Core Poverty, Vagueness and Adaptation: A New Methodology and Some Results for South Africa

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0. Introduction

Amartya Sen (1981 and 1992) has argued that poverty is a vague concept and that economists need to take this point into account. One approach to pursuing this claim in the context of poverty measurement has used fuzzy set theory (see especially Chiappero-Martinetti, 1994, 1996 and 2000), though few studies have used this approach in the context of development (Qizilbash, 2002 and Baliamoune, 2004, Qizilbash and Clark, 2005). In this paper we pursue a different, 'supervaluationist' approach to vagueness (Fine, 1975 *inter alia*). We use a framework developed by Mozaffar Qizilbash (2003) which is inspired by this approach and which applies it to the context of poverty. In this framework a person (or household) is 'core poor' if there is no ambiguity about whether or not she (or it) is poor. The notion of 'core poverty' is distinct from, and adds to, standard notions such as 'ultra-poverty' and 'chronic poverty' which are used in the literature (see Lipton, 1988; Hulme and Shepherd, 2003 and Hulme, 2006 *inter alia*).

The central issues addressed in this paper relate to methodological considerations involved in applying the framework. The literature which applies fuzzy poverty measures has typically involved making either somewhat arbitrary judgements about, or taking a data-driven relativist approach to defining, relevant cut-offs while taking the dimensions of poverty to be well-defined. In this paper, we consider an alternative approach to the selection of dimensions and cut-offs using questionnaire responses. Questionnaires have of course been used in exercises which select dimensions of poverty (see Klasen, 2000, Clark, 2002, 2003 and 2005 *inter alia*). This paper focuses on responses to a questionnaire on the 'Essentials of Life', which is concerned with ordinary people's views of basic needs or capabilities. Furthermore, the questionnaire was specifically constructed to address vagueness and help identify the core poor. The methodology we develop for using these responses to apply the framework takes its cue from an early

contribution to the literature on vagueness (Black, 1937). Our basic intuition is that the less ambiguity there is about the use of a concept, the more consensus there will be about its use in ordinary language. Finally, we consider two potentially serious problems which arise in attempts to apply this methodology. One relates to arbitrariness in the use of criteria to apply the framework. The other focuses on the worry that deprived groups can adapt to their living conditions and that their responses to questionnaires can be misleading for this reason. We also attempt to show how this methodology adds to the existing literature on poverty.

The paper is structured as follows: in section 1, we explain the framework and discuss the approach we use in applying it; in section 2 we describe the survey and fieldwork methodology; in section 3, we discuss arbitrariness in the use of criteria and the value-added of the approach; the issue of adaptation is addressed in section 4; and section 5 concludes.

1. Poverty and Vagueness: Motivation and Approach.

On a number of occasions, Amartya Sen (1981, p.13; 1992, p.48) has noted that poverty is a vague concept. At the same time, a growing literature on vague concepts has emerged in philosophy (see Keefe and Smith, 1996 *inter alia*). 'Poor' is thought of as vague in this literature for three connected reasons: (1) the borderline between the poor and non-poor is not precise; (2) there are some instances where a person might be described as 'borderline poor'; and (3) 'poor' is susceptible to a 'Sorites paradox'. While (1) and (2) are plausible claims and require no further clarification, the following example illustrates the notion of a 'Sorites paradox' in the case of the adjective 'poor'. Consider someone who is income poor. If you give this person a penny, that would not make the difference between her being poor and not poor. This logic implies that repeatedly giving a poor person a penny would leave her income poor. Yet once enough

pennies have been handed out, she clearly would no longer be income poor. So we appear to be led to a contradiction. This is a standard case of a 'Sorites paradox'.

The philosophical literature contains a variety of different accounts of vague concepts. These various accounts attempt to address the three characteristics of vague concepts mentioned above. One of these accounts is fuzzy set theory, which has been used in economics. In this paper, we develop an alternative 'supervaluationist' account of vague concepts. On Kit Fine's version of this account, a specification of a vague concept is 'admissible' if (roughly speaking) it *makes sense* as a way of articulating it. Furthermore, a vague statement is 'super-true' if and only if it is true on all admissible ways of making it more precise. In the poverty context, for example, 'x is poor' is super-true if and only if x is poor on all admissible ways of making 'poor' more precise. In this paper, we use Qizilbash's framework for applying Fine's approach to the poverty context. This framework allows for the multiple dimensions of poverty. It applies the supervaluationist account by allowing for a range of admissible dimensions of poverty and admissible cut offs. In this framework, if it is super-true that a person (or household) is poor, the person (household) is said to be 'core poor'.[1] Given the multi-dimensionality of poverty, judging whether or not some person (household) is core poor involves two steps. Firstly, a person (household) is *definitely* poor in some specific dimension if she (it) falls *at or below* the lowest admissible minimal critical level in that dimension. This is not in itself sufficient to establish that the relevant person (household) is core poor. For person (household) x to count as 'core poor', it must also be true that she (it) must be definitely poor in a 'core dimension' – a dimension that is part of all admissible specifications of poverty.

This framework is distinct from standard fuzzy approaches to poverty, because it involves two kinds of vagueness. The first of these is 'horizontal vagueness', which

relates to vagueness about the dimensions of poverty. The second kind of vagueness – 'vertical vagueness' – is about the minimal critical level in some dimension at or below which someone must fall to classify as poor in that dimension).[2] While vertical vagueness has been the focus of attention in the literature on fuzzy poverty measurement, horizontal vagueness has not been allowed for in that literature (e.g. Cerioli and Zani, 1990; Cheli and Lemmi, 1995; and Chiappero-Martinetti, 1994; 1996; 2000).[3]

An important characteristic of this framework is that if some person (household) is doing sufficiently badly in terms of any one dimension, she (it) is core poor, as long as that dimension is core. For example, if nutrition is a core dimension, someone who is very seriously malnourished would count as core poor, and we could make this judgement without checking how she is doing on all dimensions. This is a plausible feature of the approach, and it involves taking a view on an important debate about how to deal with the multi-dimensionality of poverty.[4] An alternative approach would only classify a person (household) as unambiguously poor if she (it) is judged to be definitely poor in terms of all dimensions.[5] This would imply that someone who was starving and not able to get any food (for example, in a famine situation) in spite of being quite well-off in terms of other dimensions (such as housing etc.) would not be core poor. This approach is not consistent with the framework we are using and, furthermore, we do not find it plausible. While one can judge whether or not a person (household) is poor by using dimension specific information, information on all core dimensions is necessary, nonetheless, if we want to measure core poverty using a headcount index of core poverty (i.e. the proportion of the population which is core poor) or some alternative measure which allows for the depth of deprivation in core dimensions. The following example illustrates this point in the specific case of the headcount index. Consider two alternative scenarios involving two core dimensions, d_1 and d_2. In the first scenario, 15% of the

population fall at or below the lowest admissible minimal critical level on both d_1 and d_2, while no individual (or household) falls below the relevant minimal critical level on only one of these dimensions. The headcount index of the core poor is 15% in this scenario. In the second scenario, while it is still the case that 15% of the population falls below the relevant minimal critical level on each of d_1 and d_2 those who are definitely poor on d_1 and d_2 are mutually exclusive. In this second scenario, the headcount index is 30%. Without information on the overlap between those individuals (households) who (that) are definitely poor on d_1 and d_2, we cannot distinguish between the two scenarios.[6]

In the literature on fuzzy poverty measures, there are two broad approaches to defining the range of cut-offs. One – pursued by Cerioli and Zani (1990) – supposes that there is a critical level above which people are definitely not poor and a level below which a person is definitely poor. However, there is no guidance about how to select these levels. Consequently, worries have been expressed about potential arbitrariness in the selection of these levels. One 'relativist' alternative to this approach – pursued by Cheli and Lemmi (1995) – only treats the worst-off group as regards some dimension in the sampling distribution as definitely poor, and the best-off group as definitely not poor. This approach is adopted in the South African context by Qizilbash (2002). While this approach seems to address the worry about 'arbitrariness', it is not obvious that the worst-off group in the sampling distribution for some specific dimension is definitely poor. For example, in some contexts members of the worst-off group in a dimension may have met relevant 'basic needs' – such as nutritional requirements – and it may not be obvious that they are definitely poor in the nutrition dimension.

In this paper, we pursue a different approach to identifying core dimensions and thresholds by using questionnaire responses. In attempting to make the vagueness framework described above operational, we take our inspiration from the writings of Max

Black. Black (1937) thought that people use vague terms in different ways. The degree of vagueness about the use of the relevant terms might then be measured by what Black called the 'degree of consistency' in the use of these terms. Put another way, it might be measured by the extent of assent or dissent about its use (Keefe and Smith, 1996, p. 40). While we do not pursue Black's approach to vagueness in this paper, we take one insight from it.[7] It is plausible to suppose that one might judge that a dimension of poverty is core if there is little or no dissent about it being a dimension of poverty. Similarly, we might judge that a dimension is admissible if even a small proportion of people view it as a dimension of poverty. This insight can only be linked to the framework if we have an appropriate data set with information about how people perceive the dimensions of poverty and relevant cut offs. In making our methodology operational we draw on a specially designed survey on The 'Essentials of Life' (henceforth the ESL survey), which was administered in South Africa in 2001.

2. The Survey: Background, Methodology and Key Results

In June and July 2001 the ESL survey was administered in three locations in South Africa to investigate how ordinary people view the essential things in life. An effort was made to select survey sites that are fundamentally different in terms of culture, race and occupation to generate useful comparisons. The first area, Kwanonqaba, is a township adjacent to Mossel Bay in the Southern Cape region of the Western Cape Province. At the time of the survey, the township consisted of around 8,300 people most of whom classified as Black African.[8] Those with jobs were mostly employed as wage labourers.

The second location, Murraysburg, is a magisterial district on the cusp of the Northern, Eastern and Western Cape Provinces.[9] It consists of a small town and sparsely populated countryside and farmland. The town accounts for the bulk of Murraysburg's

population (of about 5,900 people in 2001), which is predominantly Coloured with small Black African and White minorities. At the time of the survey, unemployment was high and many local people were forced to migrate to find work. Those fortunate enough to find work in Murraysburg itself were typically employed as domestic servants, contractors, farm labourers or municipality workers (Dokter, 1996, p.3).

The third area, Khubus, is a small isolated village situated in the Northern Cape on the banks of the Orange River, overlooking Namibia. In 2001 around 800 people were living in the village, most of whom were the descendants of the aboriginal Nama people. Virtually the whole population was classified as Coloured for official purposes. The majority of people with jobs were either working in the diamond mines of the Richtersveld or grazing sheep and goats to make a living.

The principal aim of the questionnaire was to find out which needs or capabilities ordinary South Africans think are basic, and where they draw the line between the poor and non-poor in specific dimensions. Responses to the questionnaire are highly relevant to the framework described in section 1, since they provide information about the dimensions of poverty and the critical minimal levels in each dimension. The questionnaire was informed by previous studies and surveys, notably the Project for Statistics on Living Standards and Development (PSLSD) administered by the Southern Africa Labour and Development Research Unit (SALDRU) in 1993 (PSLSD, 1994), as well as Stephan Klasen's study of capability poverty which draws on the PSLSD (Klasen, 1997; 2000). The survey questionnaire was also informed by discussion with local researchers and experienced interviewers. It was also piloted in two different locations (Khayelitsha and Mitchells Plain in Cape Town) and refined to ensure that respondents were able to comprehend and provide meaningful responses to each of the questions. The fieldwork teams were composed of experienced interviewers, who received extensive

training at a series of workshops in Cape Town. These workshops were specifically designed to introduce the survey methodology and eliminate interviewer bias.

Most poverty surveys are concerned with people's living conditions rather than with what people think the essentials of life are.[10] While some of these surveys include a question on the priorities of life, such questions are usually regarded as supplementary. For example, the PSLSD questionnaire asked: '[w]hat in your opinion could government do to most help this household improve its living conditions? In other words, what do you need most?' (PSLSD, 1994, p. 288). Respondents were asked to name three items and to rank them in order of importance. Responses to such questions are helpful but exclude concerns that lie outside the government's sphere of influence. They are also likely to under report those basic needs that are already satisfied. In short, this question encourages people to provide a 'wish list'. Answers to this question justify the selection of indices which proxy for basic capabilities in Klasen's study (2000, pp. 38-9). To elicit a more complete information base, the ESL survey questionnaire asked respondents to think about the 'most basic aspects of life'. These were described as 'the *bare essentials* without which A PERSON cannot *cope or manage at all* and without which *life is unbearable*' (SALDRU, 2001, p. 2). Respondents were reminded that 'these can be aspects of life that people have, or don't have and need' (SALDRU, 2001, p.2). While some studies have asked people to define the characteristics of poverty (e.g. Moller, 1996, SA-PPA, 1998 and Narayan et al, 2000), participants have not generally been asked to abstract from their own situations.

As the main objective of the survey was to investigate the components of a minimally decent life rather than some higher standard of living, interviewers asked people about the level of achievement in terms of the 'basic aspects of life' required to 'get by' as opposed to that required to 'live well'. To ensure that respondents fully

appreciated the significance of these two levels they were repeatedly required to distinguish between them during the course of the interview. The questionnaire was divided into three main parts. Part one consisted of open-ended questions that asked respondents to identify the most basic aspects of life. Respondents were then invited to weigh the aspects they mentioned (by giving a mark out of ten) and to suggest minimal critical levels in terms of these aspects which were necessary to 'get by' and 'live well'. Interviewers were instructed *not* to suggest possible answers. Part two of the questionnaire asked respondents questions about more 'specific aspects of life, such as housing, education, jobs and health' (SALDRU, 2001, p.5) which were pre-defined. It asked them to endorse or reject these predefined dimensions and select specific cut-offs relating to them. The final part of the questionnaire collected background information regarding personal circumstances and living conditions. The design, wording and translation of the questionnaire were informed by the results of previous studies (e.g. Wilson and Ramphele, 1989; PSLSD, 1994; Moller, 1996; SA-PPA, 1998; Clark, 2002 and 2003) and issues raised by experienced local researchers and interviewers at brain storming sessions in Cape Town.[11] The methodology of using two kinds of question – one of which is open-ended and the other involving predefined aspects of life – is in line with the approach adopted by Clark (2002 and 2003). This procedure allows researchers to avoid influencing initial responses (by asking purely open-ended questions at the start), look for consensus (by requesting an assessment of pre-defined needs or capabilities from all people) and test for inconsistencies (by comparing the answers to open and pre-defined questions) that might reflect preferences which are ill-informed or have adapted to personal circumstances.

A balanced sampling frame was employed to ensure that each survey area was properly represented. Random sampling techniques were used for the selection of

households and suitable respondents. In each location households were listed by enumerator area (EA) prior to selection. Sample intervals were then calculated by dividing the total number of households in each area by the number of questionnaires allocated to that area. The first household in each EA was selected randomly. Interviewers then proceeded to visit every nth household, where n represents the sample interval.[12] One person was selected from each household visited using a table developed by Kish (1995, pp. 398-401), which is designed to ensure that the age and gender skew of the sample drawn match the characteristics of the local population. When the selected respondent was unavailable, no other member of the household substituted for him or her.

A total of 941 people aged 18 or over made up the survey sample (see Table 1).[13] The sample was split unevenly between the three survey sites as follows: 568 interviews in Kwanonqaba (60.4% of the total sample); 313 interviews in Murraysburg (33.2% of the sample); and 60 interviews in Khubus (6.4% of the sample). In Murraysburg 297 interviews were completed in the town (31.6% of the sample) and a further 16 interviews (1.7% of the sample) were completed on the surrounding farms. Overall the sample consisted of slightly more women (52.7%) than men (47.3%). The respondents could be classified in terms of the racial categories used in South Africa as follows: 61.4% Black African; 34.5% Coloured; 0.1% Indian/Asian; and 1.4% White.[14] In Kwanonqaba and Khubus the sample was skewed in favour of young people. In Murraysburg the sample was skewed towards middle aged and older people (see Table 1). The sample is, nonetheless, broadly representative of the population in the survey areas, though a strict comparison with 2001 Census statistics (which were not available at the time of the survey) suggests that people in the 18-24 and 25-34 age cohorts (who accounted for 51.6 % of the adult population in the survey areas) may have been under-represented.

Tables 2 and 3 summarize some key survey findings. Table 2 presents an ordinal ranking of answers to the open-ended question about the basic aspects of life. Each response was assigned to one of thirty different categories, which are ranked in Table 2. In this table, 1 is the rank of the response that received most mentions, 2, second, and so on. If two or more items have the same number of mentions, they are given the same rank.[15] Several items ranked in Table 2 can be thought of as distinct *components* of well-being, though sometimes the items are interrelated (e.g. blankets and heat) and some of them (like income) relate primarily to means, rather than the ends these help people to realise (such as respect). It is worth emphasizing that people defined these items without *any* external assistance or interference, which makes them strong candidates for inclusion in any framework for identifying the poor.

Table 2 indicates that 'housing/shelter' category is mentioned by the largest proportion of people followed, in order, by: food; water; work/jobs and; money/income. Each of these items was mentioned by well over 400 respondents (i.e. over 42.5% of the survey sample). Clothing, education, health, electricity and safety also received a large number of mentions (well over 100 each). Only a handful of people mentioned the last ten items in Table 2. Several items at the top of Table 2 relate to the goals of South Africa's Reconstruction and Development Programme. This suggests that responses may have been influenced by political factors (Clark, 2002 and 2003). Responses to the second part of the questionnaire – which involve an evaluation of predefined categories – may give us a more complete picture, and help to iron out the distortions which can emerge from such incentives. Table 3 summarises the relevant responses. Virtually all the prominent categories in Table 2 were covered in one form or another in the pre-defined list. So the predefined categories do cover the items which emerged when respondents

themselves defined the basic aspects of life. Finally, the last column in Table 3 suggests that almost all the predefined dimensions were given, on average, a similar weight.

3. The Selection of Core Dimensions and Admissible Cut-Offs.

In the framework described above, a dimension counts as core if it is part of *all* admissible specifications of the poverty concept. If we pursue the insight derived from Black's work in conjunction with the supervaluationist framework a natural criterion for a dimension to meet to qualify as core would be *unanimity* about it being a dimension of poverty. We would then require 100% endorsement by respondents for a dimension to count as core. This effectively involves treating all those interviewed (and who responded to the relevant question) as having a 'say' about what constitutes a meaningful notion of poverty, and treating a dimension as non-core if *anyone* failed to endorse it. It involves the assumption that everyone interviewed was, in effect, attempting to articulate their notion of poverty and that there were no errors in the interviewing process.

On this reading none of the items in Table 3 would classify as 'core' despite the fact that many of these items were endorsed by *virtually* everyone. The fact that a very small number of people failed to endorse certain dimensions (e.g. health, clean water, etc.) does not, however, constitute a compelling case for regarding such items as non-core. It is sensible to allow for some margin of error in the interviewing process and to allow for at least a tiny proportion of answers which can be excluded. A small number of answers might be excluded, even in the absence of errors in the interview process. This is because the framework is concerned with lack of ambiguity, and we suggest that using a condition of virtual unanimity is a plausible way to establish this.

These considerations suggest that we might treat a dimension as core even if a relatively small proportion of respondents – say 1% or 5 % of the survey sample – fail to endorse it. 'Relatively small' is clearly somewhat vague itself, and 1% and 5% suggest

themselves because they are salient. Nonetheless, 10% – which may not seem 'relatively small' to some – is also one possible salient way of defining 'relatively small'. One might, thus, judge that a dimension is core if at least 99%, 95% or 90% of those who responded to the question, endorsed it. A 99% rule still leaves us with no core dimensions if we look at the full sample (see Table 3). However, a 95% rule does identify various dimensions. Going further and using a 90% rule leads to the result that virtually all the dimensions listed are core. This seems rather implausible, and the 90% rule does not help to distinguish core from non-core dimensions. Of the salient criteria, the 95% rule is the only one which allows us to distinguish core from non-core dimensions. We interpret this rule so that 95% means 95% after rounding up (i.e. 94.50%), and indeed interpret all the rules used in this paper in this way. Aiming at greater precision than this seems inappropriate in an exercise motivated by vagueness. According to the 95% criterion, it is clear from Table 3 that twelve dimensions are core: clean water, health, access to health care, housing, jobs, education, freedom, nutrition, safety, self worth and respect, survival and religion.[16]

It is clear that the selection of the 95% rule – or indeed any other rule – can be seen as somewhat arbitrary. However, it is not surprising that the issue of arbitrariness arises in this selection. Our methodology for addressing vagueness relates lack of ambiguity to overwhelming consensus about the use of the poverty concept. In particular, we have used the notion of *virtual* unanimity to identify core dimensions. Yet the notion of *virtual* unanimity is itself vague: there is no sharp borderline between virtual, and lack of virtual, unanimity. This is, of course, another way of making the point made earlier that 'relatively small' is vague, since what constitutes virtual unanimity involves a judgement about how small a minority of responses can be excluded for unanimity to be virtual. Thus, any attempt to specify the notion of virtual unanimity sharply *must* involve

some arbitrariness. As a consequence our methodology yields results which are somewhat indeterminate. There seems to be little option but to make some judgement in applying the framework, and to test any results which emerge for robustness. It is clear from our earlier remarks that the results which arise from use of the 95% rule are not robust. Furthermore, it is not clear how seriously we can take the precise numbers presented in Table 3, given that they may only imperfectly represent the survey sample. Nonetheless, we pursue the 95% rule here to assess and illustrate our methodology.

While we use the 95% rule for much of this paper, it is worth briefly asking whether a more stringent rule might identify core dimensions in the various sub-samples. One reason for thinking that a more stringent rule might discriminate between core and non core dimensions in the smaller sub-samples is that there may be more uniformity in the values of smaller more homogenous groups. Consider Table 3 which gives the breakdown of the responses according to location. It shows that in the smaller sub-samples – Murraysburg and Khubus – a 100% rule, i.e. one which would treat a dimension as core if it was endorsed by 99.50% or more of the sub-sample which responded – selects various core dimensions. For Murraysburg they are: clean water, health, housing, nutrition, jobs and religion. In the case of Khubus they are: access to health care, clean water, education, family and friends, freedom, nutrition, religion, safety, self-worth and respect, economic resources and survival. The larger Kwanonqaba sub-sample does not, however, produce any core dimensions with a 100% rule. It is not clear how far this difference relates to the nature of the locations, as opposed to the size of the sub-samples and quality of data collection. One possible reason for this difference relates to a more heterogeneous sub-sample in Kwanonqaba, which was largely populated by migrant workers with different cultural backgrounds from various parts of South Africa.[17] Another possible explanation relates to the larger size of the sub-sample in

Kwanonqaba (see Table 1), which increases the chance of picking up divergent views.[18] Finally, some of the difference might be accounted for by slightly poorer data collection in Kwanonqaba.[19] It is nonetheless, surprising that 'economic resources' only appears in one of the lists just presented.

Similar issues are relevant for the identification of minimal critical levels. To illustrate the point, we use a 5% rule (that is 5% after rounding up) for the selection of minimal critical levels. This is consistent with the earlier use of the 95% rule, since the motivation for the use of that rule is that we can exclude a small minority – i.e. up to 5% – of responses. Again vagueness would be relevant to judgements about what constitutes a 'small minority' and there would be some indeterminacy in how the framework is applied. So it is natural to test for robustness and to check how results would alter if one used a 1% or 10% rule. However, the case of admissibility of critical minimal levels is more complex than that of core dimensions. This is because the survey questionnaire asked people what was needed to just get by. The level at which one is definitely poor must, thus, fall *below* the lowest level to get an endorsement of at least 5%. However, in the framework outlined in section 1, the lowest admissible minimal critical level in a dimension is that *at or below* which a person is definitely poor. So the notion of admissibility involved in using the 5% rule is subtly different to that involved in the framework when it comes to the lowest admissible critical level.

To see how the 5% rule works, consider Table 4. This shows the proportion of people interviewed who endorsed a specific level in terms of a selection of widely used indictors (see for example PSLSD, 1994; Klasen, 1997; 2000; Qizilbash, 2002). These indicators relate exclusively to dimensions identified as core. In the case of education, there are two commonly reported indicators relating, respectively, to years of schooling and qualifications and we report on both. In Table 4, all those levels which have been

shaded satisfy the 5% rule. The grey bands in this table reflect regions of vagueness. Consider, for example, a case where there is a clear horizontal band of grey: years of schooling. In this case, our methodology implies that only someone with no schooling is definitely poor.

In some cases, use of the 5% rule results in apparent anomalies. For example, in the case of water source the 5% rule implies that a 'dam or standing water' is admissible but that a 'protected spring, well or borehole' is not. In cases where the ordering of categories is well defined, it makes sense to use an 'adjusted 5% rule' which treats categories as admissible even when they score less than 5%, if they lie between the lowest and highest admissible minimal levels as defined by the 5% rule. Using the adjusted 5% rule, the category 'protected spring, well or borehole' would automatically qualify.[20]

These problems with the use of the 5% rule can also be avoided by looking at the cumulative distribution of responses. First, consider the bottom end of the range of vagueness: the lowest admissible critical level. It is this level which is relevant to core poverty, since a person (or household) has to fall below the lowest such level in a core dimension to be core poor. If we look at the cumulative distribution of responses and identify a threshold such that more than 5% think that a person can cope with this level or higher, then that is sufficient to identify the lowest critical level. One could similarly use the cumulative distribution to identify the highest admissible cut-off. It is easy to verify that this approach leads to the same results as the 'adjusted 5%' rule.

Given the indeterminacy of our methodology, it is worth considering 1% and 10% rules for admissibility to test for robustness. The implications of using these rules are clear from a brief inspection of Tables 5 and 6. They are unsurprising. The use of a 1% rule means that virtually all levels are admissible, so that virtually no-one would count as

definitely poor in the relevant dimensions. Only the homeless would count as definitely poor in the housing dimension. On the other hand, the use of a 10% rule means that many groups which do not qualify under the 5% rule would qualify as definitely poor in specific dimensions. For example, anyone who does not have a 'public standpipe, water tanker/ carrier' would qualify as definitely poor as regards access to water. Like the 95% rule, the 5% rule yields results which are more plausible than salient alternatives. While these observations underline problems relating to lack of robustness, they also bring out the relationship between the definitions of 'virtual unanimity', 'small minority' and core poverty in our methodology. Clearly the stronger the criterion for virtual unanimity and the less generous the definition of a 'small minority', the more stringent the requirement is for a person (household) to qualify as core poor. While this is not surprising, any practical application of this methodology should acknowledge these relationships and their potential implications for policy. Nonetheless, we emphasise that some judgement(s) must be made in applying the framework. Engaging with the views of ordinary people can inform political judgements, but does not remove the necessity of making such judgments. This is a methodological point which is prefigured in John Rawls' writings on reasonable disagreement. Rawls (2001, p.35) writes that '[t]o some degree all our concepts, and not only our moral and political concepts, are vague and subject to hard cases. This indeterminacy means that we must rely on judgement… within some range… where reasonable people might differ'. In our methodology, the relevant judgements relate primarily to notions of 'virtual unanimity' and 'small minority' rather than the concept of poverty. In practical applications, there may also be a case for using more than one definition of 'virtual unanimity' and 'small minority'. One might for example, use a stronger criterion of virtual unanimity for the identification of 'hardcore', and a weaker criterion for the identification of 'softcore' poverty. Here the notions of

'hardcore' and 'softcore' relate to different levels of stringency used to define 'virtual unanimity' and 'small minority' in the identification of core poverty. They *do not refer to different degrees of core poverty* and should not be confused with standard distinctions such as that between moderate and extreme poverty.[21]

There are at least two different levels at which our methodology adds value to existing poverty research. First, it introduces a new approach to the identification of dimensions and cut-offs when the vagueness of poverty is acknowledged. As was mentioned earlier, existing fuzzy set theoretic approaches assume a precisely defined set of dimensions. In regard to the selection of cut-offs our methodology involves consulting the views of ordinary people (i.e. non-experts). This makes the selection less 'arbitrary' at one level. However, our use of notions of 'virtual unanimity' and 'relatively small' in using questionnaire responses introduces a new level of arbitrariness. We have attempted to clarify the nature of this arbitrariness so as to allow policy makers and others to acknowledge it and address it in any application.

To illustrate how our methodology can lead to different results to those in existing literature, consider, for illustrative purposes, the implications of the use of the 5% rule. In Qizilbash's work on fuzzy poverty measures in the South African context (Qizilbash, 2002), the Cheli and Lemmi methodology is adopted in combination with data from the 1996 Census. The Cheli and Lemmi methodology only treats those who are worst-off in the sampling distribution as being definitely poor. In Qizilbash's work this means that those whose access to water is from a river, dam or stream are definitely poor in terms of water source. By contrast, the (adjusted) 5% rule implies that only those who are worse off than this might be definitely poor – and thus classify as core poor if clean water is a core dimension (as it is according to the 95% rule). However, in other dimensions – such as years of schooling – the 5% rule yields the same cut-offs as those used in Qizilbash's

study. This seems to support the Cheli and Lemmi methodology to some degree. However, our discussion also makes clear that the significant overlap between the cut-offs selected by the 5% rule and the Cheli and Lemmi methodology relates to a specific way of making the notion of a 'relatively small' minority precise in the South African context.

Another point that is noteworthy is that, as compared to certain other studies, our methodology can lead to a quite distinct picture of poverty in South Africa. Table 4 suggests that a number of groups classify as definitely poor in the core dimensions identified by the 95% rule and thus would qualify as core poor. These include: the homeless; those living in traditional dwellings; those with no access to water at all; those with no education; and the unemployed. It is natural to attempt a rough comparison between this picture of core poverty, and that which emerges from another study which is also motivated by Amartya Sen's work. Stephan Klasen's work (Klasen, 1997; 2000) attempts to make Sen's capability approach operational and contrasts estimates of capability and income poverty. Klasen provides estimates of the 'most deprived' – as regards capability poverty – and the 'ultra poor' as regards income poverty in 1993. These are estimates of the headcount index of the *most* poor or deprived, i.e. the concern is with the depth rather than the vagueness of poverty. There is some value added in comparing the picture generated by our methodology using 1993 data with Klasen's estimates because it illustrates that the core poor need not be precisely those who are counted as the 'most deprived' and 'ultra-poor'. Since Klasen's estimates are headcount indices for households rather than individuals, a strict comparison must focus on households. While the methodology used above focused on what a person needs to just get by, it is relatively easy to extend the analysis to the household level using published data from the PSLSD. Our methodology suggests that the core poor might include: the

10.3% of households living in traditional dwellings (PSLSD, 1994, p. 64);[22] and the 29.5% of households with 'nobody working' (Klasen, 1997, p. 71). While published data on other dimensions – most notably for health, water and education – are available, it typically relates to individuals rather than households. On the basis of these statistics alone *at least* 29.5% of households would classify as core poor. By contrast, Klasen's estimate of the proportion of households that are 'most deprived' households (as regards capability poverty) is 25.4%. Our picture of core poverty also implies a higher proportion of core poor households than the headcount index of 'ultra-poor' households (defined as those in the lowest quintile of the distribution of adult equivalent expenditures) for 1993, which stood at 28.8% (Klasen, 1997, p. 56). While this result crucially depends on our selection of the 95% rule for the selection of core dimensions and the 5% rule for the selection of relevant cut-offs, it does show that estimates of core poverty are distinct from existing measures which focus on the least well off amongst the poor irrespective of whether poverty is conceived of in terms of capabilities or expenditures.

4. Adaptation.

One serious worry about our methodology relates to the possibility of adaptation. This possibility is often invoked in the philosophical literature on the quality of life – most notably by Sen – to justify a capability (or need) based approach to the quality of life as opposed to standard utility-based evaluation which focuses on happiness or the fulfillment of desires. For Sen the desire fulfillment or happiness views of the quality of life are unreliable because the poor and deprived may restrict their desires to modest or 'realistic' proportions and often learn to be happy or satisfied with their fate (Sen, 1987, pp.45-6; 1992, pp. 6-7, 55; 1999, p.62). Put another way, they may adapt their desires, attitudes, or aspirations in light of their deprived circumstances. A variation of this argument has famously been used to criticise preference-based views of welfare and

rational choice in economics (see Elster, 1982, inter alia).

The adaptation argument has gained a great deal of currency in development studies (Crocker, 1992; Nussbaum and Sen, 1993; Nussbaum and Glover, 1995; Nussbaum, 2000), although relatively little hard empirical evidence is available to support or refute the hypothesis in a developing country context.[23] A number of studies – in psychology and social science (see Frederick and Lowenstein, 1999 *inter alia*) – have investigated the relationship between life satisfaction or happiness on the one hand and income and living conditions on the other. While the ESL survey did collect information on life satisfaction in two locations (Khubus and Murraysburg) it is not primarily the relationship between life satisfaction or happiness and living conditions that is relevant for our methodology.

In the context of the ESL survey, the significant concern is that some respondents may have become accustomed to their deprivation and for this reason might have a restricted view of a minimally decent life. As a consequence, questionnaire responses relating to dimensions and cut-offs relevant to poverty might be 'distorted' by the experience of deprivation. The length of time that a person has been deprived is clearly relevant to whether or not she might have adapted in this way. This argument might be made in relation to those respondents who endorsed the category of 'traditional healer, family member or friend' in the dimension of health care. Similarly, it can be argued that only those who are genuinely poor and have become accustomed to their poverty would think that a shack is enough to just get by. These arguments challenge our methodology for selecting core dimensions and admissible critical levels on the basis of questionnaires administered in relatively deprived areas. They might also undermine the case for 'listening' to the poor in forming a qualitative picture of poverty and in formulating poverty eradication policy more generally.

The ESL survey does allow us to evaluate this line of argument to some degree. Firstly, because the survey included both open-ended and closed questions, the questionnaire responses allow us to consider whether respondents changed their view of the essentials of life after various alternatives were suggested. In so far as respondents systematically adjust their view of the essentials of life upwards after new or better alternatives are suggested this might constitute evidence of adaptation. Secondly, in as much as the survey collected information about the living conditions of respondents, there is scope to investigate the relationship between their living conditions and the range of dimensions and the cut-offs that they endorsed in responses to closed questions. In the remainder of this paper we briefly pursue these two ways of evaluating of the adaptation argument using the ESL survey. We also make some suggestions for possible future work on adaptation. Given space constraints, we cannot pursue this topic at further length here.

The first way of evaluating the adaptation argument involves comparing and contrasting responses to open-ended and closed questions. The results of this exercise are not easy to interpret. On the one hand, comparing the responses in Tables 2 and 3 might suggest some potentially important differences. First, the items at the top of our respondents' own list are quite basic: housing/ shelter, food, water, work/jobs, money/ income, clothes, education/schools, heath/ health care, electricity/ energy and safety/ security.[24] Second, the responses to closed questions seem to imply that the vast majority of respondents went on to endorse a broader range of capabilities and needs – including some less basic capabilities such as leisure – in later stages of the interview. These observations are consistent with adaptation.

On the other hand, it would be a mistake to believe that these comparisons provide hard evidence of adaptation for a variety of methodological and practical reasons. As mentioned earlier, respondents were asked to '[t]hink about the most basic aspect of

life. These are the *bare essentials* without which a PERSON *cannot cope or manage at all*, and without which life is unbearable…' in the first part of the questionnaire. This request was immediately followed by the question: 'What are the most basic aspects of life?' (SALDRU, 2001, p.2). Interviewers were instructed to provoke respondents until just *four* answers were provided. Logic suggests that the majority of people are likely to mention the most basic or fundamental essentials of life first. So it is not surprising that the items at the top of Table 2 are quite basic and some dimensions endorsed in Table 3 are not mentioned by many people in response to open-ended questions. In addition previous studies of human values and aspirations in South Africa have shown that responses to open-ended questions about dimensions of well-being can be influenced by practical and political considerations. For example, it has been shown that respondents are more likely to mention their most pressing basic need and/or the things they think the government might provide in the foreseeable future (Moller, 1996; Clark, 2002, esp. pp.129-136).

The second approach to evaluating the adaptation argument involves examining the relationship between people's living conditions and their responses. There are a number of different ways of pursuing this form of evaluation. One possibility which might seem attractive is to check whether the poor are most likely to endorse the lower critical levels, or to fail to endorse certain dimensions of well-being. The main problem with pursuing this possibility relates to how one identifies the relevant group of 'poor' people. Our methodology aims to address this issue, given the vagueness of 'poor' and cannot be used to define the relevant group, because the adaptation argument might pose a significant challenge for that very methodology.

Nonetheless, it is easy to check whether a larger proportion of people who are more deprived in a given dimension set a lower cut-off for that dimension.[25] Tables 7-9

show the percentages of people in specific categories who endorse particular cut-offs. The information relates to three core dimensions: education, health and housing. These dimensions were selected because the data collected in part 2 of the questionnaire (on the cut-offs endorsed) closely matches the data collected in part 3 (on actual living standards), which makes it relatively easy to use this information to evaluate the adaptation argument. Consider first Table 7, which presents relevant data on housing. From this table it is clear that the majority of respondents were living in either shacks or houses/ flats.[26] It is striking (but unsurprising) that just over two-thirds of those who lived in shacks thought that a person could get by in a shack. In contrast, just over a quarter of those living in a house/ flat thought a shack was sufficient to get by and just over half thought a house/ flat was not necessary to get by. It is also noticeable that for most cut offs the largest percentage of endorsements came from people who were already living in that type of housing.[27] These observations suggest, but are not conclusive evidence of, adaptation in the housing dimension.

Next consider the health dimension. Information on this is presented in Table 8. Unlike the housing dimension, the majority of people in each category endorsed a clinic or public hospital as enough to get by. Moreover, nearly 90% of those who had no access to health care during their last serious illness thought a clinic, public hospital or better are necessary for a person to get by. These observations and the overall spread of responses in this table are not suggestive of adaptation.

Finally Table 9 contains information on education. In this dimension we report information on qualifications rather than years of schooling, as the latter can be a misleading indicator of educational attainment.[28] The evidence presented in this table is not easy to interpret. Nonetheless for virtually all categories Matric scores the highest proportion of endorsements. However, significant numbers of people who have not

achieved Matric, thought that a person could get by with less than Matric. Overall, as in the case of health, these observations are not suggestive of adaptation. Our initial reading of these results, thus, provides mixed evidence as regards the adaptation argument.

While space constraints have meant that we have only pursued the empirical examination of the adaptation argument in a very restricted way, there are a number of possibilities for future work using the ESL data set. Firstly, there is scope for comparing the cut-offs that were endorsed in open-ended questions with those which were endorsed in responses to closed questions. Secondly, one might also consider more qualitative issues (e.g. the kind of shack necessary to just 'get by'). Thirdly, statistical techniques (including Chi-squared tests) and econometric analysis might throw some light on whether deprived people are more likely to endorse lower cut-offs. However, there are limits to the usefulness of the ESL data inasmuch as they do not provide any information on the length of time that people have lived in particular circumstances. Any serious test of adaptation should distinguish between those groups who have been persistently deprived and may have become accustomed to their condition and those who are temporarily disadvantaged.

5. Conclusions.

In this paper we have pursued a framework based on a supervaluationist approach to the vagueness of poverty. In particular, we developed a methodology for using questionnaire responses for making that framework operational. We have shown how both the framework and the methodology differ from standard fuzzy set theoretic approaches to poverty, and lead to estimates of core poverty which differ from standard estimates of the most deprived or ultra poor. Arbitrariness emerges in the application of the methodology because there is further vagueness about notions such as 'virtual unanimity' and a 'relatively small' minority. The relationship between judgements about

criteria used to make these notions precise and the resulting picture of core poverty needs to be acknowledged in any attempt to apply the methodology. Finally, our initial analysis of the ESL survey results does not conclusively support the view that there was adaptation amongst respondents. However, further work clearly needs to be done to assess the adaptation hypothesis.

Tables

Table 1 The Characteristics of the Survey Sample (Total Number of People)

Location		Age Cohorts 18-24	25-34	35-44	45-59	60 Plus	Unspecified	Total
Kwanonqaba	Men	34	80	79	51	23	4	271
	Women	61	88	76	44	28	0	297
	All	95	168	155	95	51	4	568
Murraysburg	Men	21	19	51	30	27	0	148
	Women	14	30	33	54	34	0	165
	All	35	49	84	84	61	0	313
Khubus	Men	6	3	11	5	1	0	26
	Women	4	10	5	10	5	0	34
	All	10	13	16	15	6	0	60
Grand Total	Men	61	102	141	86	51	4	445
	Women	79	128	114	108	67	0	496
	All	140	230	255	194	118	4	941

Source: Fieldwork Database

Table 2 Ordinal Ranking of the Essentials of Life in three impoverished communities in South Africa

1 Housing/ Shelter	16 Land and Livestock
2 Food	16 Own Business/ Enterprise
3 Water	16 Religion and Church
4 Work/ Jobs	19 Furniture
5 Money/ Income	20 Happiness and Peace of Mind
6 Clothes	21 Community Development
7 Education/ Schools	21 Love
8 Health/ Health Care	23 Freedom/ Independence
9 Electricity/ Energy	24 Better Life
10 Safety and Security	24 Oxygen
11 Transport/ Car	24 Respect
12 Family and Friends	27 Blankets
13 Sanitation	27 Heat/ Temperature
14 Infrastructure	29 Sexuality
15 Leisure/ Leisure Facilities	29 Sunlight

Source: Fieldwork Database

Table 3 Normative Assessment of 20 Pre-Defined Human Capabilities or Needs

	Regarded as necessary to "get by" *				
	All (%)	Average mark out of ten	Kwanonqaba (%)	Murraysburg (%)	Khubus (%)
Access to Health Care	96.02	9.23	93.90	99.04	100.00
Clean Water	96.87	9.44	94.77	100.00	100.00
Clothing	94.08	8.89	91.01	98.72	98.33
Economic Resources	93.63	9.04	92.42	94.57	100.00
Education	96.13	9.24	94.96	97.44	100.00
Family and Friends	94.40	8.69	92.07	97.44	100.00
Freedom	95.60	9.13	93.55	98.40	100.00
Happy and Care Free State of Mind	93.96	8.87	92.24	96.17	98.33
Health	96.24	9.34	93.90	100.00	98.33
Housing	96.66	9.44	94.60	100.00	98.33
Infrastructure	94.39	8.98	92.42	97.44	96.67
Jobs	96.34	9.41	94.25	100.00	96.67
Leisure	86.76	8.24	82.19	92.65	98.33
Nutrition	95.80	9.30	92.97	100.00	100.00
Religion	96.00	8.96	93.51	99.68	100.00
Safety	95.59	9.04	93.17	99.04	100.00
Sanitation	92.77	9.02	89.69	97.13	98.33
Self Worth and Respect	95.48	8.84	93.54	98.08	100.00
Survival	95.46	9.10	94.41	96.45	100.00
Taking Part in Community Life	88.51	8.22	84.77	93.61	96.67

** These figures exclude those who failed to respond to the relevant question.*
Source: Fieldwork database.

Table 4 Normative Evaluation of Some Pre-Defined Critical Minimal Levels (5 per cent rule)

Dimension/ Indicator	**Categories**							
Education #1	None	1-3	4-6	7-9	9-12	12-15	15 +	No response
(Years of schooling)	**1.97%**	**6.23%**	**12.46%**	**22.40%**	**38.91%**	**15.74%**	**1.86%**	**0.44%**
Education #2	No	Pass some	Pass std. 6 or	Std. 8 or junior		Matric plus	Technikon/degree	No
(Formal qualifications)	qualifications	primary school	std. 7	certificate	Matric	diploma	or prof. qualif.	response
	2.03%	**9.85%**	**14.45%**	**17.45%**	**47.00%**	**7.17%**	**1.82%**	**0.21%**
Housing	None	Traditional		Wendy	Part of house/	House/	No	
(Type of dwelling)	(homeless)	dwelling	shack	house	hostel	flat	response	
	0.21%	**1.82%**	**36.04%**	**19.04%**	**5.56%**	**37.33%**	**0.00%**	
Water	Dam or stan-	Protected spring	Public standpipe,	Piped on	Piped (inside	No		
(Water source)	ding water	well or borehole	water tanker/carrier	premises	home)	response		
	5.12%	**2.88%**	**7.68%**	**67.27%**	**16.95%**	**0.11%**		
Jobs	None	Part time	Full time	Full time, short	Full time, long	No		
(Type of contract)	(no Job)	casual	casual	term contract	term contract	response		
	2.36%	**17.15%**	**46.09%**	**16.51%**	**17.69%**	**0.21%**		
Health/ health care	No health	Traditional healer,	Clinic, public	Pharmacy, visit	Private	No		
(Type of health care)	care	family/ friend	hospital, shop	by PHC nurse	doctor	response		
	0.64%	**11.62%**	**78.36%**	**4.58%**	**4.80%**	**0.00%**		

Notes
All percentages are rounded to two decimal places.
The 'no response' category includes cases in which the 'no response' option was selected, but excludes non-responses (no response recorded on questionnaire).

Source: Fieldwork database.

Table 5 Normative Evaluation of Some Pre-Defined Critical Minimal Levels (1 Percent Rule)

Dimension/ Indicator	**Categories**							
Education #1	None	1-3	4-6	7-9	9-12	12-15	15 +	No response
(Years of schooling)	**1.97%**	**6.23%**	**12.46%**	**22.40%**	**38.91%**	**15.74%**	**1.86%**	**0.44%**
Education #2	No	Pass some	Pass std. 6 or	Std. 8 or junior		Matric plus	Technikon/degree	No
(Formal qualifications)	qualifications	primary school	std. 7	certificate	Matric	diploma	or prof. qualif.	response
	2.03%	**9.85%**	**14.45%**	**17.45%**	**47.00%**	**7.17%**	**1.82%**	**0.21%**
Housing	None	Traditional		Wendy	Part of house/	House/	No	
(Type of dwelling)	(homeless)	dwelling	Shack	house	hostel	flat	response	
	0.21%	**1.82%**	**36.04%**	**19.04%**	**5.56%**	**37.33%**	**0.00%**	
Water	Dam or stan-	Protected spring	Public standpipe,	Piped on	Piped (inside	No		
(Water source)	ding water	well or borehole	water tanker/carrier	premises	home)	response		
	5.12%	**2.88%**	**7.68%**	**67.27%**	**16.95%**	**0.11%**		
Jobs	None	Part time	Full time	Full time, short	Full time, long	No		
(Type of contract)	(no Job)	casual	casual	term contract	term contract	response		
	2.36%	**17.15%**	**46.09%**	**16.51%**	**17.69%**	**0.21%**		
Health/ health care	No health	Traditional healer,	Clinic, public	Pharmacy, visit	Private	No		
(Type of health care)	care	family/ friend	hospital, shop	by PHC nurse	doctor	response		
	0.64%	**11.62%**	**78.36%**	**4.58%**	**4.80%**	**0.00%**		

Notes
All percentages are rounded to two decimal places.
The 'no response' category includes cases in which the 'no response' option was selected, but excludes non-responses (no response recorded on questionnaire).

Source: Fieldwork database.

Table 6 Normative Evaluation of Some Pre-Defined Critical Minimal Levels (10 Percent Rule)

Dimension/ Indicator	**Categories**							
Education #1	None	1-3	4-6	7-9	9-12	12-15	15 +	No response
(Years of schooling)	**1.97%**	**6.23%**	**12.46%**	**22.40%**	**38.91%**	**15.74%**	**1.86%**	**0.44%**
Education #2	No	Pass some	Pass std. 6 or	Std. 8 or junior		Matric plus	Technikon/degree	No
(Formal qualifications)	qualifications	primary school	std. 7	certificate	Matric	diploma	or prof. qualif.	response
	2.03%	**9.85%**	**14.45%**	**17.45%**	**47.00%**	**7.17%**	**1.82%**	**0.21%**
Housing	None	Traditional		Wendy	Part of house/	House/	No	
(Type of dwelling)	(homeless)	dwelling	Shack	house	hostel	flat *	response	
	0.21%	**1.82%**	**36.04%**	**19.04%**	**5.56%**	**37.33%**	**0.00%**	
Water	Dam or stan-	Protected spring	Public standpipe,	Piped on	Piped (inside	No		
(Water source)	ding water	well or borehole	water tanker/carrier	premises	home)	response		
	5.12%	**2.88%**	**7.68%**	**67.27%**	**16.95%**	**0.11%**		
Jobs	None	Part time	Full time	Full time, short	Full time, long	No		
(Type of contract)	(no Job)	casual	casual	term contract	term contract	response		
	2.36%	**17.15%**	**46.09%**	**16.51%**	**17.69%**	**0.21%**		
Health/ health care	No health	Traditional healer,	Clinic, public	Pharmacy, visit	Private	No		
(Type of health care)	care	family/ friend	hospital, shop	by PHC nurse	doctor	response		
	0.64%	**11.62%**	**78.36%**	**4.58%**	**4.80%**	**0.00%**		

Notes
All percentages are rounded to two decimal places.
The 'no response' category includes cases in which the 'no response' option was selected, but excludes non-responses (no response recorded on questionnaire).

Source: Fieldwork database.

Table 7: The percentage of people endorsing specific cut offs for housing by type of dwelling

Respondents living in (Type of dwelling)	Type of housing regarded as necessary to 'get by'						
	House/ Flat	Part of house/ hostel	Wendy house	Shack	Traditional dwelling (hut)	None (homeless)	Total no. of responses
House or flat	48.83%	6.84%	15.71%	25.97%	2.33%	0.31%	643
Part of house or hostel	20.00%	40.00%	30.00%	10.00%	0.00%	0.00%	10
Garden shed or wendy house	2.70%	2.70%	75.68%	18.92%	0.00%	0.00%	37
Shack	11.76%	0.84%	19.33%	67.23%	0.84%	0.00%	238
Traditional dwelling/ hut	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1
Other	33.33%	33.33%	0.00%	33.33%	0.00%	0.00%	3

Sample = 932
Percentages rounded to two decimal places.

Source: Fieldwork database.

Table 8: The percentage of people endorsing specific cuts offs for health according to type of health care received.

Type of health care received during last serious illness	Type of health care regareded as necessary to "get by"					
	No health care	Traditional healer, family friend	Clinic, public hospital, shop	Pharmacy visit by PHC nurse	Private doctor	Total no. of responses
None	0.63%	11.60%	78.48%	5.27%	4.01%	474
Traditional healer/ family friend	0.00%	28.57%	57.14%	14.29%	0.00%	7
Clinic, public hospital, shop	0.79%	10.85%	80.95%	3.17%	4.23%	378
Pharmacy visit by PHC nurse	0.00%	37.50%	62.50%	0.00%	0.00%	8
Private doctor	0.00%	7.69%	69.23%	5.77%	17.31%	52

Sample = 919
Percentages rounded to two decimal places.

Source: fieldwork database.

Table 9: The percentage of people endorsing specific cut offs for education according to level of education

	Level of education regarded as necessary to 'get by'							
Level of education achieved (formal qualifications)	No qualifications	pass some primary school	pass std 6 or std 7	Std 8 or junior certificate	Matric	Matric plus diploma	Technikon, degree or prof. qualification	Total no. of responses
Never been to school	10.87%	14.13%	18.48%	8.70%	42.39%	5.43%	0.00%	92
A little primary (up to std 1 or 2)	1.05%	25.26%	9.47%	18.95%	37.89%	6.32%	1.05%	95
A lot of primary (std 3, 4 or 5)	0.84%	16.46%	18.99%	13.08%	41.77%	7.17%	1.69%	237
Standard 6 or 7	0.60%	2.99%	21.56%	16.77%	49.70%	6.59%	1.80%	167
Standard 8 or 9	0.57%	2.30%	7.47%	33.33%	47.70%	6.32%	2.30%	174
Standard 10/ matric	0.00%	3.60%	9.01%	16.22%	63.96%	5.41%	1.80%	111
Diploma, technikon or university	2.17%	4.35%	10.87%	23.91%	41.30%	10.87%	6.52%	46

Sample = 922
Percentages rounded to two decimal places.

Source: Fieldwork database.

References

Atkinson, A. B., (1987), On the measurement of poverty, *Econometrica*, (55), pp. 749-764.

Atkinson, A. B., (2003), Multidimensional deprivation: contrasting social welfare and counting approaches, *Journal of Economic Inequality*, (1), No. 1, pp. 51-65.

Baliamoune, M. N. (2004), On the measurement of well-being: fuzzy set theory and Sen's Capability Approach, *WIDER Research Paper 2004/16*, (Finland, Helsinki: World Institute for Development Economics Research).

Black, M., (1937), Vagueness: an exercise in logical analysis, *Philosophy of Science*, (4), pp. 427-455.

Bouguignon, F. and Chakravarty, S. (2003), The measurement of multidimensional poverty, *Journal of Economic Inequality*, (1), No. 1, pp. 25-65.

Bradsaw, J. and Finch, N. (2003), Overlaps in dimensions of poverty, *Journal of Social Policy*, (32), No. 4, 513-525.

Brandolini A. and D'Alessio, G. (2001), Measuring well-being in the functioning space, Paper Presented at the conference on 'Justice and Poverty: Examining Sen's Capability Approach,' St. Edmund's College, Cambridge, June 2001.

Cerioli, A. and Zani, S., (1990), A fuzzy approach to the measurement of poverty, in C. Dagum, and M. Zenga, (eds), *Income and Wealth Distribution, Inequality and Poverty*, (Berlin, Springer Verlag).

Chan, A., Ofstedal, M. B., and Hermalin, A. I. (2002), Changes is subjective and objective measures of economic well-being and their interrelationship among the elderly in Singapore and Taiwan', *Social Indicators Research*, (57), pp. 263-300.

Cheli, B. and Lemmi, A., (1995), A 'totally' fuzzy and relative approach to the measurement of poverty, *Economic Notes*, (94), pp. 115-134.

Chiappero Martinetti, E., (1994), A new approach to the evaluation of well-being and poverty by fuzzy set theory, *Giornale Degli Economisti e Annali di Economia*, (53), pp. 367-88.

Chiappero Martinetti, E., (1996), Standard of living evaluation based on Sen's approach: some methodological suggestions, *Notizie di Politeia*, (Anno 12 - N. 43/44), pp. 37-53.

Chiappero Martinetti, E., (2000), A multi-dimensional assessment of well-being based on Sen's functioning approach, *Rivista Internationale di Scienzie Sociali,* (CVIII), pp. 207-231.

Chiappero Matinetti, E., (forthcoming), Complexity and vagueness in the capability approach: strengths or weaknesses?, in Comim, F., Qizilbash, M. and Alkire, S. (forthcoming), *The Capability Approach: Concepts, Measures and Applications* (Cambridge: Cambridge University Press).

Clark, D. A., (2002), *Visions of Development: A Study of Human Values* (Cheltenham, Edward Elgar).

Clark, D. A., (2003), Concepts and perceptions of human well-being: some evidence from South Africa, *Oxford Development Studies,* (31), No. 2, pp. 173-196.

Clark, D. A., (2005), Sen's capability approach and the many spaces of human well-being, *Journal of Development Studies*, (41), No. 8, pp.1139-1168.

Crocker, D. A. (1992), Functioning and capabilities: the foundation of Sen's and Nussbaum's development ethic, *Political Theory*, (20), No.4, pp. 584–612.

Davies, R. (1997), Beyond wealth ranking: the democratic definition and measurement of poverty, Briefing note prepared for the ODI workshop *Indicators of Poverty: Operational Significance*, Overseas Development Institute, London, 8 October

1997. Available online at http://www.mande.co.uk/docs/democrat.htm (accessed 18 April 2006).

Davies, R. and Smith, W. (1998), *The Basic Necessities Survey: The Experience of ActionAid Vietnam*, Hanoi, Vietnam: ActionAid Vietnam. Available online at http://www.mande.co.uk/docs/BasicNecessitiesSurveyAAV1998.pdf (accessed 18 April 2006).

Dokter, I., (1996), *Murraysburg – A Community Profile*, SADEP/HSRC Community Profile Series (Cape Town, University of the Western Cape).

Dutta, I, Pattanaik, P. and Xu, Y., (2003), On measuring deprivation and the standard of living in a multi-dimensional framework on the basis of aggregate data, *Economica*, (70), pp. 197-221.

Elster, J. (1982), Sour grapes – Utilitarianism and the genesis of wants, in A. K. Sen and B. Williams (eds), *Utilitarianism and Beyond* (Cambridge: Cambridge University Press), pp. 219–38.

Fine, K., (1975), Vagueness, truth and logic, *Synthese*, (30), pp. 265-300.

Foster, J. and Shorrocks, A.F., (1988) Poverty orderings and welfare dominance, *Social Choice and Welfare*, (5), pp. 91-110.

Frederick, S. and Lowenstein, G. (1999), Hedonic adaptation, in D. Kahneman, E. Diener and N. Schwarz, *Well-Being: The Foundations of Hedonic Psychology* (New York: Russell Sage Foundation), pp.302-329.

Hulme, D. (2006), Chronic poverty, in D. A. Clark (ed.) *The Elgar Companion to Development Studies* (Cheltenham, Edward Elgar).

Hulme, D. and Shepherd, A. (2003), Conceptualizing chronic poverty, World Development, (31) No. 3, 403-424.

Keefe, R. and Smith, P. (1996), *Vagueness: A Reader*. Cambridge Mass.: MIT Press.

Kish, L. (1995), *Survey Sampling* (New York, John Wiley & Sons).

Klasen, S., (1997), Poverty, inequality and deprivation in South Africa: an analysis of the 1993 SALDRU survey, *Social Indicators Research*, (41), pp. 51-94.

Klasen, S., (2000), Measuring poverty and deprivation in South Africa, *Review of Income and Wealth*, (46), pp. 33-58.

Lipton, M. (1988), The poor and poorest: some interim findings, *World Bank Discussion Papers*, No.25 (Washington DC: The World Bank).

Mack, J. and Lansley, S. (1985), *Poor Britain* (London: Allen & Unwin).

Matin, I. and Hulme, D. (2003), Programs for the Poorest: Learning from the IGVGD Program in Bangladesh, *World Development*, (31), No. 3, pp. 647-65.

Moller, V., (ed.), (1996), *Perceptions of Development in Kwa-Zulu Natal: A Subjective Indicator Study* (Durban, Indicator Press).

Narayan, D. et al., (2000), *Voices of the Poor: Can Anyone Hear Us?* (Oxford, Oxford University Press).

Nussbaum, M. C. (2000), *Women and Human Development: The Capabilities Approach* (Cambridge: Cambridge University Press).

Nussbaum, M. C. and Glover, J. (eds) (1995), *Women, Culture and Development* (Oxford: Clarendon Press).

Nussbaum, M. C. and Sen, A. K. (eds) (1993), *The Quality of Life* (Oxford: Clarendon Press).

PSLSD, (1994), *South Africans Rich and Poor: Baseline Household Statistics* (Cape Town, Southern Africa Labour and Development Research Unit).

Qizilbash, M., (2002), A note on the measurement of poverty and vulnerability in the South African context, *Journal of International Development*, (14), pp.757-772.

Qizilbash, M., (2003), Vague language and precise measurement: the case of poverty, *Journal of Economic Methodology*, (10), No.1, pp. 41-58.

Qizilbash, M. and Clark, D. (2005), The capability approach and fuzzy poverty measures: an application to the South African context, *Social Indicators Research*, (74), No.1, 103-139.

Rawls, J. (2001), *Justice As Fairness: A Restatement* (Cambridge Mass: Belknap Press of Harvard University Press).

SA-PPA (South Africa-Participatory Poverty Assessment), (1998), *The Experience and Perception of Poverty: the South African Participatory Poverty Assessment* (Durban, Data Research Africa Report).

SALDRU, 2001, *The Essentials of Life Questionnaire* (Available online at www.geocities.com/poverty_in_southafrica).

Sen, A., (1981), *Poverty and Famines: An Essay on Entitlement and Deprivation* (Oxford, Oxford University Press).

Sen, A. (1985), *Commodities and Capabilities* (Amsterdam: North Holland).

Sen, A., (1987), *On Ethics and Economics* (Oxford, Blackwell).

Sen, A., (1992), *Inequality Re-examined* (Oxford, Oxford University Press).

Sen, A. (1993), Positional objectivity, *Philosophy and Public Affairs*, (22), 126-145.

Sen, A., (1999), *Development as Freedom*, (Oxford, Oxford University Press).

Sen, A. (2002), Health: perception versus observation, *British Medical Journal*, (324), 860-861 (13 April 2002).

SSA, (2000), *Measuring Poverty in South Africa* (Pretoria, Statistics South Africa).

Williamson, T. (1994), *Vagueness* (London: Routledge).

Wilson, F. and Ramphele, M., (1989), *Uprooting Poverty: The South African Challenge* (New York and London, Norton).

Notes.

[1] Notions such as 'hardcore poverty' and 'core deprivation' are already used in various senses that are distinct from the one advanced in this paper. For example, Matin and Hulme (2003, p. 468) define the 'hardcore poor' as 'those who experience the deepest deprivations and are the least likely to be able to overcome their poverty and/or give their children childhoods that will allow them to escape from poverty.'

[2] Vagueness about the critical level is easily confused with 'incompleteness' of welfare judgements and the use of multiple poverty lines in this context, which is the focus of the 'dominance' or 'stochastic dominance' approach discussed by Atkinson (1987) and Foster and Shorrocks (1988) inter alia. The contrast between these approaches is discussed in Qizilbash (2003).

[3] See Chiappero-Martinetti (forthcoming) for a discussion of horizontal vagueness and complexity in the context of fuzzy set theoretic measures of poverty.

[4] The framework developed by Bourguignon and Chakravarty (2003) and adopted in Brandolini and D'Alessio (2001) also has the feature that a person (household) is classed as poor if she (it) is poor in terms of just one dimension. See also Dutta, Pattanaik and Xu (2003) and Atkinson (2003).

[5] While they are not concerned with vagueness, Bradshaw and Finch's (2003) work has this flavour.

[6] While we are contrasting the best known fuzzy set theoretic approaches to poverty with the framework and methodology used here, it is worth noting that Qizilbash (2003) shows that this framework can be used in combination with relevant fuzzy-set theoretic measures.

[7] For a discussion of Black's paper and the ensuing debate about his view of vagueness

see Williamson (1994, pp.73-83).

[8] A new housing development on the outskirts of the township was not included in the survey. Many of these houses were vacant at the time of the survey. As the primary goal was to investigate perceptions of poverty in a typical squatter camp the survey was confined to the old established part of the township, where living conditions are relatively bad. In terms of the 1996 Census boundaries enumerator area 1200106 was excluded from the survey.

[9] For administrative purposes Murraysburg is included in the Province of the Western Cape (one of South Africa's wealthiest provinces in terms of per capita income), but exhibits levels of expenditure poverty associated with the Eastern or Northern Cape (which are both among South Africa's least wealthy provinces). According to Statistics South Africa (SSA), Murraysburg has the lowest average household expenditure level of any magisterial district in the Western Cape (SSA, 2000, p.50).

[10] Some attempts have been made to develop and apply Mack and Lansley's (1985) methodology for measuring poverty in Britain in developing countries such as Vietnam (e.g. Davies, 1997; Davies and Smith, 1998). For example, Davies and Smith (1998) include a basic necessities survey, which asks ordinary people to select items from a predefined list that, in their opinion, should qualify as basic necessities. In contrast to our methodology and the ESL survey, this approach does not deal with vagueness. While our approach looks for virtual unanimity in selecting core dimensions, this approach includes basic necessities once a majority (i.e. at least 50 per cent) has endorsed them. Moreover, unlike our methodology, this approach does not adequately deal with the multidimensionality of poverty. For no obvious reason, the underlying conception of human well-being (or ill-being) is restricted to a list of basic commodities and services

(e.g. Davies and Smith, 1998, section 1.4.1) rather than a broader set of potentially valuable ends (e.g. Clark, 2002; 2003; 2005). Finally, unlike our methodology and the ESL survey, Davies and Smith's approach begs the question from the outset by asking respondents to consider a predefined list of necessities.

[11] In particular, the use of potentially insulting words such as 'poverty' and 'deprivation' was avoided.

[12] Sample intervals of 1:4 were employed in Kwanonqaba, 1:2 in Murraysburg and 1:3 in Khubus. It was necessary to over represent Murraysburg (in relation to the other fieldwork sites) to realise statistically significant samples in sparsely populated rural areas.

[13] Local researchers and interviewers felt that children would not be able to comprehend many of the questions (especially those asking respondents to abstract from their own situation). Ethical issues were also raised about the nature and content of some questions (e.g. relating to family planning), which some interviewers felt were unsuitable for children. The sample was thus restricted to those who were over 18. A further 36 questionnaires were completed but excluded from the sample on the grounds that the wrong person was selected for interview. A total of 130 people were not available for interview and there were 25 refusals.

[14] 2.5 per cent were unspecified.

[15] In such cases, if two categories both have a score of 5, this means that there are four categories that are ranked higher than these categories.

[16] All these dimensions qualify as core using the 95% rule if the sample is broken down by gender. In the case of men, however, two other dimensions also qualify as core: family and friends (endorsed by 94.76% of men who responded) and infrastructure (endorsed by

94.99% of men who responded).

[17] In contrast to the other survey areas, representatives of nearly every major religion and denomination in South Africa (other than Hindu) can be found in the Kwanonqaba sub-sample. Many religions and denominations, however, were only represented by a small minority of people (e.g. Jews, Muslims and Lutherans). Moreover, nearly 90% of respondents in Kwanonqaba stated that the main language spoken at home is Xhosa. The dominant religious categories in Kwanonqaba (Zionist Christian, No religion, Other, Methodist including AME [African Methodist Episcopal Church], and Catholic) differ from those in Murraysburg (Dutch Reformed, Pentecostal/charismatic, Other, Apostolic and Congregational) and Khubus (Dutch Reformed). These categories account for around half of all respondents in Kwanonqaba and Murraysburg and nearly four fifths of respondents in Khubus.

[18] We are grateful to an anonymous referee for bringing this point to our attention.

[19] On the whole the quality of data collection was probably slightly better in Murraysburg and Khubus – largely because smaller interview teams were required and it was possible to retain some of the more experienced interviewers from the Kwanonqaba survey.

[20] These results are not robust if they are broken down by location, but are fairly robust if they are broken down by gender (the only notable difference is that 'pharmacy visit by PHC nurse' does not qualify under the 5% rule for men). Even using the adjusted 5% rule, the results change by location for education, water and especially health. In terms of education, '1-3 years of schooling' is not admissible in one location (Kwanonqaba); and 'matric plus diploma' does not qualify in two locations (Kwanonqaba and Khubus). While both types of piped water are admissible in all locations, none of the first three categories qualify for water in Khubus. There is even more variation in terms of health

care; in this dimension the only category that qualifies as admissible in all three locations is 'clinic, public hospital, shop'. For housing the results are the same, except that the category 'traditional dwelling' also qualifies as admissible in Khubus. Interestingly, jobs is the only dimension for which the results are completely robust by location and gender.

[21] To illustrate this point we might consider another vague concept often used in economics: money. The notions of 'hardcore' and 'softcore' poverty would be analogous to the multiple definitions of money (such as M0, M3 and M4).

[22] It is not entirely obvious that those living in traditional dwellings are actually core poor, however, since some traditional dwellings may provide better housing than shacks. So in this case the ordering of categories of disadvantage in Table 4 is not entirely clear in the case of the housing indicator.

[23] Sen (1985, 1993; 2002) relies on evidence relating to self-reported health. See also Chan et al (2002).

[24] These are the top ten items in Table 2, which coincidentally happen to be only items mentioned by more than 100 respondents.

[25] It could, of course, be argued that deprived people might choose to endorse a traditional healer rather than some other form of health care – such as a public hospital or private doctor – because of the nature of their preferences rather than adaptation to deprivation. This argument raises two separate issues. Firstly, it would suggest that simply looking at the cut-offs suggested by different groups cannot distinguish between adaptation and the diversity of preferences. For this reason, it is not a good test of adaptation. However, the adaptation argument is itself often levelled at the nature of preferences. So, preferences themselves cannot be seen as immune to adaptation. Attempting to differentiate between preferences which have adapted and those which

have not is beyond the scope of this paper. A second issue raised by this line of argument relates to the ordering of achievement levels in terms of relevant indicators in Tables 4, 5 and 6. For example, it might be argued that there are disagreements about what constitutes the best form of health care. Some might think that a traditional healer provides better health care than a public hospital or private doctor. In this paper as in related work (e.g. Klasen, 2000 *inter alia*) we have taken the ordering of most achievement levels to be uncontroversial, though we accept that there are cases where the ordering is not clear-cut (e.g. it is not clear whether a traditional dwelling is necessarily better or worse than a shack).

[26] The figures in Tables 7-9 must be interpreted with care, as the percentages in some of the rows are based on a small number of responses. For example, Table 7 indicates that only one person lived in a traditional dwelling/ hut. It may therefore be extremely misleading to suggest that 100% of people living in a traditional dwelling/ hut regard a house/flat as necessary to get by. A similar note of caution should be applied to Table 8, as only a handful of people received healthcare from a 'traditional healer/ family friend' or a 'pharmacy visit by a PHC nurse' during their last serious illness, and so on.

[27] The only clear exception is a traditional dwelling/ hut, and only one person who responded to the question was living in this type of housing.

[28] This is because some students often repeat the same year of education and sometimes fail to progress beyond primary school despite having completed many years of schooling.