Monetary Poverty versus Multidimensional Poverty: An Empirical Reflection of Farming Household in Rural Area of Oyo state, Nigeria

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***Abstract*: This study examined empirically the relationship that exists between one-dimensional (monetary) poverty and multidimensional poverty of the farming households in rural area of Oyo State, Nigeria. Multistage sampling procedure was employed for the selection of 317 respondents in Ijaye, Ilora and Ido farm settlements respectively. Four dimensions were considered: education, consumption, housing/standard of living dimensions and the multidimensional poverty. Consumption equivalent of $1.25 per capita per day was used as poverty line for the monetary poverty. Concerning the relationship between income poverty and multidimensional poverty, income still play a major role in poverty determination, though multidimensional examination of poverty revealed better, deprivation of human basic capability, covering both one-dimensional and multidimensional poverty. The statistical revelation indicated that monetary headcount is about 87%, while multidimensional headcount is 82% respectively. The probit estimates results indicated that an increase in income alone in isolation of other deprivation variables cannot significantly reduce individual poverty.**

***Key words*: multidimensional poverty, deprivations, one-dimensional poverty**

I. INTRODUCTION

Poverty has been agreed upon to be a multifaceted phenomenon. Alkire,Roche and Summer(2013);Adeoti (2014) remarked that poverty embraces different dimensions, that associated with human capabilities and functionalities such as health, education, social inclusion, standard of living. Rocha (1998) observed that because there are varieties of poverty situation worldwide, this gave birth to different definitions, measurements and policies. In the same veil, Maxwell (1999) equally asserted that the complex nature of measuring poverty, dictates its complex definition, he observed that severity of this complex is more pronounced where people are allowed to ascertain their poverty status. In the same term with Maxwell (1999) observation, Hulme and Mosley (1996) explained that defining poverty and the composition of the poor are volatile issues in the academic realm. They further stressed that the central point in poverty definition, is a much broader phenomenon which hang on the sets of needs that allow human functionality. A conventionally poverty measurement used unidimensional approach. However (Sen, 2000;Oriola, 2009; Ataguba, Ichoku & Fonta, 2013) acknowledged that income is an insufficient measure of welfare. Their disagreements on the usage of monetary base poverty measurement, is on this background that poor people experience many forms of deprivations beyond the basic needs of survival. The inclusion of other non-monetary indicators in 1980s, studies, such as ill-health, social exclusion, dramatic decrease in consumption levels etc, as noted by Maxwell (1999), made the monetary base poverty measurement approach to be unacceptable. Rocha (1998) argued that poverty measurement should have a distinctive clear cut definition with respect to relative and absolute poverty. He described absolute poverty to be inability to attain a minimum standard of living, while relative poverty describes relative deprivation or inequality. The World Bank/UNDP (2000) described absolute poverty as a condition of life degraded by diseases, deprivation, and squalor. Bradshaw (2006) shared the same view, as he described relative poverty as relative deprivation. Gore (2002) viewed poverty as an all-pervasive scenario, in that even when resources are equally distributed, a large proportion of the population is unable to meet up with basic needs of life to function as expected.

According to Rocha (1998) measuring poverty is a matter of identifying the essential causes of poverty in a given society. Is it prevalent and affects the majority of the population or is it locally concentrated? Which are its roots? Is it a traditional syndrome or does it result from economic and technological changes or geographical disparity? What is its main characteristic? And who are the poor in terms of some essential features? By and large, the general information on the pattern of poverty is very important, especially when the objective is to accommodate various deprivations that poor people undergo. To this end, this study attempts to address, (i) the relationship between monetary poverty and multidimensional poverty, and (ii) factors that determine multidimensional poverty in the study area.

1.1 Shortcomings of Unidirectional Poverty Method

One of the shortcomings of the income approach is that it is not possible to purchase some non-monetary attributes because of either imperfect market, or out rightly unavailable markets; a good example is the public goods, as it often in the developing countries. To buttress the authenticity of Sen capability approach, an empirical study by (Klasen, 2000;

Neeved & Islam, 2012), revealed that there is a significant variance in identification of the poorest section of the population when a one-dimensional and multidimensional approach was used. Also in the wellbeing study in Catalonia by Ramos (2005), only one third of the poor in the one-dimensional poverty index are also poor in the multidimensional poverty index. Ramos therefore concluded that poverty analysis based on the income related indicators definitely undermined important aspects of wellbeing.

It's therefore obvious that income is not sufficient enough to measure the well-being of individual, as it fails to incorporate other key dimensions of poverty e.g. life expectancy, literacy, sanitation, social exclusion etc. Another disadvantage of the income base approach is that there is no assurance that people with incomes at, or even above the set-out poverty line would really apportion their incomes so as to purchase the minimum basic needs bundle. For this singular reason, there may be a need to look inward for a complementary poverty measurement approach to the unidimensional methods.

II. REVIEW OF LITERATURE

Multidimensional poverty distributional data are in the form of *n.d*, *X n,d*, matrix ,here the typical element *ij* represent the achievement of individual *i* in dimension *j* , with i=1,....,*n* and *j*=1,....,*d*. This equation is in line with Sen (1976). As usual identification of the poor is the first step, and this is achieved by defining the threshold level for each dimension, below this cutoff point a person is considered deprived.

A second step is to make a decision within the multidimensional context, and to address this question: among those who are deprived in some dimensions, who will be considered multidimensional poor? Here two steps also involved: first, all those that are deprived in an at least one dimension will be considered-this is called the *union approach*. Secondly, a more tasking approach is, where all deprivations in all dimensions is considered will be used-this is called the intersection *approach*. In the Alkire and Foster (2007) poverty measurement approach, this is considered as a second cutoff: that is the number of dimensions in which someone is required to be deprived so as to be identified as multidimensional poor. Aggregation step come next, after identification of the multidimensional poor has been solved.

2.1. Multidimensional Approach to Poverty Measurement

For over a decade now, much interest and awareness is growing on multidimensional poverty measurement. Bourguignon and Chakravarty (2003) championed the proposals to measure deprivation in more than one dimension, which is an extension of the FGT class of indices. Also the use of Alkire and Foster (2010), Alike and Santos (2011) multidimensional poverty index is gaining a high recognition internationally. The main reason for these recognitions is due to the universal acknowledgment, that poverty is beyond low incomes, but also includes other dimensions of deprivation. In order to cater for all deprivations that are associated with poverty, measurement of multidimensional poverty are divided into two steps.

a. The Identification Step

The identification step can be divided into two steps: Identification of the deprived is the first step follow by identification of the poor among the deprived.

First Step: Identification of the Deprived

Approach postulated by Bourguignon and Chakravarty (2003) could be used in the identification of the deprived, in utilizing capability failures in terms of shortfalls from certain pre-specified minimum (threshold) levels of attributes as indicators of deprivation. This can be expressed mathematically thus; an individual is deprived with respect to attribute *j* if $xij \leq zj$. However, Zheng (1997) argued that if the need arises, to jack-up the capabilities of the deprived to a certain minimum level, individuals at the threshold level need not be considered as deprived, since no effort(s) has to be made to make them non-deprived. Consequently, in this case individual *i is* deprived with respect to attribute *j* if $xij < zj$.

b. Second Step: Identification of the Poor

Having set the ball rolling by identifying the deprived individual, the next task is to ascertain how much a person should be deprived before he/she is considered poor. Three approaches of identifying those that are poor are used: the *union*, the *intersection* and the *dual cutoff* method: all these approaches were used by the Alike and Foster (2007) multidimensional poverty index.

2.2. Criticism on Multidimensional Poverty Measurement

As good as the multidimensional poverty measurement is, some of it critics have disagreed in some terms. The main grey area of multidimensional poverty is all about how best to ascertain the magnitude of deprivation, in a clearer manner for the policy makers and poverty analysts to make use of the information presented in policy formulation. Also the skeptics disagreed with the choice of an arbitrary cutoff point, and that the use of relative weights for each dimension is needful. Also Rippin (2010) pointed out the following as the methodological weaknesses of multidimensional poverty measurements, this later prompt the introduction of the Correlation Sensitive Poverty Index (CSPI).

- MPI assumption of no correlation that exists between the lacked items by the household is an unrealistic assumption. It is better to say that, for example, proper sanitation and safe drinking water are related to health as well as education indicators.
- MPI failed to capture inequality that exists among households. Example is transferring items from a poor to a less poor household, this does not change the poverty index as long as both households remain poor according to the MPI.

- The MPI specific structure is misleading; in that it leads to inflation in the rate of poverty, this will mislead the policy makers and poverty analysts on the real situation of poverty.

III. SAMPLING PROCEDURE AND DATA COLLECTION

A multi-stage sampling technique was employed for this study; a multi-stage sample is one in which samplings are done sequentially across two or more hierarchical levels. This study used exclusively Primary data. Primary data were collected through the use of a well-structured questionnaires and interview schedule for the literate and non-literate farmers respectively. A total of 410 questionnaires (but 317 were useable) were distributed in all the three farm settlements with the assistance of well-trained enumerators. Information was elicited from the respondents concerning multidimensional poverty on (i) education, (ii) consumption, and (iii) housing/living conditions. Both descriptive as well as econometric analysis was employed in the study. In the multidimensional poverty aspect Alkire and Foster, (2011) Multidimensional Poverty stepwise methods were employed, for determining the poor. The software that was used for the analysis is stata 11 version.

IV. RESULTS AND DISCUSSION

This section presents results of multidimensional poor groups. The study employed three dimensions; education, consumption and housing/standard of living, with thirteen indicators. Unit of analysis is farming household (Alkire & Foster, 2010). A household is said not to be poor, if it's poor in at least 1 out of 3 dimensions (i.e. 33.33%). Alkire and Foster (2010), Ataguba *et al.,* (2011) used at least 30% deprivations to determine poor multidimensional as the cutoff value. However, researchers are allowed to consider the best cut-off values (Alkire & Foster, 2011).

Table 1, below shows the percentage of the overall respondents that are multidimensional poor. Statistics revealed that out of 317 respondents, 260 (82.2%) respondents are multidimensional poor, while 57 (17.98%) are non-poor multidimensionally. This means that 82% of the respondents are said to be poor in at least two of (education, consumption and housing/standard of living) dimensions. This result confirmed the general assertion that poverty is mainly a rural phenomenon (Adepoju & Yusuf, 2012; Aigbokhan, 2000). Table 2 shows the percentage of the respondents that were multidimensional poor when k=2/3; 81%,83%, 80% are poor in Ijaye, Ilora and Akufo farm settlements respectively. As shown in table 3a, about 82% of respondents are multidimensional poor. The adjusted headcounts (M_0) for the multidimensional poverty is 69%. Based on per capita consumption expenditures, about 86% of the respondents are classified as living below the poverty line of $1.25/day, this fact was corroborated by OPHI (2014). The adjusted headcounts (M_0) for the multidimensional poverty is 69%. The breakdown of each farm settlement shows that Ijaye, Ilora and Akufo farm settlements has 81%, 83% and 80% respectively of the multidimensional poor households. The consumption (monetary poverty) statistics indicates that about 88%, 84% and 86% are monetarily (unidimension) poor at $1.25/day per capita (table 3b). Table 4, further shows that at $1.00/day 77%,71% and 80% were living below poverty cut off line in Ijaye Ilora and Akufo farm settlement. However Studies have revealed that there is a common characteristic between monetary and non-monetary measures of poverty. Mostly, not all individuals who are income poor are multidimensionally poor and not all multidimensionally poor individuals are income poor. Nonetheless, both monetary and non-monetary measures of poverty are needed to better inform the policies intended to address the needs and deprivations faced by poor populations (OPHI, 2004).

Table 1 :Poor and Non-poor Percentages

Poverty (Poor)	Percentage	Poverty (Non-poor)	Percentage
Multidimensional	82.2	Multidimensional	17.98
Education	44.79	Education	55.21
Consumption	74.76	Consumption	25.24
Housing/living standard	89.27	Housing/living standard	10.73

Table 2:Multidimensional Poverty/ Dimensional Poverty Index with Different Dimension Cutoff Points

Farm settlement	Mpov(k=2/3)		Educ.pov(K=1/2)		Conspov(k=1)		Hsg/lsd(K=3/5)	
	M_0	H	M_0	H	M_0	H	M_0	H
Ijaye	0.54	0.81	0.21	0.41	0.77	0.77	0.52	0.87
Ilora	0.55	0.83	0.26	0.51	0.69	0.69	0.55	0.91
Akufo	0.54	0.80	0.24	0.47	0.47	0.47	0.56	0.93

Table 3a :*Monetary and Multidimensional Poverty*

Head count (%) Monetary Poverty	H(Headcount Ratio)	A(Average Gap)	M_0 (Adjusted Headcount Poverty)
86.44	0.82 (82%)	0.85	0.69

Table 3b:Multidimensional and Monetary poverty Headcount

Mpov(k=2/3)				$1.25/day		
Farm Settlement	M_0	H		Frequency	Percentage	
Ijaye	0.54	0.81		160.00	88.40	
Ilora	0.55	0.83		73.00	83.91	
Akufo	0.54	0.80		42.00	85.71	

Table 4 :Monetary Poverty (undimensional poverty))

$1.00/day			$1.25/day	
Farm Settlement	Frequency	Percentage	Frequency	Percentage
Ijaye	140.00	77.35	160.00	88.40
Ilora	62.00	71.26	73.00	83.91
Akufo	39.00	79.59	42.00	85.71

4.1 Determinants of Multidimensional Poverty

The study used the probit regression model. The likelihood ratio statistics for the model is 65.28, while the log likelihood is -116.69874 and its highly significant at ($P < 0.0000$). It shows that the model has a strong explanatory power. The pseudo R^2 for the probit model is 0.2186 , whereas in similar studies , Adeoti (2014) used a pseudo R^2 of 0.142, also Ataguba *et al*.(2011) used 0.12, 0.24 for the pseudo R^2.

Out of the seven variables employed, age of respondents, marital status, income, number of dependants and household head farming experience are significant at 1%, 5% level respectively. While two variables (i.e. education level and household head main occupation) are not significant. As indicated in table 5, the coefficients of marital status, income, and number of dependants were positive .This means that an increase in the values of these variables (i.e. marital status and household head main occupation) may likely increase to the likelihood of being poor. Age, education, household main occupation and household farming experience have negative coefficients. This shows that an increase in any of the variable may not likely increase the chance of being poor.

4.2 Linkage between variables employed and Headcount Poverty

i. Poverty and Marital Status

As indicated in table 5, the coefficient of the marital status of the respondents has a positive and significant relationship with poverty in the study area. Anyawu (2010), argued that poverty were high among the polygamous and monogamous households and that the former is more pronounced that later.

ii. Poverty and Age

Age group has the probability of decreasing poverty. Since, the bulk of farm household heads is within the age group (20-58 years) i.e middle age. According to the theory of life cycle, poverty is expected to be high at the early stage of life, decreases during middle age and then increases in the old age (Rodriguez, 2002). This finding is also discussed in Adeoti (2014). The decrease in poverty in the middle age could be explained by the ability of the individual being more energetic and vibrant at this life stage. Intuitively, this virtue helps in farming activities with respect to high productivity. Also at old age, individuals with low savings may not be able to realize high productivity as when in the middle age (Anyawu, 2010).

iii. Poverty and Number of Dependants

This variable has a positive effect on poverty, that is, it has the probability of increasing poverty in the study areas. As it's obtainable in the rural farm households, where a farming household size is big. Hence, there is possibility of higher number of dependents to affect poverty negatively overall.

iv. Poverty and household head farming experience

The probability of the house head farming experience to contribute to poverty positively is not impossible, especially the developing countries (Nigeria inclusive), where agricultural practices still remain subsistence in nature with the usage of crude implements and little or no conservation of land. Evidence has shown that farmers with more years of experience are technically inefficient (Adesiyan 2014). There is a possibility of low return to labour, regardless of years of experience in farming, hence low consumption and ultimate poverty.

v. Poverty and Income

Conventionally, poverty and income are significantly related, in reality income serves as a control variable in this probit estimation. Income is positively related to poverty, this further confirms the inadequacy of income alone to adjudge poverty status of an individual. This is supported by the United Nations Development Programme (1997): Unidimensional poverty measurement does not reveal the indepth of inadequacy, but will show part of the picture in terms of many factors that has influence on individuals' level of well-being (e.g. longevity, good health, education, etc.). Sen (1987), submitted that income alone is not enough to generate well-being if the individual lack entitlements. Nevertheless, it is recognized that income is an important part of the entitlements. Also the result implies that poverty is not about having high income or endowments. It is how the income used to boost the well-being of an individual.

Table 5: Factors Determining Multidimensional Poverty in the three Study Areas

Variable	Coefficient	Standard Error	P.value
Age	-0.328	0.147	0.03**
Marital Status	0.418	0.146	0.004**
Income	0.218	0.708	0.002**
No of dependant	0.192	0.435	0.000**
Household head-Farming experience	-0.027	0.0134	0.056*
Educational level	-0.017	0.076	0.824
Household head main-Occupation	-0.018	0.295	0.951
Constant	-1.056	0.482	0.028**

* ** *** Significant at , 5%

Number of observations: 260

LR chi^2 (7) = 65.28

Log likelihood= -116.69874

Prob >chi^2= 0.0000

Pseudo R^2 = 0.2186

V. CONCLUSION

Preceding studies on rural poverty measurement in Nigeria seldom focus on the multidimensional angle of poverty. Even those that assessed poverty in a multidimensional manner often focus on the urban poverty, notwithstanding dimensional categorization of the poor are obviously lacking in most of the poverty studies in Nigeria. This study made a concerted effort to establish four categories (i.e. Multidimensional, education, consumption and housing/living standard poverty) of the poor, based on the non-monetary/monetary indicators.

Evidently, this study uncovered the similarity and differences between the one-dimensional and multidimensional poverty, though several past studies affirmed that multidimensional poverty revealed more states of deprivations of an individual than the monetary poverty. Nevertheless it's unarguable that income is a major factor in the multidimensional poverty as it's indicated in the explanations between income and the headcount poverty in this study.

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