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Formal Credit Supply Determinants of Agricultural Contribution to Gross Domestic Product (GDP) in Nigeria (1992-2012)

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Authors' contributions

This work was carried out in collaboration between all authors. Author SIO designed the study, wrote the protocol and first draft. Authors CKO and COE anchored the field study, handled the statistical analysis and literature search as well as read and edited the first draft. Author CKO further edited the peer reviewed manuscript. All authors read and approved the final manuscript.

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ABSTRACT

There is no gainsaying the fact that agriculture is the second largest contributor to Nigeria Gross Domestic Product (GDP). To sustain contribution of agriculture to GDP, formal financial institutions were induced by moral suasion and correction to extend a minimum prescribed percentage generation of their loanable funds at concessionary interest rate to agriculture. This study specifically determined formal credit supply factors that influenced agricultural contribution to GDP; and discussed constraints to formal financing of agriculture in Nigeria identified in the literature. Time series data, covering periods of 1992 to 2012, sourced from the Central Bank of Nigeria statistical bulletin and National Bureau of Statistics, and Information got from other published studies on constraints to agricultural financing in Nigeria were used. Co-integration, error correction model and Ordinary Least Square regression technique were used for data analyses; both

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Augmented Dickey-Fuller (ADF) and Phillip-Peron (PP) tests were adopted in testing for the unit root. Outcome of the unit root and co-integration tests showed that the variables were stationary and co-integrated in the long run. The Ordinary Least Square regression estimation showed that total government expenditure in agriculture, interest rate and total credit accessed by farmers were credit supply factors that influenced agricultural contribution to GDP in Nigeria within the period under review. Government should encourage multi-sourcing of agricultural credit to drive farmers' innovativeness and efficiency and thus minimize any risk of monopoly in farm credit supply. Widening of financial markets will engender competition, reduce interest charges and increase contribution of Agriculture to GDP.

Keywords: Credit supply factors; agricultural financing; constraints.

1. INTRODUCTION

Agriculture in Nigeria has remained the largest non-oil export earner, Major employer of labour and a key contributor to wealth creation, contributing 41.21 percent of GDP and alleviating poverty [1]. In achieving this, the sector has received encouragement of banks and other financial institutions by way of receiving credit facilities. Credit supply to agricultural sector by major financial institutions has been of interest to many, particularly policy makers who consider it a catalyst for not just providing jobs or breaking cycles of poverty in rural areas but for increasing Gross Domestic Product (GDP).

Discussing role of agriculture to economic development, [2] noted that agriculture has both backward and forward linkages with itself and other sectors of the economy. There is for instance, supply of raw materials to agro allied sector which enhances provision of foods, job opportunities and income to those engaged by the sector as well as to the government. The agricultural sector in Nigeria is also essential for expansion of employment opportunity which makes it possible for poverty reduction, improvement of income distribution and speeding up of industrialization and improvement of the nation's balance of payments. [3] posited that agriculture plays an important role in the overall economic development of a country, to the extent that any nation that is able to achieve a four (4) percent annual growth rate in agriculture will record an improvement in technology and an increase in agricultural production that will be capable of reducing food importation bills, which in the long run can translate to a favourable terms of trade, which in tune can be used in increasing the importation of manufactured capital goods that would possibly improve the living standard of her people.

In an effort to facilitate and strengthen the ability of banks to finance agriculture and other sectors of the economy the federal of Nigeria in 2005 adopted business consolidation strategies through mergers, acquisitions and take over in the banking industry. All these efforts among other things were meant to make Nigerian banks compete favourably in the global financial markets and generate high capital base to provide the banks with resources needed to finance agricultural sector and promote GDP growth [4]. Nigeria has also witnessed growth in number of agricultural development programmes, and in their conducts. Naturally one then expects to see meaningful agricultural output growth, positive changes in farm sizes and general development of the sector over time. Surprisingly, contribution of the sector to GDP has fluctuated between 13.0% in 1981 and 65.1% in 2005. Stakeholders in agriculture have blamed the sluggish growth of the sector on inadequate funding [5]. Sustenance of funding to farmers requires a robust commitment on the part of formal credit supply chain to agriculture. Farming is a business that demands judicious provision of some huge funds backed by genuine policy to genuine farmers. Structurally, this has not been the case in Nigeria where credit supply to farming and agriculture has not been to many small scale farmers.

This structural defect has stunted agriculture such that businesses in the sector are operating with great financial challenges that showcase them as non-sustainable. Many commercial banks have dreaded high loan processing charges on small loans to rural farmers and prefer channeling their loan packages to urban-based businesses to the neglect of credit need of poor rural farmers. Factors such as poor transportation, limited communication infrastructure, and widely dispersed farmer population in some rural areas in Nigeria have raised transaction and information costs and have hindered spread of formal financial services to the reach of farmers. Even where such services are available, the small farmers have

found it difficult to meeting eligibility criteria for loans and those not able to meet such have been excluded from formal financial services by cost barriers (high transaction charges, required substantial minimum savings balances and loan amounts). In addition, title and property rights are difficult to verify in rural areas such that use of collaterals for formal credit transactions have been difficult to implement with farmers in rural communities.

Several studies [6-9] have dealt on credit supply issues in Nigeria. [6] did an empirical work on commercial bank credit to agriculture sector in Nigeria and found that commercial bank loans and advances and federal government capital expenditure contributed positively to the growth of agricultural output in Nigeria. [7] used time series data of 33 years to analyse the contribution of government expenditures to the growth process in Nigeria and concluded that Government's capital expenditure on agriculture though not statistically significant had positive influence on investment. [8] dealt on contributions of financial sector reforms and credit supply to Nigerian Agricultural sector (1978-2009) and recognized interest rate regulation as a veritable tool for making credit accessible to farmers at affordable levels. [9] empirically examined agricultural financing in Nigeria and traced its implications on the growth of Nigerian economy and concluded that the size and interest rate of NACRDB agricultural loan and customers' constant loan repayment had significant impact on the growth of Nigerian economy. This study intends to: (i) determine formal credit supply factors that influenced agricultural contribution to Gross Domestic Product (GDP), from 1992 to 2012; and (ii) discuss constraints of formal financing of agriculture in Nigeria identified in the literature.

1.1 Hypotheses

The study was guided by the following hypotheses stated in the null form:

Ho1: There is no long-run relationship between the formal credit supply factors (total government expenditure in agriculture in naira (GEA), nominal exchange rate in naira per US dollar (EXR), interest rate (lending rate) in percentage (IR), annual rate of inflation in percentage (RI), total farm credit from commercial banks, NACRDB and microfinance banks in naira to the agricultural Sector (TCR), liquidity ratio of commercial banks in percentage (LR), cash reserve ratio of commercial banks in percentage (CRR), minimum rediscount rate of commercial banks in percentage (MRR) and time trend variable in years (T).

Ho2: There is no significant relationship between Gross Domestic Product (GDP) from agriculture and credit supply factors (total government expenditure in agriculture in Naira (GEA), nominal exchange rate in naira per US dollar (EXR), interest rate (lending rate) in percentage (IR), annual rate of inflation in percentage (RI), total farm credit from commercial banks, NACRDB and microfinance banks in naira to the agricultural sector (TCR), liquidity ratio of commercial banks in percentage (LR), cash reserve ratio of commercial banks in percentage (CRR), minimum rediscount rate of commercial banks in percentage (MRR) and time trend variable in years (T).

2. RESEARCH METHODOLOGY

2.1 Study Area

The study was carried out in Federal Republic of Nigeria. This country is located in West Africa and is bounded on the south by Gulf of Guinea, on the West and North by Republics of Benin and Niger, on the east by Republic of Cameroon. The country is located between latitudes 4° 02′ N and 14° 03′ North (south of Lake Chad) and longitudes 2° 59′ E and 15° 02′ East of the Greenwich Meridian covering a geographical area of 923,758 square kilometers. The population according to the 2006 census was over 140 million persons [10]. The climate is semi-arid in the north and becomes increasingly humid in the south, with mean annual temperature ranging from 28℃ to 31℃ in the south. Rainfall is one of the important climatic factors influencing agriculture and three broad ecological zones rainfall pattern are commonly distinguished: the northern Sudan savannah (500 – 1000 mm), the guinea savannah zone or middle belt (1,000 – 1,500 mm) and the southern rainforest zone (1,500– 4,500 mm). Generally, rainfall patterns are marked by an alternation of wet and dry seasons of varying duration. In the north, rainfall lasts from May to September with a peak in August, while in the south, rainfall is bimodal, increasing steadily from March and reaching its peak in July and September. About two third of the total cropped area is located in the northern zone of the country while the remaining area is equally divided between the middle and southern zones [11].

Over 60 per cent of the country's population lives in the rural areas. The average population density of 118 persons per square kilometer masks the disparity that exists between the densely populated South west and South east of Nigeria, where much of the urban population live and the less concentrated north. The economy is characterized by a large rural population, mostly agricultural based traditional sector and relatively smaller urban, and more capital intensive sector. The average per capita income (estimated by the World Bank in 2006) was US$300 per annum [12]. Agriculture is the largest single sector of the economy, providing employment for a significant segment of the work force and constituting the mainstay of the country's large rural community, which accounts for nearly two-thirds of the population. The proportion of the Gross Domestic Product (GDP) attributable to agriculture hovered between 30.0% and 40.0%, well ahead of mining and quarrying, as well as wholesale and retail trade, which are the other two major contributors to the country's GDP [13]. A large proportion (89.06%) of the total agricultural production was accounted for by crop production while livestock, forestry and fisheries contributed 6.38 percent, 1.25 percent and 3.31 percent respectively [12].

2.2 Data Collection

Data for this study was culled from secondary sources. The data provided information covering the period 1992-2012 and was gathered from various issues of annual reports and statement of account of Central Bank of Nigeria (CBN) and other relevant financial data in statistical bulletins of local and international agencies. Consequently, time series data for the period 1992- 2012 on variables: nominal exchange rate, interest rate, world food prices, inflation rate, government expenditure on agriculture, foreign private investment in agriculture, index of agricultural real GDP, liquidity ratio of commercial banks, cash reserve ratio of commercial banks, minimum rediscount rate of commercial banks and total agricultural credit accessed from commercial banks were obtained and fitted to a model. The analytical models comprised descriptive statistics and Ordinary Least Square (OLS) regression technique.

2.3 Analytical Technique and Model Specification

Most time series variables are non-stationary. Therefore, before the ordinary least square estimation was performed on the variables, the residuals were tested for presence of unit roots using Augmented Dickey-Fuller (ADF) test (as specified in [14] based on independently and identically distributed (*iid*) errors and allowing some heterogeneity and serial correlations in errors and the Phillips-Perron (PP) test [15]. If both the ADF and PP statistics are significant and greater than the critical values in absolute terms, then the presence of co-integration and stationarity of the residuals of the static regression is confirmed.

The general model for the Augmented Dickey-Fuller (ADF) test was given thus:

$$\Delta yt = \alpha + \beta t + \gamma y_{t-1} + \sum_{i=1}^{p} \delta i \Delta y_{t-1} + \xi_t \quad (1)$$

Where yt is the dependent variable under investigation and ξ_t is the error term. The summation terms in the model are the lagged first differences of the dependent variable used to capture auto–correlated omitted variables that otherwise would enter the error term. Thus to ascertain existence of long–run relationship, the co-integration test was performed using both the ADF and PP test. This was to confirm the residuals of the non–stationary series that were 1(1) rather than are actually 1(0).

Gross Domestic Product (GDP) is a continuous variable hence, to determine credit supply factors that influenced contribution of agriculture to GDP, the OLS regression analysis was used following [16,17] and implicitly expressed thus:

$$IAGDP = f (IR, GEA, EXR, RI, TCR, LR, CRR, MRR, ei) \quad (2)$$

Where:

IAGDP is the index of agricultural GDP. It refers to the percentage contribution of agriculture to total annual GDP within the period being studied and is the dependent variable.
IR is the average interest rate or lending rate charged by the formal credit sources. Interest rate was measured in percentage. This variable is expected to have a negative effect on the dependent variable;
GEA is the total annual government expenditure in agriculture and was measured in Naira. The expected sign of this variable is positive;
EXR is the exchange rate, defined as average amount of Nigerian Naira needed to buy one US Dollar. The exchange rate was measured in

Naira/US Dollar. The variable is expected to have a negative influence on IAGDP;

RI is the annual rate of inflation, which measures changes in general price level in period t. The variable was measured in percentage and is expected to influence the dependent variable negatively;

TCR is the total credit accessed by farmers from commercial banks, NACRDB and

Microfinance banks and was measured in Naira. The variable is expected to exert a positive influence on IAGDP;

LR refers to the liquidity ratio of commercial banks, which is the availability of their cash over short term period. The expected sign of this variable is positive and was measured in percentage;

CRR refers to cash reserve ratio of commercial banks and was measured in percentage with an expected *a priori* positive;

MRR is the minimum rediscount rate of commercial banks and was measured in percentage;

ei is the error term, which is obtained by regressing dependent variable on independent variables. It is this term that measures the speed of adjustment of the dependent variable as the independent variable(s) changes.

3. RESULTS AND DISCUSSION

3.1 Formal Credit Supply Factors influencing Agricultural Contribution to GDP

3.1.1 Unit root tests

If a time series is stationary it implies that its mean, variance and auto-covariance are constant, no matter at which times it was measured. In a classical linear regression, the use of non-stationary variables is likely to give spurious results which can mislead predictions/forecasting and policy information [18].

Before the credit supply factors influencing agricultural contribution to Gross Domestic Product were determined, the test variables were subjected to stationarity and co-integration tests. The Augmented Dickey – Fuller (ADF) and Phillips – Perron (PP) unit root tests were used for determining the order of integration of the variables under consideration and the results are presented in Table 1.

The test variables were non- stationary in their level form. After differencing, the ADF estimates for the test variables became stationary meaning that they must be modeled in first difference ($\Delta yt = yt - yt\ -1$) to make them stationary. A time series is stationary if it does not change overtime, which implies that its values have constant variability. This helped to avoid the problem of spurious regressions that are associated with non-stationary time series models. The variables were further subjected to P-P test. Although the P-P test is non-parametric, it had been found to produce a superior result that corrected for serial correlation and heteroscedasticity. The P-P test is preferred because it takes into account all structural brakes that have occurred in the economy including the presence of regime shift which is a problem often encountered with African macroeconomic data [18]. On application of P-P test, the test variables attained stationarity after differencing once and thus, one may conclude that the variables are integrated of order one, 1(1). Stationarity was confirmed as the test statistic was greater than the critical value in absolute terms.

3.1.2 Co-integration test

In a bid to ascertain the existence of long–run relationship, the co-integration test was performed using both the ADF and P-P tests. This was to confirm that the residuals of the non – stationary series that are 1(1) are actually 1(0). Prior to the co-integration test, the ordinary least squares estimation was performed on the variables in levels and the residuals tested for the presence of unit roots. The results are as presented in Table 2. The Table showed that both the ADF and P-P statistics were significant and also greater than the critical values. The results of the co-integration test indicate that there is presence of co-integration. This implies that the variables move together in the long run. Hence, the hypothesis of no long-run relationship between the formal credit supply factors is rejected

3.1.3 Ordinary least square regression estimation

Having fulfilled the necessary conditions by applying ADF and PP test to residual based co-integration determination, the ordinary least square estimation was adopted to determine formal credit supply factors influencing agricultural sector contribution to Gross Domestic Product within the period under review. The

Table 1. Augmented Dickey-fuller (ADF) and Phillips-Perron (PP) tests for integration order for GDP (Determinants)

Variables	Augmented Dicky-fuller		Philips perron	
	Level	First difference	Level	First difference
IAGDP	1.121	-5.739***	1.643	-6.279 ***
GEA	-1.425	-4.480***	-1.425	-4.546***
EXR	-1.831	-5.760***	-1.831	-5.871***
IR	-2.523	-4.992** *	-2.523	-4.908***
RI	-1.662	-4.155**	-1.662	-4.164**
TCR	-1.630	-7.118	-1.630	-10.258
LR	-2.655	-4.675***	-2.655	-4.695***
CRR	-2.215	-6.335***	-2.215	-6.207***
MRR	-2.475	-7.655	-2.475	-7.275***

Source: Output of results from Stata package (2014)
Critical values of ADF at 1.0% (***), 5.0% (**) and 10.0% (*) are -4.187, -3.516 and -3.190 respectively.
The P-P test critical values at 1.0% (***), 5.0% (**) and 10.0% (*) are -4.196, -3.520 and -3.192 respectively

ordinary least square estimation was performed on the variables in their level 1(1) of stationarity to avoid spurious regression. The result is presented in Table 3.

Table 2. Results of co-integration test

Variable	ADF	PP
Residual	-3.590	-4.151

Source: Output of results from Stata package (2014)

Table 3 showed the coefficient of multiple determinations (R^2) as 0.8949 indicating that the regressors explained 89.49 percent of the variations in the dependent variable. The adjusted R^2 value (0.8248) was also appreciably high. The F-statistic (12.77) was significant at 1.0% alpha level and confirms the significance of the entire model. Durbin–Watson (DW) estimate (1.952186) showed absence of autocorrelation in the model given that it fell within 1.5 – 2.5 range. Investigating higher order autocorrelation tests, the Breusch – Godfrey Lagrange Multiplier (LM) recommended by [19] confirmed no autocorrelation in the data with a statistic of 0.017 significantly different from zero.

It was observed that the coefficient (-0.000881) of total government expenditure in Agriculture was negative and statistically significant at 10.0% risk level. This indicated that an increase of 1.0 percent in total government expenditure in Agriculture reduced the index of agricultural GDP by 0.001%. The sign of the coefficient was at variance with *a priori* expectation and implied that agricultural credit could have been diverted to other sectors. According to [20] the agricultural sector has not received among other things the financial boost which it deserves to perform effectively. He further posits that the needed attention as well as the financial allocation to the sector over the years by the government has been grossly inadequate which could have hindered the holistic transformation of the sector which otherwise should manifest not only in increased productivity but on the general development of the sector. The result is not in line with [6] that federal government capital expenditure contributed positively to the growth of agricultural output in Nigeria. However the result lends credence to [20] that a significant negative relationship exists between government capital expenditure and growth of agricultural output in Nigeria.

The table showed that the estimated coefficient (4.930091) for interest rate exerted a significant positive effect on Index of Agricultural Gross domestic Product (IAGDPP) at 5.0% alpha – level of probability. This implies that a unit increase in percent in interest rate of banks increased the Index of Agricultural Gross domestic Product (IAGDPP) by 4.9%. This contrasted *a priori* expectation and was manifestation of distortions associated with agricultural lending in Nigeria especially on issues of concessionary and near concessionary lending rates to the sector. However, this result is in tandem with [17] that obtained significant positive relationship (at 5.0% and 1.0% alpha – levels respectively) of interest rate (IR) on Index of Agricultural Gross domestic Product in Nigeria.

Total credit accessed by farmers (TCR) also exerted a significant positive effect on the IAGDPP. Its coefficient (11.77242) was

significant at 10.0% risk level. This implies that a unit increase in the value of formal credit accessed by farmers, at constant values of the other explanatory variables increased the Index of Agricultural Gross domestic Product (IAGDPP) by 11.8%. As reported by [16] a unit increase in the value of commercial banks' credit accessed by farmers increased the Index of Agricultural Production (IAP) by attracting more Foreign Private investments in agriculture in (million naira) to the country. This is also in line with *a priori* expectation and supports the findings of [21-23].

3.1.4 Error correction model

The existence of long run co-integrating equilibrium provides for short fluctuations. In order to straighten out or absolve these fluctuations, an attempt was made to apply the Error Correction Model (ECM). As presented in Table 4, the significant F-statistic rejects the null hypothesis of no significant relationship between GDP from agriculture and the credit supply factors included in the OLS model. It is seen that GEA, IR and TCR are indeed significant determinants of agricultural contribution to GDP. The magnitude of the coefficients confirms the absence of redundant regressor. The coefficient of error correction term is negative implying that IAGDP converges to its long run equilibrium as time goes. The coefficient of the error correction term shows that about 28% of the variations in IAGDP are explained in the short run, while 72% occurred in the long run.

3.2 Constraints to Agricultural Financing in Nigeria

The following are constraints to formal agricultural financing in Nigeria which had been identified in the literature:

Most of the formal credit institutions undertook lending to agriculture without use of trained agricultural credit officers. This has constrained supervision of credit programmes to below acceptable standards with schemes failing on account of poor repayment performances [26]. [27] indicated that many farmer loan applicants did not possess farm records and had been tagged poor farm managers by the loan schemes that deny them access.

One of the major factors militating against the success of agricultural financing especially on the agricultural credit guarantee scheme (ACGS) was scarcity of loanable funds due to lack of bank support to the Scheme [28]. Even with mandatory (preferred sector) lending, guarantee of exposure and subsidized fund schemes, most banks prefer not to lend to farmers, citing its lower productivity and higher risk relative to the non-agricultural sector as their reasons.

Table 3. OLS Regression Estimates of credit supply factors and their influence on Agricultural Contribution to GDP in Nigeria (1992-2012)

Variable	Coefficient	Std. error	t- Statistic	Prob.
CONSTANT	121.6724**	52.28788	2.33	0.038
GEA	-0.000881*	.0005557	-1.59	0.141
EXR	.633608	.6428234	0.99	0.380
IR	4.930091**	2.115952	2.33	0.035
CRR	.3362477	5.919423	0.06	0.956
TCR	11.77242*	6.396969	1.84	0.140
LR	-.348289	.4437202	-0.78	0.448
MRR	-3.37538	3.201086	-1.05	0.351
R^2	0.8949			
Adjusted R^2	0.8248			
F-Statistics	12.77***			
DW	1.952186			
LM	0.017			
Durbin Watson statistic	2.013			

*Source: Output of analysis with Stata from [24,25]; ***, ** and * represent significance at 1.0%, 5.0% and 10.0% probability levels respectively*

Table 4. Error correction model estimate

Variable	Coefficient	Standard error	t-statistic	P-value
Constant	-1.633647	0.578709	-0.574	0.570
GEA	0.0424456	0.9620576	2.681	0.494
EXR	-o.6823387	0.4825605	-0.773	0.439
IR	0.523137	0.1441717	1.665	0.217
CRR	0.7551557	0.4446364	1.555	0.089
TCR	0.9909502	0.7346554	2.364	0.0002
LR	0.1973097	0.1656863	1.193	0.234
MRR	0.033804	0.2017399	1.389	0.363
R^2	0.6635			
Adjusted R^2	0.6001			
F-statistic	5.216			
P-value of F-statistic	0.000037			
DW	1.79448			
Error correction term (-1)	-0.28417			

Source: Output of analysis with Stata (2014)

Paucity of loanable funds was another identified factor. Most of the loanable funds which had come from the government had not been sufficient for meaningful agricultural investment. The government cannot do it all alone and this has created a finance supply deficit relative to demand. Statistics show that bank credit to agriculture as a proportion of total bank credit to the economy has hardly exceeded 17 per cent since 1970, yet the sector contributed over 35 per cent to the Gross Domestic Product annually [29].

Weak institutional support to the sector as infrastructure for processing and storage, land tenure systems, legal system for registration and perfection of collateral, judicial system for the enforcement of loan contracts and foreclosure of collateral, are weak. This did not encourage private sector commitment to the agricultural financing policies [30].

Unfavourable policies had also been identified as a constraint to formal agricultural financing in Nigeria. Some of the lending policies had been criticized for being excessively skewed against the small scale farmers, given the eligibility requirements and documentation. Even under the ACGF scheme farmers are not within easy reach of credit as often lending has cumbersome procedures which many small farmers are unable to meet up with [31]. Most agricultural policies did not favour long gestation farm enterprises. Long gestation crops such as oil palm and cocoa had suffered neglect with no rehabilitation funds [26].

Undue political interference in bank lending operations had also been observed as a constraint to formal agricultural financing in Nigeria as government initiated credit policies that favoured mostly beneficiaries close to the corridors of power. The result was diversion of the fund and default in repayment [26]. Government belief that appropriate interest rates for agricultural loans must be kept low to promote agriculture and assist small farmers ended up producing decisions that favoured big farmers who now invested their funds in their businesses leaving out any little funds free for investment in farming by small scale farmers. This negated intention of government to increase adoption of new technologies and agricultural products as well as develop the rural areas [26].

Wrongful channeling of credit into unproductive non-agrarian areas led to lending dislocation and distortions. For example, River Basin Development Authority built irrigation facility in irregular flowing river not likely to produce the necessary water for irrigation or the same scheme engaging in food production with unnecessary high overhead costs are very rampant in the country.

Bureaucratic and administrative bottlenecks prevailed. The processing of applications and claims by formal credit sources had been slow so much so that at the end of 2005, there was an accumulated backlog of 4064 unprocessed claims, the oldest of which dated back to 25 years [31]. There are issues of inconsistency and lack of continuity as well as insider abuse in implementation of formal lending policies to agriculture [30].

4. CONCLUSION

Based on the empirical evidence emanating from the results of this study, it was adduced that accessed agricultural credit from formal credit sources was of particular importance to growth and development of agriculture in Nigeria. The study had shown that the credit supply factors that influenced agricultural contribution to Gross Domestic Product were interest rate, total credit accessed by farmers and total government expenditure in agriculture. The constraints to financing agriculture in Nigeria included inadequate skills to deliver services effectively; low management capacity of farmers/clients; unwillingness of conventional banks to support agriculture; paucity of loanable funds; weak institutional support in the sector; poor funding of public financing institutions; bureaucratic and administrative bottlenecks; small volume of loans; undue political interference in lending operations; credit flowing into unproductive areas; use of concessional interest rate and policy inconsistency and lack of continuity.

5. RECOMMENDATIONS

Based on the findings of this study and conclusions drawn, the following recommendations are made:

(i) Government should encourage multi-sourcing of agricultural credit to drive farmers' innovativeness and efficiency and thus minimize any risk of monopoly in farm credit supply. Widening of financial markets will engender competition, reduce interest charges and increase contribution of Agriculture to Gross Domestic Product (GDP).

(ii) Nigerian government should develop pro-active pro-farmer synergies with her monetary policies in such a way that will increase banks' marginal propensity to lend for extra unit of loan demanded by farmers without jeopardizing the general price level and other cardinal macroeconomic objectives of the federal government. This can be achieved by systematically lowering the discount rate and reserve requirement which will increase commercial banks' liquidity and maintain a considerable amount of interest rate that will neither be too high for farmers to borrow nor too low for commercial banks to lend.

(iii) The federal Government should ensure competition in financial markets to drive innovation in farming practices. Such innovations will help strengthen the borrowing capacity of farmers and increase contribution of agriculture to the GDP.

(iv) Processing of applications and claims by financial institutions should be streamlined to ensure quick and efficient delivery of credit to facilitate production needs of farmers.

(v) Formal financial institutions should comply strictly with Central Bank of Nigeria directives and strive to ease some reported unfavourable lending policies.

(vi) Government should increase efforts to ensure that government expenditure in agricultural sector is boosted as well as efficiently managed so it could translate to meaningful development in the sector which would ultimately trickle down to enhance the sectors contribution to GDP.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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