686	0.7534	relationship

The result of the granger causality has shown that none of the explanatory variables (CAS, GSA, ACGS and INTR) has causal relationship with AGO in Nigeria. This indicates that commercial bank credit in Nigeria is not related to the agricultural sector in Nigeria. Rather other factors not related to the purpose of commercial bank credit might have influence Nigerian commercial bank credit to agricultural sector within the period under review

The Ordinary Least Square Regressions

Dependent Variable: AGO
Method: Least Squares
Date: 09/14/20 Time: 11:06
Sample: 1987 2019
Included observations: 32

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	15.73210	5.435635	2.543973	0.00031
CAS	3.668951	0.991508	2.683245	0.00012
GSA	1.342700	0.099069	2.339468	0.00521
ACGS	2.145270	0.695746	2.208798	0.00312
INTR	-0.537317	-0.785673	-1.274907	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

Computed by the Authors with E-View 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 2.683245and prob. Value of 0.00012 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 0.00521 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 0.00312 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 0.64235which 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 credit to the sector, 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 enhanced agricultural production in Nigeria within the period under review

RECOMMENDATIONS

In the light of the above findings we recommend 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. Government should subsidize loan to the agricultural sector to improve productivity and enhance standard of ling of average Nigerian citizen. Government should formulate policies that will encourage the banks to give loans to farmers at a concessionary interest rate. Agricultural extension services should be provided to farmers so as to keep them 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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