Impact of Farmers Development Union (FADU) Loan Scheme on Income Generation of Farm Households in Oyo State of Nigeria

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Abstract
The impact of a Non-Governmental Organisation's (NGO)-based soft loan scheme on the income generation and expenditure patterns of farmers was investigated in Oyo State of Nigeria. The study was carried out in 13 Local Government Areas (LGAs) of the state. Data were collected from 151 farmers consisting of 81 NGO Credit Beneficiaries and 70 Non-Beneficiaries. Chow-test was used to determine the difference in income generation and expenditure patterns between beneficiaries and non-beneficiaries. Regression results showed income to be statistically significant for beneficiaries ($P<0.05$) and for non-beneficiaries ($P<0.01$). Credit was found to be negatively significant on farmers expenditures ($P<0.1$) for beneficiaries. The Chow-test value of F-Calculated was 0.123 and F-tabulated was 6.610. This showed that there was no significant difference in the expenditure patterns of both beneficiaries and non-beneficiaries. The study concluded that the size of credit granted to beneficiaries fall below the amount being demanded for by the farmers hence there was no impact of the NGO microcredit scheme on the income generation and expenditure patterns of farmers in the area investigated. There is therefore the need to expand the size of the credit/soft loans to the farmers by building linkages with the formal financial institutions.

Key words: Farmers, NGOs, Income, Beneficiaries, Non-beneficiaries, Nigeria

INTRODUCTION

The use of credit to finance agricultural industries is as old as mankind. Several studies which assessed the impact of credit have been done. Farm credit is usually a necessity though not sufficient condition for an increase in agricultural productivity and income. This is especially so for the small scale farmers who have

neither savings nor ready access to institutional credits (World Bank, 1995). Lack of access to credit has long been recognized by many researchers as a constraint to household expenditure in Nigeria especially with regards to the adoption of new technology and the use of improved inputs.

When government and donors alike started focusing attention on credit as a means of fostering rural development and improving the level of household income and welfare, a variety of specialized, mostly government owned institutions were created. The overall experience with these types of institutions were however, quite unsatisfactory. Consequently, the number of micro-credit institutions and practitioners providing financial and non-financial services to the poor in Nigeria and globally grew considerably. The formulation of NGOs is usually prompted by the desire to address identified problems or meet some felt-needs (Ogundele *et al.*, 2004). Micro enterprise development supported by integrated micro-finance and skill improving programme (as advocated by NGOs has dramatically transformed poor people's life in nearly every country of the world (Okunmadewa, 1999). NGOs have since contributed largely to agricultural production and development of the rural poor through provision of micro-credit and financial services including savings mobilization.

In the USA, the funding requirements of SMEs are given special consideration by both the formal funding institutions (Banks, Micro-credit Agencies and Venture Capitalists) and the non-formal funding agencies like the donors and specialised NGOs (Oyefuga *et al.*, 2008). Fund mobilizing and credit dealing, perhaps represent activities for which groups in Nigeria traditional societies have been most visible. In almost every community of the various ethnic groups are variously known as "Esusu" or Isusu" among communities in Southern Nigeria, and as "Adashi", among communities in Northern Nigeria.

These groups apply the same underlying principles as the modern Micro-Finance NGOs, that is, they pool the meagre resources of the people together and from the pool grant affordable credit facilities to desiring and deserving members (Ogundipe, 1999). Successful traders of the earliest times owed much of their prosperity to the support of these traditional micro-finance groups (CBN, 2000). It is note-worthy that these saving associations have survived the advent of modern

financial services. Majority of the people especially the rural dwellers, raise capital from "Esusu" or "Adashi" associations. Notable modern micro-finance NGOs build on some features of these traditional saving clubs (Okunade, 1999).

In view of the above scenario, this study assesses the impact of a NGO; Famers' Development Union (FADU) in Oyo State. The choice of Oyo state was informed by the wide range of NGOs micro-credit scheme beneficiaries in the state (Abraham, 2000) The impact of micro-credit on welfare of sampled farmers was measured, compared with that of non-beneficiaries with a view to determining and comparing the household income and expenditure patterns of both beneficiaries and non-beneficiaries and making conclusion based on the result of the study.

METHODOLOGY

The study was conducted in Oyo state of Nigeria with the adoption of a multi-stage sampling method. The first stage was to divide the state into 4 clusters (Agricultural Development Programme (ADP) Zones). One cluster (Ibadan/Ibarapa ADP zone) was purposively selected for the study. The choice of the Zone was informed by the wide range of NGOs micro-credit scheme beneficiaries in the area; and most NGOs establishment in the state are located within the area (Akinola, 1992 and 1999). Ibadan/Ibarapa ADP Zone is made up of 13 LGAs with respondents chosen at random from randomly selected towns and villages in each of the selected LGAs. Data were collected through the administration of a well structured questionnaire from 151 farmers consisting of 81 the NGO Credit Beneficiaries (NGOCB) and 70 Non-Beneficiaries (Non-NGOs CB). The data were first collected in the year 2002 and later upgraded in the year 2008. Personal interviews were also conducted with the NGOs within the jurisdiction of the study to extract vital information on the mode of operations of FADU. The interviews provided deeper insight into the operation of the scheme, and the information so obtained was a useful check for the validity and reliability of the data obtained from the respondents. It was found that there was no significant variation between the responses in the questionnaire and interview. Also, the peculiar experiences and observations of some of the respondents were taken into consideration in drawing the conclusion and making recommendations.

Analytical Techniques and Model Specification

Three analytical techniques used include descriptive statistics which involved the use of percentages, frequency distributions and tabular presentation of data obtained on variables in the study. Multiple regression analysis was used to determine the effect of the NGOs-based soft loans scheme on the income generation and expenditure patterns of farmers. The model was specified as:

(a) Factors affecting household expenditure of NGOsCB

$$Y_1 = f(X_1, X_2, X_3, D_1 D_2, \varepsilon_t)$$

Where,

Y_1 = Farmer's household expenditure level (per caput)

X_1 = Farmer's household credit/ loan (pooled)

X_2 = Farmer's household income (pooled)

X_3 = Farmer's household size

D_1 = Farmer's household head educational level: Informal education = 0, Formal education = 1

D_2 = Farmer's household head sex: Male = 0, Female = 1

ε_t = error term

(b) Factors affecting household expenditure of Non-NGOsCB

$$Y_2 = f(X_2, X_3, D_1 D_2, \varepsilon_t)$$

Where,

Y_2 = Household expenditure level (per caput)

X_2 = Farmer's household income (pooled)

X_3 = Farmer's household size

D_1 = Farmer's household head educational level: Informal education = 0, Formal education = 1

D_2 = Farmer's household head sex: Male = 0, Female =1

ε_t = error term

(c) Factors affecting household expenditure of all respondents (Pooled)

$$Y_3 = f(X_2, X_3, D_1 D_2, D_3, \varepsilon_t)$$

Where,

Y_3 = Farmer's household expenditure level (per caput)

X_2 = Farmer's household income (pooled)

X_3 = Farmer's household size

D_1 = Farmer's household head educational level: Informal education = 0, Formal education = 1

D_2 = Farmer's household head sex: Male = 0, Female = 1

D_3 = NGO-based micro-credit scheme benefits: on-beneficiaries = 0, Beneficiaries = 1

ε_t = error term

Chow-test was used to test for the significance of the difference between the estimates of the two samples.

This is represented by:

$$F = \frac{R_{SST}-(R_{SSB+}R_{SSN})/K}{(R_{SSB+}R_{SSN})B+N-2K}$$

Where,

R_{SST} = Residual sum of square for pooled sample

R_{SSB} = Residual sum of square for NGOCB sampled

R_{SSN} = Residual sum of square for Non-NGOCB

B = Number of NGOCB sampled

N = Number of Non-NGOCB sampled

T = Total Number sampled

K = Number of parameters

B+N-2K = Degree of freedom.

If the computed F is larger than the tabulated F (at 1 percent or 5 percent degree of freedom), there is significant difference in the performance between the NGOCB and Non-NGOCB. If the reverse is the case, then there is no significant difference. This was used to determine the impact of NGOs micro-credit scheme on the expenditure level. For the purpose of this study, two functional regression forms were used-Linear regression analysis and semi-log analysis.

RESULTS AND DISCUSSION

As shown in Table 1, among the 81 respondents of 151 respondents (farmers) that obtained credits from NGOs, the credit demand ranges between ₦20,000 and ₦300,000 which is an indication that majority of the farmers' population consisted of low and medium income earners and that the respondents are aware of the ceiling. The table shows that majority of the credit demand falls within the range of ₦100,000 - ₦199,000 while the majority of the credit granted was within the same range of ₦100,000-₦199, 000 per farmer's household per annum. This may likely be adduced to the fact that the respondents fulfilled their own part of obligation in terms of full payment of the previous credit/loan granted by the NGOs. More loan demands were also made within the ranges of ₦50,000-₦99,000. No credit granted was made within the ranges of ₦300,000 or above which is likely due to the credit limitations encountering by the FADU.

Table 1: Loan Beneficiaries by the Amounts of Credit Demanded and Granted by the FADU

Credit Size Demanded (₦)	Percentage	Credit Size Granted (₦)	Percentage
20,000 – 49,000	6.17	20,000 – 49,000	8.64
50,000 – 99,000	20.99	50,000 – 99,000	33.33
100,000 – 199,000	54.32	100,000 – 199,000	46.92
200,000 – 299,000	14.82	200,000 – 299,000	11.11
300,000 and above	3.70	300,000 and above	-
Total	**100**	**Total**	**100**

Source: Research Survey, 2008

The lead semi-log equations of the analysis for NGOCB, Non-NGOCB and Pooled NGOCB and Non-NGOCB are shown in Tables 2, 3 and 4 respectively.

Beneficiaries (NGOCB)
Lead Equation

$Y = -183860 - 2669.61X_1^{***} +$
$(-1.070) \quad (-0.44)$
$31293X_2^{**} - 60552X_2^{*} -$
$(0.256) \quad (3.063)$
$4467.5D_1^{***} - 15372D_2^{**}$
$(0.235) \quad (0.899)$

$R^2 = 0.29$, Adjusted $R^2 = 0.23$, F-cal = 16.68, Significant F = 0.000, Durbin Watson = 1.82.* values in parenthesis are the t-values.

The value for $r^2 = 0.29$ implies that the explanatory variables included in the model are able to explain 29% of the variability in the household expenditure per capital in Oyo State. The F-test showed the significance for the overall model at 1% level. The Durbin-Watson of 1.82 showed the absence of auto-correlation. It is interesting to note the signs and sizes of the coefficients of each variable. Contrary to *a priori* expectation however, the coefficient of the household credit and loan (X_1) is negative. This means that as credit and loan increases, the farmer's expenditure per capital decreases showing negative impacts on household welfare in Oyo State. This may be due to the fact that an average of ₦74774.81 credit/loan or 24.98% of an average of ₦299382.72 level of expenditure per farmer's household per annum for NGOCB is too small to make positive impacts on the household expenditure level.

The household income (X_2) however, was positively related to the amount of household expenditure per capital in

conformity to apiori expectations. This indicates that as the farmers' household income increases, the quality of their expenditure improves. The negative sign of the coefficient of education of the farmers' house-hold head as determinant of household expenditure for NGOCB conformed to *a priori* expectation. This indicates that the education level of the beneficiaries has no positive impacts on the welfare levels as most of the beneficiaries are either with low education level or medium level of education. The negative sign of the coefficient of the farmers' household head sex (D_2) also confirmed with economic theory and apiori expectation because the expenditure of the household is not a function of the sex of the household head. The negative sign of the coefficient of household size (X_3) is conformed to apiori expectation that as the household size increases, the per capital household expenditure decreases.

Non-beneficiaries (Non-NGOCB). Lead Equation

$Y = 313100 + 253470X_2$*
(2.959) (3.885)
$+164090X_3$**$+23275D_1$*** -
(2.541) (1.224)
$44900D_2$***
(-0.1.33)
$R^2 = 0.38$, Adjusted $R^2 = 0.35$
Fcal = 12.74,
Significant F = 0.01549,
Durbin Watson = 1.86. *values in parenthesis are the t-values.

The value of $R^2 = 0.38$ shows that the explanatory variables included in the model were able to explain 38% of the variability in the farmers' house-hold expenditure per capital in Oyo State. The F-test showed the significance for the overall model at 1% level. The Durbin-Watson value of 1.86 showed an absence of auto correlation. In conformity to the apiori expectation the coefficient of the farmers' household income (X_2) is positive. This means that the income level of a household has a direct relationship on the per capital house-hold expenditure level.

It is surprising however, that the coefficient of household size (X_3) is positive which is contrary to apiori expectation and economic theory. This showed an inverse relationship between the household size and the per capital farmers' household expenditure. This may be caused by the fact that most of the Non-NGOCB has higher income level and higher educational level compared to the Beneficiaries which gave them the opportunity for earning higher income.

Table 2: Regression Analysis Result of the Impacts of FADU Micro-Credit Scheme on Household Welfare (Beneficiaries)

Functional Forms	Dependents Variables	Constant	X_1	X_2	X_3	X_4	X_5	Durbin-Watson	R^2	Adj.R^2	F
Linear	Y	96919		0.07286*	-	7209.3***	-	1.99	0.25	0.186	18.073
		3.244	0.00466***	(-0.0305)	8035.1***	(2.038)	12405**				
			(-0.0202)		(-2.387)		(-0.379)				
Semi-Log	Y	-183860	-2669.6***	31293**	-60552*			1.92	0.29	0.231	16.681
		(-1.070)	(-0.44)	(0.256)	(3.063)	4467.5***	15375**				
						(0.235)	(0.899)				

Computed from Research Survey, 2008

Note: * t-value significant at 1 percent level
** t-value significant at 5 percent level
*** t-value significant at 10 percent level
Figures in parenthesis are t-ratio

Table 3: Regression Analysis Result of the Impacts of FADU Micro-Credit Scheme on Household Welfare (Non-Beneficiaries)

Functional Forms	Dependents Variables	Constant	X_2	X_3	X_4	X_5	Durbin-Watson	R^2	Adj.R^2	F
Linear	Y	-127240	0.58079*	44988**	57716***	-23272***	1.86	0.37	0.32	3.32
		(-0.668)	(0.1912)	(3.038)	(1.863)	(-0.203)				
Semi-Log	Y	-133100	25347*	164090**	23275***	-44900***	1.85	0.38	0.35	2.74
		(2.959)	(3.885)	(2.541)	(1.224)	(-0.133)				

Computed from Research Survey, 2008

Note: * t-value significant at 1 percent level
** t-value significant at 5 percent level
*** t-value significant at 10 percent level
Figures in parenthesis are t-ratio

Table 4: Regression Analysis Result of Data of Beneficiaries and Non-Beneficiaries (Pooled)

Functional Forms	Dependents Variables	Constant	X_2	X_3	X_4	X_5	X_6	Durbin-Watson	R^2	Adj.R^2	F
Linear	Y	89564	0.07077***	-	13601*	-	34.249***	1.89	0.49	0.47	14.92
		(2.668)	(0.021)	7229.5*	(-2.387)	6281.3***	(0.178)				
				(-1.863)		(-0.320)					
Semi-Log	Y	290670	34281***	42249**	12889***	-	-15375**	1.93	0.51	0.49	13.67
		(5.153)	(0.714)	(5.343)	(1.612)	5211.2***	(0.899)				
						(2.923)					

Computed from Research Survey, 2008

Note: * t-value significant at 1 percent level
** t-value significant at 5 percent level
*** t-value significant at 10 percent level
Figures in parenthesis are t-ratio

The positive sign of the coefficients of the level of education of farmers' household head (D_1) as determinant of the household expenditure per capital conformed to apiori expectation. Education reduces the chance of being poor (FOS, 1999). For instance, households headed by persons without education exhibited the highest poverty headcount ranging from 30.2 percent in 1980 to 72.6 percent in 1996. Evidence from Central Bank of Nigeria/World Bank Study (1999) also showed that education is crucial as it provides skills and abilities which allow households to secure productive and well-paying job. On the other hand, lack of education deprives the household the capacity to be gainfully engaged and raise productivity and income. The negative sign of the coefficient of the household head sex (D_2) also conformed to economic theory that the per capital household expenditure is not a function of the household head sex.

Pooled Beneficiaries and Non-Beneficiaries (NGOCB and Non-NGOCB).

Lead Equation

$Y = 290670 + 34218X_2^{***} - 42249X_3^{**}$
(5.153) (0.714) (5.343)
$+12889D_1^{***} - 5211.2D_2^{***} +$
(1.612) (2.923)
$38.576.2D_3^{***}$
(0.682)

$R^2 = 0.51$, Adjusted $R^2 = 0.49$, F-cal = 13.67, Significant F = 0.000, Durbin Watson = 1.93. *values in parenthesis are the t-values.

The value of $R^2 = 0.51$ indicates that the independent variables included in the model were able to explain 51% of the chance in the farmers' household welfare expenditure among respondents for this study. The F-test showed the significance for the overall model at 1% level. The Dubin-Watson value of 1.93 showed an absence of auto-correlation. The positive value of the coefficient of household income (X_2) conformed to apiori expectation. This showed a direct relationship between household income level and the farmers' per capital household expenditure. The negative coefficient of household size (X_3) conformed to economic theory. This denotes an inverse relationship between house-hold size and per capital household expenditure. The positive sign of the coefficients of the farmers' household head educational level (D_1) as determinant of the per capital household expenditure level conformed to apiori expectation. This indicates that household heads with high literate level have the tendency for higher and better per

capital expenditure as a result of higher income earnings. The negative sign of the value of the coefficient of farmers' household head sex (D_2) also conformed to apiori expectation. This indicates that the household head sex does not necessarily determine the per capital household expenditure level. The positive sign of the coefficients of pooled credit NGOCB and Non-NGOCB (D_3) confirmed with apiori expectation. This showed that the NGO-based micro-credit scheme has positive impact on the per capital expenditure of the household members.

The Chow-test result showed that the F-calculated (0.12) is lower than the F-tabulated (6.61); we can then confidently accept the null hypothesis at 5% degree of freedom. This shows that there is no significant difference in the per capital expenditure of both NGOCB and Non-NGOCB of the NGO-based micro-credit scheme in Oyo State. Hence, there is no significant difference between their household income and expenditure.

CONCLUSION AND RECOMMENDATIONS

This study analysed the activities, performance, problems and impacts of FADU on farmers' soft loans in Oyo State, south-western Nigeria with particular emphasis on the essence of micro-credit scheme as useful tool for farmers' income. The result of the research showed that the activities of the NGO like others elsewhere in Latin America and South East Asia are adaptive, well organised and coordinated. The result of the study showed an average of ₦74774.81 credit per annum per household with an average household size of 5 people or an average of ₦14954.96 credit per capital per annum. This may be too small to make an impact on the household per capital expenditure of the NGOCB and indeed their welfare.

The study recommended that the FADU should significantly expand the size of their programmes by building linkages with the formal financial institutions. This will enable them to expand their programmes and consequently expand the loan range that can make significant impact on the income and expenditure of the farmers. The key issues in the operations of NGOs should include credibility, accountability and transparency. The Federal Government of Nigeria could consider setting up a privatized Regulatory Body to oversee the registration and supervision of NGOs in Nigeria. This will certainly check the current free entry and exit and lend

credence to performing NGOs in the country. The NGOCB should also pay back the loan with interest as at when due to give room for many beneficiaries to benefit from the loan.

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