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Agricultural Credit Policy as a Panacea for Sustainable Food Production in Nigeria: Evidence from Ogun State

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Abstract

Farmers in Nigeria are credit constrained. Thus, access to credit is a sina qua non for achieving the sustainable development goal of sustainable food production and improving the welfare of the farming folks. This study assessed credit utilization among cassava farmers in Ogun state and its influence on farm profit. Emphasis was placed on the Ogun State Agricultural and Multi-purpose Credit Agency (OSAMCA). The multi-stage sampling technique was used to select 400 farmers for the study. Data collected with the use of questionnaire (388 found useful) were analyzed using descriptive statistics, gross margin and the Logit regression analyses. Inferences were drawn at 5% level of significance. Result showed that OSAMCA credit was the predominant source of credit available to respondents however, only 39% have benefited and up to 47% have not benefitted from any source of credit. Generally, most of the farmers confirmed their need of credit especially for re-capitalization or expansion. The t-test result for difference in mean average gross margin per hectare (proxy for profitability) for credit and non-credit beneficiaries showed that access to credit positively and significantly impacted agribusiness enterprise. Lack of collateral (compulsory security savings/ down payment) was reported by 74% of the farmers as the limitation for sourcing for credit. Regression result showed that the coefficients of hired labour, membership of cooperatives, awareness of credit sources, past loan size and ability to meet down payment arrangement were positive and significant thus increase in these variables will increase probability of access to credit (OSAMCA). Furthermore, coefficient of distance to the credit source was negative and significant indicating that proximity of farmers to credit source will enhance access. It is recommended that efforts directed towards enhancing the factors that increases farmers' access to credit is pertinent.

Keywords: Credit policy, farmers, cassava enterprise, Ogun state
JEL Classification: E51, N27, Q18

1. Introduction

In Nigeria and most parts of Sub-Saharan Africa, expanded crop production has been due to expanded cultivation of large farm areas for staple crops than from yield increases (Isitor,

Babalola and Obaniyi, 2014; Phillip *et al.*, 2008). This directly implies that farmers need to spend more on needed resources for expansion which are predominantly land and labour. Unfortunately many of the farmers are poor and except those assisted financially, many have resigned to subsistence farming. Financing agriculture involves lending money to farmers to stimulate the productivity of the limited farm resources (Muniraj, 1987; Adegeye and Dittoh, 1985; Osuntokun, 1992). Access to credit is expected to enhance farming households' ability to acquire capital intensive technology and assets to facilitate and improve farming activities resulting in greater capacity to invest in sustainable cultivation of high yielding crops and larger farm holdings (Nwankwo, 1983; Palmer and Ojo, 1983; Feder *et al*., 1985; Emereole, 1995; Nwaru, 2004; Nwaru and Onuoha, 2010; Ammani, 2012). Isitor *et al.* (2014), citing Enweze (2006) posited that agricultural production needs to rise at least by some six percent per annum for Africa to be able to meet its food needs and for African agriculture to become a real motor for economic development.

Nigerian agriculture is abysmally under-financed. Current available statistics shows that agriculture accounts for about 40 percent of the GDP, yet it receives only one percent of total commercial bank loans (GAIN, 2011). This is significantly below the level of other developing countries, e.g. Kenya and Brazil which reportedly registers 6 percent and 18 respectively.

A key focus of the current government in Nigeria is to broaden the economic base of the country through revamping of the agriculture sector. Many credit support schemes especially at state level have been initiated to corroborate the functions of the cooperatives, commercial and agricultural banks. Example of such is the Ogun State Agricultural and Multi-purpose Credit Agency (OSAMCA). It is anticipated that this will encourage large scale food production, enhance food security, alleviate poverty and generate employment within the nation. However, only about 11 percent of the rural farmers source credit from these formal sources (World Bank, 2000; Ammani, 2012). Poor awareness and access to credit coupled with poor fund utilization and repayments have been posited as the major factors militating against the success of existing credit schemes (Isitor *et al*., 2014; Binswanger *et al*, 1993; Agbor, 2004; Phillip *et al*, 2008).The need for a more robust arrangement for the credit support schemes and facilitating farmers' access to credit is pertinent and cannot be overemphasized. In modern farming business in Nigeria, beyond poor access, efficient utilization of credit is fast becoming a major factor limiting farm productivity (Ololade and Olagunju, 2013). This study assessed the determinants of credit (OSAMCA) utilization among cassava farmers and its influence on farm income.

Cassava has been identified as the most important root crop cultivated and consumed in tropical Africa (Akerele, 2016). With high capacity for production and huge demand for cassava and its products, the potential of the cassava enterprise to sustainably bridge the gap in food security and alleviate poverty in Nigeria, especially in the south western region abounds (Clair and Etukudo, 2000). The Food and Agricultural Organization (FAO, 2002, 2004) has identified Nigeria as having the potential to be among or even the world leading producer of cassava if farmers can be assisted to increase production scale and efficiency. Enhancing farmers' access to loanable funds is expected to facilitate the achievement of this objective and make the cassava enterprise a competitive and profitable venture. Isitor *et al*. (2014) posited that an increase in credit to agriculture will lead to increase food production and farmers' income because as the demand for credit increases, farmers' output also increases, resulting in improvement in their well beings.

1.1 Agricultural Credit Policy in Nigeria

The Federal and State governments in Nigeria have recognized that for sustainable growth and development the financial empowerment of the rural areas is vital, being the repository of the predominantly poor in society. If this growth strategy is adopted and the capabilities of this large segment of the people is sufficiently stimulated and sustained, then positive multipliers will be felt throughout the economy. To give effect to these aspirations various policies have been instituted over time by the Federal Government to improve agricultural production capabilities, to enhance their standard of living and to put the sector in the front burner of Government's development strategy. Some of the institutions and schemes put together for this purpose are the National Accelerated Food Production Programme (NAFPP), FADAMA projects, Agricultural Credit Guarantee Scheme (ACGS), Bank of Agriculture, Agricultural Cooperative Banks etc. However, according to Idachaba (2004), many of these projects and institutions have not been able to bring about the expected transformation and facilitate sustainable food production in the sector especially among small and medium scale arable farmers. The corroborate the efforts of the Federal Government, each state government in the federation has set up a public sector credit agency in order to meet the need of the people. In Ogun state, the Ogun State Agricultural and Multipurpose Credit Agency (OSAMCA) was created in 2004 to provide micro-credit for both agricultural and non-agricultural small and medium scale businesses within the state. The objectives for which OSAMCA was established are to provide low interest credit for farmers and agro-entrepreneurs, meet loan demands, serve as a growth strategy for the development of rural areas of the state, generate employment, reduce rural-urban migration, fulfill the citizens' aspiration for livelihood security, enhance the income level of farmers, and make farming attractive.

Two types of loans are given; the short term loan to match the length of the production cycle which in most cases spans between three and twelve months (here co-operatives and corporate organizations get more than individual applicants). Medium term loans are for the acquisition of assets/equipment in newly established farm estates in the state. Expectations from OSAMCA is that the proposed beneficiaries are to provide security savings/ down payment of up to10 percent of the volume of loan to be granted as a form of collateral, provide two guarantors and insure his farm with the Nigerian Agricultural Insurance Corporation (NAIC).

With the recent increase in the interest of the government to develop the agricultural sector as a way to economic recovery and growth, the demand for agricultural credit by farmers has also increased in order to alleviate the capital constraints and facilitate increase in productivity. This paper assessed the influence of cassava farmers' utilization of OSAMCA credit on farm profit.

2.Theoretical Framework

Generally, the theoretical framework underpinning this study is the theory of institutional economics which is an important part of theoretical welfare economics. The theoretical arguments regarding the role of finance in poverty alleviation are broadly classified into two main views, the Development School and the Banking School (Lipton and Sepp, 2009). The Development School views that lack of credit is a major constraint in taking up productive activities thus there is the need to steer rural credit into productive projects and into the hands of the rural poor which in most developing Africa like Nigeria, are the farming folks. According to the proponents of this school of thought, credit support is expected to boost

productivity and income. Arthur Lewis in his "Theory of Economic Growth" (1995) argues that the poor in rural areas need much more capital than they save in order to sustainably invest in productive activities. The excess in demand of capital can be met with the help of credit support by the financial institutions.

The proponents of the Banking School like Dale Adams, Von Pischke, Douglas Graham and Gordon Donald however, argued that credit does not play a leading role but a facilitating role in the process of economic development. Some of the problems that the scholars identified with the traditional credit model are, limited out reach of financial institutions with attendant bureaucratic bottlenecks, information asymmetry which further causes moral hazard and adverse selection problems in the screening process. This often results in poor loan repayment. Von Pischke, Adam and Gordon (1983) observed that the informal credit markets operated widely in rural areas to ameliorate the challenge earlier highlighted, however, high interest rates of money lenders hindered the process of investing in productive income activities by the rural poor. According to the banking school, the credit lending model which provides micro-credit at subsidized interest rate and reduced transaction costs for both lender and borrower can overcome fundamental barriers of financial intermediation and increase credit services to poor in a more sustainable manner. The objective of the OSAMCA credit arrangement for the farming folks in Ogun state aligns with this model.

The demand for credit may reflect the response to credit supply. The assumption of a perfect capital market implies that credit supply and demand are easily derivable from the utility maximization model, i.e. given an unconstraint loan supply at a certain interest rate, loan demand is determined at the point of tangency between the utility curves of the borrower and the lender, Elhirake et.al (1998). Several recent agrarian household models suggest that farm credit is not only necessitated by the limitations of self-finance but also by the uncertainty about the level of output and the time-lag between inputs and output extending by implication to the determinant and nature of farm credit supply and demand.

Nagarajan, Meyer and Hushak (1995) noted that estimates of loan demand may be bias because of the use of models that do not correct for selectivity bias and/or use of data that do not account for the existence of multiple loans. Therefore, estimate of loan demand must incorporate methods that adequately correct for data censoring due to the existence of both borrowers and non-borrowers in the sample, credit rationing, and multiple loans borrowed from several types of lenders offering different types of contracts.

A farmer is classified as liquidity constraint if he or she already had a loan but expresses a wish to borrow more at the current interest rate. Or he or she was unable to obtain loan because the request for a loan was turned down or there was no access to formal or informal source.

The credit demand function can be interpreted from the borrowers' participation decision, i.e., the decision to borrow, and the decision regarding the sector to borrow from. Their decision or choice of credit will depend, among other things on the borrowers' economic endowment and opportunities, Elhiriaka and Ahmed (1998).

3. Methodology

The study was carried out in Ogun State of Nigeria. Ogun State is located in the South-Western part of Nigeria. It is bounded in the west by the Republic of Benin, in the east by Ondo State, in the south by Lagos State and in the north by Osun and Oyo States. It has a land area of about 16,762 square kilometers and a population of about 3,728,098 (NBS, 2007), which is approximately 2.70 percent of Nigeria's population. Farming is the major

occupation of the people, particularly those living in the rural areas. The climate favours the production of arable crops such as maize, yam, cassava, rice, cocoyam and tree crops like kola nuts, cashew and oil-palm. There are twenty local government areas in the state.

Primary data were collected and used for analysis in this study. The data collection employed the use of well-structured questionnaire for gathering information from arable farmers. The multi-stage sampling method was used to select the respondents. Ten local governments were eventually used for the study. Two villages were randomly selected from each of the selected local government areas and twenty farmers sampled from each, were selected based on their cultivation of arable crops. Thus, a total of four hundred farmers were originally selected for the study but 388 responded by filling their questionnaires appropriately. Data gathered were analyzed using descriptive statistics, gross margin analysis and the Logit regression model. Inferences were drawn at 5% level of significance.

Model specification

The choice of the logit model is because the dependent variable is a dummy. Following Gujarati (1998), the model is specified as follows:

$$\text{Ln}\ (P_i/(1-P_i) = ß_0 + ß_1X_1 + \ldots + ß_{17}X_{17} + e_i \quad (1)$$

Where:

P_i = probability of farmer's decision to access and utilize OSAMCA credit for production

$1-P_i$ = probability of not utilizing OSAMCA credit for production

$ß_0$ = Intercept

$ß_i$ (1,2,3...,17) = Regression coefficients,

X_i (1,2,3...,17) = Independent variables, and

e_i = error term.

The independent variables specified as factors influencing farmer's decision to access and utilize OSAMCA credit for production and are defined below:

X_1 = Gender (Dummy: 1=male, 0=female)

X_2 = Age (years)

X_3 = Household size

X_4 = Education (Dummy: 1 ≥ sec. edu., 0 < sec. edu)

X_5 = Farming experience (years)

X_6 = Cultivation of other crops besides cassava (Dummy: 1=yes, 0=no)

X_7 = Farm size (Ha)

X_8 = Predominant Labor type (Dummy: 1=Hired, 0=family)

X_9 = Labor Cost (₦)

X_{10} = Farm Income (₦)

X_{11} = Other Income (₦)

X_{12} = Cooperative membership (Yes= 1, No=0)

X_{13} = Awareness of OSAMCA credit source (Dummy: 1=yes, 0=no)

X_{14} = Access to other credit sources (Dummy: 1=yes, 0=no)

X_{15} = Distance to credit source (km)

X_{16} = Access to extension service (Dummy: 1=Yes, 0=No)

X_{17} = Ability to meet the down payment arrangement (Dummy: 1=Yes, 0=No)

The gross margin (Budgetary) Analysis

Gross margin (GM) is the deduction of total variable cost (TVC) from total revenue (TR).

$$GM = TR - TVC \quad (2)$$

The gross margin and average gross margin per hectare were computed from the value of cropping activities and associated costs involved. The value of crop produced for the season under study was obtained from the product of output produced and going average market price. In the same vein, the cost of production was obtained from quantities of inputs used and unit price of inputs for the season under investigation. This was done for both beneficiaries and non- beneficiaries of OSAMCA.

4. Result and Discussion

Results of descriptive statistics

Results in Table 1 shows that the majority of the farmers in the study area are above 40 years old (63%) and they are mostly male (973%). The predominance of male farmers is an indication that agribusiness is generally labour intensive and still a strenuous enterprise in Nigeria (Babalola, 2014). Furthermore, the tedious and time-consuming nature of the cultural practices involved in arable cropping discourages most prospective female entrances into the business. The majority of the respondents (63%) had up to secondary education which shows considerable literacy level among the farmers in the study area. This is expected to positively influence their adoption of innovations and utilization of credit (Siyanbola, 2012). Average household size was greater than 6 members. This is above the national average of approximately 5 (Babalola, 2014; NBS, 2009). Household size is expected to vary directly with expenditure (Babalola and Babalola, 2013; Gebremedehin and Scott, 2003), thus, with increasing household size, the more likely that farmers will divert funds originally meant for farm production to cater for domestic household needs. In corroboration with good literacy level, farmers' experience in farming is expected to increase quality and quantity of output by reducing postharvest losses and increase the use of technology. The results showed that, averagely, farmers have up to 11 years farming experience which is relatively long enough for them to have gained mastery of the enterprise having passed through more than ten production cycles. Although, about 64 percent of the farmers were aware of where to source for agricultural credit and 53 percent have actually sourced for credit, some 36 percent still lack awareness, up to 47 percent have not benefited from any agricultural credit and 86 percent reported that they are credit constrained. Furthermore, result showed that OSAMCA credit was the predominant source of credit available to respondents however, only 39% have benefited. Some 48 percent of the farmers do not participate in cooperative despite its huge benefits especially as a channel for accessing credit support even from OSAMCA. The importance of cooperatives in providing access to credit for farmers has been detailed in past

studies (Ololade and Olagunju, 2013; Nto *et al*., 2011; Ayinde *et al*., 2008). The major occupation of most (59%) of the respondents was farming. Average farm size was 2.68 hectares.

Most of the farmers (60%) reported that they got to know about the credit sources through radio programme (Table 2). The expected effort of the extension agents in providing farmers with useful information relating to agricultural financing and fund management to facilitate commercial production appears to be poor in the study area with only 22 percent of the farmers claiming to have sourced information through extension service.

Table 1: Farmers' personal characteristics

Characteristics	Mean (±SD)	Frequency(n= 388)	Percentage (%)
Gender:			
Male		283	73
Female		105	27
Household size	6.68 (±2.51)		
Age (years):	45 (±9.99)		
≤30		27	7
31-40		116	30
41-50		140	36
>50		105	27
Educational level:			
None		54	14
Below secondary		89	23
Secondary		179	46
Above secondary		66	17
Farming Experience (years)	10.5 (±6.10)		
farm size	1.65 (±0.44)		
Belong to Cooperative		202	52
Awareness of credit source		248	64
Sourced/ used credit		206	53
OSAMCA		151	39
Credit constrained		334	86
Major source of income is from the farm		244	63
Major occupation:			
Trading		86	22
Farming		229	59
White collar job/civil service		74	19

Source: Computed from Field survey (2016)

Table 2: Distribution of farmers by media of information of credit sources

Sources of information	†**Freq**	**%**
Radio	233	60
Newspaper	163	42
Extension agent	86	22
Research centre	19	5
Cooperatives	202	52
Friends/Relatives	136	35

†existence of multiple response

Source: Computed from Field survey (2016)

Table 3: Distribution of farmers by mode of utilization of credit if and when accessed

Mode of utilization (n=206)	†**Freq**	**%**
To start a new farming business	47	23
To expand existing farming business	171	83
To fund the regular cultural practices	78	38

†existence of multiple response

Source: Computed from Field survey (2016)

Table 4: Distribution of OSAMCA beneficiaries by their experience with credit

	†**Freq (n = 151)**	**%**
Past application for loan	92	61
Got credit as at when needed	38	25
Paid back as expected	36	24
Repayment mode:		
Installment	65	43
Full payment	18	12
Present application for loan:	91	60
Qualify for loan (n = 91)	52	57
Loan granted (n = 91)	48	53
Major constraints:		
Not getting amount applied for	91	60
not able to meet collateral requirement	112	74
Fear of inability to pay back	36	24
Distance of loan source	73	48
Bureaucratic bottleneck	97	64

†existence of multiple response

Source: Computed from Field survey (2016)

Results in Table 3 shows that 83 percent of the farmers desired or utilized the loan given to expand their existing farm business. The results also showed that all the beneficiaries utilized the loan given for agricultural purposes therefore, with more funding commercialization will be encouraged among the farmers. Previous experience of the farmers as recorded in Table 4 showed that 61 percent had applied for loan some times in the past but only 25 percent got the loan as at when needed and only 24 percent paid back as expected despite the fact that they could pay back by installment.

Out of the 91 farmers that have currently applied for loan, 52 qualified and 48 were granted. The fact that farmers were not granted the amount of loan applied for and as at when needed (as reported by 60% of farmers), given that agriculture is a time sensitive enterprise, may be responsible for poor repayment response. The inability to furnish required collaterals (down payment) for loan acquisition was expressed as constraint to OSAMCA credit acquisition by most of the farmers (74%). This result is consistent with the findings of Philip *et al.* (2008).

Result in Table shows that the average gross margin per hectare (proxy for profitability) for OSAMCA beneficiaries (₦ 120,000) was significantly higher than for the non-beneficiaries (₦ 61,398) judging by the t-test. Estimated average farm income per season per farmer was ₦ 168,699 (approx. $467). If farming households (average 6 members) without other source of income were to live solely on the farm income for a minimum cropping season of 9 months, individual member of the household will be living below poverty line of $1 per day (approx $0.3). Efforts to increase farm income therefore are germane in the study area.

Table 5: Gross Margin Analysis for Cassava Production

	Total Variable Cost (TVC)	**Total revenue (TR)**	**Total Gross Margin TGM=TR-TVC**	**Average Gross Margin/ farmer**	**Average GM/Ha**
	₦	₦	₦	₦	₦
OSAMCA Beneficiaries (n = 151) *($\bar{x}$=2.3Ha)*	23,400,000	65,076,000	41,676,000	276,000	120,000
Non-Beneficiaries (n= 237) *($\bar{x}$=1 Ha)*	10,478,725	25,030,051	14,551,326	61,398	61,398

Calculated t-test for difference in mean of Average GM/Ha for OSAMCA beneficiaries and Non-beneficiaries = 2.05; Tabulated t at 5% level of significance = 1.96

Factors influencing OSAMCA credit access

The data on the determinants of farmers' access to OSAMCA credit were analyzed, using the logit regression model. A number of variables were hypothesized to determine the farmers' decision to access credit in the study area such as socio-economic, farm-level, institutional, awareness variables. The result of the logit model analysis is presented in Table 6. The significance of the diagnostic statistics (chi-squared and log-likelihood values) shows a good fit for the model.

The result showed that the significant and positive determinants of farmers' decision to access OSAMCA credit include use of hired labour ($p< 0.01$), participation in cooperatives ($p< 0.05$), awareness of OSAMCA credit source ($p< 0.05$), past loan size ($p< 0.01$) and ability to meet collateral arrangement ($p< 0.01$). In other words, enhancing these factors enhances farmers' decision to use the OSAMCA credit. Labour costs constitute a significant portion of the cost of production (Ammani, 2012) therefore, as farmers increase scale of production, more funds will be required to hire labour.

Table 6: Determinants of credit utilization

Variables	Beta Coeff.	t-value
Gender (Dummy: 1=male, 0=female)	0.626	1.665
Age (years)	-0.059	0.128
Household Size	-0.878*	1.986
Education (Dummy: 1=sec.more than sec. edu., 0=less than)	0.158	1.738
Farming experience (years)	-0.132	0.141
Cultivation of other crops besides cassava (Dummy: 1=yes, 0=no)	3.077	1.579
Farm size (Ha)	0.797	1.517
Labor type (Dummy: 1=Hired, 0=family)	5.062**	2.822
Labor Cost (₦)	-0.006	0.017
Farm Income (₦)	-0.004	0.024
Other Income (₦)	0.273	1.797
Cooperative participation (Dummy: 1=yes, 0=no)	0.44**	2.778
Awareness (Dummy: 1=yes, 0=no)	4.230*	1.992
Past Loan size (₦)	0.065**	3.027
Access to extension (Dummy: 1=yes, 0=no)	0.173	0.797
Ability to do down payment (Dummy: 1=yes, 0=no)	5.530**	2.846
Loan Interest (%)	0.100	0.192
Distance (km)	-1.738**	2.726
Constant	-4.394	7.458

*Sig at 5%, **Sig and 1%; Nagelkerke R^2 = 0.847; -2 Log likelihood = 29.163**; Chi-square= 87.489**

Apart from lending out loans to members from members' contributions, the activities of the cooperative societies in helping members secure loan from lending institutions like OSAMCA is well known (Babalola, 2014; Ololade and Olagunju, 2013; Siyanbola, 2012). However, many of the farmers still do not participate in cooperative activities (Table 1). Furthermore, significant and negative determinants of farmers' decision to access credit include size of their household ($p< 0.05$) and distance away from the credit source ($p< 0.05$). Conversely, reducing these factors will enhance farmers' decision to use credit. The negative influence of large households may be as a result of the action of the credit lending institutions setting a benchmark for the household size of beneficiaries so as to curtail loan diversions. Furthermore, farmers with large households often source farm labour from the households thus saving the huge amount that would have been spent on hired labour.

5. Conclusion and Recommendations

This study assessed OSAMCA credit access and use among arable crop farmers in Ogun state, Nigeria and its influence on farm income. Major occupation among respondents was farming however, farm income was generally low. The study showed that utilization of credit increased farmers' income or enterprise profitability. Farmers who sourced for credit did so to expand existing farm enterprise however, Loan repayment was poor among the credit beneficiaries. The need for down payment and inability to get the amount desired were reported as major limitations to accessing credit among the farmers. factors determining farmers' decision to use credit included size of household, use of hired labour, membership of cooperatives, awareness of credit sources, past loan size, possession of collateral and proximity to the credit lending institution.

Based on the research findings, it is recommended that government efforts should be directed towards policies arrangement to better enhance factors that increase farmers' decision to use agricultural credit. The extension agency, cooperative societies and research institutes are well appropriate organs for educating and disseminating agro-allied information and raising

awareness. Policy arrangement to enable poor farmers, without appropriate collateral, to access funds for farming activities should be look into.

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