

Neglected Trade-offs in Poverty Measurement

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1 Introduction*

Researchers and policy makers face three critical trade-offs in their work on poverty reduction in developing countries: (i) between 'objective' and subjective measures of poverty; (ii) between the identification and aggregation of the poor; and (iii) between static and dynamic notions of poverty. The debate concerning the relative merits of conventional survey and participatory techniques has focused on the first of these trade-offs. The issues of aggregation and the dynamics of poverty have been largely neglected in this debate, despite their importance to policy makers and to the choice of the appropriate intervention policies.

2 'Objective' versus Subjective Measures of Poverty

The conventional approach to poverty measurement utilizes estimates of income or consumption to construct summary measures of the extent of poverty in a sample population. Some economists (Greeley 1994) argue that an absolute and objectively determined poverty line is the most appropriate means of measuring poverty. Others (Ravallion 1992) maintain that although poverty is a many faceted concept, its characteristics (poor nutritional status, lack of physical assets, inability to work) are sufficiently well correlated with income and consumption to allow us to focus on these two variables. But others from the participatory school (Chambers 1995) reject the income/consumption approach on the grounds that it furnishes a narrow and reductionist view that fails to understand the complex, diverse, local realities in which the poor live. The participatory school therefore tends to use multiple, more subjective measures as indicators of poverty status. This section reviews the main features of the two approaches and assesses the extent to which the poverty measures they use may be characterized as objective or subjective.

The conventional approach (usually relying on large-scale, sample household surveys) argues that income/consumption is the best single proxy for poverty even though access to common property resources and state provided commodities (such as

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health and education) is usually ignored and the consumption of non-traded goods is often underestimated. Where available, proponents of this approach usually prefer consumer expenditure to income because it is more stable over time (Lipton and Ravallion 1995). Furthermore, per capita estimates of either income or consumption (usually derived from household level data using equivalence scales) should be used whenever possible, to take account of differences in the size and composition of households. Once an appropriate poverty line has been determined, such per capita estimates of individual consumption or income may then be reduced to a single summary statistic using the class of decomposable P_α measures proposed by Forster, Greer and Thorbecke (1984):

$$P_\alpha = \frac{1}{N} \sum_{i=1}^N [\text{Max} ((z - y_i) / z, 0)]^\alpha$$

where y represents real income (or consumption) per capita, z is the poverty line, N is the number of individuals in the sample population and α is a measure of inequality aversion.¹ When $\alpha=0$, the Headcount Ratio (which measures the proportion of the population below the poverty line) is produced whereas $\alpha=1$ gives the Poverty Gap (which shows the aggregate shortfall of the poor's income/consumption from the poverty line). P_0 indicates the incidence and P_1 the depth of poverty. The severity index, P_2 , is also in increasing use.

The position of the poverty line (z) is usually determined by either the food energy or the food share methods. The first of these methods regresses caloric intake against the level of income or consumption expenditure to determine the level of income or expenditure at which the minimum energy intake is achieved. The second method estimates the minimum cost of a food bundle which achieves that minimum energy intake and divides it by the share of food expenditure of poor households (i.e., the Engel coefficient). Both of these

methods result in absolute poverty lines. Alternatively, the poverty line may be set by deciding that a fixed proportion of the population, for example the 20 per cent with the lowest per capita incomes, should be regarded as poor. This latter procedure accords well with Townsend's (1954) notion of relative poverty, but is now rarely used in developing countries. One implication of the adoption of a relative poverty line is that it makes little sense to speak of poverty reduction, only poverty alleviation.

It should be recognized that even with the rigorous application of these methods, a band of uncertainty will always surround a poverty line. First, minimum energy requirements vary from individual to individual due to differences in activity levels, conversion efficiencies and size. Second, the appropriate allowance for non-food consumption also varies between individuals and locations. The share of non-food expenditure in total expenditure is, for example, usually much higher for the urban than the rural poor. Third, unless constant purchasing parity is ensured, poverty lines will not be comparable between locations and socioeconomic groups. It is for these reasons that extreme caution must be exercised in comparing income/consumption measures across regions or socioeconomic groups.

The participatory approach aims to elicit local people's own conceptions of poverty/deprivation and to harness their own priorities in the complex and heterogeneous societies in which they live (Chambers 1992 and 1995). It argues that the 'reductionism' of the traditional income/consumption approach is usually unhelpful and often positively misleading. Jodha (1988), for example, found that in two villages in Rajasthan, farmers own criteria for well-being were very poorly correlated with changes in their per capita incomes. Chambers (1995) argues that income/consumption measures are in such wide use because they serve the technocratic needs of development professionals, rather than emerging from the realities of the poor.

¹ If the sample population is continuous rather than discrete, the Forster-Greer-Thorbecke P_α measures may be calculated using the formula:

$$P_\alpha = \int_0^z ((z - y) / z)^\alpha f(y) dy$$

where $f(y)$ is the income distribution function (Kakwani 1993).

Table 1 Criteria used by local people in Asia and sub-Saharan Africa for 'well-being' (expressed in negative form)

- Disabled (e.g. blind crippled, mentally impaired, chronically sick)
- Widowed
- Lacking land, livestock, farm equipment, grinding mill...
- Cannot decently bury their dead
- Cannot send their children to school
- Having more mouths-to-feed, fewer hands-to-help
- Lacking able-bodied members who can fend for their families in the event of crisis
- With bad housing
- Having vices (e.g. alcoholism)
- Being 'poor in people', lacking social supports
- Having to put children in employment
- Single parents
- Having to accept demeaning or low status work
- Having food security for only a few months each year
- Being dependent on common property resources

Source Chambers, (1995), 'Poverty and livelihoods: whose reality counts?' IDS Discussion Paper No 347.

The participatory approach aims to substitute a cyclical, ongoing process of research, reflection and action for the conventional linear model of research, recommendation, implementation and evaluation. By use of a range of innovative techniques including focus groups discussions, visualization exercises and transects, it aims to explore local people's own perceptions of poverty. In contrast to traditional surveys, the emphasis is on process and facilitation rather than the extraction of information.

Table 1 lists some of the criteria used by local people in Asia and sub-Saharan Africa for poverty and 'ill-being', which have been drawn from various participatory studies. These criteria tell us more about local people's multi-dimensional conception of poverty than conventional income/consumption measures. It is interesting to note that some of these criteria (such as disability, single parenthood and widowhood) would also apply to the poor in many industrialized countries. But many of the criteria (for example, the acceptance of demeaning work or the ability to provide a decent burial) are, by their very nature, subjective – only definable within the norms and customs of a given society. This makes it extremely difficult to compare the results of

participatory poverty assessments across locations, particularly at the regional and national level.

The self-identification involved in participatory methods also makes it hard to distinguish the concept of poverty from those of deprivation and ill-being. These concepts overlap substantially with that of poverty, but, as with inequality, neither subsumes the other. It is possible for high levels of ill-being to coexist with a low incidence of poverty or for people to feel deprived even when they are not poor. It may be that just as conventional income/consumption measures may overestimate poverty because they ignore access to common property resources and state provided commodities, participatory methods overestimate it because they fail to distinguish clearly between poverty, deprivation and ill-being.

It should, however, be noted that there may be certain groups of the poor (such as household servants and migrant seasonal wage labourers) who are missed by both approaches. This is due to 'the problem of the disappearing household': as poverty intensifies, households tend to disintegrate in three distinct stages. In the first stage, able bodied men

migrate (often in seasonal waves) in search of employment while younger women go to work as resident servants for more affluent neighbours. In the second stage, dependants are sent to live with more affluent relatives or are abandoned altogether. In the third stage, sickness and death cause the household to simply disappear. The income/consumption approach is particularly susceptible to this problem, because of its reliance on formal surveys based on the household unit. But the participatory approach may also miss these groups of the poor because destitute, exploited and marginalized members of the community are the least likely to be identified and involved in participatory exercises. The problem of the disappearing household means will usually be necessary to adopt special sampling and survey techniques to collect information about the poorest of the poor.²

The conventional wisdom is that it is usually preferable to use both income/consumption measures and participatory methods when conducting poverty assessments and drawing-up poverty profiles (IDS 1994). It should, however, be recognized that differences in the philosophical underpinnings of the two approaches may generate conflicting results (Shaffer 1996). Sometimes, these conflicts may be resolved by iterating between the two approaches e.g., using participatory methods to help design and explain the results of conventional surveys. But sometimes differences between their 'objective' and subjective measures will identify different groups of the poor.

3 Identification versus Aggregation

In his seminal work on 'Poverty and Famines', Sen (1981) distinguishes two aspects of poverty measurement: identification and aggregation. Identification addresses the question of 'who are the poor?', while aggregation addresses the question of 'what is the overall level of poverty?' in a country or region. This latter is not just a question of the representativeness of a sample, but also of the need for policy makers to have a common unit of measurement or

numeraire. The trade-off between identification and aggregation has been almost universally ignored in the debate concerning the relative merits of the conventional survey versus participatory methods.

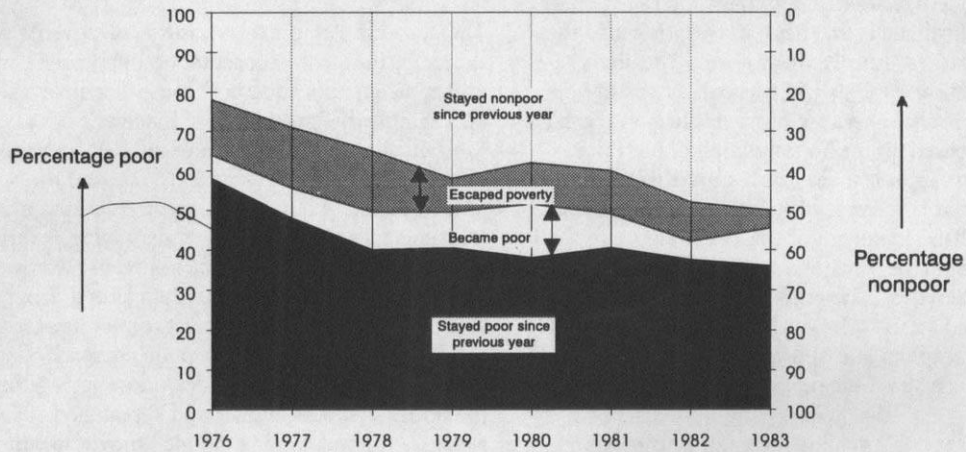
The absolute, 'objective' measures of poverty favoured by the income/consumption approach have numerous identification problems. The poor may, for example, be misidentified if incomes fluctuate substantially, or if consumption of state provided commodities and non-market transactions are underreported. Conventional income/consumption measures may also be better at identifying poverty among men than among women, because women's poverty is more dependant of the cultural context (Kabeer 1996). Once, however, the poor have been identified, the income/consumption approach offers a number of summary measures whose aggregation properties are well-known and researched. The Headcount Ratio is, for example, known to suffer from several aggregation problems: it is insensitive to changes that make poor people poorer or to transfers from the poor to the rich. With the Poverty Gap, it is also insensitive to the distribution of income/consumption among the poor. The Forster-Greer-Thorbecke P_2 measure suffers from none of these problems and is also scale neutral (Kakawani 1993), which may account for its increasing popularity in poverty assessment exercises.³

In contrast, the participatory approach focuses on the identification of the poor and has said very little, to date, about aggregation. At the individual village or project level, this is usually unproblematic as poor people's realities overlap substantially. Actions and policy interventions to help them often emerge directly from matrix rankings of their subjective priorities. In this sense, the participatory approach empowers the poor. But at the regional or national level, it is usually impossible to aggregate the matrices of poor people's priorities generated by participatory methods. One or two common themes, such as the lack of synchronicity between agricultural earnings and the payment dates for school fees or the importance of all weather roads, may emerge. With many issues, however, the realities of the poor

² See Sender and Smith (1990) for an example of the application of such techniques in rural Tanzania.

³ In the technical language of welfare economics, the Headcount Ratio is said to 'violate the monotonicity, transfer and proportionality axioms' of poverty aggregation, while the P_2 measure 'satisfies' them.

Figure 1 The dynamics of rural poverty from sample villages in India



Source World Development Report, 1990

in different locations are simply too diverse to yield any coherent recommendations for policy makers at the national or regional level.

The participatory approach's poor performance on aggregation cannot simply be regarded as indicating the need for greater decentralization and autonomy in local government. Public expenditure and budgetary decisions must, of necessity, be taken at the regional, national and indeed, the international, levels. To make effective allocation decisions that direct resources to the poorest groups within society, policy makers need 'objective', summary measures of poverty and it is here that the income/consumption approach is most powerful.

4 Static versus Dynamic Measurement

In policy design, it is often useful to distinguish between the hard core of the chronically (or persistently) poor and the transitory poor, who

temporarily fall into poverty during poor cropping seasons or 'hard' years. The appropriate response to transitory poverty is to promote policies (such as credit, crop insurance, employment guarantee and price stabilization schemes) designed to 'smooth' the incomes and consumption of the poor. In contrast, chronic poverty requires more costly and difficult permanent interventions that aim to increase the opportunities of the poor and make them more productive (e.g., basic education and training, land reform and resettlement). Unfortunately, neither the income/consumption nor the participatory approach allow the chronically poor to be distinguished from the transitory poor. Both approaches give essentially static, one-shot pictures of who is poor at a given point in time.⁴

An example may help to clarify the trade-off between static and dynamic poverty measures and the distinction between chronic and transitory poverty. Note that although this example is based on a conventional income/consumption measure – the

⁴ By collecting additional information on stocks and assets within the conventional survey, using participatory techniques time lines and trend diagrams or anthropological techniques such as oral histories,

some retrospective time-depth can be added. But the crucial questions of why people become poor and how long they remain so, are rarely answered.

Headcount Ratio – it might be extended to any time invariant criterion identified by local people via participatory methods. Figure 1 shows a graph (taken from Box 2.4 of the 1990 **World Development Report**) of the dynamics of rural poverty in Southern India. It is based on a panel survey of 211 households in six villages in Maharashtra and Andhra Pradesh carried out over eight consecutive years by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). The poor are identified using a headcount of the percentage of households whose annual income was below the poverty line in each year of the survey. The poor are then divided into those who were poor in the previous year and those who were not. Over the eight years of the survey, the percentage of households deemed to be poor followed a generally downward trend, from 64 per cent in 1976 to a low of 41 per cent in 1982. The band around this declining trend shows that, on average, 26 per cent of households moved above the poverty line ('escaped poverty') while 16 per cent moved below it ('became poor') between consecutive years. Although only 19 per cent of households were 'chronically' poor in every year of the survey, nearly 90 per cent of households were poor for at least one of the eight years.⁵

Panel data of this sort is extremely useful in identifying the events and causal processes which lead to chronic and transitory poverty, together with the policies which will reduce the vulnerability of different socioeconomic groups. Analysis of the correlates of poverty status in the ICRISAT data set, for example, found that non-poor households tended to be more educated, own more land, and participate less actively in the labour market (Walker and Ryan 1990). The transient poor were primarily medium-sized cultivator households, while the chronically poor were typically landless *Harijans*. Since chronically poor households have fewer economically active and more dependent members than the transient poor, employment guarantee/public

works schemes are likely to benefit the transient poor more the chronically poor. Similarly, the association of chronic poverty with disability, ageing and (in the South Asian context) the sale of land, underlines the importance of public health care, transfer payments and land reform in the prevention of persistent poverty.

Unfortunately, very few other quantitative estimates exist of the relative incidence of chronic and transitory poverty in other developing countries. This is largely due to the absence of comparable panel data in most developing countries.⁶ Academic researchers are usually unable to mount their own panel surveys because of the expense and long time horizons involved. Problems with high sample attrition (i.e., dropout) rates and sample ageing also make the collection of panel data difficult for national statistical agencies concerned with the provision of nationally representative data. Furthermore, many of the large-scale conventional surveys which are described as panels are, in fact, repeated cross-sections or rotating samples. For example, many of the World Bank's Living Standards Measurement Surveys, another widely quoted and analysed source of panel data, retain half and replace half of the households they survey between years. This makes it impossible to track individuals or households over more than two years, and undermines the ability to assess the relative importance of chronic versus transitory poverty.

5 Conclusion

Most practitioners would recommend a 'walking on two legs' strategy in measuring poverty. Poverty measures based on per capita income or consumption probably provide the best single 'objective' proxy for poverty status but participatory methods are useful in identifying the other, more subjective, dimensions of poverty. Although the income/consumption approach may sometimes misidentify the poor, because of the reductionism inherent in

⁵ Note that defining a household as 'chronically poor' if its annual income was below the poverty line in all years is problematic, since it excludes those households whose incomes were marginally higher than the poverty line in one or two years of the survey. To avoid this problem, Gaiha and Deolalikar (1993) and Chaudhuri and Ravallion (1994) have analysed the ICRISAT dataset

defining chronic poverty in terms of expected or typical household incomes.

⁶ See Adams and He (1995) for one such study, based on a three-year panel of 727 households in rural Pakistan.

the approach, its well understood aggregation properties make it very useful for regional and national level policy making. In contrast, the subjectivity of participatory methods make these most useful for evaluation and policy making at the village and project level. Difficulties in aggregating-up from local people's perceptions and priorities make participatory methods less useful at

the regional and national levels. Finally, both the conventional and participatory approaches need to pay more attention to dynamic issues and the ability to track households or individuals over time. For it is only by doing this, that the relative magnitudes of chronic and transitory poverty can be established, which has clear implications for the design of policies to reduce poverty.

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