

## **Core Poverty and Extreme Vulnerability in South Africa.**

by David A. Clark\* and Mozaffar Qizilbash.\*\*

*Abstract:* This paper uses a framework which allows for the multi-dimensionality of poverty and the vague borderline between the poor and non-poor, in conjunction with results from a recent survey conducted in three locations in South Africa. The 'core poor' are those who are unambiguously poor and 'vulnerability' is defined in terms of how close one is to being definitely poor in some dimension of poverty. Our results suggest that some South Africans set very tough standards for someone to qualify as poor. Even by these standards, however, there is considerable core poverty in South Africa. The core poor include households with either no or only a small proportion of adults in work and those that lack education and health care. In certain other dimensions (housing and clean water) the main problem is extreme vulnerability. These results lead us to reassess the findings of, and policy implications of, recent studies of poverty in South Africa.

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### *0. Introduction*

There is a growing literature which attempts to allow for the multi-dimensionality of poverty, and the imprecise borderline between the poor and the non-poor. The criteria for selecting dimensions and cut-offs used in this literature remain controversial. In this paper, we use a framework which allows for both vagueness and multi-dimensionality, in conjunction with the results from a recent survey on the 'Essentials of Life' (henceforth, 'the survey'), to examine poverty in South Africa. In this framework, someone is 'core poor' if there is no ambiguity about whether or not she is poor and fuzzy set theoretic poverty measures can be interpreted as measures of vulnerability. The survey results motivate our choices of the dimensions and cut-offs that are used in applying the framework. We report on how these choices alter the picture of core poverty and vulnerability in South Africa.

The paper is structured as follows: in section 1, we explain the framework, fuzzy set theoretic measures of poverty, and their use in the South African context; we discuss the survey and fieldwork methodology in section 2; we relate the survey results to the framework in section 3; section 4 focuses on estimates of poverty and vulnerability and policy implications; and section 5 concludes.

### *1. A Framework and Its Relevance in the South African Context.*

There have recently been various attempts to develop a framework which allows for the multi-dimensionality and vagueness of poverty (Cerioli and Zani, 1990, Cheli and Lemmi, 1995, Chiappero-Martinetti, 1994, 1996 and 2000, and Qizilbash, forthcoming). In this paper, we develop one of these frameworks (Qizilbash, forthcoming). The

framework involves two kinds of vagueness. 'Horizontal vagueness' relates to vagueness about the dimensions of poverty. 'Vertical vagueness' relates to the minimal critical level - in any selected dimension - at or below which someone must fall to classify as poor.<sup>1</sup>

Since the notion of poverty is vague (Sen, 1981, p. 13 and Qizilbash, forthcoming), it makes little sense to suppose that there is any exact list of the relevant dimensions and minimal critical levels. Rather - following Kit Fine's (1975) 'supervaluationist' account of vague predicates - we work with a set of 'admissible' specifications of poverty. A specification of poverty is admissible if it *makes sense* to treat it as a way of articulating the notion of poverty. In Fine's account of vagueness, 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, 'person x is poor' is super-true if and only if person x is poor on all admissible ways of making 'poor' more precise. Since this is a stringent requirement, we refer to someone who is poor in this sense as 'core poor'. For someone to be 'core poor', she must be poor on a dimension that is part of all admissible specifications of poverty. Any dimension of this sort is a 'core dimension'. We define someone as *definitely* poor in some specific dimension if she falls *at or below* the lowest admissible minimal critical level in that dimension. To be core poor, she must be definitely poor in a core dimension. If she falls at or above the highest admissible critical level in the relevant dimension, she is definitely not poor or 'non-poor' in that dimension. If she is neither definitely poor nor non-poor in some dimension, she is *vulnerable* in that dimension.

This approach implies that if someone is doing sufficiently badly in terms of a core dimension, she is core poor. 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 our framework.<sup>2</sup> Information on all dimensions is necessary, nonetheless, if we want to estimate the headcount ratio index of core poverty (i.e. the proportion of the population which is core poor). For example, consider two scenarios, involving only two core dimensions,  $d_1$  and  $d_2$ . In the first scenario, 15% of the population fall at or below the lowest minimal critical level on both  $d_1$  and  $d_2$ . The headcount index of the core poor is 15% in this scenario. In the second scenario those who are definitely poor on each of  $d_1$  and  $d_2$  are mutually exclusive. In this second scenario, the headcount index is 30%. Without knowledge of the overlap between those who are definitely poor on  $d_1$  and  $d_2$ , we cannot distinguish between the two scenarios.

In our framework, fuzzy set theoretic measures (Cerioli and Zani, 1990 and Cheli and Lemmi, 1995) can be interpreted as measures of vulnerability in specific dimensions. To see why, suppose that rank orders are assigned to people, or groups of people, according to their level of disadvantage. We can write the rank order of person, or group,  $k$  in dimension  $i$  as  $r_k(d_i)$ . We write  $r_1(d_i)$  for the lowest, and  $r_m(d_i)$  for the highest, rank order. So any person (group) ranked at or below  $r_1(d_i)$  is definitely poor in dimension  $d_i$ , and any person (group) ranked at or above  $r_m(d_i)$  is definitely not poor in  $d_i$ . We allow for a range of cases in between these, so that we can write:  $r_1(d_i) < r_2(d_i), \dots, < r_m(d_i)$ . Those who fall at a rank order between  $r_1(d_i)$  and  $r_m(d_i)$  are neither definitely poor, nor non-poor in dimension  $d_i$ : they are vulnerable. The equivalent of the rank-order version of the Cerioli and Zani fuzzy set theoretic measure of poverty is then:

$$(1) U(rk)_i = \{rm(di) - rk(di)\} / \{rm(di) - r1(di)\}$$

$U(rk)_i$  measures the difference between person (group)  $k$ 's rank and the maximum rank in the range, divided by the range of rank orders. If  $k$  is vulnerable, (so that  $rk(di)$  falls between  $rm(di)$  and  $r1(di)$ ), it is a measure of how close  $k$  is to being definitely poor. Intuitively, one can think of it as a measure of  $k$ 's vulnerability in the relevant dimension. However, this notion of vulnerability is distinct from that which is much discussed in poverty analysis. That notion is about the risk of *becoming poor*, given some specific choice of poverty cut-off(s). So the central issue is about the probability that one might become poor (Morduch, 1994, Narayan et al, 2000 *inter alia*), in the aftermath of some shock (such as a change in prices, a change in income or some natural event). The intuition in this paper is about how 'close' one is to the lowest admissible level - i.e. to being definitely poor - in some dimension. The closer one is to the lowest admissible critical level, the larger the number of specifications of 'poor' on which one is poor. So vulnerability relates to the possibility of being *classified* as poor,<sup>3</sup> rather than any risk of *becoming* poor.

Cheli and Lemmi (1995) have criticized Cerioli and Zani's arbitrary choice of two cut-offs (such as  $r1(di)$  and  $rm(di)$  above).<sup>4</sup> They have developed an alternative fuzzy set theoretic measure. Suppose we write an achieved value in terms of some index relating to dimension  $i$  as  $v_i$ . Let  $v_i^{(1)}$  be the highest achieved value, and assume that any person (group) who (which) has achieved this value is definitely not poor, in dimension  $i$ . Let  $v_i^{(C)}$  be the lowest achieved value. On the Cheli and Lemmi methodology any person (group) who (which) has this achieved value is definitely poor in dimension  $i$ . Next

suppose that the achieved values are written  $v_i^{(c)}$  where  $c=1,\dots,C$ , and that they can be ordered, so that  $v_i^{(1)} > v_i^{(2)} \dots > v_i^{(C)}$ . Let the sampling distribution of achieved values ordered in this way be  $h(v_i)$ . We can then treat a variation of the Cheli and Lemmi measure as a measure of vulnerability. We can write the vulnerability of someone with the highest achieved value  $v_i^{(1)}$  as  $U(v_i^{(1)})$ , and set  $U(v_i^{(1)})=0$ . The vulnerability of a person with an achieved value of  $v_i^{(c)}$ , with  $C > c > 1$  is then:

$$(2) U(v_i^{(c)}) = U(v_i^{(c-1)}) + \{h(v_i^{(c)}) - h(v_i^{(c-1)})\} / (1 - h(v_i^{(1)}))$$

Here vulnerability grows as people move further down the sampling distribution of achieved values, and  $U(v_i^{(c)})$  tends to one as we reach the bottom end of the distribution of achieved values. This measure is ‘relative’: as one gets more deprived, one is more vulnerable the larger the number of people with achieved values which are higher than one’s own.

It is not clear that this measure can be used with an approach which is concerned with ‘basic needs’ or ‘basic capabilities’. Sen (1983 and 1999) has argued that poverty is relative in terms of some focal variables - such as income and resources - while being absolute in terms of various other indices which relate to basic needs or capabilities - where one is looking for some bottom line in terms of an adequate human life, which does not depend on the distribution of well-being. He thinks that poverty involves not being able to do and be certain basic things - ‘basic capability failure’. If one accepts this argument, relativist approaches may be inappropriate when combined with indices relating to ‘basic needs’, or ‘basic capabilities’, but they may nonetheless be relevant

when combined with income or resource measures. However, some indices which relate to capabilities or well-being might also count as indices of resources. This is true of indices relating to knowledge - years of schooling or educational qualifications. Inasmuch as knowledge is a resource, such indices can be said to have a 'relativist component'. The Cheli and Lemmi approach can be useful when indices have such a component (Qizilbash, 2002).

Fuzzy set theoretic measures have been applied to the South African context (Qizilbash, 2002). In that application, there is some arbitrariness about the choice of dimensions and cut-offs. However, the same general issue of arbitrariness arises in much of the literature. In a recent attempt to use Sen's capability approach in the South African context, Stephan Klasen (1997 and 2000) uses indices relating to fourteen dimensions or 'components' of poverty. Each dimension is thought of as relating to some specific capability with achievements in these dimensions associated with a rank order number. Klasen's choice of indices is motivated by data from the 1993 Project for Statistics on Living Standards and Development (PSLSD) undertaken by the Southern Africa Labour and Development Research Unit (SALDRU).

The indices and rank order numbers which Klasen (2000, p. 41) uses are given in Table 1. For illustrative purposes, consider the first row in Table 1 which relates to the average educational attainment of household members. In this case, rank orders are assigned so that: less than two years of education is given a rank order of 1; between 3 and 5 years of education is given a rank order of 2; and so on. Similar exercises are carried out for the other indicators. While Klasen notes difficulties with ranking some categories, he suggests that the 'scoring is quite intuitive and unlikely to stir much

debate' (Klasen, 2000, p. 39).

Each household is assigned a rank order score on the basis of its achievements in each dimension. Klasen's deprivation index is then given by an unweighted average of a household's rank order scores.<sup>5</sup> He calculates this index using all fourteen indicators as well as for a subset of these indices involving seven dimensions - relating to education, health, housing, nutrition, water, employment and safety - to test for sensitivity (Klasen, 2000, p. 43). He characterises the index which focuses only on the seven indices as a 'core deprivation index' (Klasen, 2000, p. 43). Klasen's choice of component indicators for this index is motivated by the fact that they relate to capabilities listed in certain works by Amartya Sen (Klasen, 2000, p. 39). Klasen goes on to classify households as more or less deprived on the basis of their score on these indices. Using the worst-off 40% in terms of these indices yields a cut-off average rank order score of 2.9 for 'deprivation' and applying the worst-off 20% gives a cut-off average rank order score of 2.4 for the 'most deprived'. Since Klasen thinks that a score of below 3 signals basic capability deprivation in any dimension, the 2.9 cut off line is the one he associates with Sen's notion of poverty.

While Klasen claims that his results are robust to the selection of different dimensions, his work does not use any explicit methodology to deal with horizontal vagueness.<sup>6</sup> Klasen's use of the term 'core deprivation' (as well as the use of two cut-offs) can, nonetheless, be related to a concern with issues relating to vagueness.<sup>7</sup> Our approach provides an explicit methodology for thinking about these issues. There remains, nonetheless, the question of how to select core dimensions and admissible minimal critical levels in this approach. One way of addressing these issues is to use



survey responses.

## *2. The Survey: Background and Methodology.*

In June and July 2001 a 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. The township consists of around 8,300 people most of whom are classified as Black African.<sup>8</sup> Those with jobs are mostly employed as wage labourers.

The second location, Murraysburg, is a magisterial district on the cusp of the Northern, Eastern and Western Cape Provinces.<sup>9</sup> It consists of a small town and sparsely populated countryside and farmland. The town accounts for the bulk of Murraysburg's population (about 5,900 people), which is predominantly Coloured with small Black African and White minorities. Unemployment is high and many local people are forced to migrate to find work. Those fortunate enough to find work in Murraysburg itself are 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. Around 800 people live in the village, most of whom are the descendants of the aboriginal Nama people. Virtually the whole population is classified as Coloured for official purposes. The majority of people with jobs either work in the diamond mines of the Richtersveld or graze sheep and goats to make a living.

The principal aim of the questionnaire was to find out which needs and capabilities ordinary South Africans think are basic, and where they draw the line between the poor and non-poor. 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. Most poverty surveys are concerned with people's living conditions rather than with what people think are the essentials of life. 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'. It is answers to this question which justify the selection of indices in Klasen's study (2000, pp. 38-9). To elicit a more complete information base, the survey questionnaire asked respondents to think about the bare essentials without which a *typical* person cannot cope or manage at all. In particular, respondents were reminded that 'these can be things that people have, or don't have and need'. 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 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' i.e. those aspects 'without which a person cannot cope or manage at all, and without which life is unbearable'. 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 to either endorse or reject some pre-defined dimensions and cut-offs. 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 Ramphela, 1989; PSLSD, 1994; Moller, 1996; SA-PPA, 1998; Clark, 2002 and forthcoming) and issues raised by experienced local researchers and interviewers at brain storming sessions in Cape Town.<sup>10</sup> 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 forthcoming). 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 *n*th household, where *n* represents the sample interval.<sup>11</sup> 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 2).<sup>12</sup> 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 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.<sup>13</sup> Virtually no Indian/Asian people live in any of the survey areas. 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 2). The sample is, nonetheless, broadly representative of the population in the survey areas, though a strict comparison with 1996 Census statistics suggests that people in the 18-24 and 25-34 age cohorts (who account for 52.5 % of the adult population in the survey areas) may have been under-represented.

### *3. Key Results and the Selection of Core Dimensions and Admissible Critical Levels.*

Tables 3 to 7 summarise some key survey findings. Table 3 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 3. 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.<sup>14</sup> Most items ranked in Table 3 can be thought of as *dimensions* of well-being, though sometimes the items are interrelated (e.g. blankets and heat). 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 3 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. 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 3. Several items at the top of Table 3 relate to the goals of South Africa's Reconstruction and Development Programme. This suggests that responses may

have been influenced by political factors (Clark, 2000 and forthcoming). 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 4 summarises the relevant responses. Virtually all the prominent categories in Table 3 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 4 suggests that virtually all the predefined dimensions were given, on average, a similar weight.

There remains the issue of how to relate the survey responses to our framework. In the framework, a dimension counts as *core* if it is part of all admissible specifications of the poverty concept. A natural criterion for a dimension to meet, if it is to count as core, is: 100% endorsement by the sample population. This effectively involves treating all those interviewed as having a 'say', and treating a dimension as non-core if *anyone* failed to endorse it. On this reading none of the items in Table 4 could be classified as 'core' despite the fact that many of these items were endorsed by virtually everyone. The fact that very small numbers of people fail 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.<sup>15</sup>

These considerations suggest that we might treat a dimension as core even if a small proportion of people - say 1% or 5% of the survey sample - fail to endorse it. One might, thus, judge that a dimension is core if it is endorsed by 99% or 95% of those who were interviewed, or who responded. Excluding more than 5% of the sample, say 10%,

would exclude a relatively large proportion of the sample, and, for that reason, we do not use a 90% rule. A 99% rule still leaves us with no core dimensions if we look at the full sample (see Table 4). However, a 95% rule does identify various dimensions. This rule may be sensitive to the manner in which it is interpreted. Here are four variations on the 95% rule: (1) endorsement by at least 95.00% - of those (a) interviewed or (b) who responded; and (2) endorsement by at least 94.50% of those (a) interviewed or (b) who responded. Rules 2(a) and (b) imply that if the proportion of endorsements of a dimension is at least 95% when numbers are rounded up the dimension is core. These are suitably 'relaxed' versions of the rule, and given our general concern with imprecision, they are used in the remainder of the paper. It is not obvious, however, whether to opt for 2(a) or 2(b). If we opt for rule 2(a), it is clear from Table 4 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. Rule 2(b) actually yields exactly the same list. To this degree, the selection of core dimensions is robust.<sup>16</sup>

Table 6 gives the breakdown of the responses according to location. It is clear from this table that in the smaller sub-samples - Murraysburg and Khubus - a relaxed 100% version of rule 2(b) - i.e. one which would treat a dimensions 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 relaxed 100% rule, or even with rule 2(a). Indeed, only three

dimensions - housing, education and clean water - pass the test using rule 2(b) on this sub-sample. It is not clear how far this difference relates to the nature of the locations - Kwanonqaba is urban, whereas Murraysburg and Khubus are rural - rather than the quality of the data. It is clear, nonetheless, that despite some variation across the regions, some items appear repeatedly on these lists. Furthermore, virtually all the relevant items are among the twelve items selected by rules 2(a) and 2(b) when they are used with the full sample. These rules thus have some credibility, and we treat the items selected by them as core for the remainder of the paper. Of these only a few - health, access to health care, housing, clean water, education, nutrition and employment - can easily be related to published data. It is worth noting that much the same set of dimensions classify using rules 2(a) and 2(b) when the sample is broken down in terms of gender. Table 6 gives the gender breakdown of responses. Finally, it is noteworthy that 'economic resources' only appears in one of the lists just presented. This is a striking result, and echoes other findings (e.g. Narayan et al, 2000, p. 64).

If we use a relaxed 95% rule for a dimension to be core - thus excluding up to 5% of respondents - consistency suggests that we ought to use a 'relaxed' 5% rule - which requires endorsement by at least 4.50% of the sample - for admissibility of critical minimal levels.<sup>17</sup> 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%. Since earlier we defined the lowest admissible minimal critical level in terms of the level *at or below* which a person is definitely poor, it is the highest level with a score of less than 5%



which is the lowest admissible. As regards the highest admissible minimal critical level in terms of our framework, however, it is clearly the highest level to get a 5% endorsement.

In this case, as with the 95% rule, there is also the issue of whether to use 5% of those interviewed, or 5% of those who responded. It turns out that both alternatives give the same results. Table 7 gives the proportion of people interviewed who endorsed a specific level in terms of some indicator. To see how the 5% rule works, consider Table 7. With the exception of sanitation facilities and energy source for cooking, the indicators chosen relate exclusively to dimensions which have been identified as core. In Table 7, all those levels which have been shaded satisfy the relaxed 5% rule. Consider, for example, a case where there is a clear horizontal band of grey: years of schooling. In this case, only someone with no schooling is definitely poor. As regards the upper limit, anyone at or above twelve years of schooling is non-poor in terms of this indicator.

In some cases, use of the 5% rule results in apparent anomalies. For example, in the case of sanitation (toilet facilities) the 5% rule implies that a bucket or latrine is admissible but that an improved pit latrine or chemical toilet is not. In cases where the ordering of categories seems 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 somewhere between the lowest and highest admissible minimal levels as defined by the 5% rule. Using the adjusted 5% rule, the category ‘improved pit latrine or chemical toilet’ would automatically qualify. Similarly in the case of water source, if, as seems plausible, we can rank a borehole, well etc. above a dam or standing water, the adjusted 5% rule implies that access to a protected spring, well or borehole (which does not qualify using 5%) is admissible.<sup>18</sup>

The lowest admissible cut-offs implied by the survey results with the 5% rule are quite different from those used in Klasen's work, which involve a rank order score of 3 in Table 1. The survey results do, nonetheless, sometimes support Klasen's choices, when combined with another rule. Consider a rule which selects the crucial critical minimal level as the category which achieves the *highest* level of endorsement.<sup>19</sup> In Table 7, this category is indicated for each dimension with an asterisk. Of the dimensions presented in Table 7 access to health care and energy source for cooking are ones where the cut-off Klasen uses is selected according to this rule. In some cases - such as toilet facilities and water source - the category which is endorsed by the largest proportion of people falls *above* a rank order score of 3 in Table 1. So it is the particular framework we employ, and the concern with core poverty which leads us to such a low 'bottom line'.

#### *4. Implications for Estimates of Poverty and for Policy.*

In this section we restrict attention to the twelve core dimensions. Of these dimensions, published data can be used in conjunction with the survey results for indicators relating to: the type of housing the source of clean water; access to health care; and educational attainment. Some employment and nutrition data can also be used. We compare the pictures of definite poverty and vulnerability that emerge from our selection of admissible critical levels to those which emerge from the use of two alternative criteria for defining cut-offs in each dimension. The first of these alternative criteria - 'criterion 1' - is Klasen's: a rank order score of 3 or more in terms of his classification in Table 1. The second - 'criterion 2' - is related to the Cheli and Lemmi methodology and is used in Qizilbash (2001 and 2002). It involves treating the worst-off category in any dimension as definitely poor, those who are doing best as non-poor, and

treating everyone else as vulnerable, in the relevant dimension. The criterion for selecting cut-offs using the adjusted 5% rule and the survey results is 'criterion 3'. Those who are 'closest' to being definitely poor - in the sense that they are in the category or group that is nearest to being definitely poor - are classed as 'extremely vulnerable' (Qizilbash, 2001 and 2002). Vulnerability scores based on criteria 2 and 3 are presented in Tables 8 to 11, with Vcz and Vcl, respectively, representing the Cerioli and Zani and Chelli and Lemmi measures. If the two criteria imply different levels of vulnerability, the levels implied by criterion 2 are shown under 'scenario 1', and those implied by criterion 3 are under 'scenario 2'.

Clearly, criterion 2 implies a lower bottom line than criterion 1 does. How do criteria 2 and 3 compare? In one dimension - access to health care - both criteria yield the same result. Only those with no access are definitely poor, and only those who consult a private doctor are definitely not poor. The Vcl measure, which is reported in Table 10, suggests that there is not much difference between using a health clinic/centre, public hospital, shop or supermarket and being cared for by a family member, friend or traditional healer. This result may arise because of the relativism of the Vcl measure.

In the cases of housing and water, criteria 2 and 3 have quite different implications about the group which is definitely poor. On criterion 2, only those living in shacks are definitely poor, while those who live in houses are non-poor, and everyone else is vulnerable. On criterion 3, however, those who live in shacks are not definitely poor but extremely vulnerable.<sup>20</sup> Only people who fall *below* this level - the homeless - can be definitely poor in this dimension. Similarly, in the case of water, criterion 2 classifies those whose source of water is a flowing river, stream, dam or standing water

as definitely poor, while criterion 3 implies that this group is extremely vulnerable. On criterion 3 one must conclude that only those who are worse off than this group - those with no access to water at all - can count as definitely poor.

The implied levels of  $V_{cz}$  and  $V_{cl}$  for the type of dwelling are given in Table 8. The only significant difference between the two measures in scenario 1 is that  $V_{cl}$  treats those in flats, maisonettes and a combination of buildings as considerably less vulnerable than does  $V_{cz}$ . In scenario 2, however, those who have a dwelling of some sort but do not live in shacks are less vulnerable on  $V_{cz}$  than in scenario 1, because they are 'further' from the worst category. Introducing the new category of homeless people has no effect at all on  $V_{cl}$ , because the Cheli and Lemmi methodology is relativist. It effectively equates being definitely poor with being in the worst-off group in the sampling distribution. If there are no homeless people in the sample - in the PSLSD data there is no category for the 'homeless'<sup>21</sup> - those who live in shacks are definitely poor in terms of  $V_{cl}$ . A similar result emerges in the case of water. In Table 9, we allow for an extra category of people with no water source when calculating the  $V_{cl}$  and  $V_{cz}$  in 'scenario 2'. Comparing scenarios 1 and 2, allowing for this category has no effect at all on  $V_{cl}$ . However, as in the case of housing, the figures which are above 0 for  $V_{cz}$  are lower in scenario 2 as compared to scenario 1. These results suggest that the relativism of the Cheli and Lemmi approach can conflict with the 'absolute' notion of poverty implicit in the survey questionnaire.<sup>22</sup>

In the case of educational attainment, Klasen cites the average number of years of schooling of adult household members (see Table 1). This is not a good indicator in the South African context, because many of those with numerous years of schooling have

failed to gain any qualifications and are repeating earlier years. In the survey questionnaire, the question asked was not about households but individuals. The survey results (in Table 7) suggest that only those who have no schooling are definitely poor, and those with 12-15 years of schooling are non-poor. If '12+ years of schooling' is the highest category in the sampling distribution - it is the highest category in Klasen's Table 1 - criteria 2 and 3 give the same answer.

Another indicator which is often used relates to educational qualifications. Achievement in terms of this indicator can be broken into six categories, from those who have no qualifications at one end, to those who have gone beyond Matric or a Diploma - i.e. secondary education in the local context - on the other. Criterion 2 implies that only those with more than secondary education are non-poor, while criterion 3 implies that people with secondary education are non-poor in this dimension. However, both criteria 2 and 3 imply that only those with no qualifications at all are definitely poor. The implied levels of vulnerability are given in Table 11. Comparing  $V_{cl}$  and  $V_{cz}$ , it is clear that failing to complete secondary education is a more serious matter when one takes account of the fact that knowledge has a 'relativist component' to it. Inasmuch as knowledge is a resource needed to achieve other values or needs, a failure to complete secondary education may be important because such failure makes it considerably harder to find employment. This is likely to be true in South Africa: an analysis of the PSLSD data shows that around 50% of the unemployed had not completed secondary education (May, 2000, p. 83).

In general, the survey responses, when used together with our framework, lead us to classify only the most disadvantaged group as definitely poor. Does this imply a very

low headcount index of core poverty? In particular, does it lead to a much lower estimate than Klasen's estimate of the most deprived? While we cannot give an overall estimate of the headcount index of core poverty - given that the published data are dimension specific - we can make some inferences from the data, and we can compare the picture which emerges with Klasen's estimate of the 'most deprived'.

As regards type of dwelling and water source, using our approach with the PSLSD data implies that there was just about no definite poverty in these dimensions in 1993, since those who might be definitely poor in these dimensions are not picked up in the PSLSD data. In three core dimensions, nonetheless, the proportion that is core poor is clearly positive: access to health care, education and employment. As regards health, those who have no access to health care are core poor and the proportion of the population in this category was 17.7% in 1993.<sup>23</sup> In the case of education, adults who have no education are core poor and in 1993 the proportion of people over 16 with no education was 14.7% of the population. As regards employment, while the categories used in the PSLSD questionnaire were not related to the categories in the survey (so that we could not estimate levels of vulnerability) only 2.3% of the sample thought that a person could get by without a job (see Table 7). That makes the unemployed core poor using the 5% rule. The proportion of the workforce who fell into this class (if it includes discouraged workers) in 1993 was 30.1%. The unemployment estimates here relate to individuals rather than households. In the PSLSD data, the proportion of households which have no adult member in employment is 27.4%.<sup>24</sup> In Klasen's classification, however, it is households with 0-19% of adult members in work that count as the most disadvantaged (see Table 1). In 1993, 31.5% of households fell into this category. 31.5%

is certainly a plausible figure for definite poverty amongst households in this dimension in 1993.

Nutrition is also a core dimension. We have not discussed this dimension, since no question in the survey related to the standard anthropometric measures of under-nourishment. Nonetheless, there is a case for treating those who are classed as seriously malnourished according to such measures as core poor. The PSLSD data contains information on a measure of 'stunting' (PSLSD, 1994, p. 280). According to this data about 25.4% of South Africans were chronically malnourished in 1993.

In the absence of published data about the overlap between the households which, or individuals who, are definitely poor in terms of indicators relating to the selected core dimensions, we can only make tentative remarks about the overall headcount index of core poverty. Part of the problem lies in the fact that in some of the cases just mentioned (e.g. access to health care, undernourishment and educational qualifications) the data relates to individuals, and in other cases (e.g. water source and type of dwelling) the data relates to households. In rare cases (such as employment), data is available for both households and individuals. If there were considerable overlap between those who are definitely poor on the various core dimensions, then we would expect the overall estimate of the core poor to be close to the highest headcount index for the specific dimensions listed. The highest dimension specific index is employment at 31.5% for households. On the other hand, if there is not much overlap, the index could be considerably higher. So 31.5% is a lower bound estimate. Klasen has examined the correlation between disadvantage in terms of the various indicators which he lists. He has suggested that anyone below a score of 2.4 in terms of his deprivation index 'is clearly suffering from

multiple deprivations' (Klasen, 2000, p. 46). That does support the idea that 31.5% is a good estimate. This estimate is, nonetheless, considerably higher than Klasen's estimate of 25.4% 'most deprived'. It is also higher than the estimated 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). So while our approach implies lower cut-offs for definite poverty than Klasen's, it implies a higher lower bound estimate of core poverty for households than Klasen's estimate of the 'most deprived'. This is a surprising result.

What does all this teach us about policy? Our selection of core dimensions excludes economic resources. So core poverty is about being short of certain central basic needs or capabilities, which may not be directly related to economic resources.<sup>25</sup> This result underlines the importance of lessons in related work which suggests that the distinction between 'income poverty' - where the focal variable is income or expenditure - and 'human poverty' - where the focal variables are direct measures of basic needs or capabilities - is important. This distinction matters for accurate identification of the poor (Klasen, 2000), and policies which distribute poverty eradication grants to provinces on the basis of poverty incidence (Qizilbash, 2002). Policy must, thus, be concerned with human poverty.

In discussing policies that aim to reduce on human poverty, we can distinguish between policies that focus on the core poor - 'core poverty eradication policies' and those that focus on extreme vulnerability - 'core poverty prevention policies'. Our results suggest that in the dimensions of water and housing core poverty prevention ought to be the focus. As regards indices, core poverty eradication policy should focus on education,



jobs, health care and nutrition indices. Core dimensions for which there is little or no data include self-worth and respect, freedom, religion, safety and survival. There is some data about safety (Klasen, 1997 and 2000), but the importance of these dimensions has been underrated. While survival is related to one standard measure - life expectancy at birth<sup>26</sup> - self-worth is not easily measured. Furthermore, few studies of poverty focus on religion, though some (e.g. Finnis, 1979) argue that this (or something similar to it, such as finding meaning or purpose in life) is a component of well-being. The fact that achievement in some core dimensions cannot be easily measured ought not to lead to a neglect of these dimensions at the level of policy.

Our results also suggest that the way in which 'vulnerability' is defined matters. In much of the existing literature, particularly the livelihoods literature, 'vulnerability' is defined in terms of the risk of becoming poor (Carter and May, 1999 and 2001). That literature suggests that poverty policy should focus on assets. Our results do not have this implication. The difference between the two approaches arises, in part, because the livelihoods framework focuses on the financial aspect of disadvantage, whereas our results suggest that the financial aspect is not core.

As regards inter-provincial comparisons, our results suggest that shack dwellers are not definitely poor as regards type of dwelling - contrary to the assumption in Qizilbash (2002) - and that the relatively large proportions of the populations of the Free State, Gauteng and the Western Cape living in shacks in 1993 (Pillay, 1996, pp. 22 and 29) were not definitely poor as regards type of dwelling. Nonetheless, this result reinforces the claim (in Qizilbash 2002, p. 770) that the key problem in the Free State has been extreme vulnerability rather than definite poverty in certain dimensions. Core

poverty prevention rather than eradication ought to be the goal here.

As regards sectoral priorities, May (2000, p. 260) writes that the highest share of government's social services budget for 1997/1998 went to education, followed by health, and housing. The prioritised sectors do relate to core dimensions, but the relative weight given to the different sectors is not justified by the results in Table 4: housing and health have a higher average mark than education. The average marks of these three core dimensions are, however, very close. So it may not be sensible to put much emphasis on differences between them. A higher share for education may, nonetheless, be justified on the grounds that there is more definite poverty in this dimension than in housing. It might also be justified on the grounds that education is linked to employment prospects. Furthermore, the fact that employment is a core dimension suggests that policy should focus on job creation programmes, such as public works projects, which have met with some success in the South African context (May, 2000, pp. 87-9). At a deeper level, however, it suggests that macro-economic policy and poverty reduction policy cannot be disentangled.

We must end, nonetheless, with some qualifications. While our framework is used in combination with survey responses from a large sample, it is restricted to three locations. Even though some of the core dimensions which emerge from this exercise have received considerable attention, research on other locations in South Africa is needed to confirm that our results do not depend on the choice of survey locations. Furthermore, we need to check that the responses to the survey questionnaire do not reflect adaptation to the circumstances in which the respondents live. This worry might, for example, be expressed about those respondents who endorse 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 got used to their poverty would think that a shack is enough to just get by. Indeed, in general, it might be argued that, to some extent, people’s basic needs do not depend on what they say or think. If some new medicine will cure a serious illness, it can be argued that this is a basic need for someone with the illness, whether or not that person thinks so.

The survey results are illuminating here, since certain aspects of the living conditions of the respondents were recorded. It is worth checking, then, whether *all*, or an *overwhelming majority* of those who endorsed categories such as a shack or a traditional healer were living in very straitened conditions in the relevant dimension. In fact, in the case of shacks over half (52%) of those who endorsed this category were living in a house, while 45% were living in shacks. Of those who said that a traditional healer was enough to get by, 51% had received no health care at all during their last illness. Nonetheless, 39% had used a public hospital, clinic or shop during their last illness. So, it is not the case that *all* or even the *overwhelming majority* of those endorsing these categories were among the most deprived. The claim that all or most of the respondents who endorse very low cut-offs must necessarily be poor, and must have adapted to their situations in the relevant dimension is false.

Finally, it can be argued that survey data from 2001 cannot be legitimately used to evaluate poverty in 1993. This point is particularly pertinent in the context of income poverty lines, which have to be adjusted to allow for the changes in the cost of living. Here the fact that interviewers explicitly asked respondents to abstract from their circumstances is significant. Furthermore, since income was not selected as a core

dimension the issue of updating income poverty lines is not relevant to the discussion. As regards the indices we did focus on, furthermore, the issue of updating is less troubling.

### 5. Conclusions.

Using survey responses that reflect the views of ordinary South Africans in three locations, we find that a significant proportion of respondents set the 'bottom line' much lower than that typically set by poverty researchers and policy makers. Nonetheless, the lower bound estimate of core poverty implied by our methodology is higher than Klasen's estimate of the 'most deprived' as well as the estimated headcount index of the 'ultra-poor'. This is a surprising result because our methodology also implies that many of those who have traditionally been regarded as very deprived in the South African context (such as shack dwellers) are not definitely poor, but extremely vulnerable. Concerns about horizontal vagueness lead us to focus exclusively on certain core dimensions. Core poverty is about human rather than income poverty, though in some core dimensions the key problem is extreme vulnerability.

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Table 1 Components of Klasen's Composite Measure of Deprivation

Component	Description of indicator used	Rank Order Score (1 signifying most deprived, 5 least)				
		1	2	3	4	5
Education	Average years of schooling of all adult (16+) household members	<2	3-5	6-9	10-11	12+
Income	Expenditure quintiles (as used throughout [Klasen's] paper)	Poorest quintile	Quintile 2	Quintile 3	Quintile 4	Richest quintile
Wealth	Number of household durables (list includes vehicles, phone, radio, TV, geyser, stoves, kettle, bicycles)	0-1	2-4	5-7	8-10	11+
Housing	Housing characteristic	Shack	Traditional dwelling hostel, outbuilding	Combination of buildings	Flat, masionette	House
Water	Type of water access	River/Stream, Dam, Standing Water	Rainwater, protected spring, well, borehole	Public standpipe, water tanker/ carrier	Piped water on premises	Piped water inside house
Sanitation	Type of sanitation facilities	No toilet	Bucket	Latrine	Imp. latrine, chem. toilet, flush toilet outside	Flush toilet inside
Energy	Main source of energy for cooking	Wood	Dung	Paraffin, coal	Gas from bottle, dry battery	Electricity from grid, town gas
Employment	Share of adult members of households employed	0-19%	20-39%	40-59%	60-79%	80-100%
Transport	Type of transport used to get to work	Walk	Bicycle	Bus, train, taxis		car
Financial services *	Ratio of monthly debt service to total debt stock	30%+	20-30%	10-20%	5-10%	0-5%
Nutrition	Share of children stunted in household	80-100%	61-80%	40-59%	20-39%	0-19%
Health care	Use of health facilities during last illness	None	Family/ friend, traditional healer	Clinic, public hospital, shop	Pharmacy, visit by PHC nurse	Private doctor
Safety	Perception of safety inside (i) and outside (o) of house compared to 5 years ago	Less safe (i) - less safe (o)	Less safe (i)-same (o) less safe (o) -same (i)	Same (i)-same (o) less safe (i)-safer(o) safer(i)-less safe (o)	Safer (i)-same(o) same (i)-safer(o)	safer(i)-safer(o)
Perceived Well-being	Level of satisfaction of household	Very Dissatisfied	Dissatisfied	Neither/ Nor	Satisfied	Very Satisfied

Source: Klasen (2000), table 2.

\* The scoring for this category has been corrected following correspondence with Stephan Klasen.

Table 2 The Characteristics of the Survey Sample (Total Number of People)

Location		Age Cohorts					Unspecified	Total
		18-24	25-34	35-44	45-59	60 Plus		
<b>Kwanonqaba</b>	Men	34	80	79	51	23	4	271
	Women	61	88	76	44	28	0	297
	All	95	168	155	95	51	4	568
<b>Murraysburg</b>	Men	21	19	51	30	27	0	148
	Women	14	30	33	54	34	0	165
	All	35	49	84	84	61	0	313
<b>Khubus</b>	Men	6	3	11	5	1	0	26
	Women	4	10	5	10	5	0	34
	All	10	13	16	15	6	0	60
<b>Grand Total</b>	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 3 Ordinal Ranking of the Essentials of Life in three impoverished communities in South Africa*

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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

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*Source: Fieldwork Database*

*Table 4 Normative Assessment of 20 Pre-Defined Human Needs or Capabilities*

	Regarded as necessary to “get by”			Average mark out of ten (4)
	Total (1)	Percentage of sample (2)	Percentage of responses (3)	
Access to Health Care	893	95.82%	96.02%	9.23
Clean Water	898	96.35%	96.87%	9.44
Clothing	874	93.78%	94.08%	8.89
Economic Resources	867	93.03%	93.63%	9.04
Education	893	95.82%	96.13%	9.24
Family and Friends	876	93.99%	94.40%	8.69
Freedom	890	95.49%	95.60%	9.13
Happy and Care Free State of Mind	871	93.45%	93.96%	8.87
Health	895	96.03%	96.24%	9.34
Housing	898	96.35%	96.66%	9.44
Infrastructure	875	93.88%	94.39%	8.98
Jobs	894	95.92%	96.34%	9.41
Leisure	806	86.48%	86.76%	8.24
Nutrition	889	95.39%	95.80%	9.30
Religion	889	95.39%	96.00%	8.96
Safety	888	95.28%	95.59%	9.04
Sanitation	859	92.17%	92.77%	9.02
Self Worth and Respect	888	95.28%	95.48%	8.84
Survival	883	94.74%	95.46%	9.10
Taking Part in Community Life	824	88.41%	88.51%	8.22

Sample =941

*Note: The percentages in column 2 exclude nine questionnaires for which an interviewer in Kwanonqaba failed to ask the relevant question.*

Table 5 Normative Assessment of 20 Pre-Defined Human Needs or Capabilities by Location

	<b>KWANONQABA</b>			<b>MURRAYSBURG</b>			<b>KHUBUS</b>		
	Regarded as necessary to “get by”			Regarded as necessary to “get by”			Regarded as necessary to “get by”		
	Total	% of sample*	% of responses	Total	% of sample	% of responses	Total	% of sample	% of responses
Access to Health Care	523	93.56%	93.90%	310	99.04%	99.04%	60	100.00%	100.00%
Clean Water	525	93.92%	94.77%	313	100.00%	100.00%	60	100.00%	100.00%
Clothing	506	90.52%	91.01%	309	98.72%	98.72%	59	98.33%	98.33%
Economic Resources	512	91.59%	92.42%	296	94.57%	94.57%	59	98.33%	100.00%
Education	528	94.45%	94.96%	305	97.44%	97.44%	60	100.00%	100.00%
Family and Friends	511	91.41%	92.07%	305	97.44%	97.44%	60	100.00%	100.00%
Freedom	522	93.38%	93.55%	308	98.40%	98.40%	60	100.00%	100.00%
Happy and Care Free State of Mind	511	91.41%	92.24%	301	96.17%	96.17%	59	98.33%	98.33%
Health	523	93.56%	93.90%	313	100.00%	100.00%	59	98.33%	98.33%
Housing	526	94.10%	94.60%	313	100.00%	100.00%	59	98.33%	98.33%
Infrastructure	512	91.59%	92.42%	305	97.44%	97.44%	58	96.67%	96.67%
Jobs	524	93.74%	94.25%	312	99.68%	100.00%	58	96.67%	96.67%
Leisure	457	81.75%	82.19%	290	92.65%	92.65%	59	98.33%	98.33%
Nutrition	516	92.31%	92.97%	313	100.00%	100.00%	60	100.00%	100.00%
Religion	519	92.84%	93.51%	310	99.04%	99.68%	60	100.00%	100.00%
Safety	518	92.67%	93.17%	310	99.04%	99.04%	60	100.00%	100.00%
Sanitation	496	88.73%	89.69%	304	97.13%	97.13%	59	98.33%	98.33%
Self Worth and Respect	521	93.20%	93.54%	307	98.08%	98.08%	60	100.00%	100.00%
Survival	524	93.74%	94.41%	299	95.53%	96.45%	60	100.00%	100.00%
Taking Part in Community Life	473	84.62%	84.77%	293	93.61%	93.61%	58	96.67%	96.67%
	Sample = 568			Sample = 313			Sample = 60		

\* Figures exclude nine questionnaires for which an interviewer failed to ask the relevant question.

Source: Fieldwork Database.

Table 6 Normative Assessment of 20 Pre-Defined Human Needs or Capabilities by Gender

	MEN			WOMEN		
	Regarded as necessary to “get by”			Regarded as necessary to “get by”		
	Total	% of sample *	% of responses	Total	% of sample **	% of responses
Access to Health Care	422	95.48%	95.91%	471	96.12%	96.12%
Clean Water	425	96.15%	96.59%	473	96.53%	97.13%
Clothing	413	93.44%	93.86%	461	94.08%	94.27%
Economic Resources	412	93.21%	93.85%	455	92.86%	93.43%
Education	420	95.02%	95.24%	473	96.53%	96.93%
Family and Friends	416	94.12%	94.76%	460	93.88%	94.07%
Freedom	420	95.02%	95.24%	470	95.92%	95.92%
Happy and Care Free State of Mind	411	92.99%	93.62%	460	93.88%	94.26%
Health	419	94.80%	95.23%	476	97.14%	97.14%
Housing	422	95.48%	95.91%	476	97.14%	97.34%
Infrastructure	417	94.34%	94.99%	458	93.47%	93.85%
Jobs	420	95.02%	95.46%	474	96.73%	97.13%
Leisure	387	87.56%	87.96%	419	85.51%	85.69%
Nutrition	421	95.25%	96.12%	468	95.51%	95.51%
Religion	419	94.80%	95.23%	470	95.92%	96.71%
Safety	418	94.57%	95.00%	470	95.92%	96.12%
Sanitation	405	91.63%	92.47%	454	92.65%	93.03%
Self Worth and Respect	421	95.25%	95.68%	467	95.31%	95.31%
Survival	415	93.89%	94.75%	468	95.51%	96.10%
Taking Part in Community Life	395	89.37%	89.57%	429	87.55%	87.55%

Sample = 445

Sample = 496

\* Figures exclude three questionnaires for which an interviewer failed to ask the relevant question.

\*\* Figures excludes six questionnaires for which an interviewer failed to ask the relevant question.

Source: Fieldwork database

Table 7 Normative Evaluation of Some Pre-Defined Critical Minimal Levels

Dimension/ Indicator	Categories							
<b>Education #1</b> (Years of schooling)	None	1-3	4-6	7-9	9-12 *	12-15	15 +	No Response
	<b>1.91%</b>	<b>6.06%</b>	<b>12.12%</b>	<b>21.79%</b>	<b>37.83%</b>	<b>15.30%</b>	<b>1.81%</b>	<b>3.19%</b>
<b>Education #2</b> (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. qualif.	No Response
	<b>2.02%</b>	<b>9.78%</b>	<b>14.35%</b>	<b>17.32%</b>	<b>46.65%</b>	<b>7.12%</b>	<b>1.81%</b>	<b>0.96%</b>
<b>Housing</b> (Type of dwelling)	None (Homeless)	Traditional Dwelling	Shack	Wendy House	Part of House/ Hostel	House/ Flat *	No Response	
	<b>0.21%</b>	<b>1.81%</b>	<b>35.81%</b>	<b>18.92%</b>	<b>5.53%</b>	<b>37.09%</b>	<b>0.64%</b>	
<b>Water</b> (Water source)	Dam or standing water	Protected spring well or borehole	Public standpipe, water tanker/carrier	Piped on Premises *	Piped (Inside home)	No Response		
	<b>5.10%</b>	<b>2.87%</b>	<b>7.65%</b>	<b>67.06%</b>	<b>16.90%</b>	<b>0.43%</b>		
<b>Sanitation</b> (Toilet facilities)	No Toilet	Bucket	Latrine	Improved pit latrine or chemical toilet	Flush toilet (outside house) *	Flush toilet (inside house)	No Response	
	<b>0.21%</b>	<b>5.85%</b>	<b>4.79%</b>	<b>3.72%</b>	<b>63.34%</b>	<b>21.68%</b>	<b>0.43%</b>	
<b>Energy</b> (Source of energy for cooking)	Wood	Dung	Paraffin, coal *	Gas from bottle, dry battery	Electricity from grid, town gas	No Response		
	<b>18.81%</b>	<b>0.32%</b>	<b>46.33%</b>	<b>17.43%</b>	<b>14.13%</b>	<b>2.98%</b>		
<b>Jobs</b> (Type of contract)	None (No Job)	Part time casual	Full time casual *	Full time, short term contract	Full time, long term contract	No Response		
	<b>2.34%</b>	<b>17.00%</b>	<b>45.70%</b>	<b>16.37%</b>	<b>17.54%</b>	<b>1.60%</b>		
<b>Health/ Health Care</b> (Type of health care)	No health care	Traditional healer, family/ friend	Clinic, public hospital, shop *	Pharmacy, visit by PHC nurse	Private Doctor	No Response		
	<b>0.64%</b>	<b>11.58%</b>	<b>78.11%</b>	<b>4.57%</b>	<b>4.78%</b>	<b>0.32%</b>		

Note: "no-reponse" includes non-responses (empty data cells) as well as cases in which the "no response" option was selected.

Source: Fieldwork database.

*Table 8 Estimate of Vulnerability in South Africa: Type of Dwelling*

Type of Dwelling*	Headcount	Scenario 1		Scenario 2	
		Vcz	Vcl	Vcz	Vcl
None	N/A			1.00	1.00
Shack	11.00%	1.00	1.00	0.80	1.00
Trad. dwelling, hostel, outbuilding	17.70%	0.75	0.75	0.60	0.75
Combination of buildings	10.30%	0.50	0.36	0.40	0.36
Flat/ Maisonette	6.10%	0.25	0.13	0.20	0.13
House/ Part of House	54.70%	0.00	0.00	0.00	0.00

*Note: Figures are rounded to two decimal places.*

*\* "Other dwellings" (i.e. caravans and wendy houses), which account for 0.2% of the population, have been omitted from the calculations of Vcz and Vcl in this table.*

*Source: PSLSD (1994), p.64*

*Table 9 Estimates of Vulnerability in South Africa: Water Source*

Water Source	Headcount	Scenario 1		Scenario 2	
		Vcz	Vcl	Vcz	Vcl
None	N/A			1.00	0.99
Flowing river, stream, dam, standing water	7.43%	1.00	0.99	0.80	0.99
Rainwater tank, protected spring, well, borehole	13.72%	0.75	0.86	0.60	0.86
Piped from public tap/kiosk, water tanker	18.98%	0.50	0.64	0.40	0.63
Piped-yard tap A1	19.70%	0.25	0.33	0.20	0.33
Piped in the house	39.47%	0.00	0.00	0.00	0.00

*Note: Figures are rounded to two decimal places.*

*Source: PSLSD (1994).*

*Table 10 Estimates of Vulnerability in South Africa: Access to Health Care*

<b>Access to Health Care</b>	<b>Headcount</b>	<b>Vcz</b>	<b>Vcl</b>
None	17.70%	1.00	0.99
Family, friend or traditional healer	2.40%	0.75	0.67
Health centre/clinic, public hospital, shop, supermarket	34.20%	0.50	0.63
Pharmacy, Private Nurse, Primary Health Worker	1.30%	0.25	0.02
Private Doctor	43.60%	0.00	0.00

*Note: Figures are rounded to two decimal places.*

*Source: PSLSD (1994), p.264.*

*Table 11 Estimates of Vulnerability in South Africa: Educational Attainment*

<b>Educational Attainment</b>	<b>Headcount</b>	<b>Scenario 1</b>		<b>Scenario 2</b>	
		<b>Vcz</b>	<b>Vcl</b>	<b>Vcz</b>	<b>Vcl</b>
None	14.70%	1.00	1.00	1.00	1.00
Incomplete Primary	20.00%	0.80	0.83	0.75	0.82
Primary Complete	8.80%	0.60	0.66	0.50	0.57
Secondary Incomplete	37.50%	0.40	0.58	0.25	0.46
Secondary Complete	12.60%	0.20	0.20	0.00	0.00
Tertiary (Complete and incomplete)	6.50%	0.00	0.00	0.00	0.00

*Note: Figures are rounded to two decimal places.*

*Source: RDP (1995), p.20 quoted in Klasen (1997), p.78.*

## Notes.

1. 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 the approaches is discussed in Qizilbash (forthcoming).
2. The framework developed by Bourguignon and Chakravarty (1998) and adopted in Brandolini and D'Alessio (2001) also has this feature. See also Dutta, Pattanaik and Xu (forthcoming).
3. It need not correspond, however, to the probability of being classified as poor. That would depend on the probability of any particular specification actually being used in classification.
4. The Cerioli and Zani measure can also be criticized on the grounds that each change in rank order score contributes equally to vulnerability, whereas this is clearly contestable.
5. Klasen considers two methods of arriving at an overall deprivation index. One involves using principal-components analysis to assign weights to different dimensions, while the other involves calculating an unweighted average. However, both methods generate similar results and which method is used is not especially important (Klasen, 2000, p. 37).
6. Furthermore, his choices of 20% and 40% cut-offs for capability deprivation - which mirror the use of 20% and 40% poorest for 'adult equivalent' household expenditures - are also contestable, not least because they involve a relativist approach to defining cut-offs, whereas poverty is (on Sen's view) absolute in the space of capability.
7. Stephan Klasen pointed out to us that he chose the 20% and 40% cut-offs for the deprivation index so that it might be compared with the expenditure indices which involve those cut-offs. Nonetheless, such use of two cut-offs even in the income and expenditure spaces can be related to Cerioli and Zani (1990).
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 the 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. In particular, the use of potentially insulting words such as 'poverty' and 'deprivation' was avoided.
11. 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.
12. 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.
13. 2.5 per cent were unspecified.



14. In such cases, if two categories both have a score of 5, this means that there are four categories that are better than these categories.

15. A small number of answers might be excluded even if there are no errors in the interview process, because the framework is concerned with lack of ambiguity, and overwhelming endorsement, rather than endorsement by *everyone* interviewed, can establish this.

16. All but one of these dimensions also qualify using rules 1(a) and 1(b).

17. Since we are primarily concerned with core dimensions, the issue of admissible non-core dimensions is not discussed.

18. There are some variations in the categories which are selected using the 5% rule, if we breakdown the data according to location and gender. None of these would, however, seriously alter the conclusions of this paper. Furthermore, most of these disappear once we use the 'adjusted 5% rule'.

19. This rule, like the 5% rule, is, nonetheless, sensitive to the way in which the categories are actually defined.

20. It is worth noting that while the category of 'traditional dwelling' does not pass the 5% test, in the PSLSD data this category is combined with others and the relevant combination of categories in Table 7 do count as admissible.

21. The PSLSD sample focused exclusively on residences.

22. This does not exclude the possibility that there may have been core poverty in terms of some other indicator relating to housing (e.g. an indicator relating to crowding) which we could not relate to questionnaire responses.

23. This figure, and the figures which follow it, are taken from PSLSD (1994).

24. Klasen (1997, p. 71) gives an estimate of 29.5% for the proportion of households 'with nobody working'.

25. It is also worth noting that all the dimensions which Klasen uses in his 'core deprivation index' - education, health, housing, nutrition, water, employment and safety - are core in terms of our methodology.

26. Neither the PSLSD nor the 1996 Census includes information on life expectancy.