Southern Africa Labour and Development Research Unit
University of Cape Town

Towards a Poverty Line for South Africa: Background Note

Ingrid Woolard
Murray Leibbrandt

February 2006

USAID FROM THE AMERICAN PEOPLE
DFID Department for International Development

TOWARDS A POVERTY LINE FOR SOUTH AFRICA

BACKGROUND NOTE

This paper was supported by the National Treasury's Strengthening the Impact of Pro-poor Programmes (SIPP) Research Project. SIPP is co-funded by the United States Agency for International Aid (USAID) and the United Kingdom's Department for International Development (DFID).

1. INTRODUCTION

It is more than a century since Seebohm Rowntree's ground-breaking survey of living standards in York, England (Veit-Wilson, 1986). Household surveys are now commonplace, even in the developing world, and most countries publish poverty statistics based on these large national surveys. It is only in the last decade that South Africa has joined this trend, and it still needs to find its feet in terms of establishing a methodology for measuring and tracking well-being. This note discusses international "best practice" in the measurement of poverty and sets out some of the methodological issues relevant to the South African situation.

Common practice starts by identifying a single monetary indicator of household welfare. This will be denoted y_i, and has distribution $F(y_i)$. Next, a set of poverty lines (denoted z_i) are defined. Finally, an aggregate poverty measure is identified.

Every step in the above sequence is contentious. There is disagreement over the welfare indicator, the derivation of the poverty line and the best measures of poverty. This note considers the first two issues.

2. MEASURING "WELL-BEING"

Most empirical work on the distribution of welfare is done using either expenditure or income data recorded in household surveys (Glewwe, 1988). This is intuitively appealing and it is not necessary to review here the theoretical framework which allows one to draw the link between the distribution of income/expenditure and the distribution of welfare (Deaton, 1997; Ravallion, 1992).

To measure material welfare one needs to measure what and how much individuals consume (Deaton & Case, 1998). To achieve this, the conventional approach is to ignore the consumption of public goods and the value of leisure time (Ravallion, 1992). Thus a person's standard of living is taken to depend on the current consumption of privately supplied goods, goods from own production (for example, crops) and the imputed rents from owner-occupied housing. While the limitations of this approach are well documented (Deaton & Muellbauer 1980), the problems involved in valuing access to public goods are enormous. It is thus to a large extent for pragmatic reasons that current consumption or current income is used as the indicator of well-being.

There is some debate around whether one should use income or expenditure as the appropriate index of well-being. Below we briefly outline the case for using consumption data in preference to income data when looking at living standards in a developing country.

Current consumption reflects a household's ability to buffer its standard of living through saving and borrowing, despite income fluctuations. Consumption thus can be thought of as a smoothed outcome of income flows which exhibits less variation than income. In developing countries where a substantial proportion of households derive their incomes from informal activities and agricultural production, consumption and expenditure estimates often better reflect the welfare of low income households (Deaton, 1997).

In addition, income is generally a more delicate topic than consumption, "especially since the latter is more obvious to friends and neighbours than the former" (Deaton, 1997). Accurate estimates of income also requires knowledge of assets and their returns. Questions about assets are both difficult to answer and sensitive, and this frequently results in accidental or

deliberate under-reporting. Surveys repeatedly show large proportions of poor people dissaving (Deaton, 1997). Since it is known that consumption is more likely to be underestimated than overestimated (*ibid.*), it seems probable that survey estimates of income are too low.

Collecting consumption data is laborious and difficult. Because spending in poorer households tends to be irregular, few households are able to give estimates for an extended recall period. Ideally, interviewers need to visit the same household several times in order to check expenditure on a daily or weekly basis. This is obviously costly, and such surveys tend therefore to be on small samples. Furthermore, such data are generally only collected for a limited list of consumption items and consequently many of the items bought by upper income households are often omitted (Ravallion, 1992). Such data are thus likely to underestimate the consumption of richer households. If the aim of the survey is, however, to measure only the extent of poverty, this is not of primary concern. For narrow poverty measurement exercises it is important to be able to correctly identify the poor and the non-poor but less important to have accurate consumption information about the non-poor.

The underestimation problem is particularly serious in the case of durable consumer goods. In this regard, consumption in a given period must, in principle, be measured in terms of the services derived from such goods in that period. This raises great difficulties in valuing such services and making the appropriate allowances for depreciation. For this reason, only the value derived from certain important assets (such as owner-occupied dwellings) is usually included (Sundrum, 1990).

A further problem is that of deliberate false reporting by respondents. Richer individuals tend to underestimate their incomes for fear of the tax authorities gaining access to the information, or of provoking policies that might affect them adversely. On the other hand, it has sometimes been found that poorer households tend to exaggerate their consumption so as not to reveal the extent of their poverty (Sundrum, 1990).

In the developed countries it is reasonable to approximate a person's/household's income by calculating the amount of money received for supplying goods and services less the amount expended in order to supply those services. Yet even in developed countries there are difficulties arising from issues such as allowing for depreciation of the capital stock used to earn income (Ravallion, 1992). In the developing world there are far greater complications. Firstly, the developing economies are far less monetized: for instance, a portion of wages may be paid in kind. In addition, many households fall into the subsistence sector where most of what is produced is consumed by the household and never reaches the market. In the limit, such households have no need of income as a concept (Deaton, 1997), so that respondents may have no idea what is required when asked about profits from farms or own enterprises. In this regard, valuing home-produced goods for own consumption has many problems associated with it, but ignoring home production will result in underestimating income and overstating inequality. A related issue is that of seasonality: since a large number of households in developing countries tend to be engaged in agriculture, seasonal fluctuations make it difficult to estimate average income from once-off survey data (Deaton, 1997).

A further complication is that, owing to the nature of certain traditional personal relationships, a significant portion of monies received may be in the form of gifts. Since this does not represent income from productive activities, the recipient may not necessarily regard this as income (Sundrum, 1990).

Table 1 below gives the comparisons for three countries where both income and expenditure data is available, as well as a similar comparison for South Africa from the PSLSD and IES 1995 and 2000 data.

The difference between incomes and expenditures is quite small in the Indonesian urban survey, while quite substantial in the Sri Lankan study. In the Philippine data there appears to have been substantial underestimation of income, with average expenditure exceeding income by 20%.

Table 1: Comparison of income and expenditure data: households ranked by monthly household income

	Households ranked by household income					
	Poorest 20%	20% - 40%	40% - 60%	60% - 80%	80% - 90%	Richest 10%
Indonesia: 7 cities 1968-69						
Income ('000 Rp)	2.53	4.14	5.65	7.96	12.20	21.88
Expenditure ('000 Rp)	2.76	4.52	6.20	8.74	12.06	20.63
Expenditure as % of Income	109	109	110	110	99	94
Philippines 1971						
Income (pesos)	714	1510	2477	3922	6303	15811
Expenditure (pesos)	1975	2718	3549	4724	6885	11973
Expenditure as % of Income	277	180	143	120	109	76
Sri Lanka 1981-82						
Income (Rs)	468	784	1093	1586	2390	6096
Expenditure (Rs)	658	965	1309	1632	2323	4007
Expenditure as % of Income	141	123	120	103	97	66
South Africa 1993 (PSLSD)						
Income (R per month)	202	456	848	1611	3797	9783
Expenditure (R per month)	642	752	1017	1543	3156	5780
Expenditure as % of Income	318	165	120	96	83	59
South Africa 1995 (IES)						
Income (R per month)	420	812	1387	2723	4974	13434
Expenditure (R per month)	439	813	1379	2727	4912	12622
Expenditure as % of Income	104	100	99	100	99	94
South Africa 2000 (IES)						
Income (R per month)	369	767	1376	2734	5768	16733
Expenditure (R per month)	590	933	1526	2806	5648	15741
Expenditure as % of Income	160	122	111	103	98	94

Source: Data for Indonesia, Philippines and Sri Lanka adapted from Sundrum (1990:27); own calculations on South African data.

The PSLSD data suggests marked under-reporting of income for the poorer quintiles, with households in the poorest quintile spending, on average, three times as much as they earn.[1] While the 1995 IES data shows remarkable consistency between the two welfare measures, the 2000 IES matches less well.[2]

The very different results from the three South African surveys are illuminating because they suggest that at least some of the data problems we face may lie with questionnaire design and/or measurement error, rather than with respondent behaviour. The fieldworkers for the 1995 Income and Expenditure survey were required to re-visit a household if income and expenditure differed by more than 10%, in order to elicit reasons for the divergence and, if necessary, repeat parts of the questionnaire. The results of the1995 IES strongly suggest that poor households under-reported income in the PSLSD. But, it is unlikely that households would have *over*-reported consumption in the PSLSD, yet the expenditures reported for the poorest 40% of households in the PSLSD are quite a bit higher than in the IES (given that these figures are in nominal terms). This suggests that both income *and* expenditure of poor households may have been underestimated in the 1995 IES. Similarly, in the 2000 IES, the very large divergence between income and expenditure suggests that income reporting was very poor in the 2000 IES.

The decision as to whether to use income or expenditure will always rest partially on whether high quality, regular, comparable data exist. It needs to be borne in mind that surveys such as the IES are not conducted very often. Therefore, if tracking is needed at shorter intervals then one is restricted to using cruder variables such as a single question in which the respondent reports on the income/expenditure band into which the household falls.

ADJUSTING FOR HOUSEHOLD SIZE AND STRUCTURE

Households differ in size and demographic make-up. Thus a straightforward comparison of household consumption may be deceptive. It has therefore become common practice to use some form of normalisation. The simplest normalisation is to divide household consumption by household size and then to compare households on the basis of household per capita consumption. More complex forms of normalisation in which household consumption is converted to consumption per "equivalent adult" or even "equivalent adult males" have been used for more than a century: Booth used the concept of "equivalent male adults" in order to analyze the average expenditure of families in his 1880s survey of poverty in London (Gazeley & Newell, 1997). Using these normalisations, a household of given size and demographic composition is taken to have the equivalent needs of a given number of adults (or adult males).

There exists a vast literature on equivalence scales, ranging from normative scales devised by "experts" to equivalence scales estimated from consumer demand models to, more recently, equivalence scales based on subjective welfare measurement (see for example Hagenaars, 1993;

[1] This is not simply the result of a few outliers skewing the results: the median reported income and expenditure for this quintile were R210 and R503 respectively.

[2] For this table we use the original 2000 IES data. When we repeat the table using the "Simkins" version of the 2000 IES the discrepancy between income and expenditure in the poorer quintiles is much worse.

Amiel & Cowell, 1995, Buhmann *et al*, 1988, Lancaster *et al*, 1999, and Koulovatianos *et al*, forthcoming).

We define an equivalence scale E as an index of household needs. This index will typically depend on the sex and age characteristics of the N household members and on household size. Let X be unadjusted household consumption. Then AE is defined as adult equivalent household consumption such that $AE=X/E$. There are a variety of formulations for E, but here only the "double parameter" class of equivalence scales proposed by Cutler and Katz (1992) is considered. This is in keeping with the approach of the US Panel on Poverty and Family Assistance (as reported in Citro & Michael, 1995). This class incorporates the respective importance of the N_A adults and N_C children (with $N=N_A+N_C$) in the assessment of E in the following way:

$$E = (N_A + c\, N_C)^{\theta}$$

where c is a constant reflecting the resource cost of a child relative to that of an adult and θ measures the overall economies of scale within the household. When $c = 1$, children count as adults (as in, for example, Buhmann *et al* (1988)). It is generally agreed, however, that the cost of a child is smaller than the cost of an additional adult and thus $0 < c < 1$. When $\theta = 0$, needs are unaffected by household size, that is, our welfare measure is simply total consumption. (Note that this is the approach used by Stats SA in their reporting of the results of the 1995 & 2000 IES.) When $\theta = 1$ needs increase linearly with total size (i.e. there are no economies of scale). If $c = 1$ and $\theta = 1$, a per capita scale results.

The issue of household economies of scale will be considered first. The existence of economies of scale in household consumption is largely linked to the extent to which there are public (non-rival) goods included among the household's consumption basket. In the eloquent words of Lazear and Michael (1980), "electric light in a room, the beauty of art work on the wall, [and] the security provided by a locked bolt on the door" are all examples of household public goods.

Lanjouw, Milanovic and Paternostro (1998) assert that there is no obvious way to measure such economies of scale. In spite of this, it is unrealistic to assume zero economies of scale (Dreze & Srinivasan, 1995; Lanjouw & Ravallion, 1995). Indeed, a growing body of evidence from the subjective approach to setting poverty lines suggests a very high degree of economies of size (see, for example, Ravallion & Lokshin, 1998).

The second issue relates to household composition. A three-adult household is unlikely to have the same consumption requirements as a household with one adult and two young children. While children impose financial costs on the households in which they reside, it is generally agreed that the cost of a child is smaller than the cost of an additional adult. One standard and widely used procedure is to define children as a fraction of an adult according to nutritional needs. Based on the energy requirements for different groups set down by various organisations (see for example the Committee on International Nutrition, Food and Nutrition Board, Board on International Health, 1995) it is possible to calculate the number of equivalent males in the household. The difficulty with this approach is that children (and adults) consume non-food items as well and there is no good reason to believe that non-food expenditure is in proportion to energy requirements.

The Engel Method

The oldest of all the methods of constructing equivalence scales dates back to Engel (Deaton, 1997:251). Engel's method is one of the most straightforward and is still widely used in practice (*ibid.*). Engel observed that among households of similar size and composition, the budget share devoted to food declined as total consumption increased. Furthermore, for households with the same total expenditure, Engel observed that the larger the household the larger the budget share devoted to food. This leads to the hypothesis that households with the same food budget share have the same level of welfare, regardless of the demographic make-up of the household.

Woolard (2002) used the 1995 Income and Expenditure survey to estimate Working's (1943) form of the Engel curve to calculate equivalence scales for African households. A demand model was constructed in which the budget share devoted to food consumption (the food ratio) was regressed on the log of per capita expenditure and the numbers of persons in various demographic categories living in the household. If it is accepted that the food ratio is a valid indicator of welfare then, by fixing the referent welfare level (and hence the food ratio), the regression equation shows by how much total consumption must differ in order that a household be exactly compensated for its different composition relative to another household.

Thus, a food Engel curve was estimated using the following functional form:

$$w_i = \alpha_i + \beta_i \ln\left(\frac{x}{n}\right) + \eta_i \ln n + \sum_{k=1}^{K-1} \gamma_{ik}\left(\frac{n_k}{n}\right) + \tau_i z$$

where:

w_i is the share of total expenditure devoted to food;

x is total expenditure;

n is household size;

n_j is the number of people in age-sex class j (where there are K such classes) and

z is a vector of other socio-economic variables (such as location and gender of household head).

Table 2 shows the coefficients for the food share regressions from the 1995 IES data.

Table 2: Regression coefficients of food share in South Africa, 1995

	Coefficient
Ln per capita expenditure	**-0.120**
Ln household size	**-0.061**
Ratio of children	
0-3	**-0.061**
males 4-6	**-0.078**
females 4-6	**-0.055**
males 7-10	**-0.053**
females 7-10	**-0.048**
males 11-15	**-0.081**
females 11-15	**-0.045**
Ratio of adults	
Males 16-59	**-0.081**
Females 16-59	**-0.066**
Males 60 and over	0.005
Females 60 and over	**-0.066**

Source: own calculations on 1995 OHS and IES, Statistics South Africa.

Notes:

1. The socio-economic variables used in the regression are not shown here.
2. Bold coefficients are significant at the 5% level.

From this regression, an equivalence scale is derived. The figures in Table 3 show the estimated cost of an additional male/female of various ages when "added" to a base household of two adults. From this table it is apparent that child costs in South Africa (as measured by this method) are very high, since the additional cost of a child is roughly the same (or more) than the additional cost of an adult. Such results are typical of the Engel method in developing countries (Deaton, 1997).

Table 3: Equivalence scale based on the Engel curve, African households 1995

Engel Scales Equivalence scale estimates for boys and girls, by age[1]								
Infant	4-6 Years		7-10 Years		11-15 Years		Adult 15-59	
	Girl	Boy	Girl	Boy	Girl	Boy	Female	Male
0.29	0.31	0.23	0.34	0.32	0.35	0.21	0.27	0.22

Source: Woolard (2002)

Notes:

1. An adult couple = 1.0.
2. The figures for elderly people are not shown since the coefficient for elderly males was not significant.

The estimates from the Engel regression suggest the existence of quite small economies of scale. If one applies the average "cost" of an additional person (averaging over the demographic profile of the sample), this yields an estimate of $\theta = 0.85$.

Criticisms of the Engel method

In basing itself exclusively on food demand, the Engel model ignores the possibility of substitution between food and non-food items due to the birth of a child and, more generally, the demographic impact on parental preferences of various items.

The prime objection to the use of this technique is that it assumes that the food share is a valid indicator of well-being. Ravallion (1992) points out that, at the very least, food share is a "noisy" indicator because the relationship between food share and consumption differs across households since their tastes will differ. A further problem is that the income elasticity of demand for food can be close to one for poor households, making the food ratio an unreliable indicator. In addition, Nicholson (1976) argues that Engel's procedure overstates the cost of children. He reasons as follows. Assume that a couple have a child, who brings with her an endowment that exactly compensates the household for the costs associated with the child. By assumption, the parents are as well off as before and are able to continue to consume in the same pattern as before. The consumption patterns of the child are, however, likely to differ: specifically it is expected that a higher percentage of the child's total consumption will be on food. Consequently, the food share of the household as a whole has increased, despite perfect compensation. Therefore, had the household been compensated according to the Engel procedure, they would have been given sufficient money to drive the food share down to the level it was at before the birth of the child. Thus, the household would be overcompensated.

Comparison with other equivalence scales for South Africa

The equivalence scale derived above needs to be compared to other available scales for South Africa.

May, Carter and Posel (1995)

In the past, South African researchers have tended to follow the lead of May, Carter and Posel (1995) in choosing to set $c = 0.5$ and $\theta = 0.9$. These values were suggested by Angus Deaton in a lecture given in South Africa in 1993, but were simply suggested as plausible values for the purposes of explaining the principle of the equivalence scale (Deaton, 1999: personal communication).

The Household Subsistence Level

A source of "implied" equivalence scales for South Africa can be found in the methodology of the Household Subsistence Level (HSL) (Potgieter, 1995). The HSL attempts to calculate the cost of providing household "basic needs". Some costs (such as rent and transport) are taken to be the same for all households, while others (such as food and clothing) depend on the size and demographic composition of the household.

To establish the implicit equivalence scale used in formulating the HSL, it is first noted that the amount of money needed in Johannesburg (for example) to feed and clothe an "average" child[3] is 0.75 that of providing for an "average" adult.[4] Then, by comparing the Household Subsistence Levels (HSLs) for 5 and 6 person households (again in Johannesburg) where the additional person is assumed to be a child, it is found that the implicit value of θ is 0.86. Thus, the cost of a child in the HSL is quite a bit higher than that assumed by May *et al*. and the HSL assumes slightly greater economies of scale.

Lancaster, Ray and Valenzuela (1997)

Lancaster, Ray and Valenzuela (1997) set out to estimate equivalence scales for eight countries, using Engel's procedure as well as models based on the demographically extended rank two and rank three "complete" demand systems. Their analyses for South Africa are based on the PSLSD data and they restrict the sample to households with only two adults. While this clearly simplifies the analysis, it has the disadvantage that information from only 37% of households was used in the analysis (own calculation); moreover, two-adult households are likely to be unrepresentative of households in general. Their analysis is more sophisticated than most studies of this nature in that it looks at three age groups of children and further divides these groups by sex. The Engel results of the study are shown in Table 4 below. The wide divergence in the scales is discouraging. It is hard to credit that a girl aged 0-4 should "cost" almost eight times as much as a girl aged 14-17.

[3] This is the average of all (variable) cost figures for male and female children aged 0-15.

[4] This is the average of the cost of an adult male and adult female.

Table 4: Lancaster *et al.*'s Engel scale estimates of child costs relative to a two-adult household (without children), based on PSLSD data

Engel Scales Equivalence scale estimates for boys and girls, by age[1]					
0-4 Years		5-14 Years		15-17 Years	
Girl	Boy	Girl	Boy	Girl	Boy
0.197	0.167	0.149	0.125	0.019	0.157

Source: Lancaster, Ray and Valenzuela (1997)

Note:

1. An adult couple = 1.0.

Lancaster *et al.*'s estimates based on Rank 2 and Rank 3 demand systems are show in Table 5. In contrast to the Engel method, the "complete demand systems" based equivalence scale models allow for substitution between food and non-food items.

Table 5: Lancaster *et al.*'s Demand Systems estimates of child costs relative to a two-adult household (without children), based on PSLSD data

Scales Based on Demand Systems Equivalence scale estimates for boys and girls, by age[1]											
0-4 Years				5-14 Years				15-17 Years			
Rank 2		Rank 3		Rank 2		Rank 3		Rank 2		Rank 3	
Girl	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl	Boy	Girl	Boy
0.16	0.16	0.13	0.16	0.20	0.18	0.19	0.17	0.08	0.17	0.10	0.15

Source: Lancaster, Ray and Valenzuela (1997)

Note:

1. An adult couple =1.0

The results are more plausible than those obtained using the Engel procedure, although the "cost" of a girl aged 15-17 is still very low in comparison to all other groups and it is hard to think of a theoretical reason for this being so. All three sets of scales derived by Lancaster and his colleagues suggest child costs that are quite a bit lower than those estimated above or those in current use in South Africa.

SENSITIVITY TO CHOICE OF EQUIVALENCE SCALE

Given our inability to precisely determine the magnitude of child costs and the degree of economies of size in consumption for a household, the question that needs to be asked is whether the analysis of poverty in South Africa is in fact sensitive to the choice of these parameters. If the poverty profile is robust over a reasonably wide range of plausible values of c and θ, then it is of little consequence where the equivalence scale parameters are fixed. In this section some sensitivity analysis of poverty rankings is undertaken.

The sensitivity of the (headcount) poverty profile to a variety of values of c and θ was tested: namely c = 0.5, 0.75 and 1 and θ = 0.6, 0,75 and 0.9. In order to make meaningful comparisons, the share of households in poverty was fixed at 40%.

The results shown in Table 6 are encouraging, for they show that the poverty profile changes very little even when quite large adjustments are made to the scale parameters. In particular, the poverty rate among Africans, Coloured and rural and urban dwellers remains astonishingly unchanged. When one considers specific age categories, the impact of the parameters is more noticeable. By definition, the higher the value of c, the more children are in poverty. Nevertheless, the changes are not dramatic, with the percentage of poor children varying from 45.5% to 48.6%. The flip side of this is that the more heavily children are weighted, the fewer elderly are in poverty. The incidence of poverty among the elderly varies slightly more, with between 36.1% and 41.3% of the elderly being defined as poor. In addition, the greater the economies of scale (that is, the smaller is θ), the fewer elderly are in poverty (because the elderly tend to live in smaller households), while the reverse is true for children.

Table 6: Incidence of poverty among selected groups, using a variety of equivalence scales, with overall poverty rate fixed at 40% of households

	% Africans in poverty	% Coloureds in poverty	% of rural residents in poverty	% of urban residents in poverty	% of female headed hh in poverty	% of elderly in poverty	% of children in poverty
c=0.5, θ=0.6	51.1	29.8	58.4	24.6	52.5	41.3	45.5
c=0.5, θ=0.75	51.1	29.6	58.4	24.5	52.3	40.0	45.7
c=0.5, θ=0.9	51.0	29.8	58.2	24.5	52.0	38.9	45.9
c=0.75, θ=0.6	51.0	29.9	58.5	24.4	52.9	40.1	46.6
c=0.75,θ=0.75	51.1	29.5	58.6	24.2	52.7	38.5	47.0
c=0.75, θ=0.9	51.0	29.5	58.5	24.1	52.6	37.3	47.4
c=1, θ=0.6	51.0	29.6	58.7	24.1	53.1	39.1	47.3
c=1, θ=0.75	51.0	29.5	58.7	24.0	52.9	37.6	48.0
c=1, θ=0.9	51.0	29.5	58.6	23.9	52.9	36.1	48.6

Source: own calculations on 1995 IES & OHS, Statistics South Africa.

This does not mean, however, that the *same* households are identified as poor using different assumptions about child costs and economies of scale. If the May *et al.* parameters of $c = 0.5$ and $\theta = 0.9$ are taken as the reference point, Table 7 shows the percentage of households that are also identified as poor when using the other scales.

Table 7: Percentage of poor households "correctly" identified as poor, taking c = 0.5 and θ = 0.9 as the reference scale

Equivalence scale	% of households identified as poor under both scales
c=0.5, θ=0.6	96.1
c=0.5, θ=0.75	98.2
c=0.75, θ=0.6	95.6
c=0.75,θ=0.75	97.1
c=0.75, θ=0.9	95.9
c=1, θ=0.6	94.9
c=1, θ=0.75	95.1
c=1, θ=0.9	93.6

Source: own calculations on 1995 IES & OHS, Statistics South Africa.

It is evident that the choice of equivalence scale makes a small difference to the identification of poor households. This is an important distinction if the intention is to use the poverty indicator to identify *specific households* (as eligible for assistance, for example) as opposed to identifying *groups* in need of targeting.

Clearly, an equivalence scale needs to be selected in order to proceed with the empirical work which follows. Happily, it can be seen that, within a reasonable range, the choice will not have a significant distorting influence on the results. Given its simplicity, a per capita measure certainly deserves consideration.

3. SELECTING A POVERTY LINE

As far back as the late 19th century, social policy analysts have found it useful to focus debate through reference to a minimum desirable level of income, or a poverty line (Gazeley & Newell, 1997:19). A poverty line divides the population into two groups on the basis of some measure: below the line a household/individual is considered to be poor, and above the line it is considered non-poor. Clearly, poverty lines are extremely useful for descriptions of poverty. By defining a line that is regarded as some kind of minimum living level, one is able to ascertain the number of poor people, as well as the depth and severity of poverty.

The point at which one draws the line is, however, always somewhat arbitrary and often highly contentious. After all, it is clearly rather crude to assume (for example) that a household earning

R999 per month is in poverty, while a household earning R1000 is not. A poverty line will always be an imperfect construct, but for purposes of analysis one frequently needs to draw the line *somewhere* in order to go forward in understanding the nature of poverty.

Many approaches to identifying the poor begin with the specification of a set of basic needs. If one specifies minimum levels for certain consumption items (for example food, clothing and housing) then an individual who does not meet these minimum levels for *each* commodity is clearly poor. The difficulty arises when a person may be, for example, "food-poor", but not "energy-poor", making this a cumbersome measurement to use in practice. This approach can be termed the "direct approach" (Callan & Nolan, 1991: 244). All in all, these approaches seemed to be quite blunt measures of overall welfare and not discussed further here.

An alternative to the direct approach is to work out the cost of a minimum basket of goods and use the required expenditure level as the poverty line. This is what Sen (1976: 219) terms the "income approach". Two examples of these types of poverty lines are discussed below in the context of South Africa (namely the Household Subsistence Level and the Minimum Living Level.)

The conceptual distinction between the direct and income approaches is significant. While the direct approach identifies those individuals or households who *fail* to meet some minimum standard of living, the latter approach identifies those that are *unable* to do so. Out of respect for individual choice, economists tend to favour the "income approach".

The literature further distinguishes between *absolute* and *relative* poverty lines (Sundrum, 1990:64). An absolute poverty line is not meant to change with the standard of living in society. People are defined as poor when they lack the command over resources to meet some absolute needs. A relative poverty line will move with standards of living (as represented by, say, median income): the poor are then taken to be those persons that are suffering *relative* deprivation. The question of whether poverty should be seen as a state of absolute or relative deprivation has dominated the literature on the construction of a poverty line (Ravallion, 1995:24). The distinction is important because it affects the way we perceive poverty reduction policies. For example, economic growth will generally result in a reduction in the number of people in absolute poverty, but only a change in the distribution of income will reduce the number of people in relative poverty.

It is undeniable that there exist levels of consumption of food, clothing and shelter below which survival is threatened (Ravallion, 1992:25). But in most societies the notion of what constitutes the "minimum" living level is quite a bit higher than what is *essential* to survival. After all, as Beckerman (1984:6) has observed, it does not really make sense to define poverty at some minimum level when people continue to survive below it.

THE "DOLLAR A DAY" INTERNATIONAL POVERTY LINE

There are occasions where one might want to calculate world poverty or compare poverty rates between countries. Under these circumstances, one needs to use the same poverty line for all countries in the world. To address this, World Bank analysts working on the 1990 *World Development Report* developed the "dollar-a-day" poverty line, which provides a useable methodology for linking poverty lines and poverty measures across countries (World Bank,

1990).[5] To be more precise, the product of this effort was the "one-dollar-a-day *at purchasing power parity at 1985 prices*" line ($_{1985}$P$1/day poverty line). Ravallion et. al. examined 34 existing national poverty lines for a wide range of developing and developed countries.

To put national poverty lines stated in local currency into a common standard, they first converted all poverty lines into international dollars at 1985 prices ($_{1985}$P$), and plotted those poverty lines against per capita GDP in the same units. Two important facts stood out from this plot. First, poverty lines for upper-income and middle-income countries tended to rise fairly steadily, in rough proportion to average consumption levels in those countries. Second, this pattern did not hold true for the poorest countries: rather, poverty lines for the 12 poorest countries in the sample were tightly clustered around a fairly narrow range. Averaging the highest poverty lines within this sample provided an "upper poverty line" of $_{1985}$P$370 per year per capita. A second, "lower poverty line" was set toward the lower end of this range, at $_{1985}$P$275 per year per capita, a figure that roughly corresponded to India's national poverty line.[6] The 1990 World Development Report used the upper poverty line to estimate the number of people living in "poverty" in different regions, and the lower poverty line to measure the number of those living in "extreme poverty" (World Bank, 1990).

Although either of these lines might, in principle, provide a suitable measure for tracking changes in world poverty, in fact the upper poverty line has prevailed, while the lower poverty line quickly faded from view. The success of the upper, $_{1985}$P$370/year poverty line probably owes much to the fact that it falls within 1 percent of $_{1985}$P$1/day, and was quickly rounded off and re-labeled as the "dollar-a-day" line. Deaton (2001) captures the advantages clearly: "It is simple, easy to remember, and applies equally to all countries. It is denominated in a currency that is familiar to the relatively wealthy people who are the primary users of the measures, and who are the primary target for rhetoric based on them. The $1-a-day [line] was originally selected as being representative of poverty lines in use in low-income countries … and thus is anchored in actual practice." These rhetorical advantages also help account for the fact that neither a significant subsequent change in the way the poverty line is computed, nor nearly three decades of change in the value of the U.S. dollar, have changed the dollar-a-day *label*: the only serious competitor for attention within the international community is the $2-a-day poverty line, a much more lenient standard but one that is similarly easy for rich-country stakeholders in the development process to remember and relate to.

As just noted, the method used for calculating the international poverty line has changed since its inception. This change involved three elements. First, an expanded set of PPP price comparisons was used to update the basis for the international dollar from 1985 to 1993. Second, whereas the original PPP exchange rates were set to equalize the purchasing power of an international dollar over each country's overall production of goods and services (gross domestic product or GDP), the new poverty line used special PPP rates that equalized purchasing power over each country's *consumption* expenditures. Third, with these new PPP comparisons in hand, Ravallion and colleagues repeated the earlier process of choosing an international poverty based on actual national poverty lines, using the same set of countries used to derive the $_{1985}$P$1/day line. The researchers set the new line at the median of the 10 lowest poverty lines in that set: the result

[5] The analytical effort was led by Martin Ravallion and Shaohua Chen.

[6] In both cases, the line was defined with reference to *consumption*, rather than income.

was $1.08 per day at 1993 purchasing power parity, or $_{1993}$P$1.08/day. Purely by coincidence, this new measure yielded an estimate of the number of people living in poverty in 1993 almost identical to that found using the original $_{1985}$P$1/day line: 1.3 billion. Since then, the $_{1993}$P$1.08/day line has been used as the standard for measuring world poverty, still labeled the "dollar-a-day" line (Chen and Ravallion, 2001).

"BUDGET BASED" NORMATIVE APPROACH

Using this approach, the researcher decides what is required for a decent standard of living. The "expert" determines that a person requires, say, *v* bags of maize meal, *w* kilograms of chicken, *x* shirts, *y* pairs of shoes, housing of *z* square metres, etc. and then proceeds to cost this. This was the approach used for the Household Subsistence Level (HSL, previously based at the former University of Port Elizabeth) and the Minimum Living Level & Subsistence Living Level (MLL and SLL, produced by the Bureau of Market Research at UNISA. *Note that the HSL, MLL & SLL have been discontinued.* Only the HSL is dealt with here as information on this series was readily available to us.

The HSL was last conducted in 2004 (Johan Potgieter, personal communication, 19 January 2006). In its last years it was primarily funded by the National Student Financial Aid Scheme (NSFAS) which used it for means testing the loans which they granted to "financially needy" students (www.nsfsas.org.za). In Apartheid South Africa, the HSL was calculated separately for different race groups. In the early 1990s the researchers responsible for the HSL noted that "reference to racial groups is no longer acceptable… Consequently the terms "black" and "coloured" .have been replaced by the terms "Low" and "Lower-Middle" income groups, respectively". This bizarre nomenclature is truly confusing: a "low" income household with 6 members living in Cape Town in 2004 spending R2150 per month would have been classified as "non-poor", while a "low-middle" income household with only 5 members, also living in Cape Town in 2004, spending the same amount would have been classified as "poor".

According to Potgieter (undated), "the Household Subsistence Level may be defined as an estimate of the **theoretical** income needed by an individual household if it is to maintain a defined minimum level of health and decency in the short term. It is calculated at the lowest retail cost of a budget of necessities of adequate quality, comprising the total food, clothing, fuel, lighting and washing and cleansing materials required for each person, together with the fuel, lighting and cleansing materials needed by the household as a whole, the cost of rent, and of workers transport. The appropriate calculation can thus be made for a household of any given size or composition. For comparative purposes, the calculation is most usually made for a hypothetical "average" family of six persons, since research has shown this to be an approximate overall mean household size for low income population groups in South Africa. For practical purposes this measure is widely accepted as applicable to the "normal" low income family….

"Whilst the Household Subsistence Level indicates the cost of a theoretical budget of necessities, it does not suggest an adequate income because in practice, out of a total income equivalent to that budget, approximately one third will be diverted away from the specified items to other immediate essentials. In this case the income is not effective in enabling the household to maintain the standards of short-term health an decency specified in the Household Subsistence Level…."Therefore, in order to maintain health and decency in the long term, one and one-half

times (or 150 per cent) of the Household Subsistence Level is needed by a household. This calculated figure thus derived is termed the **Household Effective Level (HEL)."**

In August 2004 the HSL was set at an average of R2130.56 for a "low income" (i.e. African) household with 6 members living in a metropolitan area. For a "low-middle income" (i.e. Coloured) household with 5 members in a metropolitan area, the HSL was R2368.42. For simplicity, let us ignore the equivalence scale issue for now. Then this equates to an amount of R286 or R382 per capita (in constant 2000 Rands) for African and Coloured households respectively. The HEL would, of course, be 50% higher. The argument put forward by Prof Potgieter above suggests that the HEL is the more appropriate poverty line. In the last section of this research note we therefore consider poverty rates using the HEL, but restrict ourselves to the line for African households.

COST OF BASIC NEEDS APPROACH

The most common approach to setting national poverty lines is the "cost of basic needs" approach, which is anchored on the nutritional requirements of good health. This approach starts by identifying the foodstuffs consumed by the poorest x% of the population and then scaling this up in order that the minimum number of calories required for good health (usually 2100 calories per person per day) can be consumed. Next, the cost of obtaining this minimum diet at current market prices is calculated. Finally, an additional allowance is made for non-food necessities.[7] The resulting minimum expenditure figure – the estimated cost of obtaining a minimally adequate diet plus other necessities – forms the national poverty line.

Although this procedure might be expected to lead to similar poverty lines in different countries, it does not. In part, this is because the types of foods consumed by the poor vary enormously across the world. For example, in Mozambique the poor eat largely maize meal and vegetables, while in the US the poor eat a large amount of processed foods and prepared foods. In addition, the non-food component of the poverty-line budget tends to rise with national income. For example, Indonesia sets its poverty line on the assumption that rural and urban households spend 80 and 77 percent of their income on food, respectively (Ravallion, 1994). In contrast, the United States poverty line assumes that food represents only 33% of the poor household's expenditures (Fisher, 1997).

Hoogeveen & Ozler (2004) refer to work done by Babita et al. (2003) in which this methodology is apparently described in detail. Hoogeveen et al. (2004) report that the food poverty line was found to be R211 per capita per month (in 2000 prices). From this, Stats SA derived a "lower bound" poverty line of R322 per capita per month and an "upper bound" poverty line of R593 per capita per month (in 2000 prices).

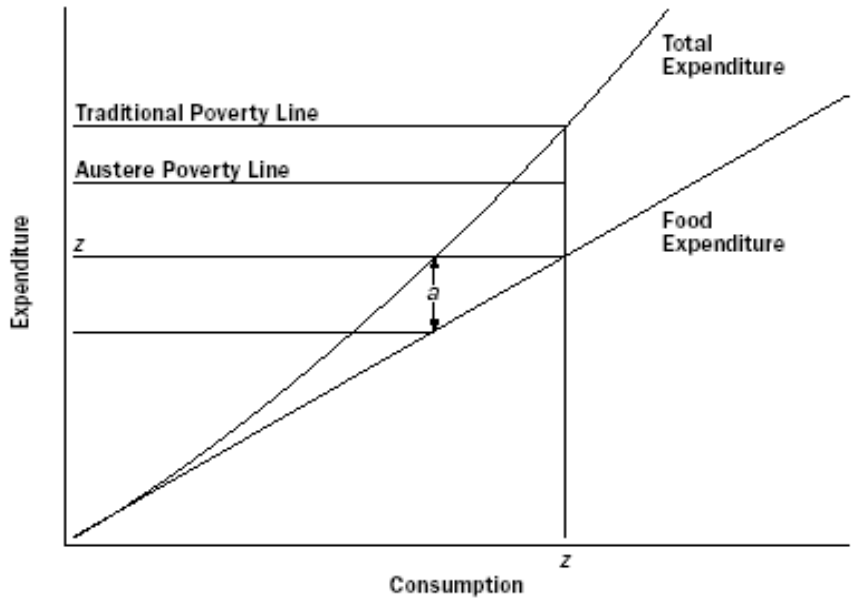
The Stats SA "upper bound" was calculated by observing the total consumption spending of households that spend R211 per capita month on food. Stats SA found that households that spent approximately R211 per capita per month on food had an average per capita expenditure level of

[7] Countries using this general approach differ in how they factor in the non-food portion of the budget: the preferred method is to use data from household expenditure surveys to estimate the actual non-food expenditures of an average household whose spending on food just equals the minimum food budget (Ravallion 1994).

R593 (R211 on food and R382 on non-food items). This is the "traditional" cost of basic needs approach to determining the non-food component of the poverty line.

The "lower bound" was calculated by observing the non-food expenditure of households that spend roughly R211 per capita per month in total. It is assumed that these non-food items are "essential", given that these households are substituting them for food. To illustrate this for the South African case: Stats SA found that households that were spending R211 per capita per month in total were spending R111 on non-food items. Thus the "lower" poverty line was calculated to be R211+R111=R322. Julian May (personal communication, September 2005) refers to this as the "austere" poverty line.

The two approaches are illustrated below. Using the Stats SA findings, z=R211. If the vertical line is drawn at R211, one can then read off the total expenditure level of households that spend this amount on food. This gives the "traditional" poverty line of R593. Alternatively, one can draw a horizontal line at R211 and see how much money households at this level of total per capita expenditure are spending on non-food items. This amount (a) is then added to the food poverty line of R211 to obtain the "austere" poverty line.



4. "POVERTY LINES" ALREADY IN USE BY SA GOVERNMENT DEPARTMENTS

DEPARTMENT OF SOCIAL DEVELOPMENT

The various social assistance grants are all means tested. In the case of the Child Support Grant, the child's primary caregiver and her/his spouse must jointly earn R1100 or less in rural areas or

informal settlements or R800 or less in other urban areas. (Note that this implies that the rural poverty line is higher than the urban line – a rather unusual situation.)

In the case of the Old Age Pension, the size of the grant for an unmarried person is calculated according to the formula D = 1,15A – 0,5B; and for a married person according to the formula D = 1,075A – 0,5B where A = the maximum grant payable per annum, B = the annual income of the applicant in the case of an unmarried person, or half the applicant and his or her spouse's annual income in the case of a married person and D = annual grant amount payable. No grant amounting to less that R100 per month is payable. In 2005, the maximum size of the grant is R780. From this, one can calculate that the income threshold for receiving the OAP is an income of R2954 per month for a married couple and R1594 per month for an unmarried person.

One could interpret this as implying that an aged couple with a combined income of less than R2954 per month are considered to be in need of "income support" and must therefore surely fall below the poverty line. According to the 2004 GHS, the average household size in which the elderly reside is 5 persons. Even if we assume that *no-one* else in this household is earning any income this income threshold would imply a per capita poverty line of R591 per month (in 2005 prices). This equates to R454 in 2000 prices.

THE EQUITABLE SHARE FORMULA

There is a "poverty component" in the equitable share formula. This component has a weight of only 3% in the formula, but it was introduced in order to capture some "measure of redistribution" within the formula (National Treasury, 2005). The poor population is defined as those households falling in the bottom two quintiles when households are ranked on household income. (Note that no adjustments are made for household size when ranking households). The 2000 IES is used to calculate this measure of poverty. Each province's share is then expressed as the percentage of the "poor" population residing in that province, where the population is the average population from the 2001 Census and the 2002 and 2003 General Household Surveys.

INDIGENCE POLICIES

Different municipalities use different criteria for assessing which households are indigent and thus unable to afford basic services. Even for those municipalities that use an income-based means test there is substantial variation. DPLG recommends using an income threshold of R800, but municipalities use a range of thresholds, varying from R800 or R2 400 per month (Kamilla Gumede, personal communication, January 2006).

5. ADJUSTING FOR CHANGES IN PRICE OVER TIME

In order to be useful for tracking changes in poverty over time, it is important that the real value of the poverty line be held fixed. In principle, this should be accomplished by adjusting the poverty line for changes in the prices of those items on which the poor spend their income. In practice, the adjustment is usually based on changes in the overall price level, such as the consumer price index. To the extent that the poor spend their income on different mix of goods and services than do the general public, this practice can cause the real value of the poverty line to "drift." In particular, the continuing decline in the price of staple foods relative to other goods

and services seen in recent decades has led to a corresponding rise in the real value of any poverty line that is adjusted for general consumer price inflation, together with a corresponding overstatement of the number of people living under the original poverty line. Still, on balance it is probably better to live with this gradual drift than to keep updating the poverty line from scratch every few years: the latter approach risks undermining the basic goal of measuring progress in reducing poverty relative to a fixed standard (Deaton 2001, 2002).

6. ADJUSTING FOR PRICE VARIATION ACROSS SPACE

Many countries publish separate urban and rural poverty lines. In principle, doing so reflects the different prices and spending patterns found in urban and rural areas. In practice, it is often difficult to ensure that the two poverty lines represent a similar standard of living: research suggests that urban households spend more per calorie than do rural households with similar real incomes, but consume a more varied and nourishing diet. Urban poverty lines are typically set in a way that recognizes the higher prices paid, but ignores the better quality obtained. As a result, urban households are counted as poorer than they really are, relative to rural households (Deaton, 2001). Setting separate poverty lines requires that a sharp statistical distinction be drawn between urban and rural areas, whereas the reality is generally less clear-cut (Sillers, undated).

The HSL was calculated separately for all major towns in South Africa. As shown in Table 8 below, the price variation amongst these towns was not found to be very large. The cheapest place to live was purportedly Bloemfontein and the most expensive Pretoria, but the difference between these two poverty thresholds was only 14.9%.

Table 8: HSL for "low income" households, August 2004

CENTRE	HSL for 6 members
Cape Town	2104.69
Port Elizabeth	2137.05
East London	2038.17
Kimberley	2057.64
Durban	2060.04
Pretoria	2259.21
Johannesburg	2091.8
Bloemfontein	1965.89
King William's Town	2138.2
Uitenhage	2041.19
George	2000.52
Pietermaritzburg	2026.59
Potchefstroom	2043.44
Polokwane	2034.86
Umtata	1980.86
Benoni	2104.41
Boksburg	2094.05
Brakpan	2110
Germiston	2101.84

Springs	2094.05
Krugersdorp	2105.76
Vaal Triangle	2154.17

The South African government *may* want to consider using a different poverty line for rural and urban areas. Currently, however, there is no work available which can give us any indication as to what the price differences might be. Statistics South Africa has only recently started to include rural areas in the survey work that they do to derive the consumer price index. In addition, Stats SA no longer make a binary distinction between urban and rural areas so it would not be possible to apply these different lines in practice. We would suggest great caution be applied before making any pronouncements on the rural-urban issue.

7. SENSITIVITY ANALYSIS

In Table 9 below we present head count poverty rates using 10 different poverty lines. Note that we are not suggesting that a per capita line (as opposed to some other per adult equivalent line) is the correct approach – we are simply demonstrating a point. In addition, the choice of the head count measure of poverty is also for illustrative purposes only. For example, the use of another measure such as a poverty gap ratio will result in a different set of poverty shares as it factors in both whether people are poor (the headcount) *and* how poor people actually are. (See Deaton, 1997).

Note that the data-set used here is the 2000 IES as originally released by Stats SA. Hoogeven and Ozler used a somewhat different data-set which is not publicly available.

Table 9: Overall (head count) poverty incidence at a range of poverty lines

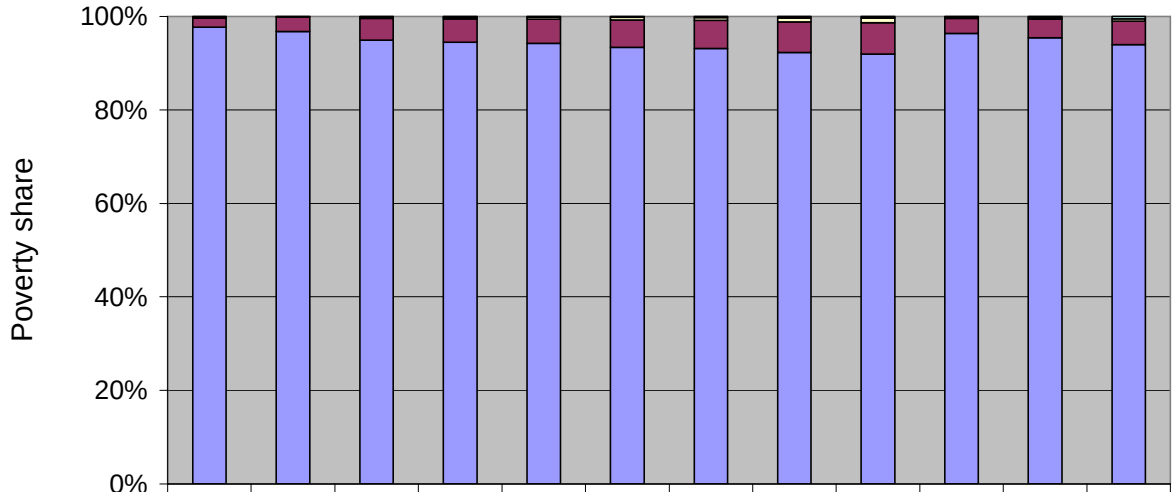
Poverty Line	Poverty line in 2000 Rands*	% of individuals below the poverty line (2000 IES)
Poverty line set at per capita expenditure of the 40th percentile of *households*	R346 per capita	54.9%
Poverty line set at 50% of mean national per capita expenditure	R538 per capita	68.1%
Stats SA (as reported by Hoogeveen and Ozler) – lower bound	R322 per capita	52.6%
Stats SA (as reported by Hoogeveen and Ozler) – upper bound	R593 per capita	70.4%
August 2004 Household subsistence level (HSL): metro average of 6 person African households, converted to per capita scale	R286 per capita	48.5%
August 2004 Household effective level (HEL): metro average of 6 person African households, converted to per capita scale	R429 per capita	61.8%
"Dollar a day" - International poverty line of US$370 (1985 prices) per capita per annum	R81 per capita	8.1%
"Two dollars a day" - International poverty line of US$370 (1985 prices) per capita per annum	R162 per capita	27.0%
"Poverty line" implied by the Old Age Pension means test for married persons, assuming a household of 5 persons and no non-elderly income earners	R454 per capita	63.4%
"Indigence" line of R800 per household per month (in 2006 prices)	R573 per household	11.7%
"Indigence" line of R1600 per household per month (in 2006 prices)	R1147 per household	38.1%
"Indigence" line of R2400 per household per month (in 2006 prices)	R1720 per household	55.1%

* Note: to discuss these amounts in November 2005 prices, multiply by 1.295

Figures 1 to 3 show how the poverty profile changes when the poverty line is altered. We use two data-sets – the IES 2000 and one of many versions of the 2001 Census created by Ardington, Lam, Leibbrandt and Welch (2005) in which incomes were imputed for records where income was not specified or was implausibly recorded as zero.

The charts suggest that the results are quite sensitive to the choice of poverty line. For example, using the 2000 IES the percentage of the poor residing in Gauteng varies from 7.4% to 18.6%, depending on which poverty line is used. The rural urban poverty profile is strongly affected by the choice of poverty line, with the proportion of the poor residing in rural areas varying from 27.2% to 46.5% when one uses the 2000 IES and from 36.0% to 56.6% when one uses the 2001 Census.

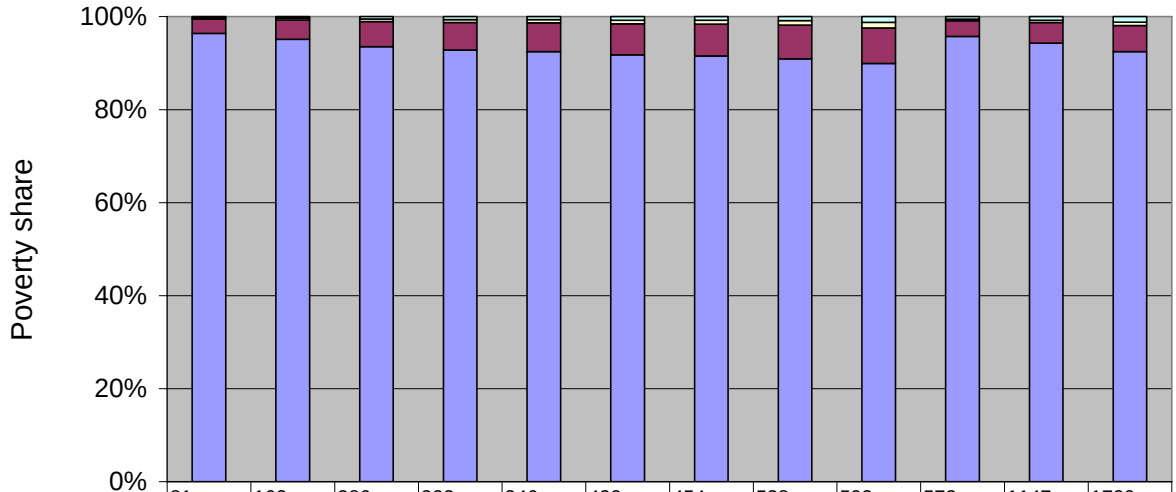
Figure 1a: Racial poverty shares (IES 2000)



	81	162	286	322	346	429	454	538	593	573	1147	1720
	Poverty line, per capita per month (2000 prices)									per household, p.m. (2000 prices)		
White	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.3	0.3	0.5
Indian	0.1	0.1	0.3	0.4	0.4	0.5	0.6	0.9	1.0	0.2	0.3	0.5
Coloured	1.9	3.1	4.6	5.0	5.2	5.8	6.0	6.5	6.7	3.2	4.0	5.0
African	97.7	96.8	94.9	94.4	94.2	93.4	93.1	92.2	91.8	96.3	95.4	93.9

Source: 2000 IES

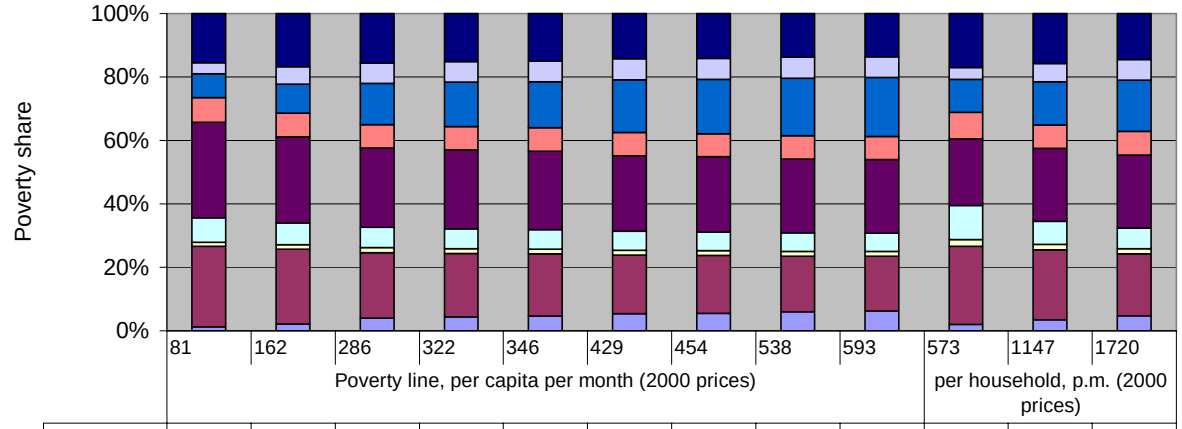
Figure 1b: Racial poverty shares (Census 2001)



	81	162	286	322	346	429	454	538	593	573	1147	1720
	Poverty line, per capita per month (2000 prices)									per household, p.m. (2000 prices)		
White	0.3	0.3	0.5	0.6	0.6	0.8	0.8	0.9	1.3	0.5	0.8	1.2
Indian	0.3	0.4	0.5	0.7	0.7	0.8	0.8	1.0	1.2	0.4	0.5	0.7
Coloured	3.1	4.2	5.4	5.9	6.2	6.7	6.8	7.3	7.7	3.3	4.4	5.6
African	96.4	95.1	93.6	92.8	92.5	91.8	91.6	90.9	89.9	95.8	94.3	92.5

Source: Census 2001

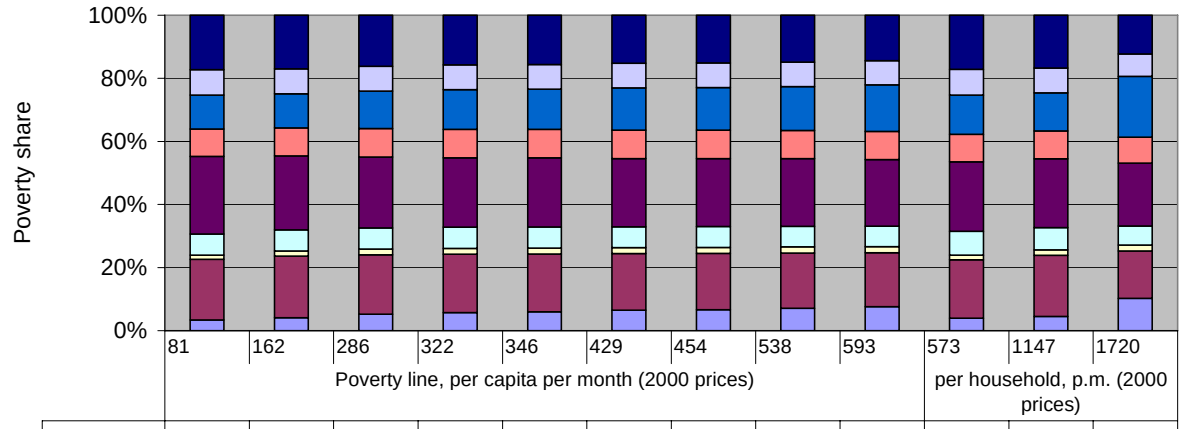
Figure 2a: Provincial poverty shares (IES 2000)



	81	162	286	322	346	429	454	538	593	573	1147	1720
Limpopo	15.5	16.8	15.6	15.2	15.0	14.3	14.2	13.8	13.6	17.0	15.7	14.5
Mpuma.	3.5	5.5	6.4	6.5	6.5	6.5	6.6	6.6	6.6	3.7	5.8	6.4
Gauteng	7.4	9.2	13.0	13.9	14.5	16.7	17.1	18.2	18.6	10.3	13.6	16.2
KZN	7.8	7.5	7.4	7.4	7.4	7.3	7.3	7.3	7.3	8.5	7.5	7.5
Free State	30.1	27.1	25.0	24.9	24.7	23.9	23.7	23.3	23.2	21.0	23.0	23.0
NW	7.8	7.0	6.4	6.2	6.2	6.0	5.9	5.8	5.8	10.8	7.2	6.5
N.Cape	1.3	1.4	1.6	1.6	1.6	1.5	1.5	1.5	1.5	2.1	1.8	1.7
E.Cape	25.3	23.6	20.7	20.0	19.6	18.4	18.2	17.6	17.3	24.6	22.0	19.4
W.Cape	1.3	2.1	4.0	4.4	4.6	5.4	5.5	5.9	6.3	2.0	3.4	4.8

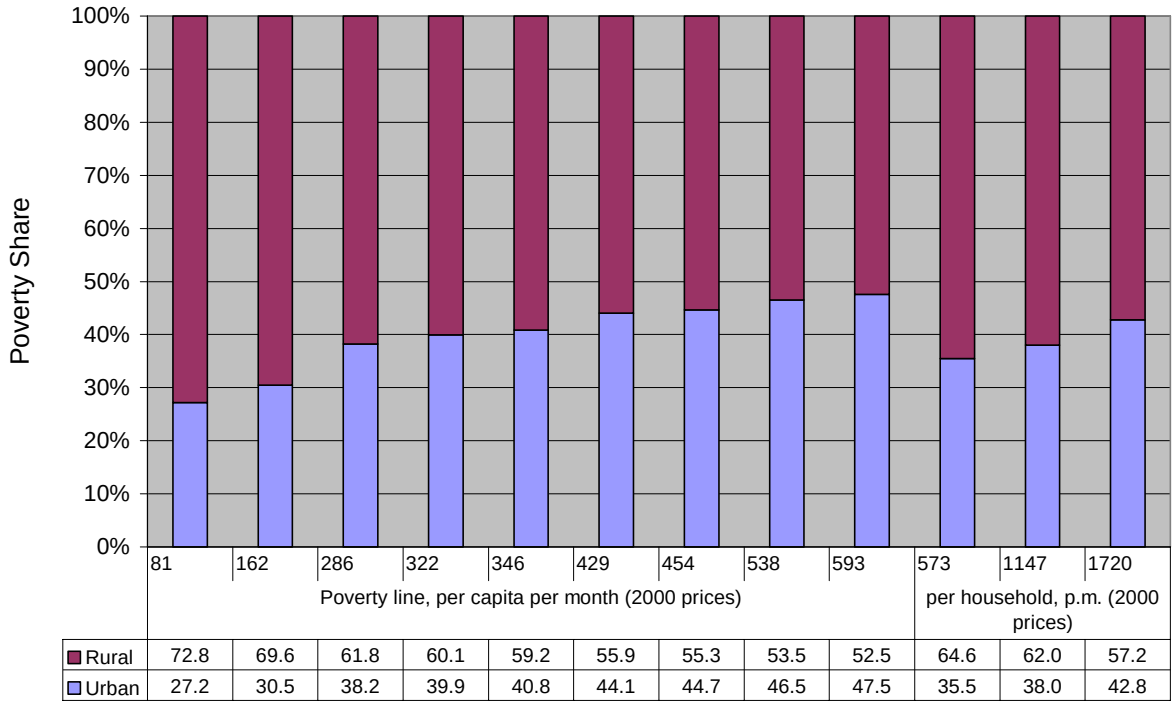
Source: 2000 IES

Figure 2b: Provincial poverty shares (Census 2001)



	81	162	286	322	346	429	454	538	593	573	1147	1720
Limpopo	17.2	16.9	16.1	15.7	15.6	15.2	15.1	14.9	14.4	17.2	16.7	12.3
Mpuma.	8.1	8.0	7.9	7.9	7.9	7.8	7.8	7.8	7.7	8.1	7.9	7.1
Gauteng	10.8	10.8	11.9	12.6	12.8	13.4	13.6	13.9	14.7	12.5	12.1	19.3
KZN	8.7	8.9	9.0	9.0	9.0	9.0	9.0	9.0	9.0	8.7	8.9	8.3
Free State	24.6	23.5	22.5	22.0	21.9	21.6	21.5	21.4	21.1	22.0	21.8	19.9
NW	6.7	6.7	6.7	6.7	6.7	6.6	6.6	6.6	6.5	7.6	7.1	6.1
N.Cape	1.3	1.6	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.4	1.7	1.9
E.Cape	19.2	19.6	18.9	18.5	18.4	18.0	17.9	17.6	17.1	18.5	19.4	15.0
W.Cape	3.4	4.1	5.2	5.7	6.0	6.5	6.7	7.1	7.6	4.0	4.5	10.2

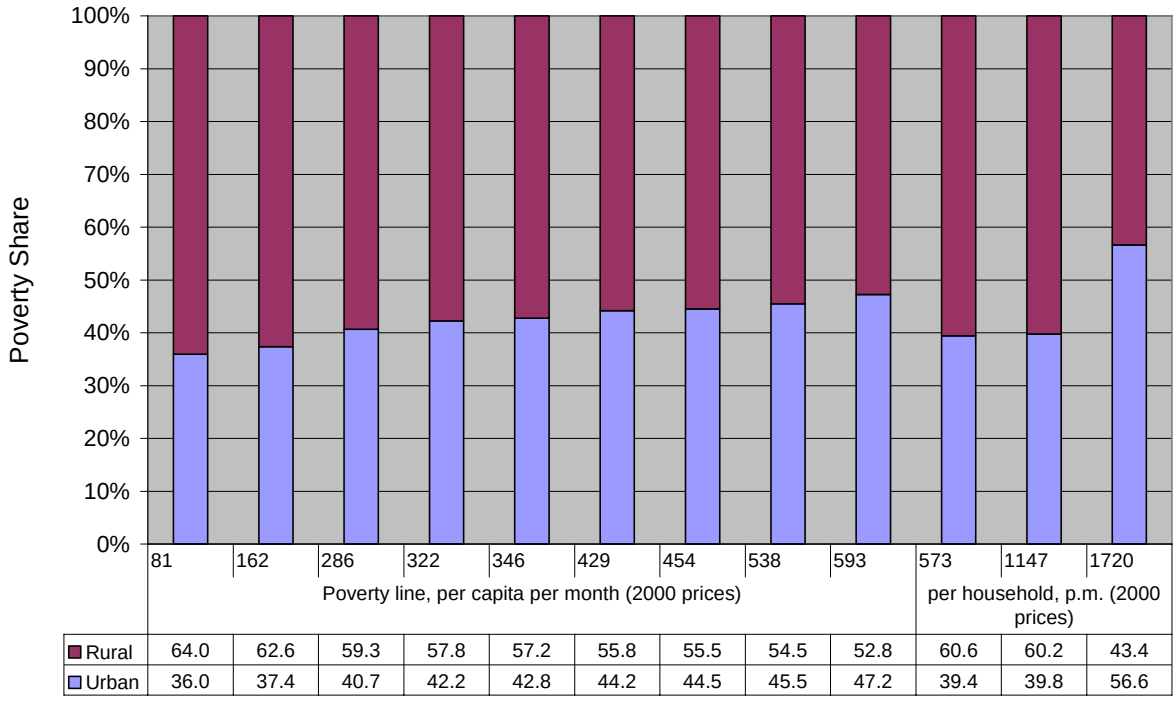
Figure 3a: Urban/Rural poverty shares (IES 2000)



	81	162	286	322	346	429	454	538	593	573	1147	1720
	Poverty line, per capita per month (2000 prices)									per household, p.m. (2000 prices)		
Rural	72.8	69.6	61.8	60.1	59.2	55.9	55.3	53.5	52.5	64.6	62.0	57.2
Urban	27.2	30.5	38.2	39.9	40.8	44.1	44.7	46.5	47.5	35.5	38.0	42.8

Source: 2000 IES

Figure 3b: Urban/Rural poverty shares (Census 2001)



	81	162	286	322	346	429	454	538	593	573	1147	1720
	Poverty line, per capita per month (2000 prices)									per household, p.m. (2000 prices)		
Rural	64.0	62.6	59.3	57.8	57.2	55.8	55.5	54.5	52.8	60.6	60.2	43.4
Urban	36.0	37.4	40.7	42.2	42.8	44.2	44.5	45.5	47.2	39.4	39.8	56.6

Source: Census 2001

Clearly, the choice of poverty line does have an impact on the poverty profile – but, given that estimates derived from survey data are somewhat imprecise in any event, one needs to consider just how much it matters in terms of describing the poor? In Table 10, we provide 95% confidence intervals for four variables (specifically requested by Kamilla Gumede of NT) using four poverty lines.

Table 10: 95% confidence intervals for estimates of the proportion of Coloureds, women, children and elderly persons in poverty (2000 IES)

	Stats SA lower poverty line	40th percentile cut-off	Stats SA upper poverty line	Poverty line derived from the means test of the SOAP
Proportion of poor individuals that are Coloured	4.4%-5.8%	4.6%-6.0%	6.0%-7.7%	5.3%-6.8%
Proportion of poor individuals that are women	54.3%-55.1%	54.2%-55.1%	53.7%-54.5%	53.9%-54.7%
Proportion of poor individuals that are children (under 16)	42.2%-43.3%	41.9%-42.9%	39.2%-40.2%	40.5%-41.5%
Prop of poor individuals that are elderly (65 or older)	4.6%-5.1%	4.7%-5.1%	4.9%-5.3%	4.8%-5.2%

8. CONCLUSION

Policymakers need to be quite clear as to *why* the state intends to set a national poverty line. Is the poverty purpose solely for monitoring purposes? If this is the case, then the position of the line is fairly arbitrary. If, however, one of the purposes is for targeting (of social grants, physical infrastructure, etc) then the position of the line becomes far more important.

Before selecting a poverty line or a range of poverty lines, policymakers need to be aware of what kind of data would be required in order to operationalize it. For example, a cost of basic needs approach poverty line requires good data on the *quantity* of food purchased, not just the *value* of the food purchased. A per "adult equivalent" measure requires that detailed information on household structure is collected within the *same* survey as income or expenditure data.

9. REFERENCES

Amiel, Y and Cowell, F. 1995. The measurement of poverty: an experimental questionnaire investigation. Unpublished mimeograph. Emek Hefer: Ruppin Institute.

Beckerman, W. 1984. Measuring poverty in rich and poor countries. *Carnegie Conference Paper no. 3.*

Buhmann, B., Rainwater, L., Schmaus, G. and Smeeding, T. 1988. Equivalence scales, well-being, inequality and poverty: sensitivity estimates across ten countries using the Luxembourg Income Study (LIS) database. *Review of Income and Wealth*, 34:115-142.

Callan, T. & Nolan, B. 1991. Concepts of poverty and the poverty line. *Journal of Economic Surveys*, 5(3): 243-261.

Chen, S. and Ravallion, M. 2001. How have the world's poorest fared since the early 1980s? Mimeo: World Bank.

Citro,C.F. & Michael, R.T. 1995. Measuring poverty: a new approach. panel on poverty and family assistance: concepts, information needs and measurements methods. National Research Council. Available online from http://www.nap.edu/catalog/4759.html.

Committee on International Nutrition, Food and Nutrition Board, Board on International Health. 1995. Estimated mean per capita energy requirements for planning emergency food aid rations. National Academy of Sciences.

Deaton, A. 1997. The analysis of household surveys: microeconometric analysis for development policy. Washington DC World Bank.

Deaton, A and Case, A. 1998. School quality and educational outcomes in South Africa. Mimeo: Princeton University, Woodrow Wilson School of Public and International Affairs, Princeton New- Jersey.

Deaton, A. and Muellbauer, J. 1980. *Economics and consumer behaviour.* New York: Cambridge University Press.

Deaton, A. and Muellbauer, J. 1986. On measuring child costs: with applications to poor countries. *Journal of Political Economics*, 94(4): 720-744.

Deaton, A. 1992. *Understanding consumption*. New York: Oxford University Press.

Deaton, A. 2001. Counting the world's poor: problems and possible solutions. *World Bank Research Observer,* 16(2), 125-147.

Deaton, A. 2002. "Is world poverty falling? *Finance and Development: A Quarterly Magazine of the International Monetary Fund*, 39(2).

Deaton, A. 2003. How to monitor poverty for the millennium development goals. *Working Paper*, Research Program in Development Studies, Princeton University.

Dreze, J . and Srinivasan, P. 1995: Widowhood and poverty in India: some inferences from household survey data. *Development Economics Research Program*, Paper No. 62, London School of Economics.

Fisher, G.M. 1997. The development and history of the U.S. poverty line thresholds – A brief overview. *Newsletter of the Government Statistics Section of the American Statistical Association*, Winter: 6-7.

Gazeley, I. and Newell, A. 1997. Social investigation and child costs in late Victorian and Edwardian Britain. *Discussion Papers in Economics* 05/97. Brighton: University of Sussex.

Glewwe, P. 1988. The distribution of welfare in Côte d'Ivoire in 1985. *Living Standards Measurement Study Working Paper 29*. Washington: World Bank.

Hagenaars, A.J.M. 1993. Perspectives on poverty. *Review of income and wealth*, 39(3): 313-318.

Hoogeven & Ozler, B. 2004. Not separate, not equal: poverty and inequality in post-apartheid South Africa. Mimeo: World Bank.

Klasen, S. and Woolard, I. 1998. Unemployment, household formation, poverty and nutrition in South Africa. Report commissioned by the Department of Finance.

Koulovatianos, C., Schroder, C. and Schmidt, U. Forthcoming. On the income dependence of equivalence scales. *Journal of Public Economics*.

Lancaster, G., Ray, R and Valenzuela, R. 1999. A cross country study of equivalence scales and expenditure inequality on unit record household budget data. *Economic Development and Cultural Change* 48(1): 177-208.

Lanjouw, P., Milanovic, B. & Paternostro, S. 1998. Poverty and the economic transition: how do changes in economies of scale affect poverty rates for different households? WPS 2009. Washington DC World Bank.

Lanjouw, P. & Ravallion, M. 1995. Poverty and household size. *The Economic Journal*, 105: 1415-1434.

Lazear, E. & Michael R. 1980. Family size and the distribution of household income. *American Economic Review*, 70(1): 91-107.

May, J., Carter, M. and Posel, D. 1995. The composition and persistence of poverty in rural South Africa: an Enntitlements approach**.** *Land and Agriculture Policy Centre Policy Paper No. 15*, Land and Agriculture Policy Centre.

National Treasury. 2005. *Budget Review 2005.* Pretoria: Government Printer.

Nicholson, J.L. 1976. Appraisal of different methods of estimating equivalence scales and their results. *Review of Income and Wealth*, 22:1-11.

Potgieter, J.F. 1995. The household subsistence level in the major urban centres of the Republic of South Africa. Port Elizabeth: University of Port Elizabeth.

Ravallion, M. 1992. Poverty comparisons: a guide to concepts and methods. *Living Standards Measurement Study Working Paper 88*. Washington DC World Bank.

Ravallion, M. 1994. Measuring social welfare with and without poverty lines, *American Economic Association Papers and Proceedings*, 84(2): 359-364.

Ravallion, M. 1995. Growth and poverty: evidence for the developing world, *Economic Letters*, 48: 411-417.

Ravallion, M. and Lokshin, M. 1998. Subjective economic welfare. *Policy Research Working Paper*. Washington DC: World Bank.

Sen, A. 1976. Poverty: an ordinal approach to measurement, *Econometrica* 44: 219-31.

Sundrum, R.M. 1990. *Income distribution in less developed countries*. London: Routledge.

Veit-Wilson, J. 1986. Paradigms of poverty: a rehabilitation of B.S. Rowntree. *Journal of Social Policy*, 15: 69-99.

Woolard, I. 2002. Income inequality and poverty: methods of estimation and some policy applications for South Africa. Unpublished PhD thesis, University of Cape Town.

Working, H. 1943. Statistical laws of family expenditure. *Journal of the American Statistical Association* 38: 43-56.

World Bank. 1990. *World Development Report 1990: Poverty*. New York: Oxford University Press.

APPENDIX 1: CALCULATING PPP CONVERSION FACTORS AND "$1-A-DAY" POVERTY LINES

This appendix shows how to calculate the value of the "$1-a-day" measure of extreme poverty in terms of local currency at current prices. This calculation simply adjusts the original estimate of the $1-a-day line, based on 1993 prices, for accumulated price inflation since 1993.

The calculation requires three pieces of information:

1. The 1993 consumption purchasing power parity (PPP) exchange rate for the country in question, available from the Penn world Tables at http://pwt.econ.upenn.edu/
2. The country's Consumer Price Index (CPI) for 1993.
3. The country's CPI for the month which is required.

With these three pieces of data in hand, the current PPP exchange rate is calculated by adjusting the 1993 PPP for cumulative inflation since 1993. That is,

$$_{current}PPP = {}_{1993}PPP * [CPI_{current}/CPI_{1993}]$$

For South Africa:

$_{1993}PPP = 1.66$

$CPI_{Nov\ 2005} = 129.5$

$CPI_{1993} = 61.2$

Thus, to find the equivalent of South Africa's 1993 PPP exchange rate in terms of current South African Rands, multiply South Africa's PPP at 1993 prices (R1.66 to the dollar according to) times the ratio of South Africa's most recent CPI (November 2005) to its value in 1993 (129.5/61.2, both relative to 2000=100). In other words,

$_{Nov.\ 2005}PPP = R1.66/\$ * (129.5/61.2) = R3.54/\$$

Finally, calculate the current value of the "$1-a-day" (which is really $370 per annum) poverty line ($1.08 per day in PPP at 1993 prices) by multiplying the result by 1.08. In the case of South Africa, the "$1-a-day" poverty line equals R3.82 per day at November 2005 prices (1.08 * 3.54).