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'Misunderestimating' Chronic Poverty?

Exploring Chronic Poverty in Developing Countries Using Cross-Sectional Demographic and Health Data

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ABSTRACT This article examines the issue of chronic (i.e. long-term) poverty in developing countries. It presents a method for estimating chronic poverty using cross-sectional data and suggests that researchers need not rely solely on longitudinal or panel data. As such data are unavailable for most developing countries, the method outlined here provides an opportunity to expand our understanding of the distribution and pattern of chronic poverty in many more countries. The article also shows how the methods used to estimate the number of chronically poor in developing countries in the 2005 Chronic Poverty Report contain errors that render them serious underestimates. The problem of chronic poverty is therefore considerably more pressing and more widespread than is currently thought.

KEYWORDS *chronic poverty*, *developing countries*, *methods*, *poverty statistics*, *Uganda*

International attention has in recent years focused on the issue of poverty in developing countries, through movements like Jubilee 2000 and the 2005 Make Poverty History campaign. While the first Millennium Development Goal relates to the eradication of extreme poverty and hunger, concern has been expressed over whether it will (ever) be met. A flurry of recent research has shown that while progress is being made to reduce poverty in some regions (notably East Asia), in others it is stalling or even regressing. Part of this research concerns the issue of chronic poverty – i.e. long-term poverty – and its impact.

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In 2004, the UK Chancellor of the Exchequer, Gordon Brown, launched the first Chronic Poverty Report (CPR). The Report estimated between 300m and 420m of the world's poor were chronically poor (between 25–35%), but made clear these were preliminary estimates. One reason for this was because questions remained about the reliability of the data and the Report's underlying assumptions and methods. This article in contributing to the debate has three main aims: (1) to propose a method for estimating long-term poverty using non-monetary, deprivation indices and cross-sectional data; (2) to compare the results of this method to those of Chronic Poverty Research Centre (CPRC); and (3) to show how due to a mathematical error, the estimates in the CPR may in fact be significant underestimates.

Concepts and Definitions

Definitions of chronic poverty reflect the duration of poverty and the way it is measured. Poverty can be experienced in a number of ways over time, for example as repeated spells varying in duration or as a single prolonged spell. More precise definitions would include details about the chosen indicator of poverty (e.g. income or consumption below a set threshold, a set number of deprivations, etc.), the time period chosen over which chronicity is assessed (e.g. five years), the frequency of assessment, and/or the number of episodes of poverty within a given period of observation, e.g. a total of six years 'in' poverty out of an observation period of ten years.

Rowntree, writing about poverty in 19th-century York, showed how it fluctuated across the course of a person's life (Rowntree, 1901). He suggested there were particular periods (childhood, old age) when people were more vulnerable to poverty, during which events could push them below or above a certain threshold (e.g. influx of additional dependent household members), into or out of poverty.

Certain deprivations (e.g. childhood malnutrition) are known to have negative effects in later life, and prolonged exposure to poor housing or insufficient food is known to be associated with a range of negative outcomes, including raised morbidity and premature mortality (Pantazis and Gordon, 1997; Townsend and Davidson, 1988; Whitehead, 1988). For these and other reasons analysts need to consider both the duration and severity of poverty experienced.

Central to debates about poverty has been the issue of its measurement. While it is generally agreed that poverty is essentially the lack of command over sufficient resources to meet one's material needs (Townsend, 1979), discussions rage as to what exactly constitutes a 'lack' of resources, which needs are to be met, and how the thresholds below which a person or household is considered 'poor' should be set (Oyen et al., 2003).

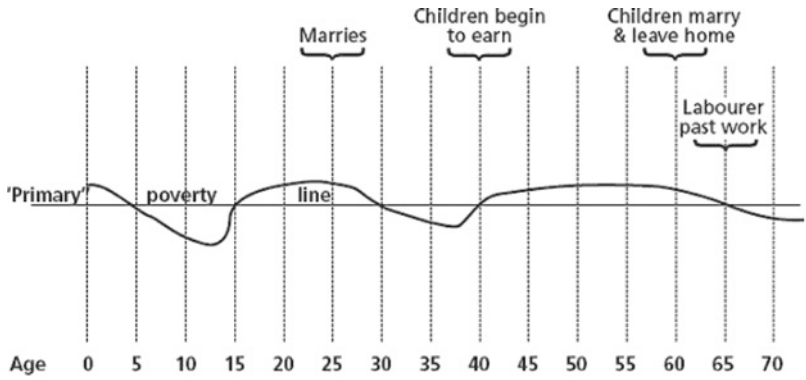


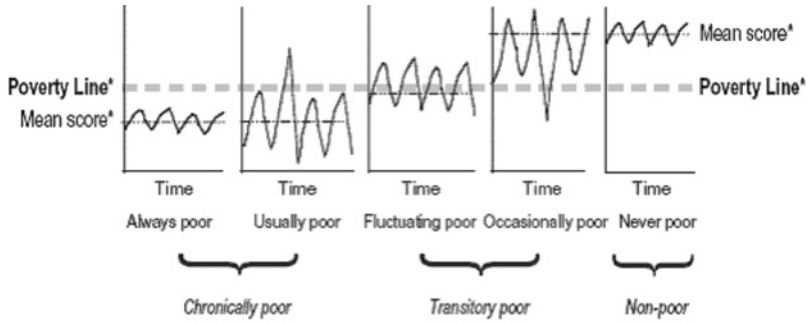
FIGURE 1 *Rowntree's model of poverty across the life course*
Source: Rowntree (1901: 137).

Until recently, a lack of appropriate data has stifled proper examination of long-term poverty and poverty dynamics in developing countries (Deaton, 1997; Harpham et al., 2003; Seager and De Wet, 2003). A recent study notes:

> Until the late 1980s the main ways in which time was included in poverty analysis was in terms of poverty trends, seasonality, the timing of experiences and historical accounts of poverty. Poverty trends commonly contrasted headcounts of poverty snapshots across a population at two different times. They provided a general impression of whether poverty was increasing or decreasing between two points in time but little or no idea of the dynamic nature of poverty. (Clarke and Hulme, 2005: 5)

While vulnerability to poverty varies across the life course (as Rowntree showed), it is also the case that patterns of poverty differ. While some groups might continuously be below a certain threshold, others might only experience poverty in short but repeated episodes. Surveys seeking to grasp a picture of poverty may fail to identify people living in poverty before and after the observation period.

While there is a large literature on poverty dynamics, based mostly on studies from Europe and North America (Ashworth et al., 1991; Bane and Ellwood, 1986; Coe, 1976; Duncan, 1984; Fourage and Layte, 2003; Huff Stevens, 1999; Leisering and Walker, 1998; Walker and Ashworth, 1994; Whelan and Maitre, 2005), there is a growing number of studies from the transition economies of central and eastern Europe (Bradbury et al., 2001). Most suggest a greater vulnerability to poverty among certain social groups, including families with children, the elderly and single parent families. Studies from the USA (Gottschalk and Danziger, 2001; Hill et al., 1998) report considerable ethnic differences, with African-Americans at greatest risk of being or remaining poor, and thereby subject to the greater health and mortality risks this entails.



*Depending on data availability, poverty could be assessed in terms of household expenditure, income, consumption, a poverty index or scale, nutritional status, or an assessment of assets.

FIGURE 2 *CPRC's models of poverty over time*
Source: CPRC (2004: 5).

Until recently relatively little attention was paid to poverty dynamics in developing countries. The CPRC was established to examine chronic poverty in developing countries, and in its first Chronic Poverty Report (CPRC, 2004) made the first global estimates of chronic poverty. The Report identified five main patterns of poverty (Figure 2): the Always Poor, the Usually Poor, the Fluctuating Poor, the Occasionally Poor and the Never Poor. These patterns were then amalgamated into three smaller groups: the Chronic Poor (comprising the Always and the Usually Poor), the Transitory Poor (comprising the Fluctuating and Occasionally Poor) and the Non-Poor. A period of five years was selected to reflect chronicity,[1] and poverty status was accorded using money-metric indicators. The CPRC's methodology is discussed in greater detail later.

Much of the literature on the measurement of poverty considers the suitability of indicators and choice of data. There is general acceptance that poverty is multifaceted, and that no single indicator completely captures what it is to be poor (CPRC, 2004). Definitions and indicators relying solely on monetary data (e.g. the World Bank's dollar-a-day indicator for extreme poverty) will miss many who live in poor and deprived conditions, whose most basic needs (e.g. for food or shelter) are often not met. Work on poverty and deprivation in South Africa (Klasen, 1997, 2000), which used both income and deprivation indicators, found that income-based indicators missed a considerable number of people (around 3.7m) who were classified as poor by the deprivation indicators. The studies found female-headed households were over-represented among the poor, especially in rural areas, and there were clear differences between ethnic groups – an enduring legacy of the policies of Apartheid. Klasen (1997, 2000) concluded that broader methods of assessment were required if significant numbers of people living in conditions of poverty were not to be missed. Anti-poverty policies that predominantly focus

on income poverty are unlikely to solve the deprivations (of food, education, housing, etc.) that affect the lives of millions.

While most studies of poverty dynamics use longitudinal or panel data, their considerable scarcity in developing countries has led researchers to try and use more readily available cross-sectional survey data (McKay and Lawson, 2002). One study from Ghana used repeated cross-sectional surveys to assess poverty dynamics, examining aggregate changes in prevalence as well as changes for particular groups and regions (Couloumbe and McKay, 2001). It found that while poverty fell nationally, it persisted in rural and savannah areas and among agricultural workers, a pattern suggestive of chronic poverty. Another study, from Papua New Guinea, adjusted annual expenditure estimates to remove the effect of within-year expenditure fluctuations and used these to measure poverty over time (Gibson, 2001). An estimated 15% of households were chronically poor, with prevalence much greater in rural areas than in urban areas. An Indonesian study (Suryahadi and Sumarto, 2001) used data on expenditure and consumption from cross-sectional household surveys to estimate the prevalence of transient and chronic poverty. Using a regression model of the relationship between a household's level of consumption and its characteristics to assess vulnerability to poverty, the researchers used the predicted values of the model to distinguish between the Transient Poor (i.e. households whose current consumption was below the poverty line, but whose predicted consumption was above it) and the Chronic Poor (i.e. households where both current and predicted consumption levels were below the poverty line). The study estimated a national chronic poverty rate of 35%, with prevalence rates again greatest in rural areas. Rates of chronic poverty were particularly high among agricultural workers, compared to those with jobs in the service and manufacturing sectors. Each of these studies used monetary indicators, and so one might argue, could have missing significant numbers of poor (i.e. deprived) people.

This article also uses cross-sectional data but takes a different approach, using deprivation indicators to identify people living in long-term poverty.

Using Cross-Sectional Data to Examine Chronic Poverty

In 1995 the World Summit for Social Development (WSSD) produced an internationally accepted definition of absolute poverty. Absolute poverty was defined as:

> A condition characterized by severe deprivation of basic human needs, including food, safe drinking water, sanitation facilities, health, shelter, education and information. It depends not only on income but also on access to services. (United Nations, 1995: 57)

Poverty studies should reflect important non-monetary aspects, such as access to safe drinking water and health and education facilities. Indicators of severe

deprivation can and have been operationalized (e.g. Gordon, 2002) to analyse poverty in developing countries, where the concept of absolute poverty is of greatest relevance.

There have been hundreds of surveys run in developing countries that collect information for use in poverty assessments and studies. Most are cross-sectional, and so have not been used to examine poverty over time. Examples of such surveys include UNICEF's Multiple Indicator Cluster Surveys (MICS), the World Bank's Living Standards Measurement Surveys (LSMS), and the well-known Demographic and Health Surveys (DHS), funded by USAID. Most use standardized questionnaires and sampling methods, and the data collected are nationally representative. Such surveys provide valuable high-quality data on developing countries that have traditionally lacked them.

The DHS are regarded to be of particularly high quality and are used regularly by international organizations like the World Health Organization (WHO) and World Bank (Vaessen, 1996; Wirth et al., 2006), and form an important part of monitoring progress towards the international Millennium Development Goals. Information on people's living conditions, education, fertility, health and nutritional status is collected at individual, household and community levels through in-depth interviews. A household questionnaire collects information on each family member (e.g. age, sex, education, occupation, marital status), and about the dwelling (e.g. number of bedrooms, distance to and type of water source, form of sanitation, cooking fuel used, source of health care). Information on asset ownership (e.g. land, livestock) and durable goods (e.g. radios, televisions, vehicles) is also collected but as the DHS do not collect income or expenditure data, researchers have developed different methods of constructing wealth and deprivation indices to examine poverty and inequality (Filmer and Pritchett, 2001; Gordon et al., 2003; Montgomery et al., 2000; Rutstein and Johnson, 2004; Sahn and Stifel, 2000).

A recent study (Gordon et al., 2003) used DHS data to operationalize the WSSD definition of absolute poverty, providing UNICEF with the first scientific estimates of the number of children living in absolute poverty in the Developing World (UNICEF, 2004). Indicators of severe deprivation for basic human need for water, shelter, sanitation, food, health, education and information were developed, with children experiencing two or more severe deprivations classified as living in absolute poverty. Children experiencing one or more deprivations were considered severely deprived but not absolutely poor, since it is possible for someone to experience a single deprivation for reasons other than poverty, e.g. discrimination (girls in some regions not receiving an education) or illness (malnutrition as a result of severe diarrhoea). Multiple deprivations are much more likely to be the result of poverty and reflect a person's inability to meet their basic needs (Gordon and Pantazis, 1997).

METHODOLOGY

This article will follow the approach of Gordon et al. (2003) described earlier but uses a deprivation index comprising four rather than seven items. As we are concerned here with identifying the long-term poor, the indicators used need to reflect deprivation over time. Because of this, not all of the indicators used in the Gordon study for UNICEF are suitable. For example, overcrowding to reflect shelter deprivation in this instance is problematic since the number of people-per-room can vary considerably, with household members joining or leaving. Similarly other often-used indicators of well-being, such as child stunting or mortality are not appropriate, as what is being developed are individual-level indicators that use both household and individual-level data. Child mortality data, however, can be used to assess the validity of the indicator.

The deprivation index uses a combination of household and individual-level items: the three household items are source of water, form of sanitation and flooring material in dwelling. The individual-level item is level of education. The items are equally weighted (Table 1). While there are many methods for weighting indices to reflect the relative importance of the different components, none is immune from criticism (Booysen, 2002). A range of subjective methods have been developed such as the Delphi Technique, where the opinions of experts are gauged as to the relative value of different components. Multivariate statistical techniques, such as principal components analysis (Bartholomew et al., 2002; Ram, 1982) and factor analysis (Sahn and Stifel, 2000, 2003) have also been used to assign weights but, as Booysen notes, these do not allow one to control the selection and weighting of components so 'introduce conceptual rigidity in composite indexing' (Booysen, 2002: 127). Some argue equal weighting should be the norm as differences in weighting methods between studies make meaningful comparison of index values difficult (Babbie, 1995). Ultimately the choice of weighting method will depend on the nature of the individual study, and researchers often choose the most comprehensible or calculable method (Booysen, 2002). In this article, the equally weighted deprivation scores (0, 1) are summed, with a maximum score of four and a minimum of zero. High scores reflect the experience of a larger number of deprivations. Again, following the rationale provided by Gordon et al. (2003) of multiple deprivations reflecting poverty, a person experiencing two or more deprivations is considered 'poor'.

The four items of the deprivation index were deliberately chosen because they each contain information that reflects deprivation (and thus poverty) retrospectively. A person with no education today cannot have had an education in the past, so has been education-deprived over time. In the same way, one can reasonably assume that a dwelling with a mud floor is unlikely to have previously had a floor made of higher quality materials, like cement; similarly, a dwelling with no sanitation facility, where members are using a bush or field, is unlikely to have had one in the past; a dwelling without an 'improved source' of water (i.e. water from a pipe, well, hand-pump or stand-pipe) whose members

TABLE 1 *Items in the deprivation index*

Item	*Score*
Dwelling has a mud floor	1
Household does not have any sanitation facility	1
Household uses an unimproved source of drinking water	1
Individual has never been to school (i.e. has not had an education)	1

use unsafe surface water (e.g. lakes, ponds) is unlikely to have previously had the facilities. Such assumptions cannot be made for other items often used in asset or wealth indices, since the current lack of an item does not mean it has not been owned in the past, e.g. a household may have once owned a radio or some land but sold it in time of hardship.

The DHS collect information on the length of time a person has lived in their current place of residence and this can be used to estimate chronicity (i.e. duration). Applying the length of time in residence of one person to other household members can be problematic (for obvious reasons); however, in some cases one should be safe to assume the respondent's information on their time in the residence applies to other household members (e.g. mothers and children). While a respondent's length of stay in their current residence can be used to assess chronicity, it should be noted that the choice of a five-year period (as in the CPR) is arbitrary, and resulting estimates will inevitably depend on the observation periods used. Also the implications of a five-year accounting period to a young child will be very different to those of an adult. This article adopts a five-year accounting period merely so its results can be compared to those in the CPR. Thus, we define here the poor as those experiencing two or more severe deprivations and the chronic poor are those who have been poor for five or more years.

Concerns are often raised about the reliability of recall data (particularly relating to past income or employment), since imperfect memories can affect data accuracy. A number of studies have assessed the reliability of recall data (Auriat, 1992; Berney and Blane, 1997; Dex, 1991; Paull, 2002) and found that while it is possible to collect and use recall data with relatively low levels of measurement error, accuracy is subject to important limits. Data need to relate to important events and should not require great detail. Respondents have been found to be consistent in their reporting as recall period lengthens, but inconsistencies are likely to occur with individuals who frequently move residence. An investigation into the accuracy of recall data on residential histories for couples in Belgium (Auriat, 1992) found that when asked about changes in residence over a period of 30 years, 80% of respondents were able to recall all their changes of address; the figure rose to 88% when respondents were interviewed together as a couple. This suggests it is appropriate to use retrospective data on the length of time in current residence.

To examine the relationship between chronic poverty and current household wealth, a simple asset-based wealth index was constructed from information on

ownership of certain assets and durable goods. Each item was given a weight according to the complement of the proportion of households that owned the item (Morris et al., 2000). Thus, if 25% of households in the sample owned a radio, then a radio received a weight of 75, etc. In this way a rough asset index was produced to reflect relative wealth in Uganda. The index is included to merely illustrate the differences between the groups of poor, and to confirm (as a measure of validity) that the current 'wealth' of the 'Non-Poor' is greater than that of the poor.

In a later section of this article we will compare the results produced using DHS data and the deprivation method with those of the CPR. Details on the CPR methodology are published in a CPRC working paper (McKay et al., 2004), available on the Internet. The working paper shows the countries for which panel data were available and on which the CPRC based its estimates (Appendix). Countries with nationally representative data were Indonesia, the Philippines, the Russian Federation, Uganda and Vietnam. DHS data exist for each of these countries, except the Russian Federation. The CPRC data for Uganda was from 1999; the closest available DHS dataset for Uganda is for 2001, and it is this we use to examine chronic poverty using a deprivation approach.

Uganda 2001 DHS

The 2001 DHS for Uganda collected information on 7885 households, containing 39,082 individuals. Around 85% of households contained women eligible for in-depth interviews, and 7246 women were interviewed; this article uses data collected directly from and on these women. Respondents who were not usual residents are excluded from analyses (around 6%). The final sample included 6831 women (16% urban, 84% rural). Table 2 shows the distribution of the sample by geographic region.

Table 3 summarises information on the respondent's length of time in residence; over half of respondents (61%) had lived in their current residence for five or more years.

TABLE 2 *Regional distribution of sample*

Region	*Frequency*	*Percent* (%)
Central	2181	32
Eastern	1838	27
Northern	1082	16
Western	1731	25
Total	6831	100

Source: Calculated from Uganda DHS 2001.

TABLE 3 *Respondent's length of time in residence*

Time in place of residence	*Frequency*	*Percent (%)*
Less than 5 years	2686	39
5+ years in residence	4145	61
Total	6831	100

Source: Calculated from Uganda DHS 2001.

TABLE 4 *Number of deprivations and poverty classification*

Poverty categories	*Number of deprivations*	*Frequency*	*Percent (%)*	*Percent (%)*
'Not poor'	0	666	10	46
	1	2487	36	
	2	2393	35	
'Poor'	3	1102	16	54
	4	183	3	
Total		6831	100	100

Source: Calculated from Uganda DHS 2001.

Table 4 shows the deprivation index. Around one in ten respondents did not experience any deprivations, 36% experienced only one deprivation, 35% experienced two deprivations, 16% experienced three deprivations and 3% experienced four deprivations. Using a threshold of two or more deprivations to constitute poverty, over half the respondents in the sample (54%) are poor.

We took a threshold of five years to indicate chronicity. Table 5 shows around a third (34%) of respondents are chronically poor. An additional fifth (19%) are also poor but have not lived in their current residence for five or more years – these will be termed the 'Other' poor. It should be noted that some of these people might actually be chronically poor (i.e. were poor before moving to their current residence) but it is not possible to know what proportion this is given the nature of the data. Just under half the sample (46%) are classed as 'Not poor'. This method provides an estimate of chronic poverty – 34% in the case of Uganda – but the figure could be higher if all the 'Other' poor also proved to be chronically poor – i.e. an upper bound estimate for Uganda would be 54%. These estimates obviously depend on both the choice of threshold and accounting period; raising the threshold to three or more deprivations but retaining the five-year accounting period would lower the minimum estimate in Uganda to around 12%. Similarly, using different accounting periods also affect the estimate – a three-year period would see the estimate for Uganda rise to 41%; a seven-year threshold, would lower the estimate to 30%. Such fluctuations will also be true for estimates based on income or expenditure indicators. Table 5 can also be used to estimate what proportion

TABLE 5 *Estimate of poverty and chronic poverty in Uganda, 2001*

Time in current residence	*Percent Not poor (N)*	*Percent Poor (2+ deprivations) (N)*	*Percent Total (N)*
Less than 5 years	20 (1359)	19 (1327)	39 (2686)
5+ years in residence	26 (1794)	34 (2351)	61 (4145)
Total	46 (3153)	54 (3678)	100 (6831)

Source: Calculated from Uganda DHS 2001.

of the poor are chronically poor (i.e. dividing the proportion of Chronic poor [34%] by the total proportion poor [54%]). Doing this, we suggest around 63% of the poor in Uganda are chronically poor.

The causes of poverty operate at many levels, from the local, regional, national and international. Politics and policies can (and often do) favour or disadvantage certain social groups or regions disproportionately; at the household level, social and cultural customs or attitudes may result in certain members (girls and women in particular) being disadvantaged. The DHS allow us to examine many of the determinants of poverty, some of which are now discussed.

Table 6 presents the prevalence and patterns of poverty in Uganda, by geographical region, religion, ethno-linguistic group, gender of household head, and age-group.

GEOGRAPHY AND PLACE OF RESIDENCE

Most studies of poverty in developing countries show it to be most prevalent in rural areas (e.g. CPRC, 2004; Gordon et al., 2003). Table 6 indicates this is true for Uganda, where rates of chronic poverty in the countryside (40%) are more than ten times those in the capital (3%), and more than three times those in other towns (11%). This could be due to greater mobility among urban residents, with people less likely to remain in the same dwelling for long periods (as reflected in Figure 3). Urban areas have relatively low rates of 'Other' poor, suggesting a much better provision of basic services like water, sanitation and education. This is one reason why large cities are so attractive to migrants, pulling in people from rural areas and small towns. The high rate of chronic poverty in rural areas may be because people in rural areas are less likely or less able to move, e.g. tied to jobs in agriculture.

There are considerable regional differences in poverty in Uganda. The North has the highest rate of chronic poverty (57%), more than three times that of the Central region (18%). The North's high poverty rate reflects two decades of armed conflict in the region (Lomo and Hovil, 2004), while the relatively low rates in the Central region, which contains the capital city, reflects the greater provision of resources and infrastructure to the area. Such unequal patterns of distribution of resources and services are common to many developing countries.

TABLE 6 *Pattern and prevalence of poverty and chronic poverty in Uganda*

	Chronic poor (%)	*'Other' poor (%)*	*Not poor (%)*
Uganda	34	19	46
Region			
Central	18	15	67
Eastern	35	26	39
Western	40	17	43
Northern	57	21	22
Type of place of residence			
Capital city	3	9	88
Town	11	19	71
Countryside	40	21	40
Sex of household head			
Male-headed	34	20	47
Female-headed	36	19	45
Religion			
Muslim	28	19	53
Protestant	34	18	48
Other	34	21	45
Catholic	37	21	43
Ethnicity (based on language)			
Luganda	19	14	67
Runyoro-Rutoro	24	17	59
Other	34	23	43
Lugbara	39	21	40
Runyankole-Rukiga	40	18	42
Ateso-Karamojong	41	37	22
Luo	57	17	26
Respondent's age			
15–19	25	23	52
20–24	24	26	50
25–29	34	21	45
30–34	40	14	46
35–39	44	13	43
40–44	50	14	36
45–49	54	12	34
Social class (based on partner's occupation)			
Not working	24	9	66
Agriculture	46	21	32
Unskilled manual	23	23	53
Skilled manual	20	17	63
Clerical, sales	22	19	59
Professional, Technical, Managerial	17	15	67

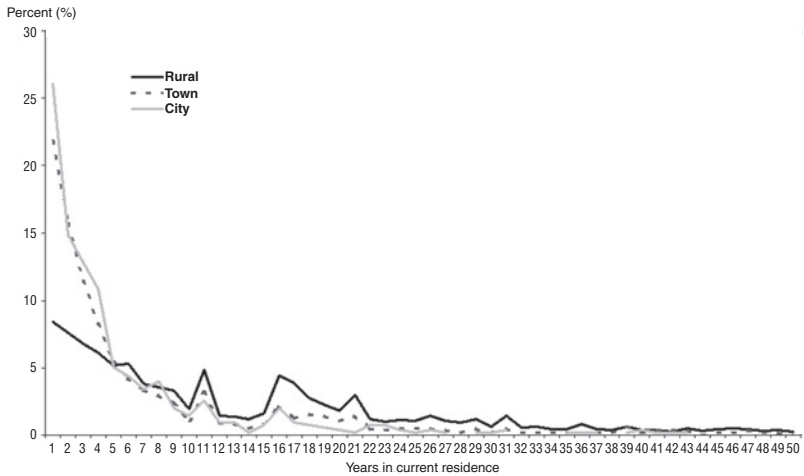


FIGURE 3 *Length of time in current residence in rural areas, towns and cities*
Source: Calculated from Uganda 2001 DHS.

SOCIAL CLASS

The article follows other studies in using occupation as a proxy indicator for social class (Kingston et al., 2002; Townsend and Davidson, 1988). The DHS collect information on respondent's occupations, which can be classified into five conventional groups: 'professional, technical and managerial', 'clerical and sales' (the first two groups are often grouped as 'non-manual'), 'skilled manual', 'unskilled manual' and 'agriculture'. Table 7 shows that most people in Uganda work in agriculture.

Figure 4 shows the relationship between social class and poverty in Uganda. Chronic poverty rates are lowest for those with professional, technical or managerial jobs and skilled manual jobs, and highest for those working in agriculture. Those with non-manual and skilled manual jobs are the least likely to be poor.

FEMALE-HEADED HOUSEHOLDS

Studies on female-headed households in developing countries often argue that they are at particular risk of falling into poverty (Barros et al., 1997; Chant, 2003). Table 6, however, shows that differences in poverty rates between male- and female-headed households in Uganda are slight.

RELIGION AND ETHNICITY

It is not uncommon for particular ethnic or religious groups to experience either greater privilege or disadvantage than others. Differences in poverty between religious groups in Uganda are shown in Table 6. While no particular religious group appears especially disadvantaged, rates of chronic poverty

TABLE 7 Occupation of respondent and partner

Occupation	*Partner (%)*	*Respondent (%)*
Professional, Technical, Managerial	7	2
Clerical, sales	18	8
Skilled manual	10	2
Unskilled manual	10	6
Agriculture	55	62
Not working	–	20
Total	100	100

Source: Calculated from Uganda DHS 2001.

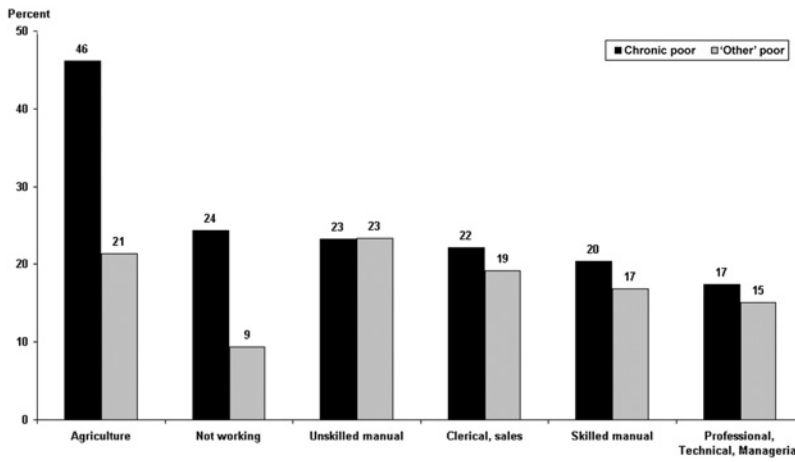


FIGURE 4 *Poverty by social class/occupation*
Source: Calculated from Uganda 2001 DHS.

among Muslims appear to be relatively low. This difference, however, was not statistically significant.

Ethnicity in this article is based on the language of the respondent. Table 6 shows the pattern of poverty among different linguistic groups in Uganda. Rates of chronic poverty are highest among Luo speakers (57%), followed by the Ateso-Karamojong (41%), Runyankole-Rukiga (40%) and Lugbara (39%). Rates of 'Other' poverty are highest among the Ateso-Karamojong, although it could be this group has the highest rate of chronic poverty, if all the 'Other' poor were counted as chronic poor.

MIGRATION

This article identified two groups of poor – those we know to be 'Chronic poor' and those we classify as the '"Other" poor'. It has been suggested that migrants are at greater risk of being poor (International Organization for

Migration (IOM), 2005; Narayan and Petesch, 2002), since they lack established networks that would provide them with support and information (e.g. about local jobs, available housing). Others argue it is the long-term poor who may be the worst off and therefore of greatest concern. The 'push and pull' factors that cause a person to migrate vary: while so-called 'distress migrations' may lead many into precarious circumstances in unfamiliar cities and towns, in many cases migrants who move to work and send remittances home provide valuable resources for their communities.

To examine differences between the poor, one can assess current wealth using a simple asset index (Table 8). As one might expect, the mean and median scores for both groups of poor are considerably lower than those of the 'Not poor'. Interestingly, however, it is the 'Other' poor who have the lowest mean score, suggesting it is they – rather than the Chronic poor – who may be worst off. The slightly higher wealth index scores of the Chronic poor could be due to the fact that they have developed networks and support systems to give them a greater command over resources by having lived in the same place/community for longer (i.e. five or more years).

UNDERNUTRITION

Prolonged exposure to poverty is known to affect a person's health, particularly that of women and children (Calle, 1999; WHO, 1995). This relationship

TABLE 8 *Chronic poverty and current wealth*

	Wealth Index Score		
Poverty categories	*Mean*	*Median*	*N*
Chronic poor (>5yrs)	52	49	2351
'Other' poor	46	49	1327
Not poor	104	110	3153
Overall	75	61	6831

Source: Calculated from Uganda DHS 2001.

TABLE 9 *Poverty and under-nutrition*

	Body Mass Index category				
Poverty categories	*Underweight (%)*	*Normal (%)*	*Overweight (%)*	*Obese (%)*	*Total (%)*
Chronic poor (>5 yrs)	12	78	9	2	100
'Other' poor	9	81	9	1	100
Not poor	7	73	16	4	100
Total	9	76	12	3	100

Source: Calculated from Uganda DHS 2001.

can be examined using respondents' body mass index (BMI) as an indicator of current nutritional status.[2] Table 9 shows a larger proportion of Chronic poor women (12%) are malnourished compared to 'Other' poor women (9%) and Not poor women (7%). At the other end of the scale, much larger proportions of Not poor women were overweight or obese.

CHILD MORTALITY

Child mortality is often used to reflect aggregate poverty – i.e. poorer countries have higher rates of infant and child mortality. The DHS collect information on the number of children a respondent has had and also on any children that have died. This information can be used to see if chronically poor women are more likely to have a child die.

Table 10 shows chronically poor women are more likely to have a child die than other women; nearly half of all chronically poor women had a child die, compared to one-third of 'Other' poor women and a quarter of Not poor women – a reflection of the generally high levels of child mortality in Uganda. Chronically poor women are twice as likely as 'Other' poor women to have five or more children die, reflecting the fact that the conditions in which the poor and chronic poor live take the heaviest toll on the most vulnerable. Two caveats should be noted with regards to this analysis: first, the effect of the age of the women should be considered, since older women are more likely to have had more children and therefore are more likely to have had a child die. Children of very young mothers are also at greater risk of mortality, so this also needs to be considered. The second caveat is that poor families tend to have more children, making the likelihood of a child death greater. Neither caveat, however, detracts from the fact that women experiencing long-term poverty are more likely to have a child die prematurely.

Table 11 presents the result of a multinomial logistic regression run to assess the main determinants of Chronic and Other poverty. As the categories of Chronic poor and 'Other' poor cannot be ordered (i.e. we cannot say which group is the 'worst' off), a multinomial logistic regression rather than an ordinal logistic regression is used to see which factors account for most difference between the groups of poor and the Not poor. Based on the bivariate analyses, the following variables were entered into the regression: age of

TABLE 10 *Poverty and child mortality*

Poverty categories	*0 child deaths (%)*	*1–2 child deaths (%)*	*3–4 child deaths (%)*	*5 or more child deaths (%)*	*Total (%)*
Chronic poor (> 5 yrs)	53	38	8	2	100
'Other' poor	67	27	5	1	100
Not poor	73	24	3	0	100

Source: Calculated from Uganda DHS 2001.

TABLE 11 *Multinomial logistic regression*

		Chronic poor			*'Other' poor*		
	Intercept	*Odds ratio*	*95(%) C.I.*	*Sig. 0.00***	*Odds ratio*	*95(%) C.I.*	*Sig. 0.00***
Age in years	15–19	0.3	(0.3–0.5)	0.00**	1.8	(1.2–2.6)	0.00**
	20–4	0.4	(0.3–0.5)	0.00**	1.3	(0.9–1.9)	0.15
	25–9	0.6	(0.4–0.7)	0.00**	1.4	(0.9–2.0)	0.10
	30–4	0.6	(0.4–0.8)	0.00**	1.1	(0.7–1.6)	0.79
	35–9	0.7	(0.5–0.9)	0.01*	1.1	(0.7–1.6)	0.79
	40–4	1.0	(0.7–1.4)	0.99	1.3	(0.8–2.0)	0.26
	45–9 (ref.)	–	–	–	–	–	–
Religion	Catholic	1.2	(1.0–1.4)	0.02*	1.2	(1.0–1.4)	0.02*
	Muslim	1.4	(1.1–1.7)	0.00**	1.2	(0.9–1.5)	0.18
	Other	1.1	(0.8–1.4)	0.56	1.0	(0.7–1.3)	0.98
	Protestant (ref.)	–	–	–	–	–	–
Region	Western	2.4	(1.7–3.4)	0.00**	1.7	(1.2–2.5)	0.01*
	Northern	10.4	(6.8–15.7)	0.00**	3.3	(2.2–5.1)	0.00**
	Eastern	2.0	(1.5–2.8)	0.00**	1.4	(1.0–1.9)	0.04*
	Central (ref.)	–	–	–	–	–	–
Occupation	Not working	2.8	(1.9–4.1)	0.00**	0.7	(0.5–1.2)	0.21
	Agriculture	3.8	(2.8–5.2)	0.00**	2.3	(1.7–3.2)	0.00**
	Unskilled manual	2.0	(1.4–2.8)	0.00**	1.9	(1.3–2.7)	0.00**
	Skilled manual	1.4	(1.0–2.1)	0.06	1.3	(0.9–1.9)	0.16
	Clerical, sales	1.6	(1.1–2.2)	0.01*	1.5	(1.1–2.1)	0.02*
	Professional, Technical, Managerial (ref.)	–	–	–	–	–	–
Sex of household head	Female-headed household	1.1	(0.9–1.3)	0.20	0.8	(0.7–1.0)	0.06
	Male-headed household (ref.)	–	–	–	–	–	–
Place of residence	Rural	8.2	(4.9–13.7)	0.00**	3.1	(2.2–4.4)	0.00**
	Town	1.7	(0.9–3.0)	0.09	1.4	(1.0-2.1)	0.08
	Capital, large city (ref.)	–	–	–	–	–	–
Ethnicity (based on language)	Ateso-Karamojong	1.9	(1.3–2.9)	0.00**	5.5	(3.6–8.2)	0.00**
	Lugbara	0.5	(0.3–0.7)	0.00**	1.0	(0.6–1.5)	0.92
	Luo	0.5	(0.3–0.9)	0.01*	0.8	(0.5–1.3)	0.37
	Runyankole-Rukiga	1.0	(0.7–1.5)	0.82	0.9	(0.6–1.4)	0.75
	Runyoro-Rutoro	0.4	(0.2–0.6)	0.00*	0.6	(0.4–1.0)	0.04*
	Other	1.0	(0.7–1.4)	0.90	1.6	(1.2–2.2)	0.01*

(continued)

TABLE 11 *(continued)*

	Chronic poor			*'Other' poor*		
Intercept	*Odds ratio*	*95(%) C.I.*	*Sig. 0.00***	*Odds ratio*	*95(%) C.I.*	*Sig. 0.00***
Luganda (ref.)	–	–	–	–	–	–
Number of children	1.0	(0.9–1.0)	0.64	0.7	(0.6–0.7)	0.00**
Number of adults	0.7	(0.6–0.8)	0.00**	0.6	(0.5–0.6)	0.00**
N adults × *N* children (interaction)	1.0	(1.0–1.0)	0.23	1.1	(1.0–1.1)	0.00**

* $p < 0.05$; ** $p < 0.01$; (ref.): referent category.

respondent, ethnicity (based on language), social class (based on occupation), sex of household head, religion, region, and place of residence. In each instance, the Not poor are set as the referent. Educational level was not entered since it forms part of the deprivation index.

When we control for factors known to be associated with poverty (i.e. age, household size, ethnicity, social class, place of residence), we see that age remains an important determinant for the Chronic poor, with older respondents the most likely to be chronically poor (the oldest age group is set as the referent). This may be because young people are more mobile, and less likely to remain in the same residence for prolonged periods. Following marriage and the start of a family, people in older age groups are more likely to settle, and so be classified as chronically poor. If, however, we consider the relationship between age and the 'Other' poor, the picture is quite different with the youngest age group the most likely to be poor ($p < 0.01$). Age, it appears, is no guarantee against poverty with both the youngest and oldest age groups at greatest risk – an interesting reflection of what Rowntree found (Figure 2).

The bivariate analysis showed little difference between religious groups, but suggested that rates of chronic poverty were lowest among Muslims. Once other factors are controlled for, however, it appears Muslims are in fact more likely (around 40%) than those in the referent group (in this case Protestants) ($p < 0.01$) to be chronically poor. Catholic respondents were around 20% more likely to be chronically poor compared to the referent group ($p < 0.05$). Among the 'Other' poor, again only Muslims had a statistically significant greater chance of being poor ($p < 0.05$) compared to the referent group.

The multinomial analysis confirms the importance of place of residence and geography in determining poverty. Respondents in the North of Uganda are more than ten times as likely as respondents in the Central region to be chronically

poor ($p < 0.01$), and more than three times as likely to be 'Other' poor ($p < 0.01$). Respondents in both the Western and Eastern regions are also more likely to be chronically poor ($p < 0.01$) than those in the Central region.

Rural respondents are more than eight times as likely ($p < 0.01$) to be chronically poor and more than three times as likely ($p < 0.01$) to be 'Other' poor than respondents in the capital city. Given that the poverty indicator used here reflects access to basic services, these differences hint at the degree of neglect of rural areas and peripheral regions in Uganda.

There is a clear relationship between social class (as reflected by occupation) and poverty. Agricultural and unskilled workers were more likely to be poor and chronically poor than those with professional, technical and managerial jobs. It is interesting that among those classified as 'not working' there is significantly greater chance ($p < 0.01$) of being chronically poor but not 'Other' poor. This could reflect the fact that not working for a long period places one at greater risk of poverty than short-term unemployment.

Table 11 confirms the differences between ethnic groups suggested in Table 6. Speakers of the Ateso and Karamojong languages are nearly twice as likely ($p < 0.01$) to be chronically poor than the referent group (Luganda), but over five times as likely ($p < 0.01$) to be 'Other' poor. This is interesting as it reveals a limitation of the method developed here. Speakers of the Ateso and Karamojong languages are mostly nomadic, based mainly in northeast Uganda. As such, they are unlikely to remain in the same place of residence and so, while being poor for long periods, they would not be identified as chronically poor here. As noted earlier, the method described here aims to provide a minimum estimate of chronic poverty and it should be recognized that a certain proportion of those classed as 'Other' poor will also be chronically poor.

Lastly, we saw above (in Table 6) that there was little difference in the rate of chronic poverty between male- and female-headed households in Uganda. Table 11 confirms this. What differences do exist might be explained if we consider location. While female-headed households in the capital city are five times more likely than male-headed households to be chronically poor, in small towns and rural areas the degree of difference is negligible. The differences can be summarized by the ratios of chronic poverty between female- and male-headed households in cities, towns and rural areas (Table 12).

LIMITATIONS

The method and discussion show how cross-sectional data like that from the DHS can be utilized to examine chronic poverty. Given DHS data are available for many developing countries, it should be possible to extend the analysis and produce regional and global estimates of chronic poverty. That said there are a number of limitations that should be noted. First, the index relies to some extent on access to publicly provided goods and services (education, water and sanitation). The effect of this is that the overall deprivation index may not correlate highly–income with poverty. This could be examined in

TABLE 12 *Chronic poverty by sex of household head and place of residence*

	Capital	*Town*	*Rural*	*Uganda*
Male-headed households chronically poor (%)	1	10	39	34
Female-headed households chronically poor (%)	7	13	43	36
Ratio female:male chronic poverty rates	5.0	1.3	1.1	1.1

Source: Calculated from Uganda DHS 2001.

further work with datasets containing both income and deprivation data. Second, estimates of chronic poverty using this method will to some extent be determined by the choice of threshold, for both the deprivation index (i.e. 1+ or 2+ items) and time in residence. While five years may be analytically convenient, the impact on different individuals or communities should really be considered.

The 2005 Chronic Poverty Report

The second aim of this article is to question the methods and limitations of the 2005 CPR. The CPR presented the first global estimates of chronic poverty. Chronic poverty was defined as long-duration poverty, more specifically a period of five or more years (Hulme and Shepherd, 2003). While the CPR acknowledged the limits of money-metric indicators and importance of considering broader indicators, the main indicator used was the World Bank's dollar-a-day measure (CPRC, 2004: 9). The authors were well aware of its limitations, but rejected alternative indicators like the Human Development Index, arguing that they 'suffer from much more serious methodological problems' (CPRC, 2004: 91).

The methodology of the CPR can be found in CPRC Working Paper No. 45 (McKay et al., 2004). It makes clear that due to questions about data comparability and accuracy, differing observation/accounting periods between surveys, and the fact that many of the surveys used were based on small samples which were not nationally representative, a number of 'heroic' (McKay et al., 2004: 7) and 'potentially controversial' (McKay et al., 2004: 3) assumptions were required in order to produce a 'best guesstimate' (McKay et al., 2004: 7) of the magnitude of chronic poverty.

These concerns are worth listing:

1. Few of the datasets were nationally representative;
2. Most of the surveys used had small samples (e.g. the surveys for India and China had 6450 households between them);

TABLE 13 *Transition matrix for Uganda used by CPRC*

		1999		
Uganda 1992–9		*Poor*	*Non-Poor*	*All*
1992	Poor	18.9%	29.7%	48.6%
	Non-Poor	10.4%	41.0%	51.4%
	All	29.3%	70.7%	

Source: McKay et al. (2004: 16).

3. Observation periods and the length of time between surveys differed from country to country; and,
4. Variations in national poverty lines made regional/international comparisons problematic.

Given (and despite) these concerns, these panel data formed the basis of the global estimates of chronic poverty. Transition matrices were constructed based on data from panel studies, which were then used to estimate what proportion of a country's population was chronically poor.[3] Table 13 provides as an example the transition matrix for Uganda from the working paper.

The shaded cell shows the proportion (18.9%) of the sample that was poor in both rounds of the survey, i.e. poor in 1992 and 1999. From transition matrices like this, it was concluded that 'the unconditional probability of a person staying poor for the next five years can be derived on a country by country basis' (McKay et al., 2004: 3). These probabilities were then 'crudely adjusted … to ensure rough consistency between countries and time elapsed' (McKay et al., 2004: 5). As the adjustments were 'subjective judgements' (McKay et al., 2004: 6), high and low estimates were provided for each country. For the countries with panel data, final estimates for the probability of remaining poor varied between 0.2 and 0.4 'suggesting that between one-fifth and two-fifths of the static poor are chronically poor' (McKay et al., 2004: 6). The high and low probabilities of remaining poor are presented in Table 14.

The number of Chronic poor in each country was calculated by multiplying the high probability estimate by the proportion of people living on less than a dollar a day, and then multiplying the product by the country population. Thus, using Uganda again as an example, the (high) probability of staying poor (0.3) was first multiplied by the 37% living on a dollar a day ($0.3 \times 0.37 = 0.11$) and then this figure (0.11) is multiplied by the population – 21m in 1997. The result is an estimate of around 2.3m chronically poor people.[4] Country-level estimates of the number of Chronic poor do not appear in the final CPR, but from Figure 2 of the working paper (reproduced here as Figure 5) one can observe national-level estimates for selected countries. While the number of Chronic poor in Uganda is difficult to gauge from the figure, for more populous countries like

TABLE 14 *Approximate probabilities of staying poor over five years, selected countries*

Country	*Low estimate*	*High estimate*
India	.25	.35
China	.15	.25
Bangladesh	.25	.35
Ethiopia	.30	.40
Pakistan	.25	.35
Indonesia	.20	.30
Vietnam	.40	.50
Philippines	.30	.40
Russian Federation	.10	.20
Uganda	.20	.30

Source: McKay et al. (2004: 6).

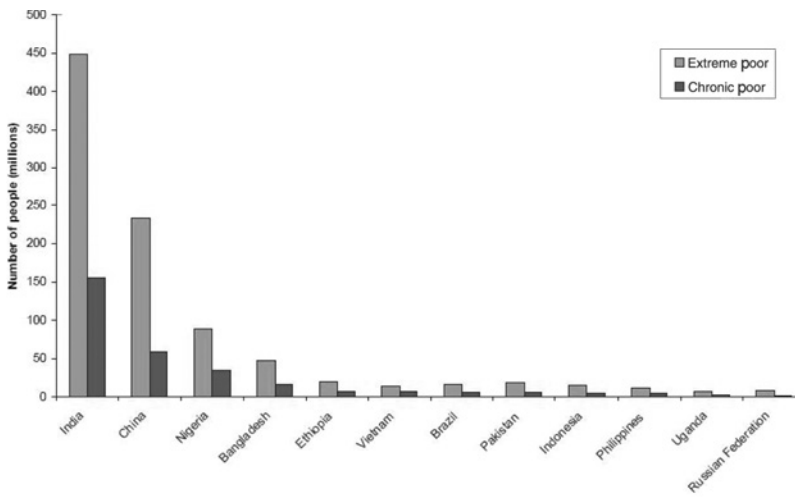


FIGURE 5 *Chronic poverty and extreme poverty for selected countries*
Source: McKay et al. (2004: 12).

China and India one can estimate that around 60m and 150m people are chronically poor. The importance of these estimates will become apparent later.

CONCERNS ABOUT CURRENT GUESSTIMATES OF THE EXTENT OF CHRONIC POVERTY

While the CPR made it clear its numbers were likely to be underestimates, it does not appear to have considered a number of other issues which could affect their estimates significantly. These issues have nothing to do with data quality or availability, and are now discussed.

To begin with, the methodological working paper uses conditional rather than unconditional probabilities. This is evident from the statement:

> Our estimates of chronic poverty are derived by multiplying the number of people who are poor in a country at a given point in time by the likelihood that these people will stay poor for the next five or more years. (McKay et al., 2004: 3)

Next, it is unclear how the probability of a person (or household) remaining poor (of being chronically poor) was calculated. To calculate the probability of a poor person remaining poor one should divide the proportion of people poor in both rounds (i.e. 18.9% in Table 13) by the total proportion poor in the first round (i.e. 48.6%). That is:

$$0.189/0.486 = 0.389$$

The 0.389 figure means that 39% of the poor in Round 1 of the survey were poor five years later, in Round 2. It is this figure (and not 18.9%) that shows the likelihood of a person remaining poor, and should be adjusted according to the CPRC criteria. The working paper says adjustments were made (in the case of Uganda from 0.189 to 0.3) but as no details were provided on how this was done their results cannot be replicated and estimates verified.

Regional estimates of chronic poverty (ranging between 17% and 40%) were calculated from countries with panel data, with final estimate of the number of Chronic poor ranging between 298m and 422m (CPRC, 2004: 9).

Our greatest concern is with the method used to estimate what proportion of the poor were chronically poor. In estimating long-term poverty, the CPR appears to have used the panel data to forecast what proportion of households/people remain poor over five years. This is an unconventional approach, since the preferred method is to use what is known as a 'back-casting' method. Here one uses the panel data to look at the chances of a currently poor person having been poor for five or more years – i.e. one takes a retrospective view. To do this, one divides the proportion poor in both rounds (i.e. 18.9% in Table 13) by the total proportion poor in the latest round (i.e. 29.3%). That is:

$$0.189/0.293 = 0.645$$

The 0.645 figure means 65% of the people who are currently poor (in Round 2) were also poor in Round 1. It is this figure that should form the basis of the CPRC calculations (adjusted up or down according to their criteria).[5] If this figure is used, the number of chronically poor people in Uganda increases from around 2m to nearly 6m. The recently launched Ugandan Chronic Poverty Report (CPRC, 2005) suggested around 26% of the population are chronically poor, around 7m people.[6]

We revised the probabilities for selected countries in the working paper to get some idea of the size of the underestimate (Table 15). Column B of Table 15

TABLE 15 *Revised probabilities and estimates of chronic poverty for selected countries*

A *Country*	*B* *Probability of staying poor (high estimate used by McKay et al., 2004)*	*C* *Adjusted probability of a poor person remaining poor, assuming current trends continue*	*D* *Adjusted probability of a currently poor person being poor in the past*	*E* *% < US $1 a day (CPRC, 2005)*	*F* *Population in 2000[b]*	*G* *Estimated number of Chronic poor (McKay et al. [2004])[a] ([B*E]*F)*	*H* *Estimated number of currently poor people who will still be poor in 5 years, assuming current trends continue ([C*E]*F)*	*I* *Estimated number of Chronic poor (i.e. currently poor people who have been poor for the last 5 years)([D*E]*F)*
India	.35	.53	.66	44	1,021,084,000	157,247,000	238,117,000	296,523,000
China	.25	.39	.57	19	1,273,979,000	60,514,000	94,402,000	137,972,000
Bangladesh	.35	.55	.64	36	128,916,000	16,243,000	25,525,000	29,702,000
Ethiopia	.40	.73	.58	31	68,525,000	8,497,000	15,507,000	12,321,000
Pakistan	.35	.51	.35	31	142,648,000	15,477,000	22,553,000	15,477,000
Uganda	.30	.39	.65	37	24,309,000	2,698,000	3,508,000	5,846,000
Vietnam	.50	.51	.86	17	78,671,000	6,687,000	6,821,000	11,502,000
				Total	2,738,132,000	267,364,000	406,432,000	509,343,000

Notes: [a] Figure 2 on page 12 of McKay et al. (2004) provides country-level estimates of chronic poverty for selected countries similar to those shown in column G. See Figure 5.

[b] *Sources*: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2004 Revision and World Urbanization Prospects: The 2003 Revision, http://esa.un.org/unpp.

shows the original high probabilities used in the working paper. Column C shows our revised probabilities of a poor person remaining poor, and column D our revised probabilities of a currently poor person being poor in the past (which we argue is what is needed to estimate chronic poverty). Column E shows the percentage of people on less than US$1-a-day and column F the selected country populations. Column G shows the estimates of the number of Chronic poor if we use the CPRC method, column H shows the estimates of the number of people likely to remain poor in the future (assuming current trends continue) and, lastly, column I provides the estimated number of currently poor people who have been poor for the last five years, i.e. the Chronic poor.

As is clear from Table 15, the differences between column G (the CPRC estimates) and column I (our estimates) are considerable; the number of Chronic poor in India may have been underestimated by around 139m people (around 50%); in China the difference is around 77m people (over 50%). If we take the total number of chronically poor for just these seven countries, the difference between the original estimate (around 267m) and the new estimate (509m) is around 242m people – a 48% difference. If these estimates are revised for the regions or are applied to all countries, the new total will dwarf the original. The problem of chronic poverty may be considerably more pressing than is currently thought.

Comparing Results

This section compares the results from the methods described in this article and those used in the Chronic Poverty Report. Given that different indicators of poverty were used, it is not surprising that the overall estimates of prevalence differ; both methods, however, show similar patterns of chronic poverty in Uganda (Table 16), e.g. being most prevalent in rural areas, the Northern region having the highest rates and the Central region the lowest, etc. There is, however, an interesting difference in the regional patterns.

The CPRC data for Uganda show the Northern region to be a high outlier, with rates of chronic poverty in the other three regions clustering together at a much lower prevalence (14–16%) (Lawson et al., 2003). Using DHS data and method presented in this article, a quite different pattern emerges with the Central region appearing to be a low outlier, with the Eastern and Western regions clustering closer to the higher rate of the Northern region (35–57%). This has important policy implications, as it implies a need to develop anti-poverty policies in three disadvantaged regions as opposed to just one. The reasons for this discrepancy (other than those due to methodological differences) seem to be the relatively greater provision of resources and infrastructure for and around the capital (located in the Central region), neglect by central government of other regions (lack of investment in infrastructure, e.g. schools, etc.), and spillover effects (i.e. internally displaced people) from the conflict in the Northern region.

TABLE 16 *Comparison of results*

	*Using CPRC method**	*Using DHS data*
Uganda chronically poor (%)	18.9	34
Estimated number of chronically poor	(2.3m)	8.3m [a]
Urban population chronically poor (%)	10	7
Rural population chronically poor (%)	21	40
Northern region chronically poor (%)	39	57
Western region chronically poor (%)	16	40
Eastern region chronically poor (%)	16	35
Central region chronically poor (%)	14	18

**Source*: Lawson et al. (2003).
Note: [a] Calculated using Uganda 2001 DHS data: $0.34 \times 24.3\text{m} = 8.3\text{m}$.
[Ideally, one should multiply 34% by the number of women aged 15–49 in Uganda, since this was the population on which data were collected. UNPOP estimates there were 5,080,000 women aged 15–49 in Uganda in 2000. This means around 1.73 million Ugandan women aged 15–49 were chronically poor].

Conclusions

This article had three aims: to present a method of estimating long-term non-income poverty using cross-sectional data, to compare the results produced by this method with those of the CPRC and to question the methods used by the CPRC to produce their estimates of chronic poverty. We have shown how long-term poverty can be examined using cross-sectional data, and been able to observe the sociocultural and geographic patterns in Uganda. The comparison of results produced by the deprivation and CPRC approaches shows that while similar stories can be told about chronic poverty using different methods, the differences that arise can have significant implications for policy. Echoing Klasen's recommendations for anti-poverty policies in South Africa, it is clear policy makers should consider the non-income aspects of poverty. The deprivation method set out here provides one way of garnering such information, and could complement other estimates of chronic poverty that rely on income and consumption data.

The final aim of the article was to question methods used in the CPR to estimate chronic poverty around the world. While the Report made clear its reasons for believing the numbers to be underestimates, we suggest there are other, more fundamental reasons that may not have been considered. The possibility that a mathematical error may have led to a serious underestimation is concerning, given the CPR has been used by high-level policy makers, e.g. Jeffrey Sachs' reference to it in a recent article in *Scientific American* (Sachs, 2005). It is important these issues are resolved and the CPRC estimates verified and, if necessary, amended.

Whichever way the CPRC and other poverty researchers choose to measure chronic poverty, a number of issues are clear. First, poverty, chronic or

otherwise, is primarily a rural problem. This is not to deny the poverty and deprivation of urban slums and shantytowns, but the fact remains that the depth and extent of poverty is greatest in rural areas. Second, the historical focus of resources and infrastructure on regions nearest capital cities has resulted in clear geographical and regional fault-lines, where the needs of a minority are much better served than those of the majority. This pattern will vary across countries, and it will be interesting to see in future work how this is so. Third, chronic poverty is clearly patterned along social class lines, with those working in agriculture much more likely to be chronically poor while those in higher social classes, in skilled manual and non-manual professions, are much less likely to be chronically poor. Lastly, the impact of long-term poverty on health and nutrition has been shown, with chronically poor women the most likely to be malnourished. The conditions of poverty appear to impact across generations, with chronically poor mothers most likely to have one or more children die. This is not to argue that poverty is transmitted across generations, but rather to show that the conditions associated with poverty will simultaneously affect different generations of the same family or household.

There are currently a number of projects collecting longitudinal and panel data that can be used to study long-term poverty in developing countries and they are welcomed. However, as this article has shown, panel studies may not necessarily be the only means of researching long-term poverty, given their expense and vulnerability to high attrition rates (Harpham et al., 2003; Seager and De Wet, 2003). Their limited availability is in contrast to the readily available, accessible and nationally representative DHS, MICS and LSMS data, which all contain information to examine chronic poverty in developing countries. Researchers should consider how best to use existing data sets in new and innovative ways to continue and extend the study of poverty.

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NOTES

1. Footnote 36 of Chapter 1 of the CPR states: 'It is worth noting that within the CPRC, discussions of the time concept focus on life-time and intergenerational periods rather than seasonality or longer time frames/histories used by other researchers. No great claim is made for the five-year period; it is simply analytically convenient, being close to that which many studies have worked. Logically, lengthening the time period would be likely to reduce the proportion of a population that

is chronically poor. Comparing the first survey with a survey *x* years later discounts any movement in between these years, which may be significant' (CPRC, 2004: 13).

2. BMI is a person's weight (in kilograms) divided by their height in metres squared. The WHO classifies BMI into four categories: underweight (BMI < 18.5), normal (BMI 18.5–24.9), overweight (BMI 25–9) and obese (BMI > 30).
3. CPRC Working Paper No. 45 lists transition matrices for the following countries: Bangladesh*, China*, Ethiopia*, India*, Indonesia, Pakistan*, Philippines, Russian Federation, Uganda, Vietnam. Figure 2 of the working paper presents estimates of chronic poverty for Nigeria and Brazil, but no transition matrices. A footnote states panel surveys exist for Madagascar, Nicaragua and KwaZulu-Natal in South Africa, but these were not used as they were considered unrepresentative of their regions. The final CPR has a slightly different list of countries (Table 11.1): Bangladesh*, *Chile*, China*, *Egypt*, Ethiopia*, India*, *KwaZulu-Natal**, *Nicaragua*, Uganda, Vietnam. Countries with an asterisk do not have nationally representative surveys; countries in italics appear in the CPR but not in the working paper.
4. Source: http://unstats.un.org/unsd/demographic/products/dyb/dyb2002/Table 05.xls (accessed 29 November 2005).
5. This number will vary depending on the figures used for percentage living on less than US$1/day and national population. In this example, the percentage living on less than US$1/day data are taken from Table 11.7 of the CPR (CPRC, 2004: 101); population data for Uganda are taken from the UN Population division. Working Paper No. 45 does not provide national-level estimates of the number of Chronic poor, although these can be estimated for larger countries from its Figure 2 (reproduced here as Figure 5).
6. It may be an interesting coincidence that this proportion is similar to that produced when the DHS data and deprivation method are used (63%).

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APPENDIX *Panel surveys used by McKay et al. (2004)*

Country	*Years*	*Nationally representative?*	*Panel size*	*Indicator*
India	1970/71–1981/82	No – rural areas only	3139 households in 261 villages	Real per capita consumption. Indian Planning Commission poverty line
China	1991–5	No – Sichuan province only, rural areas	3311 households	Per adult equivalent expenditure. CBN (cost of basic needs) poverty line based on 2100 Kcals/person/day + allowance for non-food expenditure
Bangladesh	1998–2000	No – rural areas only	379 households in 21 districts	Per capita income. Poverty line based on CBN method
Ethiopia	1994–7	No – urban areas only	1500 households	Real total household expenditure per adult per month. CBN poverty line based on 2200 Kcals/person/day + allowance for non-food expenditure
Pakistan	1986–90	No – rural areas only	686 households in 52 villages	Real income per adult equivalent. Relative poverty line equal to 20th percentile of income distribution in 1986
Indonesia	1993–7	Yes	6742 households in 13 provinces	Per capita consumption expenditure. Poverty line based on FEI (food energy intake) method

(continued)

APPENDIX *continued*

Country	*Years*	*Nationally representative?*	*Panel size*	*Indicator*
Vietnam	1993–8	Yes	4272 households	Per capita consumption expenditure. Poverty line based on 2100 Kcals/person/day + allowance for non-food expenditure
Philippines	1997–8	Yes	17.897 households	Per capita income, Poverty line based on 2000 Kcals/ person/day + subsistence threshold which includes non-food expenditure shares
Russian Federation	1994–6	Yes	2887 households	Total monthly disposable income. Poverty line based on WHO minimum nutritional criteria for different age-gender groups for all regions
Uganda	1992–9	Yes	1105 households	Per adult equivalent consumption expenditure. CBN poverty line based on 3000 Kcals/day/aeu (equivalent to 2000 Kcal per day) + allowance for non-food expenditures

RÉSUMÉ

Une Sous-estimation Incorrecte par Rapport à la Pauvreté Chronique? Une Exploration de la Pauvreté Chronique dans les pays en Voie de Développement, en Analysant de Coupe Transversale des Données Démographiques et de Santé

Ce papier examine le thème de la pauvreté chronique (c'est-a-dire, à long terme) dans les pays en voie de développement. Il présente une méthode pour estimer le taux de la pauvreté chronique en utilisant une analyse de coupe transversale, et suggère que les chercheurs n'ont pas besoin de se confier uniquement aux données longitudinales ni aux données de panel. Comme ce genre de données n'est pas disponible pour la plupart des pays en voie de développement, la méthode qu'on décrit dans ce papier fournit l'occasion de développer notre compréhension de la distribution de la pauvreté chronique dans beaucoup de pays. Le papier démontre aussi que les méthodes utilisées dans le 'Chronic Poverty Report 2005' – des méthodes qui calculent le nombre de personnes extrêmement pauvres dans les pays en voie de développement – contiennent des erreurs qui leur rendent de graves sous-estimations. Le problème de la pauvreté chronique est alors beaucoup plus urgent et répandu que l'on pense actuellement.

RESUME–

¿Incorrecto Cálculo para la Pobreza Crónica? Exploración Sobre la Pobreza Crónica en los Países en Desarrollo; uso Transversal de Datos Demográficos y Datos de Salud

El siguiente trabajo examina el tema de la pobreza crónica (a largo plazo) en los países en desarrollo. Asimismo propone un método para estimar el nivel de pobreza crónica usando datos seccionados transversalmente, y sugiere que los investigadores no necesitan confiar únicamente en los datos longitudinales ni en los datos de panel. Como esta clase de información no está disponible para la mayoría de los países en desarrollo, el método que se propone aquí da la oportunidad de agrandar nuestra comprensión sobre la repartición y el modelo de la pobreza crónica en muchos países. El documento muestra también que los métodos usados en el 'Chronic Poverty Report 2005' – para estimar el número de personas extremamente pobres en los países en desarrollo – contienen errores, resultando cálculos muy alejados de la realidad. El problema de la pobreza crónica está entonces mucho más grave y más extendido de lo que actualmente se piensa.

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