

# ESTIMATING POVERTY LINES FOR SOUTH AFRICA

---

**Discussion Document – Research Commissioned by the Department of Social Development**

**Prepared by Morné Oosthuizen, Development Policy Research Unit, UCT**

## INTRODUCTION

In societies around the world, there is concern over the plight of the poor. In South Africa, years of active discriminatory policymaking and neglect have resulted in high levels of inequality, characterised by extreme wealth on the one hand and desperate poverty on the other. The eradication of poverty, therefore, is one of the top priorities for the government, as well as various other sectors of South African society. However, for policy to effectively target and improve the lives of poor individuals and households, an appropriate poverty measure – or poverty line – is required.

There is a long history of poverty measurement, dating back over a century. Gillie (1996: 728) refers to a variety of lines starting from the 1880s, including those of Alexander McDougall, Charles Booth, and Seeborn Rowntree, many of which stemmed from “the provision in the 1870 [British] Elementary Education Act requiring school boards to develop criteria of poverty”. Over time, as societies and national and international norms, particularly regarding human rights, have evolved, so too has our understanding and conceptualisation of poverty. Thus, while poverty was originally measured exclusively in monetary terms and in terms of income, its conceptualisation and measurement has extended to encompass the ability of individuals and households to effectively meet their basic needs and, further, to engage on an equal footing in their societies.

It can be strongly argued that, in terms of policymaking, the choice of a specific poverty line within a generally broad range is not as important as the fact that there is consensus over the line. In many instances, including the original construction of the US poverty line as well as the choice of the ‘dollar-a-day’ line, the actual process followed to arrive at a poverty line is, to varying degrees, arbitrary and open to dispute. However, the political and social consensus that coalesces around the chosen poverty line determines to a large extent the ‘success’ of the line. According to Ravallion (1992: 1-2), “... much of the energy that often goes into poverty analysis is wasted. Agonizing over where to draw some ‘poverty line’ is a case in point; almost always there will exist a range of possible

lines over which the qualitative poverty comparison and, hence, the policy conclusion, is unaffected, and in some applications that range may be very wide indeed.”

This document briefly outlines work done on estimating a poverty line as commissioned by the Department of Social Development. It must be noted that this research is still in progress and estimates presented may be subject to change. The paper proceeds to describe three types of poverty measures and then describes and presents our current estimates for two types of poverty lines.

## TYPES OF POVERTY MEASURES

There are three basic approaches in estimating poverty lines, namely an absolute, a relative and a subjective approach, each of which views poverty, the experience of poverty and its most appropriate quantification differently. The absolute approach to poverty measurement constructs a line that values in monetary terms the goods and services required to meet a set of absolute minimum living standards – unvarying over time – across the various basic needs. The value of an absolute poverty line is fixed in real terms, with the only changes to the monetary value being adjustments to take account of inflation. In contrast, a relative poverty line is not anchored in minimum living standards or basic needs. Instead, it takes into account a given society’s characteristics and attempts to identify those individuals whose standards of living are unacceptably low relative to the rest of society. Such a poverty line begins to measure the ability of households or individuals to engage adequately in their society and is defined as a proportion of mean or median income or expenditure. Finally, the subjective approach to poverty measurement relies on individuals’ opinions as to what constitutes the minimum income or expenditure required by a household.

In terms of the indicator measure of poverty, much has been written on the value of using expenditure as opposed to income as an optimal reflection of welfare (Chaudhuri and Ravallion 1994; Deaton 1997). Briefly, the problem with income as a measure of welfare is that the poor may dissave significantly, upper income households tend to understate their income, and the income measure may not pick non-remunerative activities of the households, such as subsistence farming. In turn, however, the expenditure as a measure of welfare is very difficult to collect in survey data, and is often very costly and may be subject to recall errors given the detail required of households.

## ESTIMATED POVERTY LINES FOR SOUTH AFRICA

This study estimates a set of poverty measures that quantify absolute poverty and a set that quantify relative poverty. The approach is to estimate various poverty measures, taking into account varying assumptions, and ascertaining the extent to which the resulting lines differ and what the implications are for policy. Around the world, the choice of a poverty line occurs as a result of two processes, namely a technical exercise drawing on international experience and methodologies and estimating a range of possible lines based on various assumptions, as is done in this study, and a political and/or consultative process through which consensus is reached about the choice of a particular instrument with which to measure the extent of poverty over time.

The dataset utilised for this study is the newly-released Income and Expenditure Survey (IES) of 2005/2006.<sup>1</sup> The survey was conducted on eight dwelling units each from 3 000 primary sampling units of Statistics South Africa's Master Sample, spread evenly over 12 months and with national representivity ensured in each quarter (Statistics South Africa 2008b: 1).

### **a. Absolute Poverty Lines**

In its crudest, most basic form, an individual's ability to satisfy his or her nutritional requirement, one of the most basic of Man's needs, is deemed to indicate whether or not that individual is poor. Poverty lines constructed on the basis of nutritional requirements are known as food poverty lines (FPL) and are classified as absolute poverty lines. In constructing absolute food poverty lines, there are two general approaches, namely normative and semi-normative (Expert Group on Poverty Statistics. Rio Group 2006: 54-55). Normative food poverty lines estimate the cost of a basket of food where the basket is constructed to fulfill established nutritional and health criteria, but not necessarily being required to reflect existing consumer preferences. Semi-normative food poverty lines, on the other hand, constitute "the cost of a food basket that is anchored to certain nutritional guidelines according to the consumption habits and market prices faced by the population" (Expert Group on Poverty Statistics. Rio Group 2006: 55). Thus, semi-normative poverty lines respect consumer preferences and habits in terms of the types and quantities of food consumed, although technically no judgement is made as to the nutritional sufficiency of the food basket. Of the two types of food poverty lines, it is apparent that semi-normative food poverty lines are far more common than normative food poverty lines: the Rio Group notes only two examples of the latter, namely the current US poverty line and the Canadian Market Basket Measure (Expert Group on Poverty Statistics. Rio Group 2006: 55). In this study, our primary focus in terms of absolute poverty lines, and food poverty lines in particular, will be on the semi-normative approach.

The study estimates an absolute poverty line using the cost of basic needs (CBN) approach. This is a semi-normative approach, which respects consumer choice in that it does not dictate food choices but uses observed expenditures on food. The CBN approach first estimates a food poverty line, which estimates the cost of a minimum basket of food items, and then scales this line up to cover non-food expenditure. The estimation of the food poverty line has four basic steps: the estimation of the population's energy requirements, the choice of a reference group, establishing the contents of the food basket and the costing of the food basket.

The population's total energy requirements are calculated using data from the Department of Health (Tshitauzi 2007), presented in Table 1. Combining this information with the population structure as derived from the IES 2005, it is calculated that the national food energy requirement is approximately 105.7 billion kilocalories per day. This equates to a daily energy requirement for the

---

<sup>1</sup> Unlike the previous two Income and Expenditure Surveys, the most recent survey was conducted over two calendar years, between September 2005 and August 2006, and is consequently officially designated as IES 2005/2006. For ease of reference, this paper will refer to the most recent IES as 'IES 2005'.

average South African of 2 230 kilocalories (approximately 9 366 kilojoules). Although adjustment factors are available to account for pregnancy and lactation, as well as for HIV status, these have not been included in the above calculation. This is marginally lower than the estimate of 2 261 kilocalories for 2000 by Ozler (2006: 12), who uses recommendations from the US National Research Council's Food and Nutrition Board, and slightly higher than the assumed 8 500kJ (2 024 kilocalorie) line used by Woolard and Leibbrandt (2001: 49). Pradhan *et al.* (2000: 3) note that a commonly used daily minimum energy intake is 2 100 calories (8 820 kJ) per capita. India, for example, uses 2 100 kilocalories as a norm for urban populations and 2 400 kilocalories (10 080 kJ) for those in rural areas (Saith 2005: 6).

**Table 1: Average Daily Energy Requirements by Age and Gender, Updated**

Age	Sexes Combined			
	Average Energy Allowance (kcal)		Adult Female Equivalence	
0 - 2.9 months	404		0.19	
3 - 5.9 months	550		0.26	
6 - 8.9 months	615		0.29	
9 - 11.9 months	686		0.32	
12 - 23.9 months	894		0.42	
24 - 35.9 months	1 250		0.58	
36 - 59.9 months	1 500		0.70	
5 - 6.9 years	1 710		0.80	
7 - 9.9 years	1 880		0.88	
Age	Males		Females	
	Average Energy Allowance (kcal)	Adult Female Equivalence	Average Energy Allowance (kcal)	Adult Female Equivalence
10 - 11.9 years	2 172	1.01	1 894	0.89
12-13.9 years	2 437	1.14	2 063	0.96
14-15.9 years	2 795	1.31	2 214	1.03
16-17.9 years	3 071	1.44	2 275	1.06
18-29.9 years	2 925	1.37	2 140	1.00
30-59.9 years	2 866	1.34	2 145	1.00
60+ years	2 382	1.11	1 925	0.90
Pregnancy	-	-	Add 285	Add 0.13
Lactation	-	-	Add 500	Add 0.23

**Source:** Tshitauzi 2007.

There is no clear theoretical basis for the choice of a specific reference group over another possible reference group. One option is to select a subgroup of the population for whom actual nutritional intake is approximately equal to the minimum caloric intake (Expert Group on Poverty Statistics: Rio Group 2006: 56). However, given the fact that households surveys are unlikely to capture all food spending, the resultant food basket may be biased. This approach was investigated as part of the study, but was abandoned due to the fact that the estimated mean number of calories consumed per capita was extremely low (approximately 1 346 kilocalories per person per day). Thus, reliance on a methodology that requires measured caloric intake to approximate the minimum required intake would result in the choice of a reference group that would be very unlikely to be a relevant comparator for poor households. Another option is to choose a reference group based on an

expectation of where the poverty line will be, while Pradhan *et al.* (2001: 473) use an iterative approach that ensures that the reference group is “centred on the poverty line”. In line with other studies (for example, Ozler 2006), the reference group for this poverty line was chosen somewhat arbitrarily based on an expectation of the extent of poverty: it was set to be the middle 20 percent (the middle quintile) of individuals ranked by total expenditure per capita.<sup>2</sup>

Expenditures were converted directly to calories using a conversion factor calculated from detailed price data obtained from Statistics South Africa and food calorie values. These calorie values were calculated by the Medical Research Council (Rose *et al.* 2002: 5-7) and supplemented with data from the US Department of Agriculture (2007) and Langenhoven *et al.* (1991). The conversion factor was expressed as rands per calorie for each food and non-alcoholic beverage item in the basket, allowing the conversion of expenditure to calories. Given the structure of expenditure on food and non-alcoholic beverages of the reference group, it was estimated that a daily intake of 2 230 calories per capita would cost between R226 and R273 per month, depending on the assumptions, which would be our estimated food poverty line (Table 2). Individuals spending less than, say, R226 per month on foodstuffs would, on average, not be achieving the required minimum energy intake. Obviously, this statement is true within the bounds of the assumptions made.

The range of estimates is the result of two sets of assumptions. On the one hand, the food poverty lines are estimated either using total expenditure as recorded in the IES 2005, or using total expenditure less certain lumpy expenditures (generally purchases of large value that occur infrequently and may distort the total expenditure amount) and certain expenditures for items that some households pay for and others receive for free or at a subsidised rate (for example, health expenditures).<sup>3</sup> On the other hand, the food poverty lines are estimated using the original IES 2005 food expenditure, or using food expenditure adjusted upwards by 20 percent. This adjustment is necessitated by the under-reporting of food in the survey: food and non-alcoholic beverages fell from 28.5 percent and 27.4 percent of household consumption expenditure, excluding imputed rent, mortgage and other unclassified expenses, in 1995 and 2000 respectively, to just 16.6 percent in the IES 2005 (see Statistics South Africa 2008a: 25-28 for analysis of this under-reporting). This drop accompanied a change in the survey methodology, which saw food expenditures collected using the diary method in 2005 as opposed to the recall method in the previous surveys. Statistics South Africa

---

<sup>2</sup> Since the basic unit of analysis is the household, if one member of the household is included in the middle quintile, all the members of the household are included in that quintile, so that the five quintiles may not be exactly equally sized.

<sup>3</sup> From a policy perspective, it is possible to justify the use of either of these options. On the one hand, using total expenditure is computationally simple and has relatively low data requirements. Consequently, a poverty line derived using total expenditure is desirable in that it is straightforward to apply if one has data on an individual or household’s total expenditure. On the other hand, eliminating lumpy expenditures and expenditures on those items for which there is no data on free or subsidised consumption is theoretically appealing and may technically be more accurate in discerning between the poor and the non-poor. However, deciding exactly which expenditures to exclude is not necessarily straightforward and the application of the line is data intensive. For example, a line based on total expenditure could be applied (with the appropriate caveats of course) on

(2008a: 27) attributes the substantial drop in the proportion between 2000 and 2005 to the “under-reporting on high-frequency purchases such as food when using a diary to keep records (IES 2005/2006) and over-reporting of expenditure when relying on recall (IES 2000)”. The adjustment factor of 20 percent is a somewhat arbitrary amount, but puts the proportion of consumption dedicated to food and non-alcoholic beverages at between 19 and 20 percent, still substantially below previous estimates.

**Table 2: Estimated Absolute Poverty Lines under Varying Assumptions**

	Total Expenditure		Total Expenditure excl. certain lumpy and other expenditures	
	Original Food Spending	Adjusted Food Spending	Original Food Spending	Adjusted Food Spending
Monthly Cost of 2 230 calories p.c. per day, ie food poverty line (Rands)	230	275	226	271
Food share of individuals whose total expenditure is within 10 percent of the food poverty line (percent)	33.0	39.6	38.6	44.3
Lower bound poverty line (Rands per capita per month)	384	442	364	421
Lower bound poverty rate (percent)	45.3	51.5	53.6	56.9
Food share of individuals whose food expenditure is within 10 percent of the food poverty line (percent)	14.4	17.6	19.0	21.9
Upper bound poverty line (Rands per capita per month)	1 597	1 561	1 187	1 233
Upper bound poverty rate (percent)	83.1	82.8	83.8	83.7

**Source:** *Own calculations, Statistics South Africa 2007.*

**Notes:** *Expenditure is calculated as total expenditure (excluding in-kind consumption and taxation), and includes imputed rent. Food spending includes all spending on food and non-alcoholic beverages. It is important to note that where the food spending has been adjusted upwards (by 20 percent), total expenditure, however defined, will be impacted.*

However, food or caloric intake is only one basic need that individuals should be able to fulfil. There are a number of other basic needs which need to be fulfilled, including shelter, healthcare, clothing and education, amongst other things. One option is to decide on a set of non-food basic needs, price them and add the total amount to the food poverty line to obtain a total poverty line. However, again, there is no theoretical basis for choosing one set of non-food basic needs over another, opening up any given choice to dispute. The most common approach to estimating the non-food component of the poverty line is the use of the Engel coefficient, derived from the share of reference group’s expenditure devoted to food, as was done by Mollie Orshansky when estimating the US poverty lines.

The methodology followed here follows Ravallion (1998), who suggests an upper and lower bound for the non-food poverty line. The lower bound non-food poverty line is estimated by calculating the mean amount spent on non-food items for those households whose total expenditure is close to the food poverty line and then adding this mean amount to the food poverty line. The reasoning here is

that, assuming food and caloric sufficiency is one of an individual's most basic needs, any items that divert expenditures away from food to the extent that, on average, the individual is not consuming the minimum number of calories per day, must be basic necessities. The upper bound non-food poverty line is estimated by calculating the mean non-food expenditures of those individuals whose total *food* expenditure is close to the food poverty line and adding this mean amount to the food poverty line. In practice, for the lower bound non-food poverty line, this was done by calculating the mean non-food expenditure of individuals whose total expenditures fall within one percent of the food poverty line, and repeating this in increments of one percentage point up to those within ten percent of the food poverty line. These mean non-food expenditures were then aggregated using a weighted average with weights directly proportional to the width of the band around the food poverty line (i.e. the weight for the mean non-food expenditure for those within ten percent of the food poverty line is  $\frac{1}{10}$  while the weight for those within two percent is  $\frac{1}{2}$ ). An identical procedure was followed for the upper bound non-food poverty line.

This yields a range of lower bound poverty lines between R364 per capita per month (revised total expenditure, original food spending) and R442 per capita per month (total expenditure, adjusted food spending), a range equivalent to approximately 21 percent of the lower estimate. These lines provide estimates of poverty rates of between 45.3 percent (total expenditure, original food spending) and 56.9 percent (revised total expenditure, adjusted food spending). For the upper bound line, estimates range from R1 187 per capita per month (revised total expenditure, original food spending) to R1 597 per capita per month (total expenditure, original food spending). However, the poverty rates associated with the upper bound poverty line is almost unaffected at between 82 percent and 84 percent. Thus, although the upper bound poverty rate is insensitive to the assumptions made, it appears to be too high to be useful for policymaking purposes.

## **b. Relative Poverty Lines**

The concept of relative poverty lines stems from the idea that poverty cannot be measured independently of the general level of welfare and standard of living in a given society. The use of relative poverty lines, therefore, implies a shift from a pure money-metric approach to poverty towards the idea that poverty "represents the inability to participate in the ordinary life of that society owing to a lack of resources" (Expert Group on Poverty Statistics. Rio Group 2006: 73). While widely used in developed countries, in a developing country context relative poverty lines are arguably less useful: developing countries are more focussed on ensuring the attainment of basic living standards, while relative poverty lines measure the extent to which some groups or individuals in a given society are lagging in welfare terms.

There are two broad ways in which to define relative poverty lines. The first merely designates as poor a given proportion of the population at the lower end of the income or expenditure distribution. Thus, for example, in this way the relative poverty line can be defined as that income level at which 40 percent of the population is considered poor. A 40 percent cut-off is most commonly applied, although other cut-offs, such as 20 percent, are also used. Indeed, there is no theoretical argument against (or for) the choice of any specific cut-off. This method, however, has certain problems and disadvantages, one of which is that "the method prejudices the extent of



poverty” (Woolard and Leibbrandt 2001: 48). This also means that, irrespective of current economic circumstances, the poverty rate as measured using such a relative poverty line will remain unchanged. In other words, greater economic prosperity and improving living standards, whether evenly spread across society or not, would result in no change in the poverty rate. Similarly, changes in the distribution of income would have no impact on the measured rate of poverty. In essence, therefore, this method of estimating relative poverty, by definition, ensures the persistence of poverty over time.

The second method defines a poverty line relative to the relevant society’s standard of living, proxied by income or expenditure. In other words, the poverty line is set at a specific proportion, say 50 percent, of mean or median income. The implication of such a relative definition of poverty is that, even though the poverty line may shift upwards as overall income levels increase, it is still possible to eliminate poverty (through distributional changes). Since the mean is significantly more sensitive to distributional changes than the median, relative poverty lines of this type tend to be more often defined as a proportion of the latter. This type of definition of relative poverty underlies the European Union’s poverty indicators. There are ten primary and eight secondary indicators on social exclusion and poverty, commonly referred to as the Laeken indicators, by which EU member states’ record on poverty are measured. The poverty line underlying the majority of the Laeken poverty indicators (specifically indicators 1a through 1e, 3 and 4) is 60 percent of national median equivalised income (European Commission 2003). Other indicators use 40 percent, 50 percent and 70 percent national median equivalised income as poverty cut-offs. Equivalised income takes into account household structure, assuming a certain level of sharing of household resources amongst members. The EU uses “the so-called ‘modified-OECD’ scale ..., which gives a weight of 1.0 to the first adult, 0.5 to any other persons aged 14 or over, and 0.3 to each child” (Dennis, no date). Household income is divided by the sum of the weights allocated to the individual household members, and this income value is allocated to each household member.<sup>4</sup>

While a poverty line may be derived relative to a given society’s standard of living, nothing prevents its application as an absolute poverty line. In other words, a relative poverty line may be derived as described above, but would then be fixed in monetary terms and changes in poverty over time are then monitored, taking into account inflation, in terms of this amount. For example, suppose a relative poverty line of 50 percent of median income is estimated at R200 per capita per month. A feasible option for an absolute poverty line is to measure poverty over time using R200 per capita per month in real terms. Thus, although the line is originally estimated relative to societal welfare at that time, its real value becomes fixed and the line operates as an absolute money-metric poverty line.

Table 3 presents estimates of relative poverty lines for South Africa under varying assumptions. The first set of lines is based on the household as the unit of analysis for deriving the line. These lines are

---

<sup>4</sup> To put this in context, use of per capita income implies a weight of 1.0 for every person in the household, the sum of the weights being equal to the number of individual household members.



defined as the level of per capita expenditure of the household at the 50<sup>th</sup>, 40<sup>th</sup> and 20<sup>th</sup> percentiles. The household at the 50<sup>th</sup> percentile is the median household (half of households have per capita expenditures greater than the median household, while half have per capita expenditures less than the median household), while the 40<sup>th</sup> and 20<sup>th</sup> percentiles are commonly-used relative poverty lines. Approximately 64 percent of individuals reside in the poorer 50 percent of households, the poverty line being R629 per capita per month. Using the 20<sup>th</sup> percentile of households, the poverty line falls to R271 per capita per month and just under one-third (31.1 percent) of South Africans are classified as poor according to this line.

The second set of relative poverty lines are based on derived individual-level median expenditure. Median per capita expenditure is R422 per month and the poverty rate, by definition, is 50 percent (since the median defines the expenditure level at which half of South Africans spend less than this amount and half spend more). Following practices in other parts of the world, two more lines were defined at 60 percent and 50 percent of median per capita expenditure, or R253 and R211 per capita per month respectively. The poverty rates according to these lines are 28.3 percent and 20.8 percent respectively.

**Table 3: Relative Expenditure-Based Poverty Lines and Poverty Rates**

	<i>Rands per Capita per Month</i>	<i>Proportion of Individuals below the Poverty Line</i>
<b>Household-Based Lines</b>		
50 <sup>th</sup> Percentile of Households (Median)	629	64.3
40 <sup>th</sup> Percentile of Households	470	54.3
20 <sup>th</sup> Percentile of Households	271	31.1
<b>Individual-Based Median-Related Lines</b>		
Median per capita expenditure	422	50.0
60% of median per capita expenditure	253	28.3
50% of median per capita expenditure	211	20.8
<b>Individual-Based Mean-Related Lines</b>		
Mean per capita expenditure	1 230	79.1
60% of mean per capita expenditure	738	68.6
50% of mean per capita expenditure	615	63.6

**Source:** *Own calculations, Statistics South Africa 2007.*

**Notes:** *Expenditure is calculated as total expenditure (excluding in-kind consumption and taxation), and includes imputed rent.*

The third set of relative poverty lines is based on mean expenditure. In 2005, mean per capita expenditure was R1 230 and 79.1 percent of the population fell below this line. Mirroring the median-related lines, lines were constructed at 60 percent (R738 per month) and 50 percent (R615 per month) of mean per capita expenditure, resulting in poverty rates of 68.6 percent and 63.6 percent respectively.

The individual-based mean-related poverty lines are substantially higher than the individual-based median poverty lines, resulting in higher poverty rates for the former, for the simple reason that

means are far more sensitive to the shape of the distribution and the existence of outliers. In a society characterised by high levels of inequality such as South Africa, mean income is significantly higher than median income. For example, taking the poorest person and giving him/her enough income to be the richest person will raise mean income, but will (generally) hardly impact on median income at all. Similarly, taking an individual whose income is R1 above the median and giving him enough income to be the richest person will raise mean income, but will leave median income unaffected.

## METHODOLOGICAL ISSUES

### **a. Spatial Price Variations**

An important factor in translating monetary income into some measure of welfare is the set of prices facing households. Identical households with identical monetary incomes may appear to be in the same position in terms of welfare, but this would only be the case if they face the same set of prices. If one of these identical households is required to pay higher prices than the other, the former's welfare will be lower than the latter's. This may result in the misidentification of technically poor households as non-poor and/or vice versa. Thus, when estimating poverty lines and measuring poverty, the different sets of prices facing different households should ideally be taken into account.

One of the important sources of price variations across households derives from geography: households in different regions may face different price sets because of different local tastes and preferences, transport costs, climatic and agricultural differences, and demand patterns. One important facet of spatial price differentials is the difference between urban and rural prices, although there is likely demand from policymakers and officials for poverty lines tailored to more detailed geographical units, such as for individual provinces, or for metropolitan, urban and rural areas within provinces. This is particularly relevant in South Africa given that inequalities inherited from the apartheid system have a clear spatial dimension.

Unfortunately, the calculation of price indices for smaller geographical areas is data intensive. True rural price indices are not published by Statistics South Africa, the rural CPI being based on prices surveyed in the smaller urban centres. As a result, it is not possible to estimate separate poverty lines for different geographical areas and thus we calculate a single national poverty line.

### **b. Home Consumption**

As noted above, one of the data issues that has arisen in the 2005 Income and Expenditure Survey is a probable underestimate of food expenditure. Such an underestimate would serve to bias the non-food component of the absolute poverty line upwards, resulting in an upwardly biased poverty line. Another issue that impacts on the food component of the derived absolute poverty line relates to consumption of home production.

The IES 2005, like its predecessor, is unable to accurately quantify consumption of home production (in quantity terms). Although the questionnaire makes provision for the consumption of home production, it only records a respondent-assigned value of the consumption, with no quantity

information, which would allow for direct estimation of calories, being included in the released dataset. The use of data on the average sales price per quantity is not a feasible option since there is no evidence to suggest that respondents both know ruling market prices per quantity and value the consumption of home production accordingly. Furthermore, it is highly likely that there exist regional price variations for which it is not possible to make adjustments. This is a critical defect in the design of the questionnaire for the 2005 IES as it relates to poverty work, impacting negatively on the ability to accurately estimate a consumption-based poverty line using the IES. Specifically, the analysis is forced to omit consumption of home production: the result will be an underestimation of caloric intake particularly in rural areas and, therefore, will likely overestimate the extent of poverty in those areas. As noted, this is not a new problem and other researchers have also been forced to omit consumption of own production (see, for example, Ozler 2006: 14, working on the 1995 and 2000 surveys).

Since the assumption that the rands per calorie of food items purchased equals, or even approximates, the rands per calorie of food consumed from own production is untenable, the exclusion of this information from the estimation of the poverty line and the extent of poverty is unavoidable. Table 4 shows that, although consumption from own production, from nature and from gifts and/or maintenance is very small in value relative to total spending on food, it can be an extremely important food source for some households. Consumption from own production, from nature and from gifts and/or maintenance accounts for 0.8 percent of the total amount spent on food of R91 billion, while the average household consumes less than R58 worth of food from this source. In contrast, however, on average those households who report non-zero values for consumption from this source report consumption to the value of R2 144, or 31 percent of the value of their total food spending. Excluding food from this source affects the composition of the food basket as well as the level of food and total spending. It implies that mean actual caloric intake is underestimated substantially for affected households and it is possible that these households may mistakenly be classified as poor.

**Table 4: Consumption from Own Production, from Nature and from Gifts and/or Maintenance**

Food Item	Total Rand Value (Rands Millions)	Mean Rand Value per Household	Mean Rand Value per Reporting Household
Maize	88	7.07	1 036.83
Wheat	1	0.05	413.86
Other grains	1	0.11	314.44
Milk	48	3.86	1835.3
Eggs	3	0.27	201.99
Fruit	4	0.35	174.93
Vegetables	49	3.94	427.37
Other produce	33	2.67	1769.3
Cattle	147	11.81	14 771.02
Sheep	127	10.21	7 035.27
Pigs	23	1.88	3 707.43
Goats	116	9.29	5 938.93
Poultry	68	5.46	688.05
Other livestock from own production	11	0.87	3 984.62
<b>Total</b>	<b>721</b>	<b>57.84</b>	<b>2 144.07</b>
<b>Total Food Spending</b>	<b>91 346</b>	<b>7 332.60</b>	<b>6 924 .43</b>
<b>... Share (Percent)</b>	<b>0.8</b>	<b>0.8</b>	<b>31.0</b>

**Source:** *Own calculations, Statistics South Africa 2007.*

## CONCLUSION

This document has attempted to provide an overview of some of the work done to estimate a set of absolute and relative poverty lines for the Department of Social Development using the recently released IES 2005. While reference to previous studies and international best practice can assist in guiding the development of a poverty line, there are relatively few instances where the choices to be made are clearcut. Instead, it is left up to the analyst to make a wide variety of assumptions that will, in the end, affect the value of the calculated poverty line. This, however, is arguably only a problem insofar as different assumptions materially impact on the measured extent of poverty. As such, the final report of this study will detail the impact that the different sets of assumptions may have on the value of the poverty line and the measured poverty rate. Importantly, the analysis will also investigate the consistency with which individuals are identified as poor or non-poor. Although not discussed here, while there seems to be a growing consensus in South Africa that equivalence scales and scales of economy are probably unnecessary in that they do not materially impact on poverty rates or the poverty profile even over a wide range of values (see, for example, Woolard and Leibbrandt 2006: 15-17), the analysis will test the sensitivity of poverty estimates to these assumptions.

The results presented above provide an indication of the extent to which the varying assumptions impact on the estimated poverty lines and the resulting poverty rates. Lower-bound poverty estimates range between 45 percent and 57 percent, depending on the assumptions, but three of the four rates are above 51 percent. The upper-bound line, though ranging widely depending on the

assumptions, provides remarkably stable poverty rates, although at over 80 percent, these rates are arguably not very useful for policy purposes.

As noted, the choice of a specific poverty line is perhaps not as critical as the consensus that is built around the choice. Distribution matters, and it is therefore important to consider not only what has happened to the proportion of individuals below a given poverty line, but also what has happened to the proportion of individuals below poverty lines in a critical range. In this context, the use of cumulative distribution functions is very useful from an analytical perspective, since it is possible to then discuss poverty in a society independent of an actual poverty line. Obviously, though, this may be less useful from a policy perspective, where the focus is on identifying which individuals and households are in need of assistance or are eligible for certain programmes.

## REFERENCES

- Chaudhuri, S. and Ravallion, M. (1994), "How Well Do Static Welfare Indicators Identify the Chronically Poor?" *Journal of Public Economics* 53(3).
- Deaton, A. (1997), *The Analysis of Household Surveys: A Microeconometric Approach to Development Policy*. Baltimore: Johns Hopkins Press.
- Dennis, I. (no date), *European Union Countries Practice on Relative Poverty Measurement*. Available (online):  
[http://www.ncsb.gov.ph/poverty/TCPOvStat/reading\\_materials/rioXG/Relative%20Poverty%20Practices/RelPov\\_ES.pdf](http://www.ncsb.gov.ph/poverty/TCPOvStat/reading_materials/rioXG/Relative%20Poverty%20Practices/RelPov_ES.pdf). Accessed: 25 February 2008
- European Commission (2003), *'Laeken' Indicators - Detailed Calculation Methodology*. Directorate E: Social Statistics. Available (online):  
<http://www.cso.ie/eusilc/documents/Laeken%20Indicators%20-%20calculation%20algorithm.pdf>. Accessed: 25 February 2008.
- Expert Group on Poverty Statistics. Rio Group (2006), *Compendium of Best Practices in Poverty Measurement*. Rio de Janeiro.
- Expert Group on Poverty Statistics: Rio Group (2006), *Compendium of Best Practices in Poverty Measurement*. Rio de Janeiro.
- Gillie, A. (1996), "The Origin of the Poverty Line", *Economic History Review* XLIX(4): 715-730.
- Langenhoven, M. L., Conradie, P. J., Wolmarans, P. and Faber, M. (1991), *MRC Food Quantities Manual*. Cape Town: Medical Research Council.
- Ozler, B. (2006), *Not Separate, Not Equal: Poverty and Inequality in Post-Apartheid South Africa*. The World Bank. Unpublished paper.
- Pradhan, M., Suryahadi, A., Sumarto, S. and Pritchett, L. (2000), "Measurements of Poverty in Indonesia: 1996, 1999, and Beyond". *Policy Research Working Paper*, No. 2438. The World Bank.
- Pradhan, M., Suryahadi, A., Sumarto, S. and Pritchett, L. (2001), "Eating Like Which 'Joneses'? An Iterative Solution to the Choice of a Poverty Line 'Reference Group'", *Review of Income and Wealth* 47(4): 473-487.
- Ravallion, M. (1992), "Poverty Comparisons: A Guide to Concepts and Methods". *LSMS Working Paper*, No. 88. The World Bank. Available (online):  
[http://www.worldbank.org/LSMS/research/wp/wp\\_title.html](http://www.worldbank.org/LSMS/research/wp/wp_title.html). Accessed: 25 January 2007.
- Ravallion, M. (1998), "Poverty Lines in Theory and Practice". *LSMS Working Paper*, No. 133. The World Bank. Available (online):  
[http://www.worldbank.org/LSMS/research/wp/wp\\_title.html](http://www.worldbank.org/LSMS/research/wp/wp_title.html). Accessed: 16 January 2007.
- Rose, D., Bourne, L. and Bradshaw, D. (2002), *Food and Nutrient Availability in South African Households*. Development of a Nationally Representative Database. Medical Research

- Council. Available (online): <http://www.mrc.ac.za/bod/reports.htm>. Accessed: 1 February 2007.
- Saith, A. (2005), "Poverty-Lines versus the Poor: Method versus Meaning". *Institute of Social Studies Working Paper Series*, No. 420. Available (online): <http://adlib.iss.nl/adlib/uploads/wp/wp420.pdf>. Accessed: 7 February 2007.
- Statistics South Africa (2007), *Income and Expenditure Survey 2005*. Dataset.
- Statistics South Africa (2008a), *Income and Expenditure of Households 2005/2006: Analysis of Results*. Pretoria: Own publication.
- Statistics South Africa (2008b), "Income and Expenditure of Households 2006/2006". *Statistical Release P0100*. Own publication. Available (online): <http://www.statssa.gov.za/>. Accessed: 5 March 2008.
- Tshitaudzi, G. (2007), *Nutritional Requirements for Individuals*. Department of Health. Unpublished paper.
- US Department of Agriculture (2007), *USDA Food Search for Windows*. Database available (online): <http://www.nal.usda.gov/fnic/foodcomp>. Accessed: 13 February 2007.
- Woolard, I. and Leibbrandt, M. (2001), "Measuring Poverty in South Africa", in Bhorat, H., Leibbrandt, M., Maziya, M., Van der Berg, S. and Woolard, I., eds. *Fighting Poverty: Labour Markets and Inequality in South Africa*. Cape Town: UCT Press, pp. 41-73.
- Woolard, I. and Leibbrandt, M. (2006), *Towards a Poverty Line for South Africa: A Background Note*. Available (online): <http://www.treasury.gov.za>. Accessed: March 2007.