



**Full Length Article**

# Analysis of Poverty Profile of Rural Households: Evidence from South-South Nigeria

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## ABSTRACT

Poverty among rural farming households was investigated using the Foster, Greer, Thorbecke (FGT) weighted poverty index. Farm-level survey data from 150 farming households were obtained using well structured questionnaire. The households were selected through the multi-stage sampling procedure. The monthly mean per adult equivalent household expenditure (MPAEHE) of the households was ₦1,652.82 out of which poverty line of ₦1,101.88 was estimated. Results of FGT decomposition revealed that poverty incidence for the study area is 0.57. Poverty incidence, depth and severity increases with increase in age of household heads. Poverty incidence is highest (0.69) and lowest (0.31) when households are headed by persons within the age of 61-80 and 21-40 years, respectively. Results further revealed that poverty incidence and severity increase with increase in size of household members. This ranged between 0.28, 0.51, 0.72 and 0.06, 0.28, 0.51 for households with 1-5 and 11-15 members, respectively. © 2010 Friends Science Publishers

**Key Words:** Poverty; Rural; Households; Nigeria

## INTRODUCTION

Over one billion people are living in extreme poverty today, who have less than US \$ 1 per day to survive on (Addison, 2004). The extent and depth of poverty in the developing world is a disgrace (Pinstrup-Andersen & Pandya-Lorch, 2001). Poverty is a multi-dimensional, socio-economic and cultural situation that transcends economic description and analysis (Okunmadewa, 2001; Mafimisebi, 2002). Being a multifarious phenomenon, poverty is in different forms of which broad ones can be identified such as physiological, social and human deprivation. Poverty can be chronic (structural) or transitory, depending on how long poverty is experienced by an individual or a community (Okunmadewa, 2001). Chronic poverty is long term and the causes are largely structural and endemic, while transitory poverty is temporary, transient and short-term in nature. One in five people on the planet (two thirds of their women) live in abject poverty (World Bank, 2002). Although last century saw great progress in reducing poverty and improving well-being, poverty remains a substantive global problem of huge proportion. Of the world's 6 billion people, 2.8 billion live on less than US \$ 2 per day and 1.2 billion can spend less than US \$ 1 per day (World Bank, 2002).

Poverty is an unacceptable deprivation in human well-being that can comprise both physiological and social deprivation. As one looks towards the global poverty figures, the deprived masses of the poor are living in acute

misery in the rural area (Abbas *et al.*, 2005). Out of total 1.2 billion poor, more than 900 million live in rural areas around the globe (IFAD, 2002; Etim & Edet, 2009a). Nigeria is one of the most resource-endowed nations in the world. But socio-economically, Nigerians are also among the poorest in the world (Etim & Edet, 2007; 2009a). However despite Nigeria's physical and human resources endowment, there had been progressively worsening welfare conditions of its nationals (Okunmadewa, 2001; Etim *et al.*, 2009a; Etim & Edet, 2009b). The Human Development Report by UNDP (2005) reveals that Nigeria is one of the poorest among the poor countries of the world. With Human Poverty Index HPI-1 value of 38.8%, Nigeria is ranked 75<sup>th</sup> among 103 developing countries.

**According to United Nations Development Programme (UNDP 2005):** The worst performer in the world is Niger with HPI-1 value of 64.4%, whereas the best performer is the world is Uruguay with HPI-1 value of 3.6%. FOS (1980-1996) documented that the percentage of people living in rural areas is 55.90%, while that of urban population is 44.10%. The incidence of poverty, poverty gap and squared-poverty gap in rural area were 0.63, 0.26 and 0.14, whereas that of urban areas were 0.43, 0.17 and 0.09, respectively. In the south-south Nigeria, the incidence of poverty, poverty gap and squared-poverty gap were 0.35, 0.17 and 0.09, respectively (FOS, 2004).

Like in many developing countries, poverty in Nigeria is essentially a rural phenomenon as most of the

impoverished people live in the rural areas, where they derive their livelihood from farming. Though, urban poverty exists and is also becoming an increasing concern, as reflected in the worsening trend in urban welfare indicators (World Bank, 1997), rural poverty is a much wider issue than the former. It is known that about 68% of the extreme poor are dependent on agriculture and live in the rural background (Cleaver & Schreiber, 1994; UNICEF, 1996; World Bank, 1997). Investing in agriculture is a key to reducing poverty and hunger in developing countries and is an essential element in addressing the current food price crisis (Fan & Rosegrant, 2008). As poverty systematically deepens and people's meager incomes do not cover their basic food and dietary needs, interest in farming and other economic ventures has increased and is now being promoted by different families as a food security strategy for vulnerable rural families. But these farms have had limited success in providing food security and increasing incomes. Despite the involvement of rural households in various farming activities, the generality of their income remained low. Consequently for these rural farmers to improve their well-being and meet the food requirement of the rural populace, their poverty situation has to be curbed. Recent and empirical studies by Etim (2007), Etim *et al.* (2009a; 2009b); Etim and Effiong (2009), Etim and Edet (2009b) suggest that profiling poverty, identifying and understanding the factors underlying the persistent deprivation of the poor and hungry are imperative for designing policies to meet their needs and improve their well-being. This study was therefore conducted to analyze the poverty situation in rural Nigeria, specifically examining the poverty profile of Nigerian rural farming households.

## MATERIALS AND METHODS

**Study area, sampling and data collection:** The study was conducted in Akwa Ibom State, Nigeria. The state is located at latitude 4°33' and 5°53' North and longitude 7°25' and 8°25' East and occupies a total land area of 7,246 km<sup>2</sup>. With an estimated population of about 3.9 million (NPC 2006), the state is bounded to the North by Abia State, to the East by Cross River State, to the West by Rivers State and to the South by the Atlantic Ocean. Administratively, the state is divided into 31 Local Government Areas and has 6 Agricultural Development Project (ADP) Zones viz: Oron, Abak, Ikot Ekpene, Etinan, Eket and Uyo.

The study area is in the rainforest zone and has two distinct seasons viz: the rainy and the short dry season. The annual precipitation ranges from 2000-3000 mm per annum. Most of the inhabitants of rural communities in the study area are farmers and the crops commonly cultivated include cassava, oil palm, yam, cocoyam, flitted pumpkin, okra, water-leaf, bitter-leaf, etc. In addition, some micro livestock are usually raised at backyards of most homesteads.

Primary data were used for this study. Farm-level intensive itinerary survey provided the basic cross-sectional

data from 150 rural farming households in the study area. Data were collected from farm households using well structured questionnaire. Primary data included data on household income and expenditure, socio-economic characteristics of households and their heads, farm specific variable.

Multistage sampling technique was used for selecting the representative farm households that were used for this study. The first stage was the random selection of 3 out of the 6 Agricultural Development Project Zones in Akwa Ibom State. The second stage sampling was the random selection of 5 villages per ADP zone to make a total of 15 villages. Furthermore, a total of 10 households were randomly selected to make a total of 150 farming households.

**Analytical techniques:** The Foster, Greer and Thorbecke (FGT) weighted poverty index was used for the quantitative poverty assessment (Foster *et al.*, 1984). The reason for this choice is due to its decomposability of the overall population into sub-groups, which allows for comparison. United Nations UN (2001) noted that the most important purpose of a poverty measure is to enable poverty comparisons.

The FGT measure for the subgroup *i*th P  $\alpha_i$  is given as:

$$P_{\alpha i} = n^{-1} \sum_{j=1}^{q_i} \left( \frac{z - Y_{ji}}{z, O_{max}} \right) \alpha$$

Where P <sub>$\alpha i$</sub>  is the weighted poverty index for the *i*th subgroup; n<sub>*i*</sub> is the total number of households in the *i*th subgroup households in poverty; Y<sub>*ji*</sub> is the per adult equivalent expenditure of household *j* in sub-group *i*; *z* is the poverty line and  $\alpha$  is the degree of concern.

When  $\alpha$  is equal to zero, it implies no concern and the equation gives the head count ratio for the incidence of poverty (the proportion of the farming households that are poor).

The poverty line used for this study is defined as the two-thirds of mean household expenditure adult equivalent. Adult equivalents were generated following Nathan and Lawrence (2005) as follows:

$$AE = 1 + 0.7 (N_1 - 1) + 0.5 N_2$$

Where AE = Adult Equivalent

N<sub>1</sub> = Number of adults aged 15 and above

N<sub>2</sub> = Number children aged less than 15.

That is:

$$P_{\alpha i} = n_i^{-1} \sum_{j=1}^{q_i} \left( \frac{z - Y_{ji}}{z, O_{max}} \right) = q_i/n_i$$

When  $\alpha$  is equal to 1, it shows uniform concern and equation becomes:

$$P_{1i} = n_i^{-1} \sum_{j=1}^{q_i} \left( \frac{z - Y_{ji}}{z, O_{max}} \right)^1$$

This measures the depth of poverty (the proportion of expenditure shortfall from the poverty line) according to Hall and Patrinos (2005), it is otherwise called the poverty gap-the average difference between the income of the poor and the poverty line.

When  $\alpha$  is equal to 2, distinction is made between the poor and the poorest (Foster *et al.*, 1984; Assadzadeh & Paul, 2003). The equation become:

$$P_{2i} = n_i^{-1} \sum_{j=1}^{q_i} \left[ \frac{z - Y_{ji}}{z, Omax} \right]^2$$

The equation gives a distribution sensitive FGT index called the severity of poverty. It tells us the extent of the distribution of expenditure among the poor.

The FGT measure for the whole group or population was obtained using:

$$P_\alpha = \frac{\sum_{i=1}^m P_{\alpha_i} n_i}{n}$$

Where  $P_\alpha$  is the weighted poverty index for the whole group,  $m$  is the number of subgroups, while  $n$  and  $n_i$  are the total number of households in the whole group and the  $i$ th sub-group, respectively.

The contribution ( $C_i$ ) of each sub-group's weighted poverty measure to the whole group's weighted poverty measure was determined using:

$$C_i = \frac{n_i P_{\alpha_i}}{n P_\alpha}$$

The test of significance of  $P_{\alpha_i}$  (subgroup poverty measure) relative to the  $p_\alpha$  (whole group poverty measure) was given according to Kakwani (1993) by:

$$t = \frac{P_{\alpha_i} - P_\alpha}{SE(P_{\alpha_i})}$$

$$\delta = \frac{(P_{\alpha_i} - P_{\alpha_j})}{SE(P_{\alpha_i} - P_{\alpha_j})}$$

The above was used to test if significant difference exist between the  $P_\alpha$  measure of a subgroup  $i$  with another  $j$ .

The weighted poverty measures ( $P_\alpha$ ) and their corresponding standard errors were calculated using the Microsoft Excel Package.

## RESULTS AND DISCUSSION

The first step in the analysis of poverty is the determination of the poverty line. As stated in the methodology, the mean household expenditure adult equivalent was used to determine this threshold. Table I shows the average amount expended on basic consumption items of the households. The mean per adult equivalent household expenditure is ₦1,652.82 and the poverty line is ₦1,101.88.

**Table I: Mean household expenditure (adult equivalent)**

Item	Amount (N) per month	Percentage Expenditure
Energy	1677.34	20.30
Clothing	1201.30	14.54
Health care/Medication	1134.34	13.73
Education	2107.00	25.50
Food	2144.11	25.93
<b>Total</b>	<b>8264.09</b>	<b>100.00</b>

Mean 1652.82  
 $\frac{2}{3}$  1,101.88 (Poverty line)

**Table II: Comparison of poverty by sex of household head**

Sex of Household head	P			Contribution to		
	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
Female Headed	0.57 (0.00)	0.52 (0.10)	0.53 (0.00)	0.71	0.68	0.73
Male Headed	0.46 (- 0.20)	0.42 (- 0.04)	0.47 (- 0.02)	0.29	0.32	0.27
All	0.57	0.48	0.44	1.00	1.00	1.00
$\delta$ - value	0.75	0.31	-0.53			

Figure in parentheses are t-values of  $P_\alpha$

Notes:  $P_0$  refers to the head count index which measures the spread or incidence of poverty;  $P_1$  is the poverty gap ratio which measures the depth of poverty;  $P_2$  is the squared poverty gap, which measures the severity of poverty

**Table III: Comparison of poverty by age of household heads**

Age of Household head (years)	P			Contribution to		
	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
21 - 40	0.31 (- 2.00)**	0.25 (- 0.26)	0.25 (- 0.27)	0.15	0.13	0.12
41 - 60	0.52 (1.00)	0.48 (0.00)	0.51 (0.05)	0.73	0.73	0.72
61 - 80	0.69 (1.69)*	0.74 (1.88)*	0.86 (1.90)*	0.12	0.14	0.16
All	0.57	0.48	0.44	1.00	1.00	1.00

\*\* , \* Significant at 5% and 10% respectively

Figures in parentheses are t-values of  $P_\alpha$

Table II reveals that 57% of the female headed farm households are poor, while 46% of the male headed households are poor. The difference between these sub-groups poverty incidence is not statistically significant ( $P > 0.10$ ) as shown by the  $\delta$ -value of 0.75. Thus poverty incidence among farming household is not influenced by the sex of the household head. The t-test analysis revealed that the incidence of poverty of the two sub-groups is not statistically different ( $P > 0.10$ ) from that of the whole group. The contribution of the female-headed households to the whole group's poverty incidence is 71%, while the male headed households contribute 29%. The poverty depth and severity and their contributions follow similar pattern like that of the poverty incidence. In summary, poverty is more among female headed households than the male-headed ones as shown in the poverty incidence, depth and severity and their respective contributions to whole group's poverty. Results contrast FOS (1999) that male-headed households

had more poverty than the female-headed households. This may be attributed to the fact that in the study area, male headed farm households are usually involved in other off-farming activities, which provides additional income and hence enhancement of household welfare. Findings are consistent with UNDP (2004) that 70% of the world's poorest people are women; results are also synonymous with (IFAD, 1992).

Three age categories were used to profile poverty among farm households viz: 21–40 years, 41–60 years and 61–80 years. However the incidence of poverty among farm household increased with the age of household head (Dercon & Krishnan, 1998; FOS, 1999; Etim, 2007). From Table III, 31% of the households whose heads are aged between 21–40 years are poor, 52% of heads in the sub-group 41–60 years are poor, while households whose heads are between 61–80 years have 69% of them in poverty. Of all the age sub-groups, only households heads aged between 41–60 years are not statistically different ( $P > 0.10$ ) from that of the whole groups poverty incidence. The other sub-groups 21–40 and 61–80 years poverty incidence are significant at ( $P < 0.10$ ).

All the possible pairs of the age categories as shown in Table IV have their poverty incidences significantly different from one another ( $P < 0.01$ ). This implied that the age of households heads affects the level of poverty incidence. The contribution to the whole group poverty incidence are 15, 73 and 12 by farming households whose head's age are 21–40, 41–60 and 61–80 years, respectively as seen in Table III. In a nutshell, the age of the household head is inversely related to the level of poverty. This is attributable to the fact that as one increase in age, the ability to do difficult work decreases. Also the number of household members available to work on the farm decreased as the head's age increased due to schooling and training those children and younger household members. This reduces the farm size and cultivable areas and subsequent reduction in farm income (World Bank, 1996; FOS, 2004).

Farm household were categorized into 3 sub-groups viz: 1–5, 6–10 and 11–15 members. Twenty eight percent of households with less than 5 members are poor, 72% of households with more than 10 members are impoverished. Results on Table V showed that the entire three sub-groups poverty incidence is statistically significant ( $P < 0.10$ ). This means that the poverty incidence in the 3 sub-groups is different from that of the whole group. The results of the analysis on Table VI further reveal that there are significant differences in the poverty incidence of all the possible pairs of household size ( $P < 0.05$ ). This implies that the incidence of poverty is influenced by the household size (Etim, 2007). The contribution of 1–5 members subgroup to the whole group's poverty incidence is 4%, whereas it is 41 and 55% for the 6–10 and 11–15 members sub-groups, respectively. Results showed that as the household size increased, the extent of poverty as well as their contribution to the whole

**Table IV: Poverty by age of household head (years)**

Age of Household Head	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
21–40 Vs 41–60	-7.00***	-1.10	-1.44
21–40 Vs 61–80	-7.60***	-0.84	-0.95
41–60 Vs 61–80	-2.13**	-0.70	-0.76

\*\*\* Significant at 1% \*\* at 5%

**Table V: Comparison of poverty by household size**

Household Size	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Contribution to		
				P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
1-5	0.28 (-3.81)***	0.08 (-2.51)**	0.06 (-2.91)	0.04	0.04	0.06
6-10	0.51 (2.11)**	0.25 (0.82)	0.28 (0.21)	0.41	0.41	0.38
11-15	0.72 (1.72)*	0.53 (0.13)*	0.51 (3.21)***	0.55	0.55	0.56
All	0.57	0.48	0.44	1.00	1.00	1.00

Figures in parentheses are t – values of P $\alpha$  \*\*\*

Significant at \*\*\*1%, \*\* at 5%, \* at 10%

**Table VI: Poverty by household size**

Household Size	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
1–5 Vs 6–10	-5.13***	-2.51**	-2.62**
1–5 Vs 10–15	-4.52***	-3.18***	1.13
6–10 Vs 11–15	-1.98*	2.53**	-2.69**

\*\*\*, \*\*, \* Significant at 1%, 5% and 10%

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) and Dercon and Krishnan (1998).

## CONCLUSION

The study showed that the incidence of poverty among farming household in the study area was 57%, the proportion of expenditure shortfall from poverty line was 48% and 44% comprised the poorest of the poor. Results of FGT decomposition revealed that poverty incidence is higher in female-headed households at 0.57 than in male 0.46. Age and household size were positively related to poverty implying that poverty were higher among households headed by older people and larger family sizes. On the contrary, household heads years of formal education were negatively related to poverty. Poverty among households headed by persons with more years of formal education was less. Government policy should be directed at birth control. Bottom-top participatory approaches and strategies in designing demographic and birth control programs are encouraged.

The study also revealed that poverty decreases with increase in educational attainment. Policies should aim at training the poor. The will not only enhance the acquisition of more human capital stock but will increase their chances of earning more income that will combat poverty. Human

capital development also increases productivity of labor, which is the most important asset for the poor. Educated farmers are better adopters of agricultural innovations and tend to have higher yields and income from cultivable areas. Training and education will enhance movement into more remunerative non-farm employment, increase household income and propels people out of poverty.

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