



Initiative for Policy Dialogue Working Paper Series

May 2009

Poverty or Income Distribution: Which Do We Want to Measure?

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Poverty

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POVERTY OR INCOME DISTRIBUTION—WHICH DO WE WANT TO MEASURE?

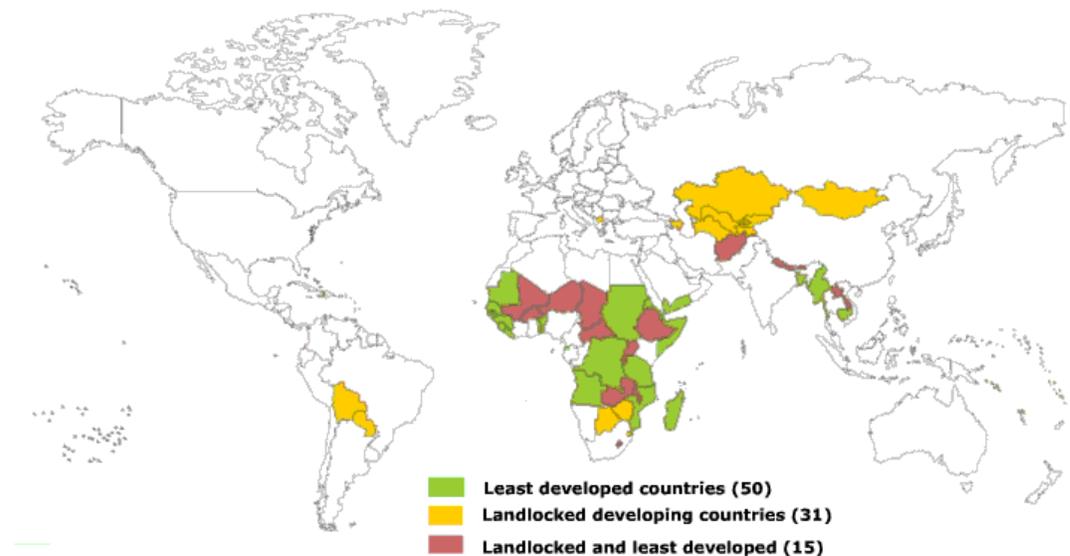
Robert Johnston

The concepts of poverty, poverty line, levels of income and expenditure, low income and inequality have been in the statistician's vocabulary for more than a century. While statisticians have considerable experience to draw on in trying to understand them, we can also see from this history that there has always been considerable confusion and overlap among them. I propose that we can benefit by studying concepts of poverty on the one hand and income distribution (including inequality) on the other separately, rather than trying to subsume them in a single analysis. This will provide a better basis for deciding what it is we define as "poverty" for measurement purposes, at least from an international development perspective (only one of many perspectives which might be used, of course), and will then help us to consider how to measure it and with what available tools.

My main conclusion is somewhat paradoxical. The 'elimination of extreme poverty' target in the United Nations Millennium Development Goals is basically not about money or income distribution; it is about deprivation and distress at the levels of individuals and households, notably hunger and malnutrition, ill health and death, and lack of shelter. Deprivation and distress can take many forms and we can and do measure a large number of these in many ways. The paradox is that money, as a generalizable measure, is the most convenient general yardstick. Fortunately, with the recent international consensus on the recent Millennium Development Goals and targets, we now have a short, workable list of other yardsticks suited to measure directly significant dimensions of human distress and

deprivation which are not well captured by the money dimension (United Nations, 2000, 2001).

Figure 7.1. Least developed countries and landlocked developing countries



Source: United Nations Statistics Division and United Nations Office of the High Representative for Least Developed Countries, Landlocked Developing Countries and Small Island Developing States, as of June, 2004.

A short historical note on poverty statistics¹

The concept and measurement of poverty have had a chequered history in statistical work over the last century. Probably the world's first large-scale poverty survey was undertaken at the end of the nineteenth century by Charles Booth, who wanted some measure of the wretched living conditions of the working class in London. This work has achieved enduring fame at the Museum of the City of London in a fine exhibit on its conduct and results. Booth's work was soon followed up by B.S. Rowntree in York, England, who seems to have invented a precursor of the modern household survey for this purpose, using

on-the-spot interviews with family members and a standard set of questions. As Claus Moser and Graham Kalton tell the story (Moser and Kalton, pp. 7-9), Rowntree also seems to have invented the concept of what we are now calling extreme poverty, that is 'total earnings insufficient to obtain the minimum necessities for the maintenance of merely physical efficiency', using a practical household budget-based standard (Moser and Kalton's paraphrases).

These surveyers apparently had no interest in the distribution of income or inequality as such. It seems that the wretched conditions and large but unknown numbers of the poor were the main motivations, not invidious comparisons with the well-off. Such comparisons were certainly a main motivation of Marx (himself a regular user of statistics) but inequality and distribution of income did not enter the practicing statistician's vocabulary until much later. To my mind, as I will try to show in the next part of this story, the later concern with inequality, equity or more generally distribution of income, has been a diversion and ultimately a serious distraction from the overriding issue of meeting fundamental human needs.

The distribution of income approach gained attention in international statistics from the 1960s onwards. This approach has tried to have it both ways, that is opening the door to considerations of inequality as well as level of impoverishment. Since a poverty line can be set anywhere along an income or expenditure distribution with reference to the correlation of that level of income or consumption with observable non-monetary needs and conditions, it came to be widely assumed that a good place to start studying poverty was with the distribution of income. Even better, the degree of inequality itself can be used as a

measure implying a lower stratum in more or less dire straits. However, this change in focus to income distribution had, in my view, the unfortunate effect of muddying the waters. What was needed was a poverty line that had an intuitively understandable referent in everyday life, but instead, the notion that all poverty was purely relative came into prominence. The study of income distribution has achieved some major conceptual and methodological advances but has contributed little, in my view, to the understanding or measurement of extreme poverty, other than providing a lot of nonstandardized data to try to work with.

Extensive work on the more traditional notion of inadequacy, however measured, followed on from the early work of Booth and Rowntree. Some new policy implications of this approach crystallized after World War II in the notion of “standard of living”, which turned on the idea of determining what an “acceptable” working-class salary would be in any given country—obviously a relative concept—with a view to also measuring regular “cost-of-living” increases which could be used to adjust wages. This has given statisticians, policy analysts, politicians and interest groups plenty of work right up to the present day.

In the United Nations, the official statisticians started talking in the 1950s about a more neutral variant, the idea of “levels of living”, that is standard of living without any explicit component of inadequacy (United Nations, 1954, 1961). Perhaps because any notion of inadequacy was left out, thereby draining the concept of relevance to social development policy, this early work did not have much of a discernable impact on development policy planning or analysis. It was taken up and substantially broadened in concept and method at

the end of the 1960s by the United Nations Research Institute for Social Development (UNRISD), an autonomous research institute in Geneva, but did not reappear on the agenda of the Statistical Commission of the United Nations Economic and Social Council until some years later.

UNRISD-sponsored research had tried another variation by expanding the income and poverty concepts into a more comprehensive index of levels of living (Drewnowski) but again there was little follow-up until the much later Human Development Index, established for the annual *Human Development Report* of the United Nations Development Programme. But in this variant, the technique was quite different and led quickly to professional and political controversies official statisticians were at some pains to avoid.

The first official statistical work that seemed to bring poverty and levels of living concepts into a single overall framework was the 1968 Level of Living Survey in Sweden (Johansson, Allardt). This work arose from a political debate in the Swedish Parliament as to the extent of poverty in Sweden, generally considered a “model” country in terms of living conditions and social equality. This gave rise to a considerable debate between the Swedish Institute for Social Research, which favored a broad and explicit levels of living approach, and Statistics Sweden, which argued that Swedish statistics were already adequate to look at the many component elements of levels of living, and that they already had an internationally agreed income distribution survey. In the event, it ended up that the Institute wrote the survey it wanted and Statistics Sweden implemented it in the field.

Ironically, the Institute protagonist, Sten Johansson, went on some years later to become the Director-General of Statistics Sweden. Johansson succeeded in bringing the focus back to levels of living issues and at the same time making explicit the income and poverty focus by fully incorporating and focusing on the concept of low income. He and Allardt also broadened and formalized the levels of living approach by explicitly reviewing the components of levels of living in terms of social policy concerns, drawing on the much earlier United Nations and UNRISD work. The rationale sounds very similar to that of the later HDI (“command over resources”), but without the index and with systematic attention to non-monetary but poverty related concerns.

At about the same time, Claus Moser developed for the United Kingdom a more detailed survey with similar coverage but without the explicit social policy underpinnings, in the General Household Survey. This survey became the mainstay source of many social measures for the UK, including income and poverty, and continues to this day.

Meanwhile, at the United Nations the official international statisticians were proceeding along much more conservative lines, with the appearance of the renowned *A System of National Accounts* (United Nations, 1968), later of *Towards a System of Social and Demographic Statistics* (United Nations, 1974), and then of *Preliminary Guidelines on Statistics of the Distribution of Income, Consumption and Accumulation of Households* (United Nations, 1977). In this work the concept “poverty” or levels of living is nowhere mentioned. Later, in the late 1980s, there was a period of enthusiasm in the Statistical Commission for looking at new issues and ideas and a poverty working group was formed, chaired by the World Bank. However, it soon concluded that there was no technical

possibility of designing international standards for poverty measurement and that it was basically a policy issue to which the international statistician had very little to contribute, and the group disbanded in 1990.

Nevertheless a countertrend in the United Nations had been at work for some time. United Nations publications in the 1970s took poverty and level of living measurement seriously as part of development statistics and indicators (United Nations, 1977, 1978, 1989, 1991), and while these publications had modest impact, they were part of a trend that was slowly ripening in the background.

In summary, I conclude first, that income and poverty are quite different concepts and distribution of income is a poor way to get to a poverty measure, but low income, carefully defined, can give us a good measure of deprivation. I have not talked much about the definition of income for this purpose, but I will say (again, paradoxically) that SNA-based definitions, such as those spelled out in (United Nations, 1977) and (United Nations Economic Commission for Latin America and the Caribbean, 1983) can serve the purpose quite well.²

Poverty and the Millennium Development Goals

Moving now to very recent times, the United Nations Millennium Declaration and its follow-up have adopted the World Bank's \$1.08PPP(1993) a day measure of poverty (hereafter referred to as the "dollar a day" poverty line) in the Millennium Development Goals and targets (United Nations 2000, 2001). This has had the effect, for global policy

applications, of ratifying the wide international use of this particular measure, notwithstanding the extensive ongoing debates on its technical and philosophical merits.

Clearly the dollar a day measure takes us back through several generations of basic needs measurements (in various guises) to the original concept in the United Kingdom surveys of dire straits—the complex and elastic question of what is socially justifiable is subordinated to the intuitively simpler question of what should not have to be endured.

If we ignore the many technical questions which have been discussed on this measure and accept the notion that it is not at all concerned with income distribution or various similar variants in terms of more or less relative poverty lines, then where is the \$1 a day measurement taking us?

There are signs of a slow but steady reformulation of the 1970s Bank dictum, “growth with equity”. As equity or lack thereof has been more and more closely scrutinized as a globalization issue, it has emerged from behind the shadow of growth. More precisely, the idea that growth automatically provides benefits to all has been seriously reconsidered, if only because experience on the ground seems to show otherwise. It is now acceptable to suggest that growth and poverty are to some degree independent, and we can now see fairly clearly how various growth and social policies and have ended up favoring the middle classes, some have favored the rich, some the poor, and some have disfavored the poor, often to considerable effect. On balance, though, in the least developed countries, where progress in achieving the poverty target has generally been minimal, we are still far

from understanding very well how to make growth work for the elimination of extreme poverty.

Meeting the target—how to close the gap?

The discussion to this point leads naturally to two immediate questions: what is the percentage of population in a given country or countries with total consumption or income below the World Bank's extreme poverty line (less than \$1.08 a day, in 1993 PPP dollars, to continue with the World Bank's concept), and what is the shortfall between consumption or income and the \$1/day PPP poverty line? Approaching the analysis in this way keeps the immediate focus for present purposes on need and deprivation, not inequality.

The World Bank publishes estimates of population below the poverty line based on extensive analysis of household surveys in most developing countries. However, its "poverty gap index", described as the mean shortfall from the poverty line as a proportion of the poverty line taken across the whole population, does not readily allow the calculation of the total absolute amount of the gap relative to total income. Neither does it address what might intuitively be of more immediate interest, the shortfall of the poor themselves, since the shortfall is taken as a ratio relative to the whole population. It is difficult to calculate either of these ratios because the current poverty line estimates use PPP 1993 dollars, and estimates of total current income in 1993 PPP dollars are not readily available.

The Bank's regional estimates of the percentage of population in extreme poverty in 2003 are given in the appended table. These seem plausible enough, and more or less in line with the United Nations identification among the developing countries of categories of countries with special needs, the least developed and the landlocked. These two special groupings, and their overlaps, are shown in the appended map and provide a good quick guide to where the most serious problems lie.

Table 7.1. TTPopulation below \$1 purchasing power parity (PPP) per day^a

| Regions | Percentage of population living below a \$1 per day | | |
|---|---|------|------|
| | TT1990 | 1999 | 2001 |
| Northern Africa | 2.6 | 2.0 | 1.9 |
| Sub-Saharan Africa | 46.9 | 42.7 | 46.4 |
| Latin America and the Caribbean | 10.9 | 10.6 | 10.0 |
| Eastern Asia | 33.0 | 17.8 | 16.6 |
| Southern Asia | 39.7 | 30.5 | 30.4 |
| South-Eastern Asia | 18.4 | 10.8 | 10.2 |
| Western Asia | 1.6 | 4.2 | 3.7 |
| Commonwealth of Independent States | 0.5 | 10.3 | 5.0 |
| Transition countries of Southeastern Europe | 0.4 | 1.7 | 2.1 |

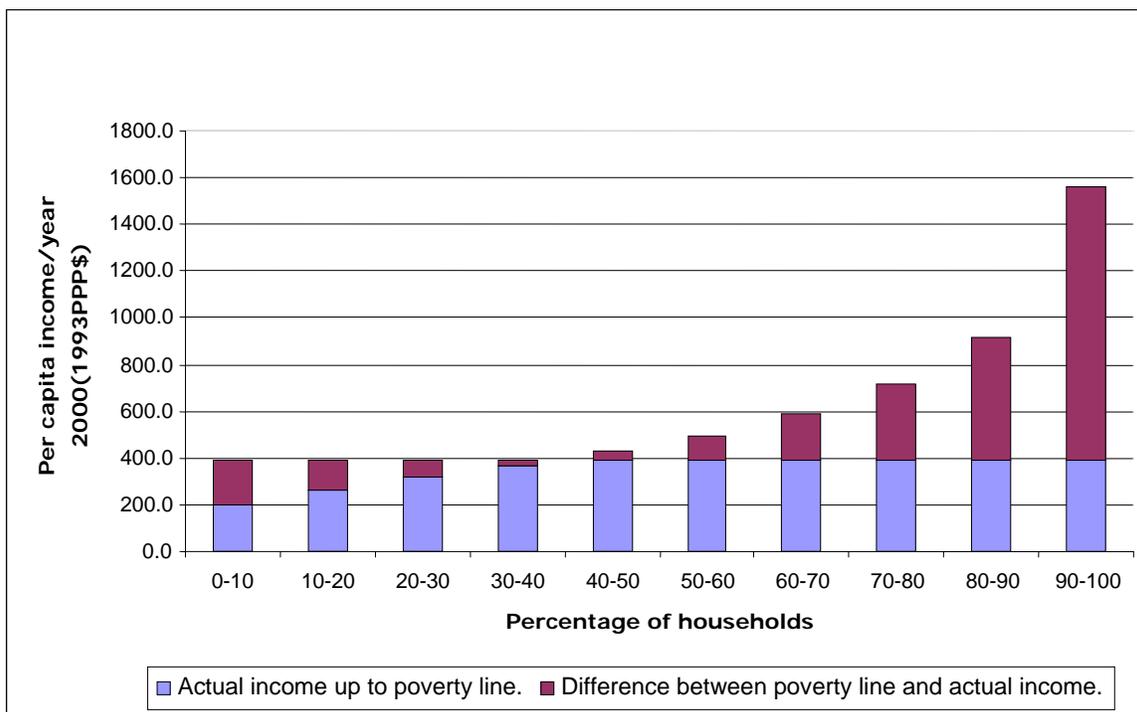
^a High-income economies, as defined by the World Bank, are excluded.

Source: Compiled and estimated by the World Bank for the United Nations Millennium Indicators Database, World and Regional Totals (<http://millenniumindicators.un.org>), accessed 5/2004. The latest estimates are at [UUhttp://mdgs.un.org/unsd/mdg/Default.aspx](http://mdgs.un.org/unsd/mdg/Default.aspx) under World and Regional Totals (October 2006).

In order to see how large the poverty line shortfall might be, I take Bangladesh as an example. Figure 7.2 shows an old and therefore purely illustrative income distribution curve from Bangladesh (Jain) applied to total GDP 2000 in 1993 PPP dollars, so that the 1993 dollar a day poverty line (actually \$1.08, equaling 393.12/year) can also be used. The figure shows that the average income ranges from \$199 in the lowest decile to \$1,563 in the highest. Actual income below the poverty line is shown in light shading and the actual income differences below and above the poverty line in dark shading. The dark portions of

bars in the four deciles with actual incomes below the line represent the poverty gap, while those in the six deciles above the poverty line show the total “surplus”.

Figure 7.2. Illustrative Income Distribution in Bangladesh, 2000



Sources: Calculations by the author based on gross national income per capita in 2000 equal to \$PPP1,501 (World Bank estimate) and decile shares for the Lorenz Curve from Jain (1974), based on a 1966/67 national survey.

The Bank’s poverty gap ratio, taking the amount of the poverty gap as a percentage of poverty line income for the whole population works out to 10.81 percent. However, the ratio of the gap to income above the line is 27 percent. As a percentage of the total national income (GDP), it is 7 percent. The figure of 27 percent answers the question of how much of the income above the line would have to be redistributed below the line to bring everyone at least up to the line. It seems fairly clear that this is well beyond political practicality, even assuming there were some effective control of the distribution process.

Another way to consider it is to take the figure of 7 percent (the poverty gap as a proportion of total income) and multiply it by the total GDP to obtain a dollar amount for the gap. In this case it is \$US3.53 billion using year 2000 prices and exchange rates. This tells us how much money would be needed, if it were perfectly targeted only on the extreme poor, to bring them up to the extreme poverty line but no more. By way of comparison, total official development aid to Bangladesh in 2000 was \$US1.1 billion (United Nations *Statistical Yearbook*).

This is an admittedly highly speculative calculation but provides some background to consider ways the gap could be filled. It is also worth pointing out at this stage that once everyone has reached the poverty line, presumably thereby eliminating extreme deprivation by this standard, there is no basis to choose one or another income distribution as socially preferred. In other words, if there is no extreme poverty by the dollar a day standard, the MDG target is achieved and the distribution of income is irrelevant.

Further complicating the picture, there is another phenomenon at work here. Some rough calculations seem to show that the total GDP per capita in \$PPP for Bangladesh in 2001 is about twice the per capita household income based on its income and consumption surveys. The \$PPP 1993 per capita income from household surveys in 2000 was about 585, while total per capita \$PPP GDP was about 1150. Some of this difference can be accounted for by other sources and destinations of the national product in the form of investment, government expenditure, flows to and from the rest of the world and the like, but basically only a fraction. As other papers in this volume show in some detail, large discrepancies such as this have been found in many countries and seem to be growing, and

despite some considerable research in a few countries, they cannot at present be satisfactorily explained. It is very much to be hoped that when the phenomenon is better understood, it will be possible to design more effective policies for tapping resources to improve the income and consumption of the very poor.

There are three ways of addressing the gap that come to mind: redistribution from above the line to below it; redistribution into a country from abroad; growing the economy as a whole, with some unspecified portion of the growth occurring among those below the line until they are above it. All poverty strategies rely on one or a combination of these approaches but of course there are considerable debates, not always well grounded in quantitative analysis, at least for most developing regions, on which are, or might be, more effective.

A notable exception to this lack of rigor is provided by the work of the United Nations Economic Commission for Latin America in its *Social Panorama 2003* (United Nations, 2003). As discussed further below, it clearly demonstrates the near impossibility of “growing the poor” out of poverty without a higher rate of growth of poor compared to non-poor incomes, at least in that region.

This is where ethical judgments on inequality are frequently brought in which, it can be argued, crowd out the further analysis of income generation and distribution of free and subsidized services which is needed. The first approach, straight redistribution from above the line to below it, apparently violates the constraint of Pareto optimality—that is there are obviously losers above the line who will be worse off in a simplistic approach. A

simplistic approach, however, usually based on the concept of progressive taxation, belies a more realistic and careful analysis of the distribution of public services, subsidies and other important components of consumption which are part and parcel of any government's real workings.

The second approach, redistribution from abroad, is of course already a major factor in many developing countries in such forms as aid, income and workers' remittances from abroad. Here data and analysis are relatively scarce. Likewise, there are some data and considerable discussion of foreign direct investment, but relatively little macro-analysis or time series on the household income and consumption it generates in a country or its distribution.

Finally, there is the growth strategy, or the notion that a rising tide floats all boats. Unfortunately, literally speaking, a rising tide floats all boats equally in absolute terms, whereas in an economic calculus, equality is sought in the percentages. An equal percentage growth rate starting from \$1 per day is profoundly different from a starting point of \$10 or \$100 per day (United Nations ECLAC, 2002). The poverty analyses already cited from United Nations ECLAC demonstrate conclusively, based on a large and well-structured collection of survey microdata from that region, that where there is a significant proportion of the population poor or extremely poor, long-term growth rates in the absence of major changes in the distribution patterns imply absurdly long timetables for the poor to change their poverty status. It should be possible to do some analyses on the distribution of investment by income level needed to change production and productivity

curves by income level but that is another line of research which it is impossible to pursue here.

Continuing with the Bangladesh example, we can look at it again in the light of our consideration of exactly what we are trying to achieve with the MDG poverty goal, which aims to eradicate extreme poverty. That is, we want everyone to be at least level with the extreme poverty line. This we take to be the minimal satisfaction of a moral imperative, or arguably of a human right. In the system of international organizations, the entire huge apparatus of relief is built on that imperative and a fairly high degree of social intervention is widely accepted to meet these basic needs. We can now see that the conclusion from the Bangladesh example and its follow-up, that national redistribution of existing resources is not going to help much, except for the caveat that we do not have a very good idea where 30-40 percent of the national income is actually going.

All of this is rather speculative but does lead me to think that we have hardly begun to put the statistical and analytical tools that we have available to work. We have very considerable bodies of statistics on production, consumption, income and investment in national accounts; we have very detailed trade and financial flow statistics; and we have a tremendous amount of data on employment by class, occupation and industry, and on living conditions among various classes, defined in various economically important ways. But we do not seem to have made much progress in applying these data to mapping out viable and detailed economic and social development strategies that are able to bring together consistently the macro-economic data and the household survey income and

consumption data to explain better than we can now where and how real dollars need to go to meet the poverty target, and where they might come from.

That is where I see that the real challenge lies. The great ship of economic and social development may have started to change course, but there is still a long ways to go.

Conclusions and ways forward

To sum up:

1. The concept of extreme poverty based on observable individual and household distress and degradation is as serviceable now as it was a century ago.
2. There is good correspondence between the World Bank's concept of the dollar a day threshold for extreme poverty and the still-relevant concept of poverty as an umbrella concept for distress and degradation. It is entirely appropriate that this concept should be adopted for the Millennium Development Goals as there is a good international consensus for the alleviation of basic suffering through humanitarian and development assistance.
3. The related concept of minimum standard of living, based on negotiations over minimum "decent" wages for the working classes, is based on the concept of the "relative poverty line", which is drawn according to national conditions and politics. This concept does not have any clear application or value in the international implementation of the Millennium Development Goals.

4. Likewise inequalities in national income distributions, judging from limited evidence, may have an important role in the Millennium Development Goals relating to the elimination of poverty, but they are highly resistant to change for the better, at least with the policy tools known and tried to date, such as taxes. Thus, targeting redistribution per se seems, on historical evidence, unlikely to have a very significant impact on poverty. There are also considerable problems in consistent and comparable data collection, analysis and interpretation of income and consumption distribution data which make any kinds of conclusions based on them rather speculative.

5. The concepts and definitions of the international System of National Accounts, as concern household income and consumption, provide a sound conceptual apparatus for measuring income and consumption levels at and below any given poverty threshold, even at so-called subsistence levels. However, there is relatively little systematic guidance available, or incentive, to less experienced national statistical services to apply these appropriately and consistently in national household surveys.

6. There are many physical manifestations of extreme poverty, and many other highly desirable development objectives, that should be separately measured. These are reasonably well covered by the consensus Millennium Development Goals and targets, and statistically well specified in the indicators and data series agreed for measuring them.

7. Hardworking and hard-pressed national statistical offices, and the World Bank, have collected and compiled a remarkable amount of data on poverty in the developing regions.

Nonetheless, we have very little analysis as yet as to the overall dimensions of needed income, expenditure and investment to alleviate and eliminate poverty, or the relative contributions national economic growth, development assistance, and reallocation of expenditures might make to these. This analysis is complicated by the extremely discrepant aggregate sizes of household income and consumption produced by household surveys and national accounts methods, for which at present there is no explanation.

In a few words, I think our statistical toolbox for the measurement of poverty is in pretty good shape as far as concepts and methods are concerned, and these tools are more helpful in analyzing and targeting poverty than income distribution concepts and methods.

However, support for consistent implementation of the available tools and standards in developing regions is at best uneven, and good methods, or “best practices”, for reconciling household survey and national accounts data have yet to be fully worked out.

As far as empirically grounded policy analysis and prescriptions go, I think it is fair to say that we are still a long ways from a technical consensus on what policies can have a significant and measurable impact on the alleviation of extreme poverty.

*The author is a retired staff member of the United Nations Statistics Division. The views expressed are not necessarily those of the United Nations Secretariat. I would like to acknowledge the assistance of Statistics Division staff members Virgilio Castillo and Javier Terán in preparing the maps and charts, and the helpful and encouraging comments of colleagues in the Statistics Division and the former Development Policy Analysis Division, United Nations Department of Economic and Social Affairs, on some of these ideas in the “zero” draft of this paper, as well as the very helpful comments and suggestions of the referees, none of which, of course, can be held responsible for any of the conclusions here.

¹ Glennerster et al., which appeared in late 2004, has been extremely useful in reviewing this section.

² These comprise compensation in cash and kind, entrepreneurial income in cash and kind, property income and current transfers, which add up to total household income. These components are spelled out and defined in detail in the sources cited. The ECLAC source refines them even further for use in the study of rural poverty.

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