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Multidimensional poverty assessment: applying the capability approach

John Ele-Ojo Ataguba

*Health Economics Unit, University of Cape Town,
Cape Town, South Africa, and*

Hyacinth Eme Ichoku and William M. Fonta

Department of Economics, University of Nigeria, Nsukka, Nigeria

Abstract

Purpose – The purpose of this paper is to compare the assessment of poverty/deprivation using different conceptions of this phenomenon including the traditional money-metric measure and different forms of multidimensional constructs.

Design/methodology/approach – The data were drawn from a household survey conducted in Nsukka, Nigeria. Interviewer-administered questionnaires were used in data collection from about 410 households across urban and rural localities. The counting and FGT methodologies were used to assess impoverishment, while regression analyses were used to assess the determinants of deprivation across different constructs.

Findings – Between 70 per cent and 78 per cent of the study population were identified as poor/deprived. However, more than 11 per cent of those living on less than USD1.25/day were classified as non-poor using different measures of multidimensional poverty. Similarly, more than 62 per cent of individuals who live on more than 1.25USD/day (i.e. non-poor) are classified as poor using different measures of multidimensional deprivation. There is some level of correlation between measures, some inevitably stronger than others. The major determinants of deprivation across the various constructs of deprivation include large family size, low level of education, poor employment, rural location, and poor health.

Originality/value – This paper uses novel datasets that incorporate variables relating to the capability approach in understanding deprivation. Specifically, it analyses the so-called missing dimensions of poverty. It also applies a new methodology for the assessment of impoverishment and deprivation. It highlights the importance of the capability approach in explaining poverty.

Keywords Poverty, Nigeria, Social economics, Urban areas, Rural areas, Multidimensional poverty, Deprivation, Capability approach, Missing dimensions, Nsukka

Paper type Research paper

1. Introduction

The measurement, assessment and analysis of poverty are traditionally linked to a single dimension – normally income or consumption. This approach enjoys the advantage of simplicity (Anand and Sen, 1997) under the assumption that money is a "universally convertible asset that can be translated into satisfying all other needs" (Scott, 2002, p. 488; Ahuvia, 2008). However, it has been acknowledged that poverty, which is a manifestation of insufficient wellbeing[1], goes beyond monetary indicators to include others that are non-monetary (Bourguignon and Chakravarty, 2003). Implicit in the unidimensional approach is that an individual's status on one dimension (say income) strongly predicts that individual's status on the others (Wagle, 2005, 2008). While this may well be true to some extent, it is important to note that a "higher level of capability is conducive to deriving resources needed to elevate one's economic welfare and yet not all with higher capabilities choose to do so" due to other considerations like altruism, culture, religion, or even life-style (Wagle, 2008, p. 61). The same is true of social exclusion between the monetarily non-poor and the poor (Fukuda-Parr, 1999), and the relationship between income and happiness[2] (Ahuvia, 2008).

Recently, research interests have shifted to understanding poverty in its multidimensional form (Wagle, 2005; Bourguignon and Chakravarty, 2003; Atkinson, 2003). This interest has been furthered by the increasing availability of relevant data (Alkire and Foster, 2011) and the inability of the unidimensional measure to capture multiple deprivations. This multidimensional form draws largely on the basic needs argument and Sen's capability approach (Sen, 1984, 1985, 1993; Duclos and Araar, 2006; Anand and Sen, 1997; Wagle, 2008). In a broad sense poverty can be understood as involving not only a lack of necessities of material wellbeing but also the denial of the opportunities of living a tolerable life within a society (Anand and Sen, 1997). To work with this multidimensional form means collecting extensive data on non-monetary indicators which some researchers regard as being of poor quality. However, the "quality of non-monetary data has in fact improved tremendously in the last two decades" (Alkire and Deneulin, 2009a, p. 17).

This paper acknowledges the multidimensional nature of poverty and deprivation. In doing so it also acknowledges Sen's (1993) capability framework alongside more traditional conceptions. The paper aims to examine and compare different conceptions of poverty/deprivation – the traditional money-metric measure, and different forms of multidimensional constructs including that of the "missing dimensions"[3]. This comparison is made using data for Nsukka, Nigeria. The paper also assesses the determinants and the extent of overlap across different constructs of poverty/deprivation.

In Nigeria, figures on national monetary poverty generally show that poverty has been rising. In 1980 about 17.7 million people (i.e. about 28 per cent of the population) were categorized as poor and this number increased dramatically to 68.7 million (i.e. about 54 per cent of the population) by 2004 (FOS, 2004). Also, self-assessed poverty suggests poverty is higher than that predicted by monetary poverty (FOS, 2004). While this is consistent across regions in Nigeria, the regions with lower monetary poverty headcount tend to have higher levels of self-assessed poverty headcount. This situation has been confirmed in assessment studies of participatory poverty (Canagarajah and Thomas, 2001 reporting the participatory assessment by Todd, Narayan et al., 2000). These participatory and self-assessment

studies of poverty show that "the poor" often express deprivation and poverty in terms that are often unquantifiable but instead are qualitative and subjective (see Narayan *et al.*, 2000 for instance). These however can be understood under the capability approach. They are most often related to lack of empowerment or powerlessness, social and personal isolation, and feelings of insecurity and gender discrimination (Ali-Akpajiak and Pyke, 2003; Narayan *et al.*, 2000).

This paper attempts to examine some of these issues in the Nsukka local government area (LGA) in Enugu State in Nigeria. This is a predominantly rural area characterized by underdevelopment in both physical and human capital (Madu, 2007) (this is despite the fact that a federal university is located there).

The rest of the paper is structured as follows. The next section briefly introduces the capability approach, including the "missing dimensions." Next, some key issues with the measurement and assessment of poverty are discussed. The methodology, results and discussion are presented subsequently.

2. The capability approach and the missing dimensions
The capability approach[4] evaluates social arrangements primarily "according to the extent of freedom people have to promote or achieve plural functionings they value" (Alkire, 2007, p. 90; Alkire and Deneulin, 2009b) and have reasons to value being and doing (Robeyns, 2005; Alkire and Deneulin, 2009b). It is a normative approach that views poverty not just as a multidimensional concept but as deprivation of people's valuable freedoms. In this paper, poverty is analysed within the "capabilities space" or as a function of capabilities (Wagle, 2005). In essence, we are interested in knowing whether people's valuable freedoms, through the capabilities space, are expanding or not. The capability approach can be applied differently depending on the place, situation, level of analysis, available information or even the kind of decisions involved (Alkire, 2007, p. 91).

In multidimensional poverty assessment, a set of a few available dimensions that are easily quantified are usually used. These include income/consumption, education, health, sanitation, nutrition, assets and access to basic amenities. However, some of these variables are a manifestation of the choices and lack of choices some individuals face. As such they do not in themselves indicate deprivation, for example, of freedom or of autonomy. To overcome this issue, drawing on Sen's idea of capabilities and functionings, some dimensions have been identified as "missing" (OPHI, 2007). These "missing dimensions" are introduced to try to provide a better explanation of deprivation as experienced by individuals. Five dimensions have been identified by a team of researchers at the Oxford Poverty and Human development Initiative (OPHI) based at the University of Oxford. These include quality of employment, agency or empowerment, physical safety, ability to go about without shame, and psychological wellbeing (see OPHI, 2007 for details on the indicators for assessing these dimensions). They are at best infrequently reported in national surveys, even less so in developing countries.

3. Some issues with multidimensional poverty assessment
Different approaches have been used to assess poverty and deprivation. These include the capability, social exclusion and participatory approaches (Laderchi *et al.*, 2003). These different approaches often indicate differential impacts of poverty and its determinants (Deutsch and Silber, 2005). While some have sought to suggest that

different approaches do not result in significant differences (Deutsch and Silber, 2005; von Maltzahn and Durrheim, 2008; Wagle, 2008), others have shown that there are, for example, differences in the people identified as poor (Laderchi *et al.*, 2003; Lollivier and Verger, 1997; Verger, 2003; Razafindrakoto and Roubaud, 2003; Fukuda-Parr, 1999). For instance, Lollivier and Verger (1997) working with the European Community Household Panel, isolated the tenth of the population with the lowest financial resources, the tenth with the worst living conditions, and the tenth who find it hardest to remain within their budget. Somewhat surprisingly, they found little convergence of these three sub-populations. In fact only 2 per cent are present in all three sets (Verger, 2003). Razafindrakoto and Roubaud (2003) reporting on Antananarivo in Madagascar showed that in constructing poverty based on seven criteria (objective and subjective), only about 2 per cent are common across the different constructs. On this Laderchi *et al.* (2003) argue that "different methods have different implications for policy, and also, to the extent that they point to different people as being poor, for targeting." This has been confirmed in some countries such as India, Chile, Uganda, Ethiopia, Zimbabwe, Morocco, and Peru (Laderchi *et al.*, 2003). Further, Razafindrakoto and Roubaud (2003) have noted that such weak correlations are helpful in further understanding differences in policies and the nature and causes of poverty.

4. Methodology

The population chosen for this study is that of Nsukka LGA of Enugu State, Nigeria. Nsukka, the largest LGA in the state, is located in the Northern part of Enugu State, in South-Eastern Nigeria. It is the largest LGA in the state. The population census figure for 2006 is 309,633 of which about 52 per cent are females (NBS, 2007). The choice of Nsukka is based on its relative population size, predominant rural characterization and development in comparison to similar LGAs in the state. Despite the location of one of the county's foremost universities, Nsukka is still considered relatively underdeveloped in infrastructure and human development (Madu, 2007).

Interviewer-administered questionnaires were used to conduct an adapted version of the survey modules originally developed by a team of experts at the OPHI. These supplement the OPHI's five core missing dimensions modules with traditional household survey modules drawn from the Nigerian Living Standard Survey (NLSS), Core Welfare Indicator Questionnaire (CWIQ), and General Household Survey (GHS). The information collected includes: demographic characteristics, housing characteristics, education/literacy/numeracy, health and health care, employment and employment quality, household consumption and expenditure, perceptions about values and freedom in decision making, dignity and security/violence, and perceived necessity for an acceptable standard of living.

The questionnaire was administered to 410 households in the last quarter of 2009. The respondent was an adult member (at least 18 years) of the household[5]. A multistage sampling technique was used in selecting households. The technique ensured a representative sample across both sexes. To also ensure adequate representation of both urban and rural localities, the LGA is stratified into urban (Nsukka central) and rural (the rest of the communities). Each community is classified as an enumeration area (EA) based on the National Bureau of Statistics. Because Nsukka community, which is predominantly urban, makes up about 30 per cent of the population of the LGA (NBS, 2007), 30 per cent of the sample was drawn from it.

The remaining households were drawn randomly and evenly from seven EAs in such a way as to ensure a probability-proportional to size (PPS) sampling.

The methodology developed in Alkire and Foster (2011) and recently used in Alkire and Santos (2010) to obtain multidimensional poverty indices (MPI) for developing countries was used to identify individuals who are multidimensionally poor. This methodology, similar to the FGT (Foster *et al.*, 1984) class indices, produces a new class of dimension-adjusted multidimensional poverty using a dual cut-off point approach. The first cut-off is dimension specific while the second is the minimum number of dimensions for deprived people to be called multidimensional poor. This recently proposed method for determining multidimensional poverty has been shown to satisfy various axioms including decomposability (useful in targeting) and dimensional monotonicity[6] (Alkire and Foster, 2011). It allows for the use of generalized as well as equal weights in aggregating dimensions (see Sen, 2004, p. 78 for details on differential weights). This paper uses the Alkire and Foster methodology to derive deprivation headcount (H_0) and the dimension-adjusted headcount ratio (M_0).

The dimension-adjusted headcount M_0 is obtained as:

$$M_0 = H_0 \cdot A \tag{1}$$

where H_0 is the proportion of people who are poor based on the dual cut-off approach, A is the average deprivation share across the poor.

By definition, $H_0 = q/n$ and $A = \sum_i c_i(k)/(q \cdot d)$. Where $c_i(k)/d$ is the average number of dimensions person i is deprived ($c_i(k)$) out of the total number of dimensions (d). And q is the number of poor people, k is the cut-off value and n is the total number of individuals (Alkire and Foster, 2011).

The dimension-adjusted headcount is sensitive to both the frequency and the breadth of multidimensional poverty. It is also compatible with ordinal data. In general, M_α can be written conveniently as:

$$M_\alpha = \frac{1}{nd} \sum_{i=1}^{n} \sum_{j=1}^{d} w_j \left(g_{ij}^{\alpha}(k) \right) \tag{2}$$

where $g_{ij}(k)$ is the gap in deprivation at a cut-off point k, w_j is the dimension specific weight (this allows for generalized or equal weights), n is the total number of individuals, and d is the total number of dimensions. We compute M_α for $\alpha = 0$ as the dimension-adjusted headcount where $\sum_j w_j = d$. The generalized weights (Table I based on Table II) are based on the respondents' assessment. Results from an adapted version of the socially perceived necessity (SPN)[7] questions were used (Halleröd, 1994) to generate these sets of generalized weights using the averages of responses. Importantly for poverty targeting, M_0 can be decomposed by constituent dimensions and mutually exclusive population groups (Alkire and Foster, 2011).

To construct the traditional household money-metric index of poverty we apply the FGT(α) indices (Foster *et al.*, 1984) using the poverty line of $1.25/day (at 2005 PPP) especially suited for developing countries (Baker, 2008; Ravallion *et al.*, 2009). Poverty headcount ($\alpha = 0$) and the depth of poverty ($\alpha = 1$) were assessed.

Based on the above methods, four categories of poverty/deprivation were constructed – the money metric or consumption poverty (Pov-1), multidimensional poverty including the "missing dimensions" (Pov-2) – using all nine dimensions,

Dimension	Indicator(s)		Measurement[a]	GW[b] (%)	EW[c] (%)
1. Consumption	Per capita consumption expenditure		Per capita consumption and the poverty line	11.22	11.1
2. Housing characteristics	(i) Sanitation		Good sanitation conditions	4.56	3.7
	(ii) Electricity for lighting		Use electricity as main lighting source	4.56	3.7
	(iii) Floor material		Improved floor materials	4.56	3.7
3. Health	Indicator		Health not a limiting factor in most frequent activities	14.56	11.1
4. Education	Indicator		Primary education completed	12.44	11.1
5. Employment	Indicator		Being employed	10.89	11.1
6. Employment quality	Quality employ1 (indicator)		[1] Not in informal employment	5.44	5.55
	Quality employ2 (indicator)		[2] Earning above minimum wage	5.44	5.55
7. Physical safety	Indicator		Not experiencing incidence of crime/violence	9.67	11.1
8. Empowerment	(i) Autonomy: health	Domain-specific autonomy	[1] Ability to make health/health care decisions	1.59	1.85
	(ii) Autonomy: religion		[2] Ability to practise a religion	1.59	1.85
	(iii) Autonomy: prevent crime/violence		[3] Ability to take decisions to prevent crime/violence	1.59	1.85
	(iv) Autonomy: employment choice		[4] Ability to make employment/job choice	1.59	1.85
	(v) Autonomy: change things at individual level	Global autonomy	[1] Ability to change things at individual level	1.59	1.85
	(vi) Autonomy: change things at community level		[2] Ability to change things at community level	1.59	1.85

(continued)

Table I.
Dimensions, indicators and weights

Dimension	Indicator(s)	Measurement[a]	GW^b (%)	EW^c (%)
9. Shame/humiliation	(i) Stigma of poverty	Shame associated with poverty	1.78	2.78
	(ii) Shame proneness	Feeling prone to shame	1.78	2.78
	(iii) External humiliation (external experience)	Humiliation relating to being lessened in dignity	1.78	2.78
	(iv) Internal humiliation (accumulated humiliation)	Humiliation relating to an internal feeling	1.78	2.78
10. Psychological wellbeing[d]	(i) Meaningfulness in life	Having a clear and satisfactory meaning in life	–	–
	(ii) Psychological autonomy	Being generally free to decide how to live		
	(iii) Competence	Generally competent in what one does		
	(iv) Relatedness	General ability to interact and get along with people		

Notes: [a]Details on the measurement is contained under the methodology section; [b]generalized weights; [c]equal weights; [d]this was not included in the aggregation of multidimensional poverty

Table I.

Dimension	% regarding dimension as essential
Health	91.75
Housing characteristics	86.24
Education	78.54
Income/expenditure	71.25
Quality employment	69.10
Employment[a]	69.10
Physical safety	61.14
Empowerment	60.67
Shame/humiliation	44.66

Note: [a]The same proportion was assumed as with quality of employment

Table II.
The distribution
of the weights

multidimensional poverty that excludes the "missing dimensions" (Pov-3) – using five dimensions, and that based only on the "missing dimensions" (Pov-4) – using four dimensions. The unit of analysis is the individual.

For the multidimensional measures, this paper uses the cut-off value k (i.e. the sum of weighted indicators of which an individual must be deprived to be considered multidimensional poor). This can also be interpreted as a policy variable describing the range of deprivations each poor individual must have to be classified as deprived (Alkire and Santos, 2010). An individual is categorized as multidimensionally poor if the weighted indicators (k) of which he or she is deprived sum up to 30 per cent (see Alkire and Santos, 2010, for an example on this). We used the value $k = 6$ and $k = 8$ for Pov-2 using equal weights and generalized weights, respectively, and $k = 3$ for Pov-3 and Pov-4.

To assess the factors or variables associated with the poor/deprived, a probit model for the probability of poverty is estimated on all the categories identified (Pov-1 to Pov-4). The dependent variable for the probit model is poverty/deprivation used in computing the headcount (H_0) for each of the poverty construct (Pov-1 to Pov-4). A deprived individual has a value of unity while an individual who is not deprived has a value of zero. Because the probability model may not always be suited for assessing the determinants of money-metric poverty (The World Bank, 2005), a simple ordinary least squares (OLS) was fitted on the logarithm of per capita consumption expenditure. Relevant socio-demographic, household and individual variables are used as the vector of covariates. These include sex, household size, age, marital status, educational status, employment status, region of residence, and current health status of the individual. A count model (Poisson)[8] was also implemented on the multidimensional constructs to determine the covariates that are associated with higher counts of indicators that an individual is deprived in.

4.1 Choosing indicators and dimensions
Nine core dimensions were identified (Table I) for inclusion in the multidimensional construct. The choice is based largely on the existing literature, indices used in the Millennium Development Goals (MDGs), existing theory and the availability of relevant data (see Alkire and Santos, 2010, for similar criteria in choosing indicators and dimensions for the new MPI). The tenth dimension included in Table I (i.e. psychological wellbeing) was not used in the aggregation of deprivation (OPHI, 2007) as this is more prone to subjective interpretations and adaptive preferences. It is important to note that

the choice of indicators was not straightforward. For dimensions with more than one indicator, exploratory analysis is used to seek to confirm that these indicators are in fact measuring the same thing.

To measure deprivation in health, the MDGs are often used. The MDGs' definition requires household level information (see MDG#4, MDG#5, MDG#6)[9] or individual nutritional status (see MDG#1). Because our interest is deprivation at the individual adult level, individual level data is required. Generally "nutritional assessment of adults is more problematic" than children (Collins *et al.*, 2000, p. 1). Any ideal measure of nutritional status for adults must be correlated with health/functional outcomes (Collins *et al.*, 2000). An individual is considered deprived in health if health is a limiting factor in the most frequent activities undertaken by the individual. For education, individuals who have not completed primary education[10] (see MDG#2) and those with more than primary level education but illiterate were classified as deprived. Deprivation in housing characteristics is measured using four indicators, namely: lack of electricity for lighting, poor floor materials, and poor sanitation. Thus, someone from a household without electricity is considered as deprived, likewise if their house's floor materials are of mud, dirt/straw and again if they lack an improved sanitation facility (see MDG#7) or if the facility is improved but shared with other households (Alkire and Santos, 2010). For employment, an individual is deprived if they are not employed or if they are employed only as occasional, temporary or casual workers. This however does not mean that the individual is satisfied or contented with the job (Lugo, 2007; ILO, 2005). Following Lugo (2007), a measure of employment quality was constructed using two indicators:

(1) informal employment, i.e. "all economic activities by workers and economic units that are – in law or in practise – not covered or insufficiently covered by formal arrangements" (Lugo, 2007, p. 5); and

(2) earnings below the national minimum wage[11].

For shame and humiliation, two indicators were used. Indicators for shame include the stigma of poverty and shame proneness which is defined as "the tendency to experience emotion shame in response to specific negative events" (Zavaleta, 2007). Indicators of humiliation (Zavaleta, 2007) are divided into two (external and internal). External humiliation relates to external events (e.g. discrimination, respectful treatment and unfair treatment) and internal humiliation relating to internal feelings[12]. Empowerment or agency was assessed using domain-specific and global autonomy. Indicators of the former include autonomy in making decision related to health and health care, employment, practising a religion, and preventing crime/violence (Ibrahim and Alkire, 2007). Indicators of global autonomy include the ability to bring about change at the individual level, and at the community level[13]. Specifically, an index of relative autonomy (RAI) was constructed following the work of Ryan and Deci for each of the domains (OPHI, 2008). A positive RAI score indicates autonomy in that domain. With respect to physical safety, an individual who has been victim of either violence on property or self or both is considered to lack safety. This is related to "actual acts" and not the threat of violence. This is because fear bears little relation to objective risks (Diprose, 2007, p. 7).

Per capita household consumption expenditure and equivalent household consumption expenditure[14] were constructed and used to assess monetary poverty. In establishing equivalence each child under 16 years of age is weighted as

half an adult with an economies of scale value of 0.95 (Deaton and Zaidi, 2002). Consumption expenditure was computed to include both household expenditure and own production. The World Bank's revised poverty line – US$1.25 per person per day (at 2005 PPP) recommended for developing countries (Baker, 2008) was used after adjusting to 2009 prices. The adjusted poverty line used in the paper is ₦112 (naira) per person per day[15].

Psychological wellbeing was not considered as a core component of wellbeing (OPHI, 2007) because it relates to psychological aspects that are not necessarily objective in assessing poverty. However, it is useful in understanding some aspects of an individual's wellbeing. Indicators used include: meaningfulness in life, autonomy, competence and relatedness (Samman, 2007). The incidences of these are presented.

5. Results

The mean age of respondents is 52 years (Table III) while the average, household size is four. More than half (59 per cent) of the respondents are males. Average per capita consumption expenditure is ₦137,000 (US$247) per annum.

Variables	
	Mean
Age (in years)	51.9
Household size	3.90
Annual per capita consumption (naira)[a]	36,991
Annual per adult equivalent consumption (naira)[a]	42,253
Location	*Proportions* (%)
Rural	80.68
Urban	19.32
Sex	
Female	40.82
Male	59.18
Civil status	
Married (monogamous)	48.42
Married (polygamous)	0.97
Informal/loose union	0.73
Divorced/separated	2.19
Widowed	41.12
Never married	6.57
Education level	
None	50.0
Primary school	30.68
Secondary school	13.53
Tertiary	5.80
Health status	
Excellent	10.41
Good	69.49
Average	17.68
Poor	2.18
Very poor	0.24

Notes: [a]US$1 = ₦1150 (naira); $n = 410$

Table III.
Descriptive statistics
of respondent

About half of the respondents are married, about 41 per cent widowed and 3 per cent separated. The average level of education is low, as half are not formally educated at all. Only about one-third have had a primary education and 6 per cent tertiary education. The majority (81 per cent) of respondents live in rural areas. A greater proportion of respondents reported above average health status with only a few reporting poor health.

The incidence of deprivation across the indicators as presented in Table IV shows that, on average, deprivation is lowest (<5 per cent) in autonomy to practise a religion, shame proneness and physical safety.

The incidence of deprivation is higher (>70 per cent) in informal employment, where earnings are less than the minimum wage, in education and where individual relative autonomy is low. Dimensions and indicators such as health, sanitation, relatedness, stigma of poverty, and employment show moderate levels of deprivation. Specifically, 41 per cent of the people are deprived in health, 55 per cent in sanitation, and 23 per cent in employment. Disaggregating the incidence of deprivation by sex shows that generally females tend to be more deprived than their male counterparts except in a few indicators such as employment, practising a religion, autonomy in employment choice, internal humiliation, relatedness, competence and consumption. Disaggregating by location (urban/rural) indicates that, on average, rural dwellers tend to be more deprived than urban dwellers. However, exceptions are relative autonomy and external humiliation.

| | Sex | | Location | | |
	Female (%)	Male (%)	Rural (%)	Urban (%)	Total (%)
Health	52.1	32.7	46.1	17.5	40.6
Education	92.9	74.3	82.0	81.3	81.9
Electricity	71.0	66.5	72.2	52.5	68.4
Sanitation	62.1	50.6	56.0	52.5	55.3
Floor	13.6	8.6	12.0	5.0	10.6
Employment	22.5	24.5	27.2	8.8	23.7
Informal employment	96.4	93.5	95.2	92.5	94.7
Less than min. wage	87.6	58.8	73.1	60.0	70.5
RA[a] (health)	14.2	13.5	16.2	3.8	13.8
RA[a] (religion)	4.1	5.3	5.7	1.3	4.8
RA[a] (violence)	32.5	29.4	36.5	6.3	30.7
RA[a] (employment)	4.1	7.8	5.7	8.8	6.3
RA[a] (community)	39.6	18.0	25.7	31.3	26.8
RA[a] (individual)	59.8	78.0	67.1	85.0	70.5
Stigma of poverty	21.9	22.0	25.1	8.8	22.0
Shame proneness	4.7	3.7	4.8	1.3	4.1
External humiliation	10.1	9.8	9.3	12.5	9.9
Internal humiliation	11.8	14.3	15.3	5.0	13.3
Physical safety	5.9	2.9	4.2	3.8	4.1
Meaningfulness	17.2	14.7	17.7	7.5	15.7
Autonomy	14.8	14.3	16.8	5.0	14.5
Competence	17.2	20.8	22.5	6.3	19.3
Relatedness	33.7	40.0	43.1	13.8	37.4
Consumption	60.9	75.5	73.4	53.8	69.6

Note: [a]RA – relative autonomy

Table IV.
Incidence of deprivation
across indicators

Though informative, the incidence of deprivation presented in Table IV can only indicate the proportion of people deprived in each indicator/dimension. It does not represent an aggregate measure of poverty. Such aggregate measures are shown in Table V. Here, poverty headcount and normalized poverty gap using per capita consumption, and some measures of multidimensional poverty (the headcount ratio (H_0) and dimension-adjusted headcount (M_0)) are presented, as are group specific headcounts and gaps.

Using per capita consumption, the poverty headcount is about 70 per cent (i.e. the proportion of people living below the poverty line of US$1.25/day). On average, the normalized gap is 33 per cent. Using the cut-offs defined earlier, the multidimensional headcount varied little from about 79 per cent (Pov-2 using equal weights) to 78 per cent (Pov-2 using generalized weights). However, adjusted headcounts for the average share of deprivation among the poor (M_0) ranged from 31 per cent (Pov-2 equal weights) to 45 per cent (Pov-2 generalized weights). Generally, M_0 with generalized weights was much higher than that with equal weights even though the headcounts (H_0) were similar. This may be because individuals place varying weights on different dimensions.

Group specific consumption headcounts show that rural dwellers on average are poorer (73 per cent) than urban dwellers (54 per cent). The same picture is observed for the multidimensional poverty measures. For monetary poverty males are more likely to be poor (75 per cent) than females (61 per cent). While this is the same even when using household headship in Nigeria (FOS, 2004), the reverse is the case for the multidimensional measures. Here females are multidimensionally more likely to be poor than males across all the measures. Undoubtedly, educational attainment plays an important role in poverty. Individuals without any formal education are more likely to be poor. However, this trend is not consistent for the money-metric measure. This may

| | Headcount[a] (%) | Normalized gap (%) | Pov-2[b] ($k = 6$) (%) | | Pov-2[c] ($k = 8$) (%) | |
			H_0	M_0	H_0	M_0
	69.56	32.68	78.50	31.40	78.26	44.73
	(0.023)	(0.013)	(0.020)	(0.009)	(0.020)	(0.012)
Group specific normalized gaps and headcounts						
Location						
Urban	53.75	23.01	56.25	20.50	58.75	29.88
Rural	73.35	35.00	83.83	34.01	82.93	48.29
Sex						
Male	75.51	36.18	72.65	28.43	73.88	40.42
Female	60.95	27.62	86.98	35.71	84.62	50.99
Education						
None	70.05	32.48	90.82	36.93	90.82	54.14
Primary	76.38	36.96	70.87	28.31	73.23	40.67
Secondary	55.36	24.55	67.86	25.62	58.93	29.74
Tertiary	62.50	30.80	37.50	13.54	41.67	20.09
Household size						
1-2 members	29.93	9.20	81.02	32.48	78.83	44.33
3-5 members	83.73	38.65	82.53	33.83	81.93	48.28
6+ members	97.30	52.75	69.37	26.44	72.07	39.92

Table V.
Poverty and deprivation headcounts

Notes: [a]Poverty line = US$1.25/day; [b]equal weights; [c]generalized weights; standard errors in parenthesis

be explained by the insensitivity of monetary poverty to the incidence of deprivation in other vital dimensions. While education may increase the potential for earning, income may also be earned through some other means that do not require extensive education. Examples include owning large business outfits, and operating large sales outlets that are peculiar to the study population. The results also show that larger household size is associated with higher poverty headcounts, especially for monetary poverty but the picture is mixed for multidimensional measures.

Table VI indicates the decomposition of M_0 across dimensions. For Pov-2, the relative contributions of dimensions differ when generalized and equal weights are used. However, employment quality contributes most to deprivation. For Pov-4, empowerment and employment quality contribute more to deprivation than the remaining two dimensions. When the missing dimensions are excluded (Pov-3), housing adequacy contributes most to deprivation. Consumption contributes only between 9 and 19 per cent. The overall contributions of physical safety, shame and employment are relatively small. In summary, employment quality, empowerment, education, housing adequacy and health are the more important dimensions of deprivation.

The evidence on the overlaps across constructs is presented in Table VII. This table shows the proportion of the monetary poor (monetary non-poor) who are classified as non-poor (poor) using other measures of multidimensional poverty (i.e. Pov-2 to Pov-4). The results show that about 22 per cent (75 per cent) of the monetary poor (non-poor) were classified as non-poor (poor) using only the missing dimensions (Pov-4). Including all nine dimensions (Pov-2), about 16 per cent (66 per cent) of the monetary poor (non-poor) are classified as non-poor (poor). This implies that, though the measures

	Pov-2[a] (%) $k = 6$	Pov-2[b] (%) $k = 8$	Pov-3[a] (%) $k = 3$	Pov-4[a] (%) $k = 3$
M_0 (adjusted headcount)	31.40	44.73	45.58	25.31
SE (M_0)	(0.009)	(0.012)	(0.012)	(0.008)
Percentage contribution				
Health	5.96	11.89	11.66	–
Education	10.81	18.01	22.26	–
Housing	19.19	11.20	39.52	–
Employment	3.46	5.09	7.19	–
Employment quality	22.42	32.86	–	41.63
Empowerment	20.77	3.99	–	42.44
Shame	7.46	2.10	–	14.68
Physical safety	0.62	0.83	–	1.25
Consumption	9.31	14.03	19.38	–

Notes: [a]Equal weights; [b]generalized weights

Table VI.
Dimension-adjusted poverty headcounts (M_0) decomposed by dimensions

	% monetary poor classified as non-poor based on	% monetary non-poor classified as poor based on
Pov-2 (using equal weights and $k = 6$)	15.97	65.87
Pov-3 (using equal weights and $k = 3$)	11.11	62.70
Pov-4 (using equal weights and $k = 3$)	21.52	75.40

Table VII.
Classification of deprived across measures of multidimensional poverty

produce similar levels of headcount (between 70 and 78 per cent), they tend to identify different individuals as poor/non-poor. To illustrate this point further, we present the results of a simple Spearman's rank correlation of the headcounts (H_0) in Table VIII.

The correlation coefficients show that there is some level of positive correlation between various measures. For consumption poverty and the missing dimensions (coefficient = 0.03), this was not statistically different from zero. The rest of the pair-wise correlations are statistically significant, signifying some level of agreement across measures.

The factors or characteristics that predict poverty and deprivation, using binary probit regression, are presented in Table IX. All the results show fairly similar patterns. Column (1) relates to the consumption poor (Pov-1), column (2) multidimensional poverty (Pov-2) using equal weighting, column (3) is similar to column (2) but with generalized weights. The dependent variable in column (4) is the probability of being "missing dimensions" poor using equal weights while column (5) uses as dependent variable, the construct of multidimensional poverty without the missing dimensions (Pov-3). We chose this differentiation in order to examine if similar variables or factors are associated with each definition.

Significant variables that predict consumption poverty include household size, employment status, location, and education. For multidimensional poverty using equal weights (see column (2)), significant variables include employment status, location, education and health. For generalized weights (column (3)), the significant variables are slightly different. The significant variables include age, sex, civil status, location, education and health. In column (4) significant variables include household size (though the sign is counter to expectation), age, education, and health. In column (5) significant predictors include employment status, sex, location, education and health. Also in Table X similar variables as those contained in column (1) of Table IX are associated with lower logarithm of per capita expenditure. Only the sign on current health status is counter intuitive.

These show that even though similar variables tend to predict poverty, there are cases when predictors of poverty may vary depending on how poverty or deprivation is measured. However, key variables that tend to predict poverty across all measures include health, education, and location.

Similar to the factors that predict poverty, some factors are associated with higher counts of deprivation. The results of the Poisson regression presented in Table XI show that on average, rural dwelling, individuals with low level of education, not employed, and poor health are associated with higher counts of deprivation. Also larger

	(A)	(B) $k = 8$	(C) $k = 9$	(D) $k = 5$	(E) $k = 3$
(A)	1.000				
(B)	0.203*	1.000			
(C)	0.262*	0.722*	1.000		
(D)	0.307*	0.599*	0.638*	1.000	
(E)	0.034	0.550*	0.376*	0.1363*	1.000

Table VIII.
Correlation between selected poverty headcounts

Notes: Significant at: *1 per cent level; (A) – consumption headcount; (B) – headcount Pov-2 (equal weights); (C) – headcount Pov-2 (generalized weights); (D) – headcount Pov-3 (equal weights); (E) – headcount Pov-4 (equal weights)

	Pov-1 (PL = $1.25/ day) (1)	Pov-2 (equal wgts) $k = 6$ (2)	Pov-2 (general wgts) $k = 8$ (3)	Pov-4 (equal wgts) $k = 3$ (4)	Pov-3 (equal wgts) $k = 3$ (5)
Household size	0.624***	−0.055	−0.002	−0.103***	0.027
	(0.070)	(0.040)	(0.041)	(0.038)	(0.042)
Age1 (18-30 years)[a]	−0.472	0.295	0.285	1.305***	0.599
	(0.449)	(0.425)	(0.439)	(0.502)	(0.436)
Age2 (31-45 years)[a]	0.148	−0.038	−0.115	0.498**	0.205
	(0.289)	(0.276)	(0.301)	(0.252)	(0.291)
Age3 (46-60 years)[a]	0.146	−0.056	−0.501**	0.350*	−0.119
	(0.210)	(0.221)	(0.253)	(0.186)	(0.231)
Employed	−1.500**	−1.138*	−1.078	−0.844	−1.305*
	(0.640)	(0.645)	(0.687)	(0.615)	(0.687)
Male	0.038	0.103	0.980***	−0.120	0.699**
	(0.291)	(0.278)	(0.331)	(0.265)	(0.307)
Married[b]	−0.223	0.124	−0.199	1.092**	−0.073
	(0.443)	(0.406)	(0.402)	(0.431)	(0.404)
Divorced or widowed[b]	−0.106	0.256	0.985**	0.678	0.608
	(0.420)	(0.393)	(0.390)	(0.394)	(0.386)
Urban	−0.472**	−0.855***	−0.757***	−0.253	−0.864***
	(0.215)	(0.185)	(0.190)	(0.184)	(0.188)
No formal education[c]	2.011***	1.689***	1.720***	0.803**	2.115***
	(0.484)	(0.356)	(0.369)	(0.331)	(0.375)
Primary education[c]	1.460***	1.066***	1.143***	0.729**	1.656***
	(0.447)	(0.332)	(0.341)	(0.318)	(0.351)
Secondary education[c]	1.479***	0.730**	0.425	0.878**	0.905**
	(0.509)	(0.362)	(0.370)	(0.372)	(0.374)
Excellent health[d]	0.027	−1.277***	−1.470***	−1.315***	−0.707*
	(0.326)	(0.326)	(0.396)	(0.288)	(0.365)
Good health[d]	0.058	−0.550**	−1.074***	−0.553**	−0.732***
	(0.215)	(0.263)	(0.334)	(0.219)	(0.281)
Constant	−1.569*	1.504	1.286	0.767	0.663
	(0.811)	(0.779)	(0.848)	(0.746)	(0.805)
Pseudo R^2	0.41	0.23	0.27	0.12	0.24
Log likelihood	−150	−167	−159	−193	−153
χ^2	209***	98***	115***	55***	97***
Observations	414	414	414	414	414

Notes: Significant at: *10, **5 and ***1 per cent levels; reference categories: [a]Age4 (61 years +); [b]never married; [c]tertiary education; [d]less than good health

Table IX.
Coefficients of probit model showing the correlates of poverty and deprivation

household size is significantly associated with higher counts of deprivation for the missing dimensions. These variables show that multiple deprivations are significantly higher for this category of individuals compared to their counterparts and are significant from a policy perspective.

As shown in Figures 1 and 2, and as expected, poverty frontiers decline with increasing values of k. M_0 responds less to this choice compared to H_0. The ordering of poverty headcount generally remains robust to choice of values of k (e.g. irrespective of the cut-off value, the proportion of poor individuals residing in rural areas is higher than those residing in urban areas). The robustness results are generally similar across H_0 and M_0.

Dependent variable = log of per capita expenditure	
Household size	-0.195^{***} (0.014)
Age1 (18-30 years)[a]	-0.080 (0.113)
Age2 (31-45 years)[a]	-0.095 (0.082)
Age3 (46-60 years)[a]	-0.043 (0.065)
Employed	0.361^{***} (0.119)
Male	0.179^{*} (0.094)
Married[b]	-0.073 (0.109)
Divorced or widowed[b]	0.002 (0.099)
Urban	0.373^{***} (0.074)
No formal education[c]	-0.452^{***} (0.137)
Primary education[c]	-0.294^{**} (0.140)
Secondary education[c]	-0.162 (0.145)
Excellent health[d]	-0.114 (0.090)
Good health[d]	-0.135^{**} (0.065)
Constant	11.023^{***} (0.186)
R^2	0.49
Observations	414

Notes: Significant at: [*]10, [**]5 and [***]1 per cent levels; reference categories: [a]Age4 (61 years +); [b]never married; [c]tertiary education; [d]less than good health

Table X.
OLS regression results of determinants of monetary poverty

	Multidimensional poor (1)	Multidimensional poor (exc. missing dimensions) (2)	Multidimensional poor (only missing dimensions) (3)
Household size	-0.016 (0.010)	0.006 (0.014)	-0.037^{***} (0.014)
Age1 (18-30 years)[a]	0.123 (0.103)	0.098 (0.152)	0.146 (0.141)
Age2 (31-45 years)[a]	0.065 (0.063)	0.046 (0.090)	0.087 (0.089)
Age3 (46-60 years)[a]	0.043 (0.048)	-0.012 (0.068)	0.099 (0.069)
Employed	-0.210^{*} (0.113)	-0.279^{*} (0.161)	-0.145 (0.159)
Male	0.015 (0.067)	0.077 (0.096)	-0.040 (0.092)
Married[b]	0.112 (0.105)	0.077 (0.157)	0.147 (0.141)
Divorced or widowed[b]	0.126 (0.101)	0.185 (0.152)	0.075 (0.136)
Urban	-0.220^{***} (0.051)	-0.261^{***} (0.076)	-0.185^{***} (0.070)
No formal education[c]	0.440^{***} (0.104)	0.683^{***} (0.158)	0.221 (0.139)
Primary education[c]	0.388^{***} (0.103)	0.546^{***} (0.157)	0.254^{*} (0.137)
Secondary education[c]	0.276^{**} (0.112)	0.323^{*} (0.172)	0.231 (0.148)
Excellent health[d]	-0.287^{***} (0.075)	-0.144 (0.105)	-0.431^{***} (0.109)
Good health[d]	-0.093^{**} (0.046)	-0.062 (0.066)	-0.125^{**} (0.064)
Constant	1.826^{***} (0.167)	0.861^{***} (0.247)	1.370^{***} (0.228)
Pseudo R^2	0.04	0.04	0.03
Log likelihood	-877	-705	-743
χ^2	81^{***}	63^{****}	41^{***}
Observations	414	414	414

Table XI.
Poisson estimates of the correlates of deprivation counts

Notes: significant at: [*]10, [**]5 and [***]1 per cent levels; reference categories: [a]Age4 (61 years +); [b]never married; [c]tertiary education; [d]less than good health
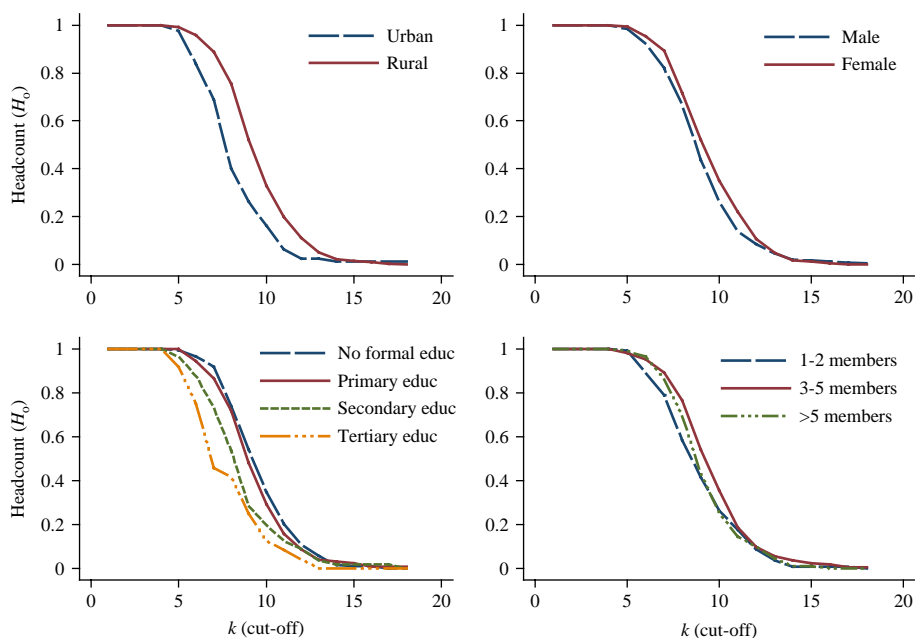
Figure 1.
Choice of cut-off (k) and
poverty headcount: Pov-2
(equal weights)
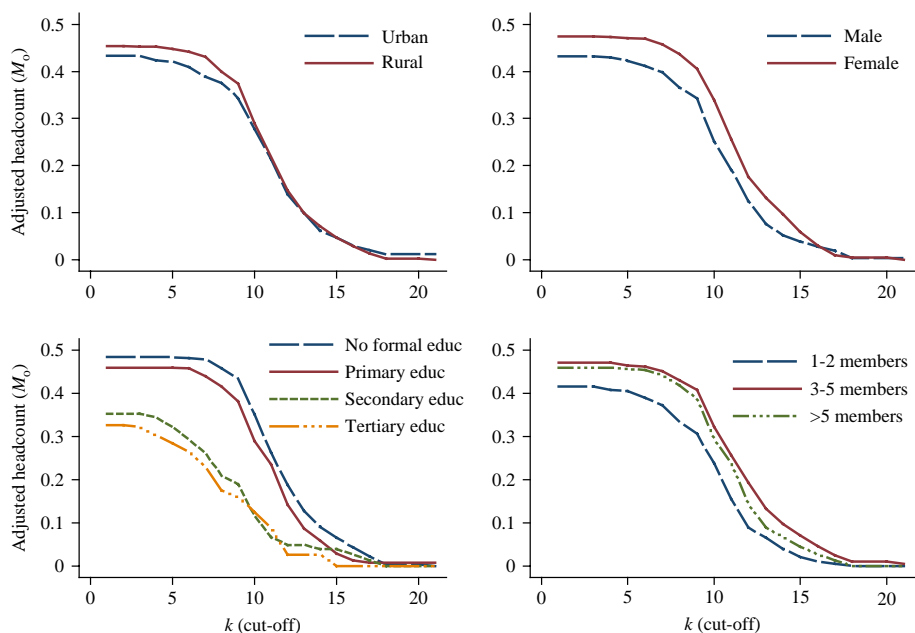
Figure 2.
Choice of cut-off (k)
and adjusted poverty
headcount: Pov-2
(equal weights)

6. Discussion

The findings from the study indicate that, depending on how poverty and deprivation are conceived of and measured, there are likely to be differences in the people identified as poor and/or deprived. Using simple incidence of deprivation, females are identified as generally more deprived than males in most key indicators including education, electricity, flooring material, sanitation, employment quality, most of the autonomy indicators, and shame. However, contrary to expectation, consumption poverty (less than US$1.25/day) was reported higher among males (76 per cent) than females (61 per cent). This is the same as other evidence reported, based on national statistics in Nigeria (FOS, 2004) that uses household headship and not poverty of the individual. International debate still exists on whether more females are poorer than males or female-headed households are poorer than male-headed (Marcoux, 1998; Fukuda-Parr, 1999). However, inequalities in access to basic amenities have been documented against females who suffer multiple deprivations (see Agarwal, 1989, for instance). The multidimensional measures that do not assess poverty using only consumption expenditure show that females are more deprived than males. This trend was further confirmed in robustness analysis irrespective of the cut-off (*k*) value for Pov-2 to Pov-4. The larger proportion of deprived females compared to males has also been documented in terms of female and male school enrolment rates (Adeyemi and Akpotu, 2004) and access to other social services.

The general poverty headcount obtained from this study compares with that obtained in national surveys (FOS, 2004). Across rural and urban areas, the results show that, as expected, rural areas are more deprived in employment and employment quality than their urban counterparts. Though there are heterogeneous employments in the urban areas, compared to the rural, the quality is still higher. Further, the results show that rural dwellers exhibit greater autonomy in decision making both at the individual and community levels than urban dwellers. This autonomy could be driven largely by the communal nature of rural living in Nigeria. In rural areas compared to urban, people are more readily acquainted with each other and each other's families and there is therefore greater likelihood of being part of community decision making. In fact, communal living is common in most rural societies in Nigeria.

The results of the deprivation incidence indicate that the major dimensions/indicators of which people are most likely to be deprived include sanitation, electricity, education, employment quality, and consumption expenditure. These can therefore be interpreted as the major drivers of deprivation in Nsukka. These impact on each other and also on overall wellbeing. For instance, poor health outcomes could limit productivity and lower living standards. These issues have been discussed in the literature on the social determinants of health (Dixon, 2000). Indicators such as shame proneness, physical safety, and autonomy to practise a religion show low levels of deprivation. High autonomy to practise a religion is not surprising in Nigeria because of the centrality of religion in affairs (Marshall, 1991).

As expected, rural dwellers, those with little or no formal education, and large households tend to have higher deprivation headcounts than urban dwellers. Rural dwellers are more likely to be poorer due to the nature of their environment, living conditions and lack of access to basic amenities and constrained opportunities. The same is true of individuals with little or no education. Education may offer individuals a way out of poverty as skills acquired can increase the productivity of people and their earnings (Tilak, 2002). Also education can be regarded as a basic need which can help to fulfil other basic needs and thereby lead to improvements in quality of life (Tilak, 2002). On household

sizes, although it appears that generally larger households are poorer (Lawson *et al.*, 2006), this may be the result of ignoring economies of scale (Lanjouw and Ravallion, 1995). However, using per adult equivalent consumption shows the same pattern as those based on per capita consumption. For instance[16] using per adult equivalent consumption, smaller households (one to two members) have a headcount of 27 per cent compared to the largest households (86 per cent). For the multidimensional measures, a contrasting pattern is observed as headcounts are smaller among larger households (6 + members). However, the headcounts for households with three to five members are still larger than those for households with less than three members. This may be attributed to different conceptions underlying poverty using the multidimensional approach. Our results therefore indicate that while household size impacts on poverty status of households using monetary measures, the results are less clear for multidimensional poverty.

Though the choice of which conception of poverty/deprivation is used for policy making is dependent on the policy maker, the decomposition results across the dimensions indicate that employment quality, empowerment, education, housing adequacy and health are important dimensions of deprivation. Equally important is the finding that various measures of multidimensional poverty, to an extent, capture different people as poor (see Verger, 2003 for a similar argument). While this has been shown elsewhere, it has potentially major implications for policy and targeting (Laderchi *et al.*, 2003; Razafindrakoto and Roubaud, 2003). Our results show that more than 11 per cent of those living below US$1.25/day are classified as non-poor using different measures of multidimensional poverty. Similarly, more than 62 per cent of individuals who survive on more than US$1.25/day (i.e. non-poor) are classified as poor using different measures of multidimensional deprivation.

Even though the results across measures indicate differences in the people classified as poor or non-poor, there is some level of correlation between measures, some weak, others strong. Consumption poverty correlates well with all but one (i.e. Pov-4 – the missing dimensions). This shows that the inclusion of the "missing dimensions" under the capability framework may be indicating another aspect of wellbeing that is different from those captured using only consumption or other sets of variables traditionally used in constructing multidimensional poverty.

The results of the assessment of the determinants of deprivation along the various constructs of poverty are used to further investigate if there are significant differences in the people identified as deprived. If the factors that predict poverty or deprivation are fairly similar, as may often be the case (Deutsch and Silber, 2005), it may make little difference for policy targeting. If however these factors differ considerably, policy prescriptions are likely to be different. Our results show that though few different variables may be significantly associated with different measures of deprivation, on average similar key variables such as health, education and location are generally significant across all measures. For the factors associated with higher counts of multiple deprivations, similar variables were also identified. Rural dwelling, low level of education, not being employed, and poor health were found to be associated with higher counts of deprivation in the study population. These factors, similar to those often reported in previous studies (Deutsch and Silber, 2005; Wagle, 2008), are relevant for poverty targeting in the context of the MDGs.

In general, our results indicate a number of factors which are characteristic of the poor and deprived in Nsukka. In order to alleviate poverty, a holistic and integrated

approach that recognizes the inter-linkages between and among the various factors that characterize the poor is important. In terms of policy, and based on this study, improving housing conditions may impact positively on health, and quality employment may enhance housing conditions, etc. Therefore, factors such as housing conditions, education, employment quality, health, and other "missing dimensions" that have been identified as major significant factors associated with the poor must be used in the future, adopting multi-sectoral approaches. To improve the quality and level of education, a good, strong educational system is required in addition to for instance good environmental conditions and an absorptive labour market. This will include building and staffing schools and increasing awareness of people to the benefits of education as well as ensuring that individuals have access to electricity for learning. Also because quality employment offers a route out of poverty (Lugo, 2007), higher assurances of entering into the formal labour market through employment opportunities are important.

It remains the case however that multidimensional poverty assessment is still faced with methodological challenges and that further research is required. However, this paper has shown that poverty measurement using different constructs can identify different individuals as poor. Also the "missing dimensions" of poverty approach under the capability framework has provided insights into understanding multidimensional poverty. In the future, there is need to incorporate these into routine data collection processes and future analyses of poverty data.

Notes

1. It is important to note that wellbeing here is not just about material wellbeing. It includes psychological wellbeing, physical wellbeing, lack of opportunities and freedom, etc.

2. Evidences show that "among the truly poor, the relationship between income and happiness is moderately strong. Once one's basic needs have been met, the relationship between income and happiness continues to be measurable but becomes extremely small, and of negligible practical significance" (Ahuvia, 2008, p. 204). This is largely true for cross-sectional data within countries than time-series across countries.

3. The missing dimensions and what constitutes them is explained in the next section.

4. This approach is not just about poverty. It "is not a theory that can explain poverty, inequality or well-being; instead, it rather provides a tool and a framework within which to conceptualize and evaluate these phenomena" (Robeyns, 2005). It is also a framework with interdisciplinary character that focuses on the multidimensional aspects of wellbeing.

5. The survey provided for the case where there may be only children in a household. However, during the survey there were no children-households.

6. Here, if a poor or deprived person is deprived in a new dimension in which she/he was not previously deprived, the overall measure of poverty should reflect this (i.e. it should increase).

7. The SPN is attributed to the work of Mack and Lansley (1985) in the Great Britain. They defined poverty as "an enforced lack of socially perceived necessities" (see Halleröd, 1994 quoting Mack and Lansley). Here, they identified as necessities a set of consumption items. Individuals were regarded as poor in terms of their ability to maintain a standard of consumption that is perceived necessary by majority of the population. This aims to reduce the influence of researchers and allow the values of people to determine how poverty is aggregated.

8. Test for over dispersion shows that the Poisson model is appropriate rather than a negative binomial.

9. MDG#1, MDG#2, MDG#4, MDG#5, MDG#6, and MDG#7 mean MDG goal numbers 1, 2, 4, 5, 6, and 7, respectively.

10. From the survey, all respondents are adults and none with less than secondary level of education is currently attending school. With respect to education we categorize as deprived, individuals who indicate having only up to primary education. This was because of the difficult of distinguishing those who had completed and those who had not completed primary education.

11. Reported income from main activity was used to assess this. Though there are issues, in traditional surveys, with under-reporting, this is a major limitation of the method.

12. Zavaleta (2007) contains details on the distinction between external and internal humiliation. Humiliation "can refer to an [external] act (i.e. to humiliate someone or feeling humiliated by someone) or to an internal feeling" (Zavaleta, 2007, p. 4).

13. For details on how these were captured, see OPHI (2007).

14. Adult equivalent scales are constructed to account for, for instance, household composition and structure. Controversies exist as to what the correct value for the cost of a child and the measures of economies of scale are. The literature contains several measures of adult equivalents. For simplicity, we used a value close to one as the measure of economies of scale and a value of 0.5 for the cost of a child (Deaton and Zaidi, 2002). We found that results from using per capita expenditure and that from using per adult equivalent expenditure were not different. We however present the results based on per capita consumption expenditure.

15. As at the time of the survey, the average nominal exchange rate was however US$1 = ₦150.

16. This was not shown in the table.

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Corresponding author

John Ele-Ojo Ataguba can be contacted at: John.Ataguba@uct.ac.za

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