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# Financial Stimulus And Performance of the Commercial Agricultural Credit Scheme (CACS) in Nigeria

*A. Olomola;*

*Nigerian Institute of Social and Economic Research (NISER), Surveillance and Forecasting Department, Nigeria*

*Corresponding author email: aderibigbeolomola@gmail.com*

***Abstract:***

*This study sought to determine the impact of the financial capital intervention (stimulus to the banking sector) on credit flow to the agricultural sector using random-effects Tobit econometric technique and proffer suggestions for improved participation of the banking sector in agricultural financing in Nigeria. The results show that loan supply is higher for banks that are younger and bigger in size and that it is significantly higher under the commercial agricultural credit scheme (CACS) than before; implying that the financial stimulus have elicited significantly positive response from the commercial banks. Prior to CACS rising borrowers' risk was associated with higher probability of loan supply whereas under CACS risk-taking by commercial banks has been moderated due to regulatory interventions by the CBN including intensive monitoring and enforcement of operational guidelines. Commercial banks do not increase agricultural lending due to higher leverage, greater liquidity and wider network of branches. They do so because of access to off-balance sheet resources. If their performance must increase as expected, public spending on infrastructural development must also increase. And to sustain the CACS, tapping alternative sources of funds such as the pension fund, accumulated funds in CACS repayment account, sugar levy account etc. is strongly recommended.*

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**JEL Codes:** G28, C58

#599

# FINANCIAL STIMULUS AND PERFORMANCE OF THE COMMERCIAL AGRICULTURAL CREDIT SCHEME (CACS) IN NIGERIA

***ABSTRACT***

This study sought to determine the impact of the financial capital intervention (stimulus to the banking sector) on credit flow to the agricultural sector using random-effects Tobit econometric technique and proffer suggestions for improved participation of the banking sector in agricultural financing in Nigeria. The results show that loan supply is higher for banks that are younger and bigger in size and that it is significantly higher under the commercial agricultural credit scheme (CACS) than before; implying that the financial stimulus have elicited significantly positive response from the commercial banks. Prior to CACS rising borrowers' risk was associated with higher probability of loan supply whereas under CACS risk-taking by commercial banks has been moderated due to regulatory interventions by the CBN including intensive monitoring and enforcement of operational guidelines. Commercial banks do not increase agricultural lending due to higher leverage, greater liquidity and wider network of branches. They do so because of access to off-balance sheet resources. If their performance must increase as expected, public spending on infrastructural development must also increase. And to sustain the CACS, tapping alternative sources of funds such as the pension fund, accumulated funds in CACS repayment account, sugar levy account etc. is strongly recommended.

## 1. INTRODUCTION

This study seeks to understand the response of the banking sector to recent agricultural finance policy initiatives in Nigeria with a view to articulating ways of strengthening the impact of the policies and boosting agricultural lending in the country. The focus is on the commercial agricultural credit policy initiative of 2009. The commercial agriculture credit scheme (CACS) was created to actualize the desire of the government to develop the agricultural sector through the expansion of lending by commercial banks. The Federal government decided to inject funds into the banking sector to induce the commercial banks to increase their lending for the development of commercial agriculture. In this connection, the Debt Management Office (DMO) raised a seven-year bond in the sum of ₦200 billion and the proceeds were earmarked for the financing of the scheme through lending by approved commercial banks. This government intervention in commercial agriculture lending (GICAL) took place in 2009 when governments in the developed world were providing fiscal stimulus in their economies in response to the global financial crisis and economic melt-down of 2008/2009. The stimulus was largely in terms of capital infusions into the banking sector to revive distressed banks of various sizes. The Federal Government of Nigeria decided to make the intervention fund available to approved banks to provide credit facilities to commercial agricultural enterprises at a single digit interest rate.

The intervention was highly welcomed by the farming community but was later to be confronted with controversies on account of the various restrictions associated with its utilization. There were restrictions in terms of the category of beneficiaries, participating banks and types of agribusiness enterprises. Representatives of small-scale farmers who approached the banks for loans were initially asked to wait until guidelines would be received from the CBN but were later turned back on the explanation that small-scale borrowers could not be accommodated under the scheme. Some State Governors complained that the banks holding the funds made it

impossible for the farmers to get the loan despite the efforts made by the states to access the agricultural credit facilities for on-lending to farmers in their states. A committee had to be set up to look at what the problems were and work out modalities for easy disbursement of the credit to the respective beneficiaries. The committee comprised six state governors, the ministers of finance and agriculture and was to be chaired by the Central Bank Governor. The CACS has been in operation effectively since 2010 to date.

Despite enormous agricultural resource endowment, the performance of Nigerian agriculture is still below expectation. Nigerian farmers are among the poorest in the society and the agricultural sector remains highly undercapitalized. With meager income and low savings majority of farmers lack the equity capital for the expansion of their operations and modernization of their enterprises. Access to debt capital is even more constraining as many smallholders are discriminated against by formal financial institutions. The phobia of lending to the agricultural sector remains incurable in spite of numerous policy initiatives to remedy the situation. The commercial banks scheme out agriculture from their lending portfolio while existing policies and schemes aimed at encouraging them to participate in agricultural lending are far from being fully effective. How can the existing financial institutional rigidity associated with agricultural lending be tackled? Why do commercial banks prefer to be brokers (relying on off-balance-sheet operations) in the agricultural financial system rather than financial intermediators (that are expected to transform customers' deposits into loans) for varying categories of borrowers)? The fact that agricultural sector that contributes over 20 percent to the GDP is not attractive to the banking sector should be a source of worry to policy makers and investors. This raises the question as to how the banking sector can improve its understanding of the performance of the agricultural sector. According to CBN data, agricultural lending accounts for only 1.4 percent of total bank lending as at December 2010. More often than not the demand side of the problem is the focus of attention. The major arguments are that the sector is risky, transaction cost is high and the small-scale farmers have no collateral. The supply side of the problem has received far less attention. What exactly are the limitations of the commercial banks? How can the constraints on lending to agriculture be relaxed? What policies and incentives will be required to encourage them to participate in agricultural value chain financing? Specifically, what are the challenges and opportunities associated with the commercial agriculture credit scheme in creating a win-win situation for both lenders and borrowers? What type of financial arrangements and instruments will be suitable to ensure that small-scale farmers have direct access to credit under the scheme?

The policy initiatives ─government infusion of capital for agricultural lending through the instrumentality of the commercial agricultural credit scheme (CACS) are indeed, justified in view of the fact that the agricultural sector has always been discriminated against by commercial banks over the years on account of being too risky. The intervention fund which is expected to increase bank lending may imply that banks may have to increase the riskiness of their lending. Unless there is proper risk management, approval of loans by the banks may not increase in accordance with the intension of the intervention. Given the conflicting nature of these objectives the question remains as to how CACS might have affected risk-taking incentives relative to changes in bank lending thus indicating the advisability to ascertain the effects of CACS on bank risk-taking and changes in the demand for agricultural credit. Moreover, the banking sector is part of the private sector that is supposed to lead the business processes in translating the goals of agricultural transformation into reality. The banking sector must therefore be on the same page with the policy makers in terms of the motivation, understanding and implementation of

agricultural transformation policies and projects that require financial services for achieving desired results. All the consumers of such services, as well as the service providers and policy makers must play active role in the implementation of the financial policies that guide the delivery of financial services to the agricultural sector. This is important in order to ensure uninterrupted flow of funds to smoothen the operations of the agricultural commodity value chains.

In view of the foregoing the broad goal of this study is to examine the response of the banking sector to the value chain financing needs of farmers and the financial stimulus through the instrumentality of the CACS in Nigeria. The study seeks to achieve three objectives namely; (i) examine the implementation of agricultural finance policies and incentives associated with the stimulus funds for boosting agricultural lending through the commercial agricultural credit scheme (CACS), (ii) determine the impact of the financial capital intervention (stimulus to the banking sector) through the instrumentality of CACS on the flow of credit to the agricultural sector, and (iii) proffer suggestions for improved participation of the banking sector in agricultural financing in Nigeria.

## 2. Methodology

The focus of the study is to determine whether and how the financial stimulus affected risk taking in credit and investment activities of commercial banks in Nigeria. With regard to the CACS the analysis involves two sub-periods namely; pre-stimulus (2006-2008) and post-stimulus (2009-2012). The commercial banks participating in the CACS and the non-participants are included in the study. The required data were collected from the commercial banks in addition to policy-related data obtained from the CBN, Federal Ministry of Finance and Federal Ministry of Agriculture and Rural Development. The two types of data collected from the commercial banks covered the period from 2006 to 2012. Data were collected in respect of CACS including the amount of CACS capital received, time received, time of commencement of credit disbursement, CACS credit disbursed by type of business, number of CACS agricultural credit applications received and approved, interest rate, capital adequacy, asset quality, age of bank, earnings, liquid assets, liquid liabilities, total loans, non-performing loans, total deposits, size (total assets), bank total equity capital, age of bank, number of bank branches, presence of agricultural desk, number of staff in agricultural finance department. In addition to the quantitative secondary data, qualitative data were also obtained from all the commercial banks using open-ended research instruments. This aspect of the data collection exercise involved visits to the headquarters of the banks and discussions with key officials.

In the analysis, the study focused on two hypotheses namely; (i) the stimulus provided by the government to the banking sector to boost agricultural financing has led to significant agricultural credit expansion; (ii) commercial banks have been less risk-adverse to agricultural lending due to the capital infusion to the banking sector by the government to stimulate agricultural lending. However, to the extent that banks were subject to government regulations, these regulations might reduce rather than increase risk taking, for example, by asking banks to establish agricultural desks. Earlier studies underscore the importance of bank capital for credit origination (Thakor, 1996). While previous research shows that a negative shock to bank capital forces a cut in lending (Berger and Bouwman, 2013), others suggest an asymmetric response of financial institutions to capital shocks. In particular, Duchin and Sosyura (2012) find that a positive shock to capital need not result in credit expansion, but instead may lead to a shift in

credit rationing and an increase in risky investments. It is instructive to ascertain in the case of Nigeria the direction of the impact of injection of capital funds by the government.

**2.1 Determining the effects of stimulus on agricultural lending**

The effect of government intervention on commercial agriculture lending is examined by focusing on the response of the commercial banks to the financial infusion into the banking sector under the commercial agriculture credit scheme. The estimating model is specified implicitly as follows.

$$y_{i,t} = \alpha + x_{i,t}\beta + \epsilon_{i,t} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

In this time-series-cross-section formulation, y is the value of loans supplied by commercial banks which are the cross-sectional units; *i* refers to a bank while *t* refers to time expressed in years from 2006 to 2012. $\beta$ is the parameter to be estimated and $\epsilon_{i,t}$ is the error term. For the purpose of the analysis the period from 2006 to 2008 is regarded as pre-stimulus while the period from 2009 to 2012 is regarded as post-stimulus period. The essence is to determine whether there is a significant change in the supply of credit to the agricultural sector by commercial banks due to the injection of funds by the governmental to boost agricultural financing. To take advantage of the stimulus, the banks themselves have to be in good standing to engage in financial intermediation. This underscores the need to consider key performance variables as well as the size of the bank to lend to agribusiness firms across the country. Thus, to capture the effect of the stimulus some bank characteristics that may influence banks' lending are considered such as size (total assets) and proxies for key measures of banks' financial condition and performance used by banking regulators such as capital ratio and liquidity ratio. The estimating equation is specified as follows.

$$y_{it} = \alpha_i + \beta_{1ir_{it}} + \beta_2 CACS_{it} + \beta_3 loanrisk_{it} + \beta_4 CACS * loanrisk_{it} + \beta_5 capratio_{it} + \beta_6 liqratio_{it} + \beta_7 tassets_{it} + \beta_8 branch_{it} + \beta_9 bankage_{it} + \varepsilon_{i,t} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Where, $y_{it}$ is the total value of loan granted to agricultural enterprises by a commercial bank in a particular year, ir is (lending) interest rate, *CACS* refers to the stimulus to the banking sector through government's capital injection under the commercial agriculture credit scheme with a value of unity from 2009 to 2012 and zero from 2006 to 2008, *capratio* is capital ratio, (defined as ratio of equity capital to total assets) *liqratio* is liquidity ratio, (defined as ratio of liquid assets to total assets) branch refers to the number of branches of a commercial bank, *bankage* is the age of the commercial bank, *tassets* refers to a bank's total assets and *loanrisk* refers to loan-to-income ratio (for a borrower) which is used as a proxy for borrowers' risk while $\varepsilon_{i,t}$ is the stochastic disturbance term of the regression.

In testing the specified hypotheses, the significance of the coefficients $-\beta_2$, $\beta_3$ and $\beta_4$ are particularly crucial. Commercial banks' disposition to the stimulus policy is analyzed by including an interaction term "stimulus*loanrisk" in the model. The significance of the coefficients will enable us capture the effect of the stimulus policy on agricultural lending by commercial banks. The direction of the effect depends on whether the banks tend to be more risk-taking in view of the fact that they have access to off-balance sheet resources to support

their lending to agriculture in which case the sign of the estimated coefficient will be positive or they refrain in making risky investments in accordance with the operational guidelines of the regulatory authority in which case a negative sign is expected. It is expected that lending will reduce as borrowers become more risky thus the sign of the estimated coefficient of loanrisk is expected to be negative. The signs of the coefficients of *capratio, liqratio, tassets, branch* and *bankage* are expected to be positive since bigger, older and more liquid banks with wider network of branches should have greater capacity to lend to agriculture than otherwise would have been the case. Bigger banks (banks with larger total assets) tend to have greater capacity to generate loanable funds, meet larger loan requests, have more personnel with specialization in agricultural lending and to carry out extensive agricultural credit transactions compared with those with low level of total assets. Although bank capital has a role to play in reducing risk, the direction of the effect of capital ratio is not unambiguous. According to Koch (1988) it provides a cushion for firms to absorb losses and remain solvent. It also provides ready access to financial markets and guards against liquidity problems caused by deposit outflows. With high capital ratio, banks are better placed to take on risky investments by for example investing more in loans than safe assets. Its large equity base will serve as cushion against large loan losses. On the other hand a highly capitalized bank may decide to invest in safer assets such as government securities if there is an attraction by government policies thus crowding loan requests by the private sector. Besides, a less capitalized bank may decide to follow a similar investment pattern of investing more in loans than safe assets in order to increase expected profits even though at a greater risk (Betubiza and Leatham, 1995). In view of the nature of the data (limited observations and limited time covered) as well as peculiar characteristics of the banks, the model cannot be estimated by pooled ordinary least squares technique (POLS). Some of the seventeen commercial banks included in the analysis did not grant any loans in some of the years covered in the study (2006 to 2012); thus the dependent variable takes on the value of zero during those years. With the small size of the sample, eliminating those banks to circumvent the problem of limited dependent variable is inadvisable as it will undermine the degrees of freedom and more importantly create sample selection bias. Rather than excluding those banks with zero response for the amount of originated credit, a random-effects Tobit analysis is employed to account for the censored nature of the data and to adequately characterize the full range of commercial banks' behavior during the period covered in the study.

**3. Design and Implementation of the commercial agriculture credit scheme (CACS)**

The injection of capital into the banking sector in 2009 represents the most fundamental policy initiative by the Nigerian government designed to encourage commercial banks to expand the inflow of credit to the agricultural sector. This section examines the design and implementation of the commercial agricultural credit scheme (CACS) through which the financial stimulus is provided to the banking sector. The performance of this initiative and commercial banks' response is also analyzed. 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 Program (CADP) is financed through a ₦200 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 borne by the Central Bank of Nigeria (CBN). The CBN and the then 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 Minister of Agriculture and Water Resources (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. The CACS is operated in two tranches of ₦100 billion each. The first tranche ran from May to December, 2009 while the second tranche commenced in February, 2010. As at 2012, a total of 19 commercial banks are participating in the scheme. Nonetheless, the disbursement of the amount has witnessed considerable lag; implying that repayment may even drag beyond the expected time frame.

Lending under the scheme covers key stages of the agricultural value chain beginning from the supply of farm inputs (fertilizers, seeds/seedlings, breeder stock, feeds, farm equipment and machineries) to the production of tree and arable crops (oil palm, fruit trees. rubber, sugar cane, jatropha carcus and cocoa, cotton, rice, wheat, cassava, maize, soybean, beans, millet, tomatoes and vegetables), livestock (broilers and eggs production, meat, dairy and piggery), aquaculture (fingerlings and catfish). It also covers processing such as feed mills development, threshing, pulverization and other forms of transmutation for value addition as well as storage of commodities, agrochemicals and warehousing and marketing of agricultural commodities. The guidelines issued for the operation of the scheme define a commercial enterprise as any farm or agro-based enterprise with agricultural asset (excluding land) of not less than ₦100 million for an integrated farm with prospects of growing the assets to ₦250 million within the next three years (large-scale commercial enterprise) and ₦50 million for non-integrated farms/agro-enterprise (except in the case of onlending to farmers' cooperative societies) and having the prospect to grow the net asset to ₦150 million in the next three years (medium-scale commercial enterprises). The guidelines also stipulate favorable loan condition with a maximum interest rate of 9 percent while the CBN bears the interest subsidy. The participating banks are to request acceptable collaterals in line with their banking operations. The loans have a maximum duration of seven years with a moratorium based on the gestation period of the enterprise. There is also provision for working capital facility of one year which can be rolled over as the need arises. According to its original design, CACS was to last for a period of seven years; but the terminal

date has recently been extended from 2016 to 2025 by the committee of governors (CoG) of the CBN at its 343rd meeting.

### 3.1 Response of Banks to CACS Initiative

The commercial banks are positively disposed to the incentives provided under CACS and are willing to explore the opportunities. The Banks are interested in CACS because it is a source of additional income and affords them the opportunity to actively participate in the transformation agenda to promote commercial agriculture enterprises in the country. CACS is an initiative that affords the banks an opportunity to offer customers in the agricultural sector single digit interest rate loans while also not putting pressure on the bank's balance sheet thus helping to improve liquidity. The government intervention provides long-tenor funds which enable banks to support agricultural infrastructural development and acquisition of agricultural capital items. The tenor of seven years makes the scheme suitable to agricultural projects including agro-infrastructural development which are characterized by long gestation periods. The focus of the scheme on medium and large-scale agricultural enterprises with capacity to borrow from banks and good management/organization to efficiently utilize the funds is in sync with the customer preference of commercial banks. The specified categories of enterprises are in a position to comply with banks' collateral and other requirements within their general lending framework. Furthermore, the single digit pricing makes it attractive to various banks' clients. Borrowing under the scheme is a cheaper option for the targeted enterprises and this is also of interest to the banks since their clients are better placed to operate with lower cost and higher returns and so empowered to meet their repayment obligations.

The banks have shown favorable response by increasing their lending to agriculture due to the generally satisfactory manner in which the CBN has been implementing the scheme. In general the banks adduced five reasons which have positively influencing their response. They are: (1) Transparent process. The implementation of the scheme has so far been transparent and directed at the real players in the agricultural sector in line with the guidelines of the scheme. Open release of the guidelines to commercial banks by the CBN has been helpful in bridging communication gaps and generating better understanding among the stakeholders. (2) Timeliness of operations. Although some banks complain about delay in processing loan applications, others are of the opinion that the operation and turn-around-time for credit processing and disbursement by CBN officials have been encouraging and so far contributed to the success of the scheme. (3) Rule enforcement. The guidelines of the scheme provide clear instructions on the application, disbursement, monitoring and collection processes. The CBN is committed to enforcing strict compliance with the implementation guidelines. Many of the commercial banks consider the strict adherence by CBN to the procedure of auditing, monitoring and evaluating the enterprises of the borrowers to ascertain the performance of the scheme as highly commendable. (4) Effective monitoring. The emphasis on verification and monitoring of the projects benefiting under scheme is particularly considered to be a very good initiative. (5) Adequate funding. The provision of liquidity to fund the lending at low interest rates of 9 percent is attractive to both the banks and the scheme's beneficiaries. Overall, the ability of the CBN to absorb the subsidy which may arise in the pricing of loans to beneficiaries is an overarching source of attraction to the participating banks.

### 3.2 Performance of the CACS

Available data from the CBN show that by the end of 2012 a sum of ₦199.12 billion has been disbursed for 269 projects consisting of 239 private projects and 30 state governments including the Federal Capital Territory (FCT). Under the scheme each state government can borrow up to ₦1.0 billion for on-lending to small-scale farmers. To date, however, not all the states have considered it necessary to take advantage of this provision of the CACS. Nonetheless, the overall impact of the scheme on the flow of credit from the commercial banks to agriculture is likely to be positive especially judging by the rising trend in the share of agriculture in total commercial banks' credit to some key sectors of the economy. The share rose from 1.4 percent in 2009 to 3.9 percent in 2012. This positive trend cannot however, be due to the CACS alone. It is a reflection of the total effect of all the agricultural credit intervention schemes and government incentives. The schemes include the agricultural credit guarantee scheme (ACGF), the self-help group linkage banking, the trust fund model to enhance agricultural credit supply, the interest rate drawback programme (IDP) and the agricultural credit support scheme (ACSS) all introduced at different periods by the CBN.

With regard to CACS specifically, there are positive trends in terms of demand and supply of credit as well as understanding of implementation procedures all leading to a rising trend in funds release by the CBN and loan disbursement by the commercial banks. This understanding is evidenced by the reduction in the rejection of loan applications by the commercial banks. By the end of 2010, applications have been submitted by the private sector in respect of 347 projects out of which only 85 projects were approved; representing a rejection rate of 76 percent. The public sector (state governments) submitted applications for 32 projects out of which 19 were approved; representing 41 percent rejection rate. By the end of 2012, however, the number of projects applied for by the private sector increased to 472 while the number of projects approved increased to 228. At the same time the project rejection rate dropped to 52 percent. The number of projects submitted by the state governments increased to 42; out of which 30 were approved while the rejection rate dropped to 29 percent.

The drop in project rejection rate is associated with the rising number of participating banks and substantial increase in the volume of loans. The number of banks rose from only 2 in 2009 to 11 in 2010, 19 in 2012 and 20 in 2014. Three banks, United Bank for Africa, Zenith bank and First Bank of Nigeria in that order, have dominated the loan market under the CACS judging by the share of cumulative loans disbursed in 2010, 2012 and 2014. The cumulative loans disbursed stood at ₦96,811 billion in 2010. It increased to ₦198.17 in 2012 and ₦237.0 billion in 2014. Of these loans, the percentage share of the three leading banks stood at 60.05, 45.86 and 45.56 in 2010, 2012 and 2014 respectively with the United Bank for Africa standing out as a clear leader during the period. The banks have demonstrated a clear preference for the private sector and large-scale producers in their response to the stimulus provided by the government. Their hesitation to lend to the state governments for on-lending to small-scale farmers was evident in the fact that only five banks lent to them by 2010 and the number increased to eight in 2012 whereas the number of commercial banks which were lending to the large-scale borrowers increased from 11 to 19 during the same period (Table 3.1). The small-scale farmers faced discrimination from both the banks and the states who are supposed to serve as the on-lenders. As at 2014, not all the 36 states in the country have availed themselves of the opportunity to borrow under CACS for on-lending to farmers' cooperatives or other areas of agricultural intervention. The limited coverage of smallholders under CACS is not an operational aberration; indeed it is in compliance with the design.

**Table 3.1 Cumulative Funds released by commercial banks to clients**

| Bank | 2010 | | 2012 | |
|---|---|---|---|---|
| | Private Sector (₦'Bn) | Public Sector (States) (₦'Bn) | Private Sector (₦'Bn) | Public Sector (States) (₦'Bn) |
| Access Bank Nigeria Plc | 4.176 | 1 | 9.326 | 1 |
| Citibank (NIB) Plc | 0 | 0 | 3 | 0 |
| Diamond Bank Nigeria Plc | 0 | 0 | 2.744 | 0 |
| Ecobank Nigeria Plc | 0 | 0 | 3.67 | 0 |
| Equitorial Trust Bank Plc | 0 | 0 | 0 | 0 |
| Enterprise Bank | 0 | 0 | 0.375 | 0 |
| Fidelity Bank Plc | 0.5 | 3 | 2.575 | 6 |
| First Bank of Nigeria Plc | 9.135 | 0 | 18.194 | 4 |
| First City Monument Bank Plc | 0 | 0 | 4.715 | 0 |
| First Inland Bank Plc | 0 | 0 | 0 | 0 |
| Guaranty Trust Bank Plc | 4.25 | 0 | 4.8 | 1 |
| Intercontinental Bank Plc | 0 | 0 | | |
| Keystone Bank | 0 | 0 | 0.2 | 0 |
| Mainstreet Bank | 0 | 0 | 2 | 0 |
| Nigeria International Bank Plc | 0 | 0 | 0 | 0 |
| Oceanic Bank International Plc | 2 | 0 | 0 | 0 |
| Platinum Habib Bank Plc | 0 | 0 | 0 | 0 |
| Skye Bank Plc | 6 | 0 | 9.217 | 0 |
| Spring Bank Plc | 0 | 0 | 0 | 0 |
| Stanbic – IBTC Bank Plc | 1.35 | 0 | 11.742 | 0 |
| Standard Chartered Bank Plc | 0 | 0 | 0 | 0 |
| Sterling Bank Plc | 0 | 0 | 4.759 | 2 |
| Union Bank Plc | 7.404 | 3.5 | 12.417 | 5.5 |
| United Bank for Africa Plc | 28.662 | 6.5 | 32.257 | 9.5 |
| Unity Bank Plc | 5.5 | 0 | 19.512 | 0 |
| Wema Bank Plc | 0 | 0 | 0.715 | 0 |
| Zenith Bank Plc | 9.835 | 4 | 17.955 | 9 |
| Total | 78.811 | 18 | 160.17 | 38 |

Source: CBN monthly economic reports, various issues

The emphasis on the large-scale enterprises right from the design stage is a fait accompli between the government and the banking sector to favor less risky borrowers. There are three issues arising from the urban-biased nature of the design: (1) the inherent approach of carrying coal to Newcastle is inadvisable. This is borne out of the fact that the stimulus is actually targeted at large enterprises that have the wherewithal to borrow from the banking sector and are in a position to take advantage of a variety of financing options while the farmers who have limited options and little savings (if any) are left alone to fend for themselves. In point of fact, without adequate financing, such farmers can neither expand their scale of production nor attain a higher level of commercialization. (2) The growth in the agricultural sector as at the time the scheme was introduced derived from the contribution of the smallholders whose efforts continue to sustain the sector's contribution to the GDP of the country. To the extent that such contribution is not considered in determining the priority of the lending stimulus it will be difficult to achieve significant transformation of the agricultural sector in which the less resource endowed participants in the value chain will be empowered to play active roles. (3) Ignoring small-scale farmers in the order of lending priority under CACS undermine their participation in value chain financing and development. It is therefore, not surprising that only discrete financing of the value chains has been going on under CACS without adequate attention being given to the development of critical links and governance of the chain including the empowerment of the primary producers to be active players. Table 3.2 presents the structure of projects financed by the banks with regard to specific stages of the value chain such as input supply, production, processing, marketing and storage. The cumulative total number of projects rose from 228 in 2012 to 274 in 2014 (August) while the loans disbursed increased from N160.193 billion to N190.282 billion accordingly. Although production loans represents about 50 percent in each of the sub-periods, there is no financing link between the production stage and any of the other stages. Besides, production in the rural areas (i.e. production by small-scale farmers) is left out of this financing structure.

**Table 3.2 Structure of cumulative projects financed by value chain under the CACS**

| Project category | 2012 | 2014 |
|---|---|---|
| **Input supply** | | |
| -number | 1 | 1 |
| -value (₦' billion) | 0.564 | 0.564 |
| -number share (%) | 0.44 | 0.36 |
| -value share (%) | 0.35 | 0.3 |
| **Production** | | |
| -number | 112 | 139 |
| -value (₦' billion) | 55.48 | 66.153 |
| -number share (%) | 49.12 | 50.73 |
| -value share (%) | 34.64 | 34.8 |
| **Processing** | | |
| -number | 87 | 105 |
| -value (₦' billion) | 82.45 | 95.407 |
| -number share (%) | 39.16 | 38.59 |
| -value share (%) | 51.48 | 50.2 |
| **Marketing** | | |
| -number | 16 | 15 |
| -value (₦' billion) | 15.311 | 20.111 |
| -number share (%) | 7.02 | 5.47 |
| -value share (%) | 9.56 | 10.6 |
| **Storage** | | |
| -number | 12 | 13 |
| -value (₦' billion) | 6.367 | 8.047 |
| -number share (%) | 5.62 | 4.74 |
| -value share (%) | 3.97 | 4.2 |
| Total number | 228 | 274 |
| Total value | 160.173 | 190.282 |

Source: CBN monthly economic reports, various issues

### 3.3 Results of the econometric analysis of the impact of CACS

The interest of the commercial banks in agricultural lending has been stimulated in terms of increased participation and rising disbursement under the CACS. The commercial banks have taken advantage of the opportunity given to them to rely on off-balance sheet resources to engage in agricultural credit transactions in view of the huge expected financial benefits. It is therefore, expected that agricultural lending should expand due to the financial stimulus provided by the government. This section presents the results of the econometric analysis which seeks to determine the impact of the CACS on credit supply to the agricultural sector. The study hypothesized that agricultural lending is significantly affected by interest rate, size of banks (proxied by total assets), capital ratio, liquidity ratio, number of bank branches, age of bank, level of borrowers' risk. It was further hypothesized that lending would be higher as a result of the financial stimulus provided by the government with the instrumentality of CACS and that the stimulus would have significant impact on the risk-taking behavior of commercial banks as regards lending to agriculture. A random-effects Tobit regression was estimated to test these

hypotheses. The results of the agricultural loan supply equation are presented in Table 3.3 while the elasticity coefficients for the regressors in the equation are presented in Table 3.4.

The results show that agricultural loan supply depends significantly on bank's size, age, borrowers' risk and government's financial stimulus under CACS. The interest rate (lending rate) and commercial banks' capital ratio, liquidity ratio and number of branches are not significant predictors of agricultural loan supply judging by the non-significance of the estimated coefficients in statistical sense. The estimated coefficient for interest rate has the expected negative sign but it is not statistically significant. As expected, the coefficients for capital ratio, liquidity ratio and bank branches also have positive signs indicating that higher levels of these variables are associated with higher probabilities of loan supply, however, to the extent that the coefficients are not statistically significant, they mean little if anything as far as agricultural lending in Nigeria during the period was concerned.

The signs of the coefficients of age and size of banks as well as the coefficient of the CACS dummy variable are positive and significant as expected. The results show that loan supply is higher for banks that are younger and bigger in size (in terms of total assets) and that it is significantly higher under CACS than before; thus underpinning the positive supply effect of government's financial stimulus. An increase of 1.00 percent in the age of banks is associated with a reduction of 0.24 percent in loan supply whereas a similar increase in total assets of banks is associated with an increase of 0.22 percent in loan supply (Table 3.4). An interaction term has been included in the model to determine whether banks' disposition to risk taking in agricultural lending has been affected by the government's financial stimulus. The coefficient of loan risk is positive and highly significant. The coefficient of the interaction term is also significant but the sign is negative. This shows that there CACS has significantly affected the risk-taking behavior of commercial banks. The results shows that prior to CACS rising borrowers' risk was associated with higher probability of loan supply whereas under CACS risk-taking by commercial banks is dampened ─as borrowers' risk increases, the probability of loan supply decreases. As shown in Table 3.4 an increase of 1.00 percent in borrowers' risk level is associated with an increase of 2.00 percent in loan supply whereas under CACS it is associated with a decline of 3.00 percent in loan supply. Under CACS the amount of loan supplied to agricultural enterprises tend to be higher for borrowers with low risk levels than for borrowers with high risk levels. This finding does not support the theoretical predictions of the risk behavior of lenders in developed countries. In a recent study for instance, Duchin and Sosyura (2012) found that capital support by the government led to higher risk taking by banks. They found that increase in risk taking was more pronounced at larger banks which were more likely to receive continued government protection.

According to the authors the findings are broadly consistent with the theories that predict an increase in risk taking incentives in response to government protection (Berger et al. 2011; Black and Hazelwood, 2013; Bhattacharyya and Purnanandam, 2014) due mainly to lax monitoring and weak regulatory regime. This is understandable because the 2008-2009 financial crises in many developed countries was actually due to very weak bank regulation in the face of generous policy incentives to encourage lending to various groups of consumers. The fact that the finding of this study is at variance with what obtains in developed economies is not surprising because the lower risk-taking attitude of commercial banks in the case of Nigeria is a reflection of the enforcement of the CACS implementation guidelines and extant regulatory policies by the CBN. Although the commercial banks find it difficult to adhere strictly to the CACS operational guidelines, the recalcitrant banks have not been spared from sanctions by the

CBN. The CBN applies sanctions against any infringement from time to time to serve as deterrent to recalcitrant banks. For instance, in May 2014, one of the banks was fined a sum of ₦353.395 million being

**Table 3.3 Results of estimated random-effects Tobit model for agricultural lending**

| Variable | Coefficients | Standard Error | P[\|Z\|>z] |
|---|---|---|---|
| Interest rate | -3.816 | 3.478 | 0.273 |
| CACS dummy | 2.2921*** | 0.754 | 0.000 |
| Total assets | 0.145* | 0.086 | 0.093 |
| Capital ratio | 0.380 | 0.294 | 0.196 |
| Liquidity ratio | 0.414 | 0.448 | 0.356 |
| Bank branch | 0.146 | 0.226 | 0.517 |
| Age of bank | -0.633** | 0.286 | 0.027 |
| Loan risk | 0.489*** | 0.147 | 0.001 |
| CACS*Loan risk | -0.004*** | 0.002 | 0.093 |
| Constant | 14.011** | 7.240 | 0.053 |
| Log likelihood = -69.941<br>Wald $chi^2$ (9) = 35.36<br>Prob > $chi^2$ = 0.000 | | | |
| /sigma_u | 7.44e=18 | 0.334 | 1.000 |
| /sigma_e | 1.454 | 0.165 | 0.000 |
| Rho | 2.62e-35 | 2.35e-18 | |
| Likelihood-ratio test of sigma_u=0: $Chi^2$ (01) = 0.00 | | Prob > $Chi^2$ = 1.000 | |

Source: Authors' computation

Note: ***significant at the 1% level, **significant at the 5% level, *significant at the 10% level

**Table 3.4 Estimated elasticity coefficients of variables in the random-effects Tobit model**

| Variable | Coefficients | Standard Error | P[\|Z\|>z] |
|---|---|---|---|
| Interest rate | -1.077 | 0.982 | 0.273 |
| CACS dummy | 0.320*** | 0.083 | 0.000 |
| Total assets | 0.219* | 0.131 | 0.093 |
| Capital ratio | -1.116 | 0.089 | 0.196 |
| Liquidity ratio | -0.064 | 0.069 | 0.356 |
| Bank branch | 0.099 | 0.152 | 0.517 |
| Age of bank | -0.244** | 0.110 | 0.027 |
| Loan risk | 0.021*** | 0.006 | 0.001 |
| CACS*Loan risk | -0.030*** | 0.017 | 0.094 |

Source: Authors' computation

Note: ***significant at the 1% level, **significant at the 5% level, *significant at the 10% level

sanction for infraction of the CACS guidelines in one month. In point of fact, the cumulative penalty charged the banks that have violated the guidelines from inception in 2009 to May 2014 stood at ₦1.242 billion (CBN, 2014). The effects of these actions are capable of attenuating the inclination of banks towards risk taking. This explanation is consistent with recent studies which suggest that disciplinary actions and penalties imposed by regulators tend to reduce banks' risk taking (Duchin and Sosyura, 2012; Berger, et al., 2011).

## 4. Summary, Policy Recommendations and Conclusions

The past five years have witnessed renewed efforts by the government to boost agricultural financing through injection of capital into the banking sector and policy reforms to reduce agricultural lending risks and thus expand credit supply to the sector. This study examines the financial innovations and commercial banks' response to the policy incentives. This section presents highlights of the main findings, policy recommendations and conclusions.

### 4.1 Main findings

This study has examined the design and implementation of financial initiatives to encourage commercial banks to expand their lending to agriculture in Nigeria with emphasis on the capital infusion by the government through the instrumentality of CACS and incentives provided under NIRSAL to reduce lending risk. With regard to the CACS specifically, there are positive trends in loan requests and understanding of implementation procedures all leading to a rising trend in funds release by the CBN and loan disbursement by the commercial banks. The number of banks rose from only 2 in 2009 to 11 in 2010, 19 in 2012 and 20 in 2014. Three banks, United Bank for Africa, Zenith bank and First Bank of Nigeria in that order, have dominated the loan market under the CACS judging by the share of cumulative loans disbursed in 2010, 2012 and 2014. The development of critical links, governance of value chains and empowerment of primary producers to be active players have been downplayed. Although production loans represents about 50 percent of total loans disbursed annually, there is no financing link between the production stage and any of the other stages in the value chains. Besides, production in the rural areas (i.e. production by small-scale farmers) is left out of this financing structure. However, this is more of a policy design defect rather than implementation challenge.

The econometric analysis of the effects of governments' capital infusion into the banking sector on agricultural lending reveals that lending depends significantly on bank's size, age, borrowers' risk and government's financial stimulus under CACS. Although rising capitalization ratio, bank liquidity and bank branching have direct relationship with credit origination, their effects are not statistically significant. The results show that loan supply is higher for banks that are younger and bigger in size (in terms of total assets) and that it is significantly higher under CACS than before; implying that the financial stimulus under CACS have elicited significantly positive response from the commercial banks. An increase of 1.00 percent in the age of banks is associated with a reduction of 0.24 percent in loan supply whereas a similar increase in total assets of banks is associated with an increase of 0.22 percent in loan supply. Specifically, CACS has significantly affected the risk-taking behavior of commercial banks. The study shows that prior to CACS rising borrowers' risk was associated with higher probability of loan supply whereas under CACS risk-taking by commercial banks has been moderated ─ the probability of credit origination tends to decrease as borrowers' risk increases.

### 4.2 Policy Recommendations

The commercial agricultural credit scheme has changed the configuration of agricultural financing in Nigeria; focusing on large enterprises and demonstrating how off-balance sheet resources can be mobilized and deployed to targeted enterprises. In view of its positive impact on loan origination, stakeholders have clamoured for its extension from its 2016 terminal date to 2025. If the scheme is to be sustained till the new terminal date, the CBN should relentlessly monitor the use of the funds and ensure strict compliance with the guidelines. In addition the following measures should also be adopted.

#### 4.2.1 Emphasize value chain financing under the CACS

The CBN should re-orient the lending focus under the CACS from discrete financing of separate stages of value chains to an integrated system of value chain financing. This will ensure that the agricultural lending portfolios of the commercial banks synchronize with the emerging value chain approach to agricultural development in the country and the business orientation of the ongoing agricultural transformation agenda.

#### 4.2.2 Strengthening banks' participation in value chain financing

The participation of commercial banks in value chain financing can be strengthened through strict enforcement of operational guidelines and sanctioning of erring participants. The federal government should strengthen agricultural finance operations through appropriate legislations for effective operationalization of existing credit guidelines and timely discharge of responsibilities and obligations of stakeholders. Enabling laws and regulatory actions are required in the following areas: (1) Law on warehousing receipt system such that receipts can be traded and applied for the purpose of value chain financing by commercial banks, (2) Enabling laws to govern contracts between out-growers and off-takers to make them binding and bankable, (3) Provision of special prudential guideline incentives unique to agricultural loans and (4) Liberalization of agricultural insurance to create more products and strengthen its capacity to serve an agricultural sector that is undergoing rapid transformation.

#### 4.2.3 Revamp the small-scale component of CACS

The CBN in collaboration with state governments should revamp lending to smallholder farmers under the CACS. This smallholder component which is designed to be implemented through on-lending by state governments should be re-directed towards a more efficient delivery system. The limit of ₦1.00 billion which can be granted to a state government under the CACS should be increased to ensure meaningful coverage of farmers. This is important because farmers' need for credit to acquire modern inputs and sophisticated equipment has increased substantially; much more in recent times than it was about a decade ago when CACS was established.

#### 4.2.4 Strengthen the loan recovery mechanism under the CACS

It is important for CBN and the commercial banks to give due priority to the recovery of the CACS loans in order not to deplete the loanable funds and to ensure that sufficient funds will be available to sustain the scheme till 2025 as recently approved. What is more, there is need to give prominent attention to the issue of risk in agricultural lending in its totality. This should include strengthening the capacity of participants in the agricultural finance value chain to reduce systemic risks, borrowers' risks and bank risks.

### 4.2.5 Improvement in lenders' and borrowers' skills

Stakeholders in the value chain financing system require some form of capacity building. This can be achieved in various ways including the following: (1) Training of bank staff in agricultural financing products, project assessment and monitoring (2) Provision of support by commercial banks to clients to enable them develop bankable proposals, (3) Appointment by commercial banks of well-trained graduates of various disciplines of agriculture as agricultural credit officers in various locations in the country to provide technical inputs into agricultural finance, (4) Commercial banks should sponsor their agricultural credit officers and relevant desk officers to participate in agricultural shows, workshops etc.; to familiarize them with agricultural development issues and (5) Commercial banks should develop communication materials and undertake regular portfolio review to demonstrate the potentials of agriculture as a profitable venture.

## 4.3 Conclusions

The financial innovations introduced in Nigeria under the CACS has led to an increase in lending to agriculture. Commercial banks do not increase agricultural lending due to higher leverage, greater liquidity and wider network of branches. They do so because of access to off-balance sheet resources which brightens their prospects for increased profitability and risk reduction. Capital infusion by the government through the instrumentality of the commercial agricultural credit scheme has a significantly positive effect on agricultural lending. Other determinants of loan origination are bank size, age and borrowers' risk. The CACS stimulus has a significant impact on the risk of originated loans. After CACS, commercial banks granted less risky loans than before. The amount of originated loans granted to risky borrowers tends to be lower following the CACS stimulus compared with the situation before CACS due to regulatory interventions by the CBN including intensive monitoring and enforcement of operational guidelines as well as imposition of sanctions against infractions.

It is important to stress that the policy actions required to expand lending to agriculture should not be limited to the banking and agricultural sectors alone. Complementary fiscal and monetary policy actions are required. There is need for increased public spending on the development of infrastructural facilities including agricultural storage, transportation, marketing and processing facilities so as to reduce post-harvest losses and enhance productivity. This in turn should lead to an improvement in competitiveness and repayment capacity of agricultural enterprises. Moreover, alternative sources of funds such as the pension fund, accumulated funds in CACS repayment account, sugar levy account etc. should be tapped to sustain the CACS over the extended period from 2016 to 2025.

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