Conceptual and Measurement Issues in Poverty Analysis

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THE CHALLENGE OF GROWTH AND POVERTY: THE SOUTH AFRICAN ECONOMY SINCE DEMOCRACY.

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1. Introduction

Our understanding of the concept of poverty has improved and deepened considerably in the last three decades or so following Amartya Sen's seminal work. We possess presently the analytical tools to identify and locate the poor, to describe their characteristics and to measure the extent of poverty at different levels of aggregation. Yet, in spite of spectacular methodological advances in the analysis of poverty a number of conceptual and measurement issues remains to be addressed or further clarified. Ravi Kanbur (2002) has argued that the research on distributional issues in economics and development economics in the last thirty years can be divided roughly into two periods the 1970's to the mid 1980's and the mid-1980's to the end of the last century. The first fifteen years were a "period of great conceptual leaps and ferment" while the second fifteen years were marked by "consolidation, application and fierce policy debate". Very recent methodological contributions suggest that we are entering a period of resurgence in research attempting to sharpen and broaden our view of poverty.

The objective of this paper is to review a number of issues related to poverty, while taking stock of the ongoing research. Most of the remaining unresolved issues in poverty analysis are related directly or indirectly to the dynamics of poverty. Before the development community can become more successful in designing and implementing poverty-alleviation strategies, within the context of growth, we need to understand better the conditions under which some households remain permanently (chronically) poor and how others move in and out of poverty. In what follows we review the state of the art under a number of interrelated headings: 1) Chronic vs. transient poverty; 2) Poverty and vulnerability; 3) The determination of the poverty line across time and

countries; 4) The quantitative vs. qualitative approach to poverty measurement; and 5) Growth, inequality and poverty.

2. Chronic vs. Transient Poverty

There is increasing evidence that the prevalence of transient poverty is significantly greater than that of chronic poverty in many parts of the developing world. For instance, Baulch and McCulloch (1998) using a five-round panel data set for rural Pakistan find that only 3% of the households were poor in all five years and half were poor in at least one period. Similarly, Gaiha and Deolaiker (1993) find that 22% of households in rural South India were below the poverty line in each of nine consecutive years while almost 90% of all households surveyed were poor in at least one of the nine years.[1]

The poverty measures used in applied work, such as the FGT measure (Foster, Greer and Thorbecke, 1984), capture poverty at one point in time and therefore ignore any possible fluctuation around average consumption.

Distinguishing transient poverty from chronic poverty is essential in that the types of interventions called for to alleviate each type differ. Appropriate insurance schemes (such as crop insurance) and other consumption-smoothing measures can be effective in reducing temporary poverty but are likely to be much less effective against chronic poverty. Reducing the latter might require significant investment in human and health capital and some redistribution of assets- particularly land. McCulloch and Calandrino (2003) distinguish three types of chronic poverty: a) mean consumption across time being below the poverty line; b) a high frequency of being in poverty over some time

[1] This evidence was presented in McKay and Lawson (2003). For additional evidence see the recent excellent special issue of World Development (2003) devoted to chronic poverty and development policy.

(or a high probability of being poor) and; c) a high degree of persistence in poverty (p. 613).

The first definition above is the one adopted by Jalan and Ravallion (1998) in their decomposition of poverty. They define total poverty P_i as the expectation over time of the poverty measure at each point in time p_{it}.

$$P_i = \mathrm{E}[p_{it}] \qquad (1), \text{ where}$$

$$p_{it} = \begin{cases} \left(\frac{z - y_{it}}{z}\right)^{\alpha} & \text{if } y_{it} < z \\ 0 & \text{if } y_{it} > z \end{cases} \qquad (2)$$

where , z is the poverty line and a represent the poverty aversion parameter in the FGT measure

Chronic poverty is defined as

$$C_i = P\left(\mathrm{E}[y_{it}]\right) \qquad (3)$$

which for the FGT class of measures can be written as

$$C_i = \begin{cases} \left(\frac{z - E[y_{it}]}{z}\right)^{\alpha} & \text{if } E[y_{it}] \leq z \\ 0 & \text{if } E[y_{it}] > z \end{cases} \qquad (4)$$

Finally transitory poverty (T_i) is defined as total poverty (P_i) minus chronic poverty (C_i)

The following example is given to understand better the implications and limitations of this approach. Assume a household with the time path of income (consumption) per adult equivalent over six periods given by a vector

[8,7,6,11,11,11] where mean consumption is 9 and z = 10

In this case it can easily be verified that for a = 1

$$P_i = \frac{3}{20}; \quad C_i = \frac{2}{20}; \quad and \quad T_i = \frac{1}{20}$$

Assuming a different vector

[7,6,5,12,12,12] yielding the same mean consumption of 9 and taking z = 10, we obtain

$$P_i = \frac{6}{30}; \quad C_i = \frac{3}{30}; \quad and \quad T_i = \frac{3}{30}$$

The absolute magnitude of chronic poverty under the second time path of consumption has not changed in spite of a rather drastic reduction in consumption (already below the poverty line) in the first three periods. The only difference is an increase in transitory poverty.

It would appear that the Jalan-Ravallion decomposition of poverty is not sufficiently responsive to fluctuations in consumption over time around the poverty line. Hence a number of authors have opted for the second definition of chronic poverty above namely a significant probability of being poor in any given time period. Thus in the above example for a = 0 (the headcount ratio) the household would have a 50% probability of being poor in each of the two time paths of consumption (the household is below z in three out of six years). In fact this last interpretation leads directly to the concept of vulnerability and the extent to which households can protect themselves against a variety of shocks.

3. Vulnerability and Poverty

Suppose the time paths of income for two households (shown by a solid and dotted line, respectively) were such that they fluctuated in a regular way around the poverty line (z), so that the excess income above z in one period was exactly compensated by an equivalent shortfall below the poverty line in the next period as depicted in Figure 1a.

Since the average (mean) income over time would be exactly equal to z, in each case, neither household would be considered as chronically poor- according to the definition used in the preceding subsection- only transitorily poor. It could be argued -somewhat naively-that faced with the intertemporal income pattern shown in Figure 1a, each household could save the excess of income above z in the first period and use it to smooth consumption in the second period.

The problem with this view is that given any concave welfare function (reflecting diminishing marginal utility as income increases), the loss of utility from falling below z would be greater than the gain in utility from a stream of income above z – as can be seen in Figure 1b that tracks the time path of utility corresponding to the time path of income appearing in the top panel (Figure 1a). In other words, the average utility of income (Uy_i) over the two time periods would be below the utility of z as shown in Figure 1b. Clearly, in this case there are good reasons to consider both households as chronically poor.

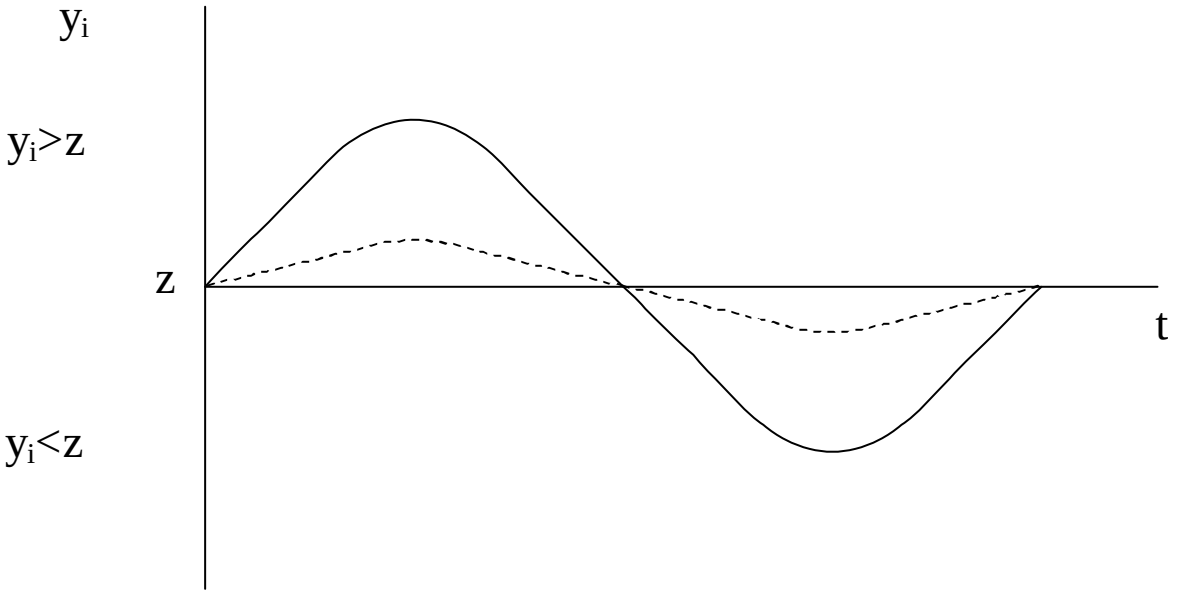

Figure 1a: Income over Time for Household $_i$

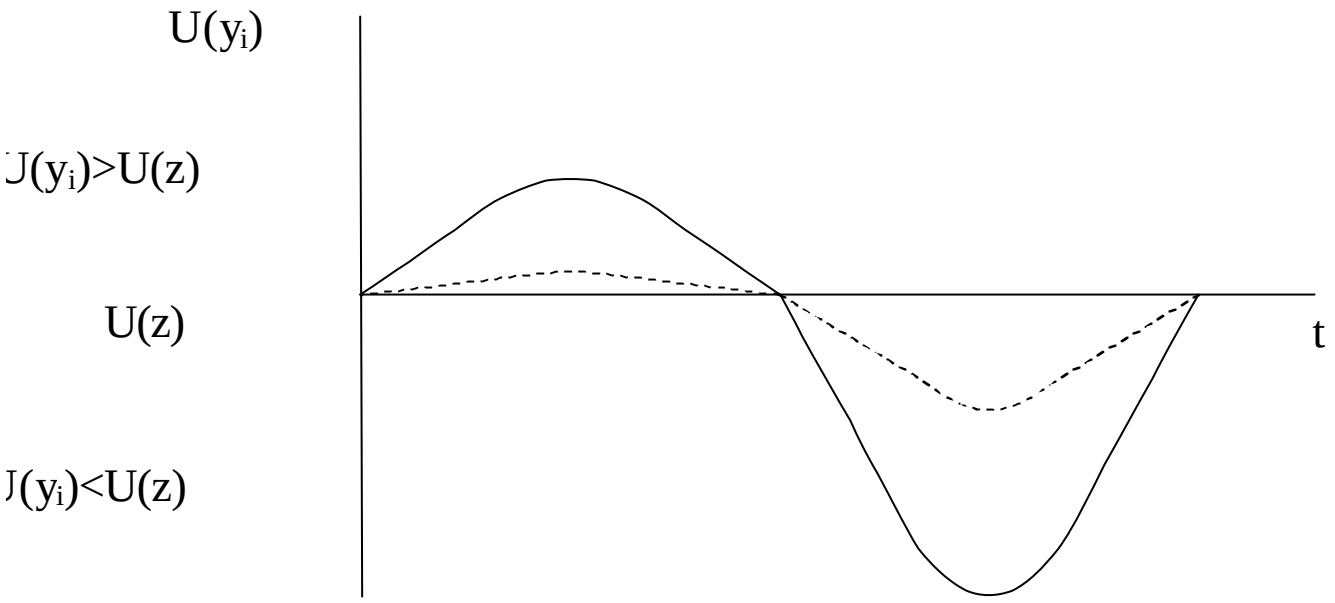

Figure 1b: Utility of Income over Time for Household $_i$

A number of recent contributions have attempted to define and operationalize the concept of vulnerability. Christiaensen and Boisvert (2000) contrast poverty and vulnerability in the following way. Poverty is concerned with not *having* enough *now*, whereas vulnerability is about having a high probability now of suffering a future shortfall. Their notion of vulnerability is the risk of a future shortfall and is expressed as a probability statement regarding the failure to attain a certain threshold of wellbeing in the future. They measure vulnerability as the probability of falling below the poverty line z, multiplied by a conditional probability-weighted function of a shortfall below this poverty line. Consistent with the FGT poverty measure they use a vulnerability-aversion parameter a such that by setting a > 1, households with a higher probability of large shortfalls become more vulnerable.

In their application to Mali they use the log-linear distribution of consumption across households in their longitudinal survey to derive the probability of any one household being below the caloric threshold at some future date. This brings up two issues. The use of the FGT vulnerability aversion approach may not be appropriate as it implies increasing absolute risk aversion with increasing consumption below the poverty line. Secondly, although the distribution of consumption across households based on a limited panel data survey is likely to yield a log linear distribution the inter-temporal distribution of consumption faced by a given household is more likely to be normal. In any case, their empirical results indicate that current poverty and vulnerability constitute separate dimensions of well- being.

McCullouch and Calandrino (2003) define household vulnerability as the probability of being below the poverty line in any given year. They use the longitudinal component of a panel data set for rural Sichuan to calculate crude estimates of the intertemporal mean consumption expenditure and the intertemporal standard deviation of consumption for each household. In contrast with Christiaensen and Boisvert they postulate a normal distribution of consumption over time. Their main findings are that households remain highly vulnerable to poverty even when the average consumption lies some distance above the poverty line. Less than 9% of households have average consumption below the lower poverty line; the bottom quintile of households has a greater than 50% chance of being poor in any one year. Within the context of rural Sichuan (in China) they show that the characteristics of vulnerability are similar to those of low-mean chronic poverty "with demographic and educational factors playing important roles along with the value of assets and geographical location." (p.624). In contrast, the determinants of vulnerability are different for households with average consumption below the poverty line compared with those above.

The essence of vulnerability is the uncertainty of future income streams and the associated loss of welfare caused by this uncertainty. As Ligon and Schechter (2003) put it the critical issue is that " a household with very low expected consumption expenditures but with no chance of starving may well be poor, but it still might not wish to trade places with a household having a higher expected consumption but greater consumption risk". In a major conceptual breakthrough, Ligon and Schechter (2003) break down vulnerability into two components reflecting poverty and risk, respectively.

Figure 2 was drawn to illustrate and reflect their methodology. Assume a concave welfare function $U(c_i)$ so that the marginal utility of consumption falls as consumption rises. Under uncertainty the expected consumption of household i is $E(c_i)$ yielding an expected utility $EU(c_i)$ at point C in Figure 2. This household could be thought of as facing two states of nature- a low consumption one, c_L, and a high consumption one, c_H with expected consumption being the average of c_L and c_H. However if that household could obtain a level of consumption E(c) with certainty (eliminating all risk) the utility of expected consumption $UE(c_i)$ would be higher at point D in Figure 2.

Next, given a poverty line z, yielding utility U(z), Ligon and Schechter (2003) define vulnerability as equal to the distance FC and break it down into two components poverty (FD) and risk (DC). This is an ingenious way of distinguishing that part of vulnerability due to (chronic) poverty from that due to risk and uncertainty. They further divide risk into two sub-components aggregate risk (such as a downturn in GDP or aggregate consumption) and idiosyncratic risk.

In their application of this methodology to a data set from Bulgaria they find that the utility of the average household in their sample is nearly 20% less than it would be if resources could be costlessly redistributed so as to eliminate all inequality and risk in

consumption. The impact of aggregate risk is also significantly more important that that of idiosyncratic risk in affecting household welfare.

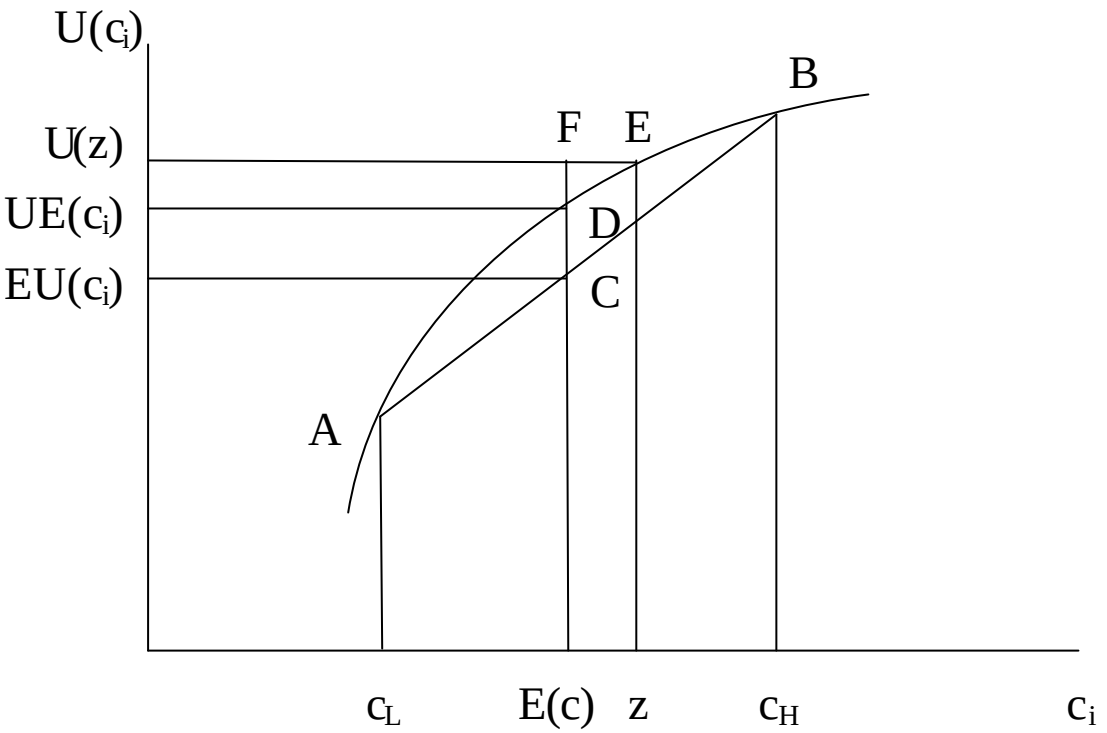

Figure 2. Vulnerability (FC) broken down into Poverty (FD) and Risk (DC) Components (based on and adapted from Ligon and Schechter (2003)

A final major contribution to the identification of the vulnerability concept that needs to be highlighted is that of Elbers and Gunning (2003). It is unique in that it derives vulnerability within a quasi- general equilibrium framework. The methodology they follow is to specify and estimate a structural model of the household's consumption and dis(saving) behavior as the outcome of intertemporal optimization under uncertainty. This ensures that the household's responses to shocks (both ex ante and ex post) are explicitly accounted for. This method is illustrated based on a Ramsey model estimated on panel data drawn from smallholder households in Zimbabwe. Elbers and Gunning (2003) show that vulnerability can change dramatically over time as a consequence of both sustained growth and adjustment to shocks.

An important implication of their approach is that the usual identification of chronic poverty with structural determinants and transitory poverty with risk breaks down. They show that "a household can be chronically poor because its response to risk lowers consumption permanently". (p.2). This feature of their approach is fundamental in that it incorporates the possibility of households deciding within an intertemporal framework to reduce their mean consumption to reduce consumption variability and risk. Wood (2003) referred to this trade-off as the "Faustian Bargain". The quest for household security can lock poor people into social structures that reduce vulnerability but which also keeps them poor. Based on ethnographies derived from qualitative research Wood shows why many households "stay poor" in an attempt to "stay secure".

In the Elbers and Gunning (2003) construct, household optimize a utility function over an infinite horizon, that incorporates either directly, or indirectly income, consumption, wealth, the capital stock, a discount factor, a parameter converting assets into income and an depreciation rate. Both income and assets are affected by shocks containing idiosyncratic and covariant components. Future shocks are unknown but the authors

assume that the household knows the distribution of these shocks. They also assume that if the household perceives a change in the distribution of the shocks it will adjust its response by choosing different values of the future capital stock and hence consumption. The model solves endogenously for the household's perceived welfare (V) and a low value of V is interpreted as vulnerability.

This is an extremely rich and ambitious approach to vulnerability that still leaves some questions unanswered. First, most attempts at defining vulnerability set up a threshold that is typically related to z or expected z. No such threshold is incorporated in the present version of their model so that vulnerability is defined on an ad hoc basis as say 50% of the most vulnerable. A second issue is how the household reaction function to shocks is specified. Households start with a subjective perception of a distribution of shocks and adjust their response and ex ante expectations of shocks on the basis of an increasing knowledge of those shocks as they are affected by them over time? Is there some kind of learning, adaptation mechanism over time? One could argue that with more knowledge of the shock-generating mechanism households become less vulnerable ceteris paribus. By simply postulating a response function these issues are left open.

One of the important conclusions of the Elbers and Gunning exercise is that if measures of chronic poverty are based on mean consumption over time then a large part of chronic poverty could in fact reflect risk.

4. Determination of Poverty Line over Time and across Countries

There are currently two main methods of setting the poverty line, i.e. the Cost of Basic Needs (CBN) and the Food-Energy-Intake (FEI) methods. The CBN approach has the advantage of ensuring *consistency* (treating individuals with the same living standards

equally) while the FEI approach has the advantage of *specificity* reflecting better the actual food consumption behavior of individuals around the caloric threshold given their tastes, preferences and relative prices.

It has been cogently argued by Ravallion and Bidani (1994) and Ravallion (1998) that in order to make valid welfare comparisons the reference basket (bundle) yielding the caloric threshold should remain constant. The monetary poverty line at any point in time is then obtained by multiplying the constant quantitative reference basket by the variable price vector to obtain z at current (nominal) prices and then deflating it by an appropriate price index (often the consumer price index, CPI) to express z in real terms.

The implicit assumption, when the CPI is used as a deflator, is that the prices of the goods constituting the reference bundle move in parallel with the CPI. When this is not the case the real monetary poverty line needs to be approximated taking into account the differential price evolution of basic goods (particularly foodstuffs) as opposed to other goods and services that go into computing the CPI. For example, in Indonesia after the shock caused by the Asian Financial Crisis, rice prices (the main food staple of the poor) increased by a multiple of the CPI in 1998 necessitating major adjustments in the setting of the poverty line.

As soon as the domain of inquiry shifts to exploring the dynamics of poverty and its breakdown between chronic and transient poverty the issue of selecting an appropriate price deflator becomes even more crucial. This can be illustrated by returning to the diagram on Figure 1a. Assume that a category of households (say small farmers) experiences seasonal income fluctuations as depicted in Figure 1a. Assume, further, that the first period in the diagram (where income is above the poverty line) corresponds to the post-harvest situation and the second period (with income below z) corresponds to

the pre-harvest situation. Under normal circumstances the post-harvest prices of staple food would be lower than in the pre-harvest phase. A poor household whose income tracks the time profile shown in Figure 1a would be hit by a double whammy in the pre-harvest phase, i.e. a lower income and higher food prices.

Note that the issue here relates exclusively as to whether it is appropriate to use one and the same real monetary poverty line (expressed as an annual average) in the face of large seasonal fluctuations affecting food prices when one is interested in estimating transient poverty- while maintaining the reference bundle constant.

Should the real monetary poverty line be adjusted seasonally to reflect the above price evolution? If the observer is interested in estimating transitory poverty the answer would appear to be in the affirmative.

Another issue relates to the setting of the poverty line to make comparisons over an extended period of time. As more household panel data sets become available from a variety of countries this question becomes more relevant. Over an extended period of time, relative prices can change significantly leading to substitution by consumers among basic goods and services away from those whose relative prices rose and towards those with lower relative prices. It is not unreasonable to argue that the longer the time period over which poverty comparisons are attempted, the more weight should be assigned to the specificity criterion. With the market appearance of somewhat different goods-both qualitatively and quantitatively- triggered by technological progress, consumers' tastes and preferences are likely to evolve as well. In this case, the maintenance of a historical reference bundle over a long period simply to satisfy the consistency criterion could fly in the face of a different contemporaneous basket actually consumed by the near poor today.

The cost of a basket of goods satisfying food requirements grows with GDP per capita for several reasons: such as, changes in the range of goods consumed as income increases, rising prices of basic foodstuffs compared to prices of other goods, increasing proportion of population in urban areas where foodstuffs may be more expensive than in rural areas, and gradual disappearance of subsistence farming. It can readily be observed that basic needs expand with development-particularly at an early stage of development. For example, as the rural to urban migration occurs the new urban dwellers may have to use public transport and be charged for a variety of public services that were essentially either not available or free in the villages they left behind. For all these reasons it may be reasonable, over an extended time horizon to update and re-compute the basic needs basket.

One possible such method is to use a *flexible* or *adjustable absolute* poverty line derived from an international cross-sectional and panel data set. Thus, from a sample of 48 developing countries (of which 16 are in Sub-Saharan Africa), Ali and Thorbecke (2000) estimated the relationship between mean income μ and the poverty line z_{AT} derived in these countries based on the best and most comparable studies available. This procedure yielded the following equation (with the absolute values of t statistics given between parentheses):

$$\text{Log } z_{AT} = \underset{}{5.181} + \underset{(100.9)}{0.00158\mu} - \underset{(18.3)}{0.0000003485\mu^2} \qquad (5)$$
$$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad (10.9)$$

$$R^2 = 0.96$$

For any given mean income we can thus derive the corresponding poverty line (z_{AT}) following the Ali-Thorbecke method as Table 1 shows. [2] Even though many researchers might feel uncomfortable compromising the consistency criterion, there is a certain logic at adjusting the poverty line upwards as a country grows over time.

Table 1. Poverty Line and GDP Per Capita
(according to the relationship of Ali and Thorbecke)

GDP Per Capita (μ) (in dollars)	Poverty line (z_{AT}) (in dollars)
100	207
200	240
300	276
400	316
500	359
600	404
700	453
800	503
900	556
1000	609
1200	717
1400	820
1600	913
1800	988
2000	1040

[2] This specification has the advantage that for low-income countries the elasticity of the poverty line with respect to mean income is low, thus, for example, for Tanzania with a mean income of $302 in 1993 the elasticity is 0.39 while for Ghana (with a per capita income of $796) the elasticity approaches the maximum and is equal to 0.82. Table 1 shows the values of the poverty line (z) as a function of mean income (μ). In the poorest countries like Niger z clearly exceeds the average income ($200). The two values are equivalent for μ=$280. Subsequently the z/μ ratio falls below unity. Thus for Côte d'Ivoire
(μ =$660) the ratio amounts to 0.65.

5. Quantitative vs. Qualitative Poverty Appraisal

Increasingly sociologists and anthropologists are relying on Participatory Poverty Assessments (PPAs) to try to capture the multi-dimensional nature of poverty. As Amartya Sen's emphasis on capabilities and functioning is becoming the dominant paradigm in poverty analysis, a clear implication is that a definition of poverty based exclusively on the material welfare status of an individual at one point in time misses key features of poverty that can only be unveiled through PPAs.

The qualitative (PPA) approach to poverty assessment is more inductive and subjective than the quantitative approach. The "hands on" iterative interviewing technique generates hypotheses that can be formally and quantitatively tested by the more deductive quantitative methodology that relies on econometric and statistical tools. These hypotheses might be either confirmed or rejected after having been subjected to quantitative testing. If the hypotheses are rejected or only weakly confirmed this information can be conveyed to practitioners of the PPA approach who could then try to generate new (modified) hypotheses to be subsequently tested by quantitative researchers. This iterative process could lead to a productive dialogue between the two schools and the identification of a set of richer findings. (Thorbecke, 2003) [3]

In general the qualitative approach tends to be highly context-specific. Researchers and interviewers focus on specific villages and communities and obtain a mass of useful and comprehensive information on the socioeconomic structure of each village studied. One revealing difference in the diagnosis of poverty between the two approaches is that

[3] For an excellent discussion of the advantages and disadvantages of the two schools of thought and an attempt to reconcile them see Kanbur (2003).

some households who are clearly below the poverty line on objective money-metric grounds when interviewed by PPA analysts claim that they do no consider themselves poor and vice versa. The likely explanation can be found in the extent of income and wealth inequality within the neighborhood and village of those households. A household surrounded by individuals at similar and lower levels of income (below z) may not "feel" poor. On the other hand, a household living in a village with a much more unequal distribution of income and surrounded by individuals with higher standards of living may "feel" poor even though its consumption is above z. This suggests that the perception of poverty is often relative to the living standards of neighbors rather than an absolute concept.

The design of a poverty measure sensitive to the extent of income inequality around the poverty line (including individuals just above it) could help in the identification of the perception of poverty. Also given the crucial importance of context-specific conditions in shaping the perception of poverty it can be argued that the setting of z at a more location - specific level would lead to a more accurate appraisal of poverty. The use of a national or even provincial poverty line in the light of major intra-regional and inter-village differences in socio economic conditions can distort the poverty diagnosis at the local level. Again, this illustrates the inherent conflict between the specificity and consistency criteria. It is not possible to satisfy both simultaneously. [4]

A final issue that deserves to be highlighted is the lack of correspondence between monetary and non- monetary indicators of poverty. There is some evidence that monetary poverty is less persistent than a) child stunting and malnutrition among children and adults; and b) primary and secondary school enrollments-reflecting well-known irreversibilities in education and nutrition (Baulch and Masset, 2003; Sahn, Stifel and Younger 1999). A relevant question is whether and if so how our present

[4] Tarp et al (2002) provide a good start to the exploration of this conflict within the context of Mozambique.

measures of poverty need to be modified to take on board key non-monetary indicators of poverty. (for an effort in that direction see Morrisson, 2002)

6. Growth, Poverty and Inequality

There is probably no more fundamental issue in economic development than a better understanding of the mechanisms through which growth affects poverty. As Foster and Szekely (2000) put it

> "a key reason for the interest in this topic is that it is at the heart of the debate between two very different models of development: one model emphasizes growth and efficiency under the idea that they eventually, if not immediately, improve the standard of living of the population at large, including the poor; the alternative model stresses that the state must play an active roll in determining where the benefits of development end up, since it is not clear that the poor will benefit automatically." (p.59)

While it is axiomatic that growth is a necessary condition for poverty alleviation, the key question is how the impact and the magnitude of growth on poverty-reduction can actually be captured. Not surprisingly, different methodologies yield different results. The first methodology uses a relative concept of poverty by estimating the growth elasticity of the per capita income of individuals in the first quintile of the distribution. Dollar and Kraay (2000), and a number of other researchers, argue that the elasticity is practically one. A second approach (focusing on absolute poverty), perhaps best exemplified by Ravallion (2000) finds that the elasticity of the head- count ratio is typically higher than two. However, depending on the country, the time period being examined and the choice of the poverty line, the growth elasticity of poverty can vary over a wide range from around minus 2.5 to minus .5. Clearly the pattern and structure of growth matters in how it affects poverty.

An inherent limitation of poverty measures is that they ignore totally the state of the income distribution above the poverty line. An aggregate poverty measure is essentially a welfare function in which the poor receive all the weight and the non-poor do not receive any weight (Kakwani et al, 2000).

Ideally, analysts would like to have access to a measure that combines in a relatively non-arbitrary way poverty and inequality spanning the whole income distribution. Cleary, truncating the income distribution at the poverty line is arbitrary and leads to a loss of information by failing to consider the distribution of income above z. Foster and Szekely (2000) quite cogently raise the following question "why should an income slightly higher (than the poverty line) be ignored, just because it is above the arbitrary cut off being employed?"

They proceed to develop a methodology where the measurement of poverty is sensitive to the state of income distribution and includes a weighting scheme that is continuous in which the non-poor also receive positive weight which may be made small as one wishes. It is based on Atkinson's (1970) family of "equally distributed equivalent income" functions called "general means". For different values of the parameter a more weight is placed on higher incomes (for higher parameter values) and more weight on lower incomes (at lower parameter values). Based on 144 household surveys from 20 countries over the last 25 years, Foster and Szekely (2000) showed that the growth elasticity of the general means can vary from 1.08 to a very low .22 depending on the choice of a. They conclude that "the positive value of the elasticity indicates that growth is good for the poor. However, it seems that it is even better for other sectors of society. This suggests a role for additional policies aimed specifically at guaranteeing that the poor share the benefits of development more proportionally". (p. 69)

The Foster-Szekely approach provides an important bridge to the design of welfare measures sensitive to and incorporating poverty and inequality- a high priority in the research agenda in development economics. In particular, the sensitivity to inequality around the poverty line appears crucial in the subjective perception of poverty as was discussed in section 5.

A final question that transcends the various issues discussed in this paper and goes to the heart of the definition of poverty relates to the treatment of preventable deaths. Kanbur (2002) has argued that it is paradoxical that in a typical poverty measure such as the FGT measure the premature and preventable death of an individual in a poor household would actually reduce aggregate poverty. If we accept Sen's paradigm of capabilities and functioning as the relevant way of assessing poverty then a preventable death is the most acute form of deprivation- i.e. deprivation of all capabilities for all the lost years of life (Hulme and Shepherd, 2003).

Kanbur and Mukherjee (2003) have made a valiant effort to modify the FGT poverty measure so that it is not "perversely mortality sensitive". The further development of such a measure requires confronting and resolving deep- rooted normative and even philosophical questions. As Hulme and Shepherd (2003) have remarked "estimating how many years of life were "lost" and placing a value on such years is enormously problematic". (p.409).

As the research frontier moves increasingly to analyze and understand better the dynamics of poverty one fruitful avenue would appear to be a greater focus on life-cycle income.

References

Ali, A., and Thorbecke, E. (2000). "The state and path of poverty in Sub-Saharan Africa: some preliminary results." *Journal of African Economies*, Volume 9, supplement 1, 9-40.

Atkinson, A. B. (1970). « On the measurement of inequality." *Journal of Economic Theory*. 2:244-63.

Baulch, B., and McCulloch, N (1998). "Being poor and becoming poor: poverty status and poverty transitions in rural Pakistan". IDS Working Paper number 79. Brighton: Institute of Development Studies.

Christiaensen, L. and Boisvert, R.N. (2000). "Measuring household food vulnerability: case evidence from Northern Mali". Working Paper 2000-05, Department of Agricultural, Resource, and Managerial Economics, Cornell University

Dollar, D. and Kraay, A. (2000) "Growth is good for the poor." The World Bank, Washington DC. Mimeo.

Elbers, C. and Gunning, J.W. (2003). "Estimating vulnerability." Department of Economics, Free University of Amsterdam.

Foster, J., Greer, J., and Thorbecke, E. (1984). "A class of decomposable poverty measures". *Econometrica*, 52, 761-765.

Foster, J. and Szekely, M. (2000) "How good is growth?" *Asian Development Review*, 18, 2 pp. 59-73.

Gaiha, R., and Deolaiker, A. B. (1993). "Persistent, expected and innate poverty: estimates from semi-arid rural South India.". *Cambridge Journal of Economics*, 17(4), 409-421.

Hulme, D. and Shepherd, A. (2003) "Conceptualizing chronic poverty". *World Development*, 31, 3, 403-423.

Jalan, J., and Ravallion, M. (1998). "Determinants of transient and chronic poverty: evidence from rural China". Policy Research Working Paper 1936. World Bank, Washington DC.

Kakwani, N., Prakasah, B. and Son, H. (2000) "Growth, inequality, and poverty: an introduction." *Asian Development Review*, 18, 2 pp. 1-21.

Kanbur, R. (2002) "Conceptual challenges in poverty and inequality: one development economist's perspective." Working Paper 2002-09, Department of Applied Economics and Management, Cornell University.

Kanbur, R. and Mukherjee, D. (2003) "Premature mortality and poverty measurement." Department of Economics, Cornell University, NY, USA, Mimeo.

Ligon, E. and Schechter, L. (2003). "Measuring vulnerability". *Economic Journal*, 113, 95-102.

McCulloch and Callandrino, M.(2003). "Vulnerability and chronic poverty in rural Sichuan". *World Development*, 31(3).

McKay, A., and Lawson, B. (2003). "Assessing the extent and nature of chronic poverty in low income countries: issues and evidence". *World Development*, Volume 31, no. 3, 425-439.

Morrisson, C. (2002). "Health, education and poverty reduction". OECD Development Center Policy Brief No 19, Paris.

Ravallion, M. and Bidani, B. (1994). "How robust is a poverty profile?" *World Bank Economic Review* 8, 1, pp.75-102.

Ravallion, M. (1998). "Poverty lines in theory and practice." Living Standard Measurement Study Working Paper 133, World Bank, Washington DC.

Sahn, D., Stifel, D. and Younger, S. (1999). "Inter-temporal welfare changes: preliminary results from nine African countries". CFNPP Working Paper, no. 94, Cornell University.

Tarp, F., Simler, K., Matusse, C., Heltberg, R. and Dava, C. (2002) "The robustness of poverty profiles reconsidered." *Economic Development and Cultural Change*, 51, 1, 77-106.

Thorbecke, E. (2003) "Tensions, complementarities and possible convergence between the qualitative and quantitative approaches to poverty assessment." In Kanbur, R.

(editor) 2003. Q-squared Combining Qualitative and Quantitative Methods in Poverty Appraisal. Delhi: Permanent Black.

Wood, G. (2003). “Staying secure, staying poor: the “Faustian Bargain”. *World Development*, 31, 3.