Effects of Community-Based Organizations' Membership on Food Poverty and Welfare Status of Rural Households in Ogun State, Nigeria

Awotide, D. O
Department of Agricultural Economics,
Olabisi Onabanjo University, Yewa Campus, Ayetoro, Ogun State, Nigeria
E-mail: w_awotide@yahoo.com

Abstract
The study established the relationship among community-based organizations (CBOs) membership, food poverty and welfare status of rural household in southwest Nigeria. A multistage sampling technique was used to select 240 respondents. The data were analyzed using poverty depth analysis (FGT class), Logit and ordinary least square regression models. CBOs membership and welfare status were modeled to form indices and incorporated into the regression analyses. Analysis of the poverty measures revealed that most rural dwellers are not poor in theory but are poor in reality. Also, CBO membership, food poverty and welfare status were found to be interwoven. CBO membership significantly determined the poverty level and the welfare status of the rural dwellers. Evidences provided in this study suggest that empowerment of local communities through self-owned and managed community-driven organizations would be a step in the right direction to alleviating poverty and improving the standard of living of the rural dwellers. Therefore, policies aimed at encouraging the establishment and sustenance of CBOs most especially professional associations, trade associations, and cooperative societies should be strongly considered. This is to allow them increase their access to productive capital as well as enjoy economies of scale.

Key words: Community-based organizations, Poverty, Welfare status, Logit, Nigeria.

INTRODUCTION

The core objectives of the proposed rural development sector strategy in Nigeria are to reduce poverty, increase rural productivity, reduce rural unemployment, improve rural and urban food security to promote competitiveness as a means of increasing investment in the rural economy and improving rural productive capacities (FMA&RD, 2001). The achievement of these objectives therefore requires specific interventions by all stakeholders in the rural development sector. One of the major stakeholders in this regard is community-based organizations CBOs. In Nigeria, CBOs are usually membership-based, are privately owned and at times in partnership with the other organizations, which are aimed at improving the livelihoods of rural dwellers that are mostly into agriculture. Each of these CBOs have distinct mandates to provide credit, afforda-

ble input supply, and enabling environment for sustainable livelihood among the rural communities in Nigeria.

CBOs are voluntary social groups that are formed for the purpose of protecting and promoting common interest of the people in the field of politics, economic, religion, social, recreation, and enjoyment, (Fadipe, 1970). Fadipe (1970) identified ten types of voluntary organizations, they are: mutual help associations, recreational types, tribal types, *Ogbonni* type, association of warriors, age group, hunters associations, occupational association, religious and cultural associations. Aguda (1998) categorized these organizations into four types based on their structure and functions. These are (1) mutual-benefits: members are the prime beneficiaries (2) business concern: the owners are the prime beneficiaries (3) service organization: service to clients; and (4) Commonwealth organizations: the public at large is the major beneficiary. It has been established that the most predominant type of voluntary organization in Nigeria are those relating to mutual help, community development associations, cooperative societies, and progressive unions. The organizations vary in size, number, scope, and possess certain characteristics.

The spirit of association shown through their dedicated participation in the development undertakings is documented in a number of studies (Lele, 1975; Akinbode, 1977; Adediji, 1990; Ajayi, 1996; and Alao, 1996). These studies showed that the spirit of self-help and development in the people of the rural areas can be exploited to bridge the imbalance in development, which is hitherto concentrated on township alone.

In recent years, CBOs have been found not to be only developmental in their activities but also involve in poverty alleviation. The roles of these membership-based organizations in providing necessary productive facilities for members, vis-à-vis poverty reduction among members have been widely reported (Baland and Platteau, 1996; Appendini and Marsh 1998; Marsh, 2000; and Gandhi, 2003).

Low levels of living often characterize developing nations. These are evident in the form of low income, food inadequacy, inadequate housing, poor health, low level or no education, high and rising levels of unemployment and underemployment. All these result in poverty or reduced welfare status. Literature is replete with facts that rural development goals such as poverty reduction, effective management of natural resources and improved livelihoods should be built upon local organizations

(Marsh, 2000 and Gandhi, 2003). In Nigeria, Yusuf (2000) observed that the worsening standard of living of people can be traced to a number of factors ranging from inadequate access to endowments such as education, healthcare facilities, good food, proper sanitation system, good water supply, poor infrastructural development, inadequate access to capital and land.

Others are credit facilities, lack of access to markets for the goods and services and inadequate or non-involvement of the poor in the planning of developmental programmes. The need to empirically relate the complex roles of these organizations either singly or in combination is a major challenge, which is lacking in the literature. As a result, this study aims to link the participation in CBOs to rural households' welfare status and their poverty levels.

The knowledge arising from this study would enhance the formulation and implementation of policies aimed at poverty reduction and improved household welfare through the formation of virile, empowered and sustainable CBOs. The integrated approach to this work i.e., the assessment of food poverty and welfare status through CBOs makes this work to be more appropriate in poverty reduction efforts. The research work is hoped to produce empirical evidence of the effects of CBOs membership on food poverty and welfare status of rural household with the aim of making theoretical generalizations about CBOs in the study areas.

METHODOLOGY

The Study Area

The study was conducted in Yewa North and Odeda Local Government Areas (LGAs) of Ogun State in the southwest geopolitical zone of Nigeria. The state lies within latitude 6^0 55'- 7^0 N and longitude $3^0$46' – 4^0 15^0 E, and has a human population of about 2, 338, 570 (National Population Census, 1991). The State occupies a total area of 16, 409.26 square kilometers. The average annual rainfall in the state ranges between 1250mm and 1800mm, with a bimodal rainfall distribution, which peaks in June and October, while the dry season stretches from mid November to mid March. The annual rainfall is between 1116-1969mm. The temperature is between 22.8 to 31.2°C with the annual average temperature at 27°C. The average relative humidity is between 54.5-95.3 percent (Weather Office, IITA, Ibadan). The state is blessed with fertile soil and rich land for livestock production (particularly cattle). There are also mineral deposits such as Bauxite, Kaolin, high quality clay soil, and limestone (Overview of Ogun

State, 2004). The occupation in the study areas is predominantly farming, especially in the areas of food and cash crops which includes maize, cassava, vegetables, yam, and cocoa among others.

Sampling procedure and sample size

A multistage sampling technique was used in this study. Two local government areas (LGAs) were randomly selected in Ogun State. Six villages were selected at random from a list of all the villages in the two LGAs obtained from each of the LGA headquarters office. From each village, 20 respondents were chosen using random sampling technique. In all, 240 questionnaires were distributed for data collection. However, 5 were rejected for inconsistencies of information.

Analytical technique

Welfare status and CBO index modeling

Welfare status is a measure of survival socioeconomic factors. In this study, a model is proposed. The model aggregates some measures of respondent's standard of living to serve as a proxy for welfare status. The welfare status of the respondents was modelled from some standard of living indicators such as ownership of cars, television set, radio set, refrigerator, video compact disc player, fan, house, type of housing, type of roofing materials used, type of toilet and type of floor cover. Most of these observations reflect a dichotomous variable, representing ownership or non-ownership; and users or nonusers. For a meaningful modeling, the variables were transformed to continuous scales using the uniform rank transform method as adopted by Odulaja and Kiros (1996) and Awotide (2004). This was performed by ranking the data for each variable in ascending order and then dividing by the total number. The mean of uniform ranks over all the standard of living indicators was then obtained for each sample to represent the welfare status. Hence, the welfare status, W, is distributed in the interval of (0, 1). CBO index for each household was obtained by aggregating CBO membership. This was performed by taking each association as unit and the addition of the associations to which the respondents belong translate to CBO index. For example, a respondent that belongs to three associations has CBO index of three.

Measures of Poverty

The traditional approach of a poverty index is based on headcount of poor individuals below the specified cut-off point, i.e. the proportion of the population whose standard of living is less that the poverty line to the total number of individuals or households

(World Bank, 1990). The poverty line is the level of welfare that distinguishes poor households from the non-poor households – it is also expressed in the same unit of consumption and is based on cost-of-basic-needs for an individual. These costs are determined by considering the food requirements of an individual and his or her critical non-food consumption. The poverty line was determined by calculating two-third of the mean per capita expenditure of the households in the study sample. This was used to categorize the households into poor or non-poor. However, the headcount index does not indicate the depth of poverty, i.e. how poor the households are. Hence, the evolution of poverty gap index.

Poverty gap index is the ratio of the average extra consumption that would be required to bring all poor people up to the poverty line. The poverty gap is interpreted as measuring the depth of poverty. The squared poverty gap index takes into account not only the consumption shortfall of the poor from the poverty line, but also inequality among the poor. This measure decreases if, for example income is transferred from a poor individual to a poorer individual. The squared poverty gap index is often interpreted as measuring the severity of poverty (Foster et. al., 1984; Kanbur, 1986).

The Foster-Greer-Thorbecke (FGT) class of poverty measures has some desirable properties (such as additive decomposability), and they include some widely used poverty measures (such as the head-count and the poverty gap measures). The FGT poverty measures are defined as

$$p_\alpha = \int_0^z \left[\frac{z-x}{z}\right]^\alpha f(x)dx \quad \alpha \geq 0, \ldots\ldots 1$$

where x is the household consumption expenditure, f(x) is its density (roughly the proportion of the population consuming x), z denotes the poverty line, and α is a non-negative parameter. Higher values of the parameter α indicate greater sensitivity of the poverty measure to inequality among the poor. In what follows, we will be concerned with the estimation of poverty measures P for α = 0, 1, and 2, which respectively define the head-count index (H), the poverty gap index (PG), and the squared poverty gap index (SPG). Headcount index (H) and poverty gap index (PG) as given by Datt (1998) are presented as:

$$H = \frac{q}{n} = 1 - \frac{z}{\mu} \ldots\ldots\ldots\ldots\ldots\ldots 2$$

$$PG = H - \left(\frac{\mu}{z}\right) L(H) \ldots\ldots\ldots\ldots 3$$

where: q = no of poor household, n = total no of household, z = poverty line, μ = mean consumption and L

= slope of the Lorenz curve $\left(\frac{z}{\mu}\right)$.

The SPG for the Foster-Greer-Thobecke measure of P_2 is given by Ravallion (1992) as

$$P_2 = \frac{PG^2}{H} + \frac{\left(H - PG^2\right)}{H} CV_p^2 \ldots\ldots 4$$

where; PG = Poverty gap index, H = Headcount index, CV_p^2 = Squared coefficient of variation of income among the poor.

Logit model specification

In this study, a model, which reflects the empirically observed households' poverty status, was used. Such observations reflect a dichotomous variable, represented by poor or non-poor households. Although ordinary least squares estimates can be computed for binary model, the error terms are likely to be heteroscedastic, leading to inefficient parameter estimates; thus classical hypothesis tests, such as t-ratios, are inappropriate (Pindyck and Rubinfeld, 1981). An alternative proposal, and the method employed in this study, is the use of a probability model. However, if a linear model is used, predicted values may fall outside the 0-1 interval, thereby violating the basic tenets of probability. The use of probit and logit models, which give maximum likelihood estimators, overcomes most of the problems associated with linear probability models and provide parameter estimators which are asymptotically consistent, efficient and Gaussian so that the analogue of the regression t-test can be applied (Pindyck and Rubinfeld, 1981)

Several studies have assessed the determinants of poverty using different approaches, especially the Probit and Logit functions and also qualitative approaches (Sen, 1981; Hassan and Babu, 1991; Awotide, 2007). These approaches classified household into poor and non-poor without taking into consideration the extent of poverty. In this study, the relationship between poverty and various socio-economic variables were examined using the Logit regression model. This model has the advantage of yielding results that can give information on households' probability of being poor. The Model is stated thus:

$$Y_i = g(I_i) \ldots\ldots 5$$

$$I_i = b_o + \sum_{j=1}^{n} b_j X_{ji} \ldots\ldots 6$$

where, Y_i is the Poverty level of each farming household in the study sample (i.e. the binary variable, $Y_i = 1$ for poor farming households and $Y_i = 0$ for non-poor farming households). I_i is an underlying and unobserved stimulus index for the ith observation (conceptually, there is a critical threshold (I_i*) for each

farming household, if $I_i<I_i^*$ the farming household is observed to be a non-poor, if $I_i \geq I_i^*$ the farming household is observed to be poor); g is the functional relationship between the poverty level of each farming household (Y_i) and the stimulus index (I_i) which determines the probability of being poor.

The Logit model assumes the underlying stimulus index (I_i) is a random variable, which predicts the probability of being poor. Therefore, for the ith observation (each farming household):

$$I_i = In\frac{P}{1-P} = b_o + \sum_{j=1}^{n} b_j X_{ji} \quad \ldots\ldots 7$$

The relative effect of each explanatory variable (X_{ji}) on the probability of being poor is measured by differentiating with respect to X_{ji}. Using the quotient rule

$$\frac{dP_i}{dX_{ji}} = \left[\frac{e^{I_i}}{\left(1+e^{I_i}\right)^2}\right]\left[\frac{I_i}{X_{ji}}\right] \quad \ldots\ldots 8$$

where, P_i = the probability of ith farming household to be poor or non-poor; X_i = Vector of explanatory variables presented in Table 1. e = error term.

For the CBO index and welfare status index, ordinary least squares regression models were specified.

Table 1: A prior expectation of the explanatory variables to be included in the regression models.

Description of the variable	Expected sign
Age of farmer in years	+/-
Sex of respondent (1 = male , 0 = female)	+/-
Educational status of the household head (Years of formal education)	+
Size of the household (number of individuals)	-
Dependency Ratio (Number of dependant /Total household size)	-
Primary occupation of the household head (1 = farming , 0 = otherwise)	+/-
Land area owned by the household (ha)	+
Distance of the households' farm from home (Km)	-
Distance of the households' farm from the nearest tarred road (Km)	-
Welfare status index	+/-
Poverty level of household	+/-
Aggregate CBO membership index	+/-

RESULTS AND DISCUSSION

The prominent voluntary groups in the study areas are categorized into six. These are community development organizations (CDO), professional associations, cooperative societies, youth associations, trade associations and progressive unions. The frequency distribution of the CBOs membership is presented in Table 2. Data in Table 2 revealed that community development associations and progressive unions had more members (53 and 57 percent respectively). The reason is very clear, the members are expected to be the forward-looking members of the community whose interest should include promotion of social, educational, health, welfare, and the general development of their community through self-help. This may be observed in the areas of provision of physical structures such as schools, town halls, hospitals, post office, and general infrastructure development.

Professional and trade associations had 43 percent and 20 percent respectively. This is contrary to *a priori* expectation. In reality, community members are expected to form social groups for the purpose of protecting and promoting economic interest. In this study, professional and trade associations though similar, are treated separately. For example, a crop farmer may be a member of maize farmers' association as well as a member of palm produce sellers' association. This finding has serious implication on poverty level and standard of living of the rural dwellers. For meaningful economic advancement, rural dwellers should be encouraged to join professional and trade associations in order to enjoy economies of scale.

The most common informal rural financial service providers are self-help groups, including the rotating saving and credit associations locally called *esusu* and several cooperative societies which provide the bulk of rural dwellers credit needs. Moneylenders are the least preferred because of their exploitative terms and conditions. In this study, all forms of rural credit providers with the exceptions of moneylenders were grouped under cooperative societies to avoid ambiguity. According to Alufohai (2006), rural financial sources of credit perform better than the formal system because they have adapted to the high-risk environment of their clients. Consequently, cooperatives in rural areas are considered as more credible credit sources to farmers and small-scale enterprises.

Data in Table 2 also revealed that only 31 percent of the respondents are members of cooperative societies suggesting that resource poor farmers who

propel the agricultural engine of the nation had little access to credit assistance to expand their production and consequently transform their socioeconomic situation. In spite of the fact that evidences abound in the literature that farmers are still in dire need of adequate capital (Oni, 1999), encouraging rural dwellers to join cooperative societies is a step in the right direction at increasing farmers' productivity and consequentially reduce poverty. About 35 percent of the rural dwellers belong to youth association. The reason for the low membership is not far-fetched. It is expected that most of the farmers would have past the age of 40 years, which is considered as the upper boundary for the youth association.

Table 2: Frequency distribution of respondents by CBOs membership

	Frequency (N= 235)	Percent
Community development association (CDA)		
0	110	46.8
1	125	53.2
Professional Association		
0	134	57.0
1	101	43.0
Cooperative societies		
0	162	68.9
1	73	31.1
Youth association		
0	154	65.5
1	81	34.5
Trade association		
0	188	80.0
1	47	20.0
Progressive union		
0	102	43.4
1	133	56.6

Source: Field survey, 2007 1 = member, 0 = non-member

The frequency distribution of the indicators used in welfare status index is presented in Table 3. Some of the indicators like television set, radio, concrete block houses, iron sheets roofing, and carpet are commonplace in rural areas of Ogun State. The reason is that Ogun State is about 60 km from Lagos, which is the commercial center and the origin of civilization in Nigeria.

Table 3: Frequency distribution of the indicators used in computing welfare status index.

Welfare indicators	Frequency (N = 235)	Percent
Car		
None	216	91.9
Yes	19	8.1
TV		
None	128	54.5
Black and white	48	20.4
Colour	59	25.1
Radio		
None	29	12.4
Yes	206	87.6
Fridge		
None	201	85.6
Yes	34	14.5
Housing		
None	4	1.7
Mud	110	46.8
Concrete	121	51.5
Roof		
Thatch	42	17.9
Iron sheets	193	82.1
Toilet		
None	53	22.6
Pit latrine	167	71.1
Water closet	15	6.4
Floor		
None	138	58.7
Carpet	87	37.0
Rug	10	4.3

Source: Field survey, 2007

Poverty analysis

The values for the poverty measures, Head-count index (H), poverty gap index (PG), and Foster-Greer-Thorbecke (P_2), are presented in Table 4. The headcount index (incidence of poverty) computed for the study area was 0.32 implying that the proportion of the farming households whose per capita expenditures fell below the poverty line was 32 percent. The poverty gap index (depth of poverty) computed had a value of 0.0014 while the squared poverty gap index had a value 0.051 which depicts that severity of poverty in the study area was 5 percent. The

squared poverty gap index takes into account not only the distance separating the poor from the poverty line, but also the inequality among the poor. The poverty line for the study area was ₦426.30. The estimated cost of a meal for the regular poverty line was ₦20.3. This implied that per capita cost of meal for the average household in the study area was ₦20.3. This is far below the recommended $1 per day, which is estimated at ₦43.3 per meal ($1 = ₦130). This analysis suggests that most farming households are not poor in theory when food poverty line is drawn using two-thirds of mean per capita expenditure but are poor in reality in the sense that the respondents can not survive with ₦20.3 for a meal.

Table 4: Frequency distribution of the poverty status of the household

	Frequency/Value (N= 235)	Percent
Poverty level		
Poor	76	32.3
Non-poor	156	67.7
Poverty measures		
Head count	0.32	
Poverty gap	0.0014	
Squared poverty gap	0.051	
Poverty line per week	₦426.30	

Source: Field survey, 2007

Empirical relationship among CBOs membership, poverty, and welfare status

In order to empirically establish the relationship among CBOs membership, food poverty and welfare status, Logit and ordinary least square regression models were used. The results are presented in Table 5. Data in Table 5 showed that the educational level of the respondents was significant at 10 percent but negatively related to the probability of household being poor. It is expected that higher educational level reduces the probability of a household being poor. The size of the farming households was significant at 1 percent but had negative sign suggesting that higher household size increases the probability of a household being poor. This implies that poverty level may increase as household size increases. Dependency ratio of the farming households is statistically significant at 5 percent level and negatively related to the likelihood of poverty. High dependency ratio

decreases earning potential in relation to needs and therefore increases the risk of poverty (Lipton, 1983). Occupational status (1 = farming, 0 = otherwise) of the respondents is statistically significant at one percent level and negatively related to the probability of a household being poor. This suggests that respondents that are primarily farmers are likely to be poorer than respondents that are not farmers.

Distance of the farm to the nearest tarred road was significant at one percent level and exhibited a positive sign. This positive relationship is not very clear as it is expected that farther farm increases the probability of the household being poor. However, if soil fertility and the size of the farm were used as basis for explanation, the positive sign exhibited is expected. CBO index was significantly and positively related to the likelihood of being poor in the study area. This implies that CBO membership in the study area increases the likelihood of a household being poor because it requires more resources. This finding is not surprising in that majority of the rural dwellers are members of associations that would not allow hem have access to credit to enhance their productivity thus reducing poverty. Associations like community development and progressive unions exhort members in form of charity contributions to the development of the community. This invariably reduces the capital available for farming and non-farming business. Incidentally, majority of the respondents belong to such associations.

Ordinary least square regression results presented in Table 5 showed that age of the household head, sex, the educational level of the farming household head, household size, occupational status, farm distance from nearest tarred road and CBO index significantly determined the welfare status of the household. On the other hand, age, land area owned by the household, farm distance welfare status significantly determined CBO membership in the study area. One striking conclusion that could be gleaned from the findings was that CBO membership, food poverty and welfare status were interwoven. CBO membership determined the poverty level and the welfare status of the rural dwellers.

Table 5: Results of Logit and Ordinary Least Squares regression.

Model	Logit Regression		Ordinary Least Squares Regression			
Dependent	Poverty level		Welfare status index		CBO index	
Variables	Coeff	t-value	Coeff	t-value	Coeff	t-value
Constant	1.348	0.75	0.384	5.23*	0.324	3.744*
Age (years)	0.024	0.04	-0.0027	-2.69*	-0.0033	-2.89*
Sex (Dummy: 1=male, 0=female)	-0.035	-0.21	0.0681	2.66*	-0.019	-0.64
Educational level (years)	-0.095	-1.86***	0.0074	2.67*	-0.0001	-0.95
Household size (number)	-0.394	-4.86*	0.0099	2.29**	0.0008	0.016
Dependency ratio	-2.380	-2.17**	0.0052	1.01	-0.066	-1.25
Occupational status	-0.306	-3.22*	0.0116	2.03**	-0.0102	-1.54
Land area owned (Ha)	0.002	0.09	-0.0053	-1.19	0.0072	5.10*
Farm distance (Km)	0.144	1.64	0.0023	0.36	0.0135	3.45*
Farm dist. from tarred road (km)	0.191	3.75*	-0.0066	-4.01*	0.0026	1.22
Welfare status index	0.747	0.66	-	-	0.249	3.29*
CBO index	1.872	1.90***	0.188	3.28*	-	-
Poverty level	-	-	0.0024	0.81	0.994	3.02
Log likelihood ratio	176.24	-	-	-	-	-
Cox-Snell adjusted R^2	0.40	-	-	-	-	-
Nagekerle adjusted R^2	0.56	-	-	-	-	-
F-value	-	-	7.21*	-	12.71*	-
Adjusted R^2	-	-	0.23	-	0.36	-

Source: Regression analysis of survey data, 2007

* Significant at 1% level, ** significant at 5% level, *** significant at 10% level.

CONCLUSION

Rural sector is central to Nigeria's development strategy. Any rural development strategy must recognize and incorporate the complex linkages among community-based organizations, food poverty and welfare situation of the rural dwellers. These linkages have been established in this paper. Four striking conclusion can be gleaned from this study: (1) six prominent voluntary groups namely: community development organizations (CDO), professional associations, cooperative societies, youth associations, trade associations and progressive unions have been identified. (2) Majority of the rural dwellers were members of associations that do not provide credit to enhance their productivity and thus reducing poverty. Associations like community development associations and progressive unions exhort members in form of charity contributions to the development of the community. This invariably reduces the capital available for farming and non-farming business. Incidentally, majority of the respondents belong to such associations. (3) Further analysis of the poverty measures revealed that most rural dwellers are not poor in theory but are poor in reality. (4) CBO membership, food poverty and welfare status were interwoven. Since CBO membership significantly determined the poverty level and the welfare status of the rural dwellers, empowerment of local communities through self-owned and managed community-driven organizations like CBOs would be a step in the right direction to alleviating poverty and improving the standard of living of the rural dwellers. Therefore, policies aimed at encouraging the establishment and sustenance of CBOs most especially professional associations, trade associations, cooperative societies should be strongly considered. This is to allow them increase their access to productive capital as well as enjoy economies of scale.

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