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Determinants of Poverty Status of Fish Vendor Households in Lower Cross River Basin, Nigeria

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Abstract
This study was carried out to analyse the poverty status of dry fish vendor households in Lower Cross River Basin, Nigeria. The specific objectives were to; estimate the mean expenditure on basic consumption items of fish vendor households, determine the influence of socio-economic characteristics of the respondents on their poverty status and estimate the determinants of poverty amongst fish vendor households. Primary data collected were analysed using descriptive and inferential statistics (Logistic regression). The monthly mean per adult equivalent household expenditure of the households was $29.78 (₦ 4,764.48) out of which poverty line of $ 9.93 (₦1, 588.16) was estimated. Results of FGT decomposition revealed that poverty incidence for the study area is 0.569. The head count index was calculated at 56.9% while poverty gap was 48.0%. Logistic regression result showed that except for age, and marital status, all other explanatory variables were found to be significant predictors of poverty among dry fish vendors in lower Cross River Basin. The variables include; ownership of assets ($p<0.002$), years of fish vending experience ($p<0.020$), educational status ($p<0.037$), household size ($p<0.064$) and major occupation ($p<0.053$). Educational status and ownership of assets reduces the probability of being poor, while larger households, longer periods in fish vending (experience) and fish vending as a major occupation were associated with a higher chance of being poor. Policy interventions that target these predictor variables are necessary to reduce poverty among dry fish vendors in lower Cross River Basin.
Keywords: Poverty status, Fish vendor, Lower Cross River Basin.

1. Introduction

Fishery in agriculture occupies a very significant position in the primary sector providing employment for over a million people and contributing about 50% of animal protein intake of the Nigerian population, particularly the resource poor (Agbon *et al.*, 2012). Fish, as a food item, has been recognized to contribute greatly to the dietary needs of Nigerians (Etuk, 2010). In Nigeria, fishing is an income generating activity and its marketing by women contributes substantially to raising the living standard of families. Food and Agricultural Organization (2007), described poverty reduction in fisheries communities as a situation where people become measurably better off overtime owing to their involvement and/or investment in fisheries or fisheries-related activities.

It has been reported that both pre-harvest and post-harvest activities in fisheries can generate significant profits, prove resilient to shocks and crises and make meaningful contributions to poverty alleviations and food security (Davies, 1996). Moreover, one of the greatest challenges facing Nigeria is to find solutions to problems of hunger and poverty. The situation in Nigeria presents a paradox, because despite the fact that the nation is rich in natural resources, the people are poor. World Bank (1996) referred to this situation as poverty in the midst of plenty.

Over the years, several governments in Nigeria have embarked on programmes and projects, with the support of International Organizations in some cases to alleviate/ reduce poverty in fishing communities without much success. Communities in Lower Cross River Basin have not been spared from this dilemma. These communities need improvement in the quality of their living standards. This, therefore, of great concern, hence the decision to investigate household poverty level and the influence of socio-economic characteristics on their poverty status. The objective of this study therefore is to analyse the poverty status of fish vendor households in the lower Cross River Basin and to determine the influence of socioeconomic characteristics on their poverty status

2. Conceptual Framework

In estimating the determinants of poverty in the study area, we rely on the relative poverty approach, using the income of the fish vendors to ascertain their poverty status, which also served as the Dependent variable in the Logistic Regression analysis. To determine the poverty status of the fish vendors, which essentially requires classifying them into "poor" and "non-poor" categories, we follow the NBS (2005 and 2012), in estimating the Two-Thirds of the Total Per Capita Expenditure (Income) or the "relative poverty line".

p-alpha poverty measure (Foster-Greer-Thorbecke index) was used for the measurement of poverty among the respondents while the binary logistic regression model was used to estimate the determinants of poverty among fish vendor households. Following Foster-Greer-Thorbecke (1984) and World Bank (1996);

$$P_{\alpha} = \frac{1}{n}\sum_{i=1}^{n} q_i \left[\frac{Z - Y_{pi}}{Z}\right]\alpha \qquad (2.1)$$

Where Z is the poverty line value; Y_{pi} is the income of the ith poor groups of persons; n is total population; n is number of income earning group below the poverty line; q_i is number of persons in the ith group below the poverty line $q = \sum q_i$; is the number of income earners below the poverty line. The analysis of poverty status using FGT measure of poverty involves the ranking of income in ascending order of magnitude such that $Y_{1i} \leq Y_{2i} \leq Y_{qi} < Z_i \leq Y_{(q+1)\,i} \leq \ldots \leq Y_{ni}$

This class of poverty measure is flexible in two ways. One, α is a policy parameter that can be varied to approximately reflect poverty "aversion" and two, the P_{α} class of poverty indices is sub-group decomposable.

In particular, when α = 0

$$P_o = q/n = H \qquad (2.2)$$

where H is the head-count ratio, that is, the proportion of total income receiving units below the poverty line.
When α = 1, the poverty measure becomes the poverty-gap index (PG)

$$P_{\alpha-1} = PG = \frac{1}{n}\sum_{i=1}^{n} q_i \left[\frac{Z - Y_{pi}}{Z}\right] = HI \qquad (2.3)$$

$$\text{Where I} = \frac{1}{q}\sum_{i=1}^{n} q \left[\frac{Z - Y_{pi}}{Z}\right] = HI \qquad (2.4)$$

is the income gap ratio. I is the mean of the poverty gaps expressed as a portion of the poverty line. This measure is insensitive to income distribution among the poor, hence, to reflect the degree of inequality or severity of poverty among the poor, a greater weight has to be given to the poorest income-earning units and this is achieved by assigning values that are greater than 1 to α.
When α = 2, the squared poverty gap index (SPG) is generated given by,

$$P_{\alpha-2} = \text{SPG} = \frac{1}{n}\sum_{i=1}^{n} q_i \left[\frac{Z - Y_{pi}}{Z}\right]_2 \qquad (2.5)$$

2.1 The logistic regression model

The logit regression model is characterized by a binary dependent variable with mutually exclusive and exhaustive outcomes. The dependent variable is the poverty status of the respondents, which is one if poor and zero if non-poor. Following Maddala (1990) and Babcock et al (1995), the model specification gives rise to a system of two probabilities thus:

$$\Pr ob\left(Y_{i=j}\right) = \sum^{2} \frac{e^{\beta jXi}}{e^{\beta kNi}} \qquad (2.6)$$

where j = 0 or 1

Expanding equation 1:

$$\Pr ob(Y_i = j) = \frac{e^{n_j x_i}}{e^{n_0 x_i} + e^{n_i x_i}} \qquad (2.7)$$

The equations above have inter-determinacy problem and need to be removed. We therefore assume that n_0 in the denominator is zero i.e. $n_o = 0$. Then, $e^{n\,Xi} = 1$, hence

$$\Pr ob(Y_i = j) = \frac{e^{n_j x_i}}{1 + e^{n_i x_i}} \qquad (2.8)$$

$$\Pr ob(Y_i = j) = \frac{e^{n_j x_i}}{1 + n^2 e^{n_k x_i}}$$

Then, the probability of being in each group (j = 0 or 1) is:

$$\frac{1}{1 + \sum_{k=1}^{2} e\beta_k X_i}$$

$$\text{Prob } (Y_i = 0) = \qquad (2.9)$$

$$\text{Prob } (Y_i = 1) = \frac{e\beta_{1Xi}}{1+\sum_{k=1}^{2} e\beta_k X_i} \quad (2.10)$$

Where β_j is a vector of parameters that relate the explanatory variable X_i to the probability that Y= j
Where β_j is a vector of parameters that relate the explanatory variable X_i to the probability that Y= j
Y_i = j = Poverty status of fish vendor household
Thus;
Y = Poverty status (categorical); poor=0 and non- poor =1
X_1 = Age of household head (categorical covariate)
X_2 = Educational Status (continuous covariate)
X_3 = Household size (continuous covariate)
X_4 = Marital Status (categorical covariate)
X_5 = Major occupation (categorical covariate)
X_6 = Ownership of Assets (continuous covariate)
X_7 = Fish vending experience (continuous covariate)

3. Research Methodology

3.1 Description of the study area

Cross river basin covers part of two states, Cross river and Akwa Ibom states,Nigeria. The main river in the Cross River Basin is the Cross River which takes off from Republic of Cameroon passing through Cross River State and Akwa Ibom State before empting into the Atlantic Ocean. The Cross River flows through Etung, Ikom, Obubra, Yakurr, Abi, Biase, Akampa, Itu, Odukpani and Mbo Local Government Areas (LGAs). Other rivers in the Cross River Basin are the Calabar River (which flows through Akpbuyo and Calabar South Local Government Areas in Cross River State), Great kwa River and Akpa Yafe River. The prevalent occupation of the people is fishing, farming and trading in a variety of products including fish. This study was carried out in Calabar-South, Akpabuyo and Mbo LGAs.

3.2 Sampling procedure and sample size

The target population of this study consisted of all dry fish vendors in Lower Cross River basin. A multi-stage sampling technique was used for this study. The first stage involved a scoping survey; Findings from the survey revealed that Calabar-South, Akpabuyo and Mbo L.G.As has a large concentration of fish vendors and also serve as a wholesale markets. The second stage involved a purposive selection of these three LGA's. In the third stage, fish vendors were randomly selected from registered dry fish vendors in the three areas. Calabar-South had 132 fish vendors, Akpabuyo had 101 dry fish vendors and Mbo had 120 dry fish vendors; 40% of the respondents were randomly selected from each area making a total of 140 respondents. A total 137 questionnaires were retrieved.
Data generated were subjected to statistical analysis using descriptive statistics, the Foster-Greer-Thorbecke (FGT) measure and Logit regression analysis.

4. Results and discussion

The mean monthly per adult equivalent household expenditure for the study was ₦ 4, 764.48 and the poverty line was ₦ 1,588.16 using 1/3 of mean per adult equivalent household expenditure as shown in Table 1.

The result of the poverty profile among household by socio-economic characteristics revealed that on the aggregate, the headcount ratio was 0.569. This means that 56.9% of the households covered by the study in Lower Cross River Basin are poor, while 28.0% of the households are core poor. The poverty gap index for lower Cross River Basin was at 0.48. This implies that on the average, poor households have a consumption expenditure shortage of 48.0% of their poverty line. The severity of poverty however depends on the distribution of the poor below poverty line.

The result of the poverty profile among household by socio-economic characteristics in the study area is presented in table 2.From the table, the incidence of poverty among fish vending households increased with the age of household head. This is in line with the findings of Dercon & Krishnan, 1998; FOS, 1999; Etim, 2007; Etim and Ukoha 2010. From the result, 33% of the households whose heads are aged between 21– 40 years are poor, 51% of heads in the subgroup 41– 60 years poor, while households whose heads are 61 and above have 69% of them in poverty. The result also revealed that reveals that increase in household size results in increase poverty situation among households in the study area with the incidence, depth and severity highest with values

0.613, 0.835 and 0.713, respectively for household with 5 and above members. Results showed that as the household size increased, the extent of poverty as well as their contribution to the whole group poverty also increased. The reason may be attributable to the fact that increased household size implies more dependants who rarely contribute to household income.

Finding are however synonymous with World Bank (1991), Lanjouw and Ravallion (1994), Schubert (1994), World Bank (1996), Dercon and Krishnan (1998) and Akerele and Adewuyi (2011). The result also reveals that incidence, depth and severity of poverty appear higher with values 0.239, 0.402 and 0.191 in households whose heads are married than in households whose heads are single. This means that households whose heads are married are more vulnerable to poverty than the households whose heads are single. Households whose heads are married are often considered to be more vulnerable to poverty because of their tighter time schedule and income constraints than the households whose heads are single. Their vulnerability may partly be as a result of lack of access to or low productive resources, education, credit, and decision making forums (Oniang'o and Makudi, 2002). The severity of poverty is higher among households whose major occupation of the head is fish vending than those with other occupation. The tendency of households whose major occupation of the head is fish vending in the study area to be less severely affected by poverty might be that these household heads derive income from diverse income sources. Diversification as a source of income growth is a potential means of poverty reduction (Nicholas *et al*., 2006). The result also shows that poverty also reduces with increased level of household assets, emphasizing the important role productive assets play in income generation and poverty reduction.

The results of the logistic regression on the determinants of poverty are shown in table 3. The results showed that assets owned ($p<0.002$) significantly explains the poverty status of household, and is indicated by a positive coefficient. The variable is significant at 1%. This result is consistent with that of Bogale (2005).

Years of fish vending experience ($p< 0.020$) and level of education are ($p<0.037$) are other important determinants of poverty in the areas. Results showed that an increase in the years of experience is negatively related to the probability of being a poor household. The coefficient for years of experience is negative and significant at 5%. Furthermore, the coefficient for level of education is negative and significant at 5%. The data provided through this study is on levels of schooling of the household head. 56.9% of the population had secondary education. The negative coefficient and the significance of level of education suggest that level of education might explain the poverty status of household. The result does not coincide with the findings of Khalid (2005) and Sekhampu (2013) who reported that no significant effect on the poverty status is made by the level of education of the head of the household, but it is consistent with that of Geda (2005) and Achai (2010).

Larger households were found to have a higher probability of being poor. This is indicated by a 10% significant level ($p<0.064$) and a positive coefficient. The result is consistent with that of Sekhampu (2013) and Osowde (2012). The coefficient for major occupation is negative and significant ($p<0.053$) at 10%. Results suggest that involving in fish vending as a major occupation is negatively related to the probability of household being poor. The marital status of the household head is negatively related to the poverty status but not significant. The result is consistent with that of Sekhampu (2013) but does not coincide with the findings of Baulch and McCulloch (1998) who reported that significant effect on the poverty status is made by the marital status of the household head. Also, the age of the household head is negatively related to the poverty status but not significant. This result is in line with the findings of Baulch and McCulloch (1998) who reported that no significant effect on the poverty status is made by the age of household head. This suggests that these variables (age and marital status) might not fully explain the poverty status of a household.

5. Summary, conclusion and recommendation

The aim of the study reported here was to analyse the poverty status of fish vendor households in lower Cross River State. Data from a random sample of 137 households in lower Cross River Basin was analyzed with the poverty status of (0=non-poor and 1=poor) as the dependent variable and a number of socio-economic characteristics as explanatory variables. The FGT measure was used to determine the poverty status of the respondents. The poverty line was calculated to be #1,588.16. The headcount index for the sample was calculated at 0.569 (56.9%) while the poverty gap was 0.48 (48.0%) using the survey data. The result of the analysis revealed that except for age and marital status, all other explanatory variables hypothesized in the study was found to be significant predictors of poverty among dry fish vendors in lower Cross River Basin. The variables include assets owned ($p<0.002$), year of fish vending experience ($p<0.020$), level of education ($p<0.037$), household size ($p<0.064$) and fish vending as major occupation ($P<0.053$). The household size and assets owned were positively associated with the probability of being poor while the major occupation, years of experience and level of education were negatively related with the probability of being poor. Age and marital status were negatively related but not significant. Moreover, the study provides the factors which are strongly related to the poverty status of a household. Strategies aimed at poverty reduction can be directed to these factors. The study recommends that training programmes for those involved in dry fish vending as a major

occupation could be established to improve their knowledge and business skills. Also, there is need to intensify family planning services so as to improve knowledge of family planning. Household heads should have the number of household members they can carter for. People should be adequately sensitized about the various benefits of acquiring formal education as basic step towards the reduction of poverty prevalence in Nigeria.

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Table 1: Mean household expenditure for lower Cross River Basin

Items	Amount (N) Per month	% expenditure
Food	6,870.78	28.8
Clothing	4,750.40	19.9
Health/medication	2,150.25	9.0
Shelter	5,700.60	24.0
Energy	4,350.37	18.3
Total	23,822.40	100.00
Mean = 4,764.48		

Source: Survey data 2012

Table 2: Poverty profile among households by socio-economic characteristics.

Socio-economic Characteristics	Poverty Incidence (P_0)	Poverty depth (P_1)	Severity of poverty (P_2)
Age			
21-40	0.332	0.213	0.213
41-60	0.515	0.461	0.480
61& above	0.670	0.720	0.841
Educational level			
Primary	0.201	0.221	0.051
Secondary	0.411	0.524	0.321
Tertiary	0.081	0.087	0.012
No formal education	0.192	0.201	0.151
Household size			
1-4	0.463	0.538	0.213
5 &above	0.613	0.835	0.713
Marital status			
Married	0.239	0.402	0.191
Single	0.221	0.379	0.171
Major occupation			
Fish vending	0.149	0.389	0.180
Others	0.286	0.383	0.257
Assets owned			
50,000 & below	0.550	0.442	0.194
51,000-100,000	0.350	0.401	0.177
101,000 & above	0.300	0.345	0.134
Whole household	0.569	0.480	0.280

Source: Survey data 2012.

Table 3: Logistic regression result on poverty determinants

	B	Z	p-value	Lower	Upper
Age of household head	-0.003	-0.026	0.979	-0.379	0.038
Educational Status	-0.443	-2.084	0.037	-0.144	-0.061
Household-Size	1.448	1.849	0.064	0.512	0.438
Marital Status	-1.679	-0.838	0.402	-0.531	0.100
Major occupation	-4.408	-1.938	0.053	-0.739	0.100
Years of fish vending.	-0.542	-2.326	0.020	-0.176	-0.097
Ownership of Assets	0.0001	3.098	0.002	0.000	0.000
Constant	-1.978	-0.397	0.691		

Source: Survey data 2012.

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