Comment on “Counting the World’s Poor,”
by Angus Deaton

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In his very instructive article, Angus Deaton argues that for international institutions (for example, the World Bank) and the national governments of most poor countries (for example, India), reduction of poverty is or is professed to be the paramount objective of policy. As such, they require some overall yardstick of progress (or lack thereof). According to Deaton, there is a long history of studies of poverty mobilizing support among the nonpoor for antipoverty values. So it is important to know whether the world and national poverty counts are sound enough to support their uses.

Deaton’s analysis of the problems with poverty counts and suggestions for improvement, including issues needing further research, are based on two distinct stages in counting the poor (see also Deaton 2000). At the first or international stage, a world poverty line is set and used to derive comparable poverty lines for each country. At the second or domestic stage, the poverty lines are used to count the number of poor people in each country, and the others are added up over countries. He finds disquieting evidence about both stages of counting. The data for poverty counts in the second stage come from household surveys, whereas data on aggregate economic growth are from National Accounts Statistics (NAS). Deaton finds that in many countries there are large and growing disparities between survey data and national accounts so that there is no consistent empirical basis for conclusions about the extent to which growth reduces poverty. It is scandalous that even after nearly half a century of pursuing national and international programs for the eradication of mass poverty, the empirical foundations for assessing the success or failure of the programs and drawing lessons from them are so weak as to be deemed nonexistent. In what follows, I reinforce many of Deaton’s arguments.

Deaton’s discussion of global counts of the poor presumes that the World Bank and other international development institutions will continue to produce them anyway. He then asks how best to produce them and suggests improvements to current procedures, while concluding that the World Bank and others should in fact back away from such counts. I go further. In my view, global counts have little meaning and even less policy relevance. Abandoning them and focusing on na-
tional and subnational poverty analysis that goes beyond headcounts would be the sensible course to follow. Like Deaton, I draw heavily on the experience of India’s statistical system. I focus only on consumption-based poverty lines. The reason is the challenge of defining household income in a theoretically satisfactory manner and collecting data on income based on that definition through household surveys in any country (developed or developing). Deaton (1989) discusses the difficulties in meeting the challenge. Poverty counts based on income-based poverty lines are even more problematic than consumption-based ones.

Unavoidable Arbitrariness in Defining Poverty Lines

The criteria by which the incidence of poverty in any society at any point in time is to be judged are essentially arbitrary. Adam Smith long ago argued that in defining necessities, one must include not just “the commodities which are indispensably necessary for the support of life” but also those which “the custom of the country renders indecent for creditable people, even of the lowest order to be without” (Smith 1937:821–22). To be nonpoor, a person must be able to afford at least the necessities. Following Smith, one should include a “decency” component in them. Obviously, these are subjective and would vary over time and space.

A claim of objectivity and nonarbitrariness is often made for a particular poverty line (that is, a value of consumption expenditure or income per person) by linking it to the required habitual or long-term intake of food (or, more precisely, its energy content) for an individual to be adequately nourished. The use of such a poverty line would identify being poor with not being adequately nourished.1

Such a claim appears untenable and its use in poverty counts based on household surveys questionable. First, the long-term energy requirement for adequate nutrition of an individual of a given age and gender and performing specified tasks is not a fixed number of kilocalories per day. Second, household surveys collect data on expenditures on food and quantities consumed of various items of uncooked and cooked foods by the household over a short reference period. Even ignoring measurement errors in translating such data into their energy content, the resulting number at best represents the energy content of food consumed by the household as a whole. It is not possible to deduce the long-term energy intake of each person in the household from the total energy intake of the household over a short reference period.

Third, in surveys of the consumption expenditure of households in poor countries, such as India’s National Sample Survey (NSS), the estimated energy intakes of very poor households are often found to be too low for survival and those of rich households too high to be consistent with good health. The reason for this in part could be that not all the meals that individuals from poor households consume outside their
homes are included in their food consumption. In addition, some of the food consumed by nonhousehold members is included in the food consumption of rich households. Agricultural workers from poor households often eat meals provided by their employers at the fields where they work. Although the survey enumerators were instructed to ask each household about such meals and include them in (or exclude from) the food consumption of that household, depending on the circumstances, these instructions are unlikely to have been followed fully and meticulously in practice. For these reasons, estimates based on an ostensibly nutrition-based poverty line, and survey-based household consumption are poor measures of the extent of undernutrition and poverty (see Srinivasan 1992).

Deaton rightly recognizes that dimensions of poverty other than income or consumption are as important or more important, particularly deprivations in health, education, and democratic rights, and that there are difficult measurement issues associated with all of these dimensions. The UNDP (1996, 1997) estimates a “capability poverty measure” based on Amartya Sen’s concepts of “capabilities and functionings” and a “human poverty index,” a weighted composite of several nonincome indicators including those incorporated in the capability measure. These measures do not adequately recognize and account for the difficult conceptual and measurement problems that Deaton highlights.

The best and easily understood starting point for deriving a consumption-based poverty line is a “poverty consumption” bundle of goods and services for a representative (in size and age-gender composition) household. It is common to assume that part of the bundle would be provided free or at subsidized prices by the state. Valuing the private component of the bundle at appropriate prices yields the poverty line. This valuation of the private component is in effect what an expert group did for India’s Planning Commission in 1962, in defining poverty lines for rural and urban households in India. There is unavoidable arbitrariness in determining which goods and services (and in what amounts) are to be included in a poverty bundle. Nevertheless, given a poverty bundle for a representative household, appropriate adjustments for differences of any other household in its size and age-gender composition could be made to arrive at a household-specific poverty line. A household would be deemed to be poor if it does not have the resources, measured in terms of either income or total consumption expenditure, to buy the private component of its poverty bundle at the prices it faces. In such a definition, a household that can afford to but does not buy its poverty bundle is not deemed poor.

Clearly, if an annual survey collects data on the resources that each household commands and the prices it faces, it is a straightforward matter to estimate the number of the poor. As long as the constituents and the nonprivate component of the poverty bundle remain the same over time and space and surveys in different regions and time periods continue to collect household-specific data on resources and
prices, estimating the poor in each region and time period continues to be relatively uncomplicated.

The price data collected in different household expenditure surveys differ in their coverage, completeness, and representativeness. In some, only expenditure data are collected. In others, total expenditures on and quantities purchased of each commodity are collected so that unit values could be computed. In still others, prices paid are also collected along with quantities purchased. But I know of no survey that collects data on prices actually paid by households in each of their transactions involving purchases included in their consumption. The Indian NSS does collect price data (although it is not transaction specific).

Deaton and Tarozzi (2000) use more than 7 million pieces of price (more precisely, unit value) information from two rounds (1987–88 and 1993–94) of NSS expenditure surveys. In his analysis of the unit value data from the NSS for the state of Maharashtra in 1983, Deaton (1997) found that they matched independently collected market price data. Survey data confirm that households living in the same region and canvassed at the same time reported paying different prices for the same commodity even after allowance was made for possible differences in quality and other factors. Indeed, such differences raise serious questions about the common assumption in the analysis of household surveys that households purchase homogeneous commodities in competitive markets in which the “law of one price” holds. Apart from such interhousehold variation in prices, there are spatial and intertemporal variations as well. Also, there could be (and often are) interhousehold, interregional, and intertemporal variations in access to the state-provided component of the poverty bundle. I am unaware of any poverty count that allows for these variations.

Clearly, it is impractical to update poverty lines through revaluation of a given poverty bundle at prices that are specific to each household, region, and period of time. As such, a common practice is to use some price index to adjust some poverty line (not necessarily one derived from valuing a poverty bundle) at base year (or base region) prices to arrive at a poverty line for a different year (or region). The fact that poor (rural) households face different prices compared with nonpoor (urban) households could be taken into account in such an approach by using poor-specific rural and urban price indexes to update poverty lines (or alternatively to deflate consumption expenditures). For example, in India, because a large proportion of rural poor are believed to be landless agricultural laborers, the consumer price index for agricultural laborers has been used for updating the rural poverty line in official estimates of poverty. A simple average of the consumer price index for industrial workers and that for urban nonmanual workers is used to update the poverty line. However, commodity weights used in constructing these indexes are outdated, and the price quotations used are not representative of the relevant transactions. Using commodity weights and unit values based on the household surveys, Deaton and Tarozzi
recompute the poverty estimates. They find that, in contrast to the diverging trends in the official estimates, “between 1987–88 and 1993–94, there was no great difference in the rate of decline of urban and rural poverty.” Clearly, the choice of price index matters. But whatever index is used, as Deaton points out, the basic, standard textbook index number problem remains and cannot be wished away.

I have thus far addressed problems encountered in Deaton’s “domestic” stage. Moving to his “international” stage, a poverty bundle common to all regions within a geographically and culturally diverse country such as India, let alone for all countries of the world, cannot be meaningfully defined. (I will return to this issue in the concluding section.) If such a bundle could be defined, then the national poverty line at any point in time would be the value of that bundle at the prices in local currency that households face in that nation at that point in time. There is no need for any exchange rate in such a calculation. Deaton is absolutely right in arguing that, because such an internationally accepted bundle does not exist, it does not make sense to simply convert $1/day to local currency values using purchasing power parity (PPP) exchange rates with commodities weighted by their shares in the consumption of the poor. The reason is that doing so makes poverty lines move around with changes in PPP exchange rates arising from world market price changes that have no relevance to the poor. For example, the poverty line for one country would be shifted by a change in the world price of a commodity that is not consumed by the poor in that country but consumed by the poor in some other country, because such a price change affects the PPP exchange rate. In any case, global poverty counts are based on neither a common global poverty bundle nor conversions to local currency values using PPP exchange rates with commodity weights more relevant to the poor.

As Deaton points out, an international poverty line for base year 1985 was chosen ($1/day at 1985 PPP dollars) as being representative of poverty lines in use in low-income countries. In making this choice, poverty lines in local currency (consumption expenditures per person per day) in use in 1985 were presumably converted to U.S. dollar terms using the then-available PPP exchange rate for each currency. Because these were apparently found to cluster around one dollar, $1/day in constant 1985 PPP dollars was seen as representative of the poverty lines then in use.

It should be obvious that even assuming that local-currency poverty lines in 1985 represented the value of a national poverty bundle, it cannot be claimed that the $1/day at 1985 PPP dollars poverty line is representative of national poverty lines even in that base year. Moreover, as Deaton documents persuasively, revisions of the PPP rate to reflect, on one hand, better and more accurate information, but on the other hand, the change in base year play havoc with the poverty counts. Deaton’s critique is more than enough to persuade any serious analyst that these poverty counts are virtually meaningless.
Poverty Counts and Policymaking

There is no denying that if eradication of mass poverty is the objective of policy, indicators of progress toward achieving the objective are needed. It is well understood that poverty is a multifaceted phenomenon in that being poor does not simply mean not having adequate material resources at one’s disposal. It also means not having a voice in making decisions that affect one’s life. That is, it means not having as much access as one is entitled to state provision of goods and services, including those of the administrative, educational, healthcare, and legal systems.

Because each of these dimensions captures a different aspect of poverty, a separate indicator is needed. By combining indicators capturing disparate dimensions into a single composite index, such as the UNDP’s Human Development Index, one loses some of the information contained in the separate indicators. The extent of the loss depends on the independence of the different dimensions in describing the phenomenon of poverty. If they are not independent at all—in the sense of each indicator being perfectly correlated with every other—then combining them linearly into a composite indicator is not necessary. In fact, any one of the indicators would do just as well in describing poverty. But in this case there is no loss of information either because, given one indicator, the others do not add information. Perfect correlation is very unlikely and information loss in using a composite index is likely to be substantial, so it is most useful to put together several indicators of poverty, one of which would be based on consumption. Having said this, I should hasten to add that conceptual and measurement problems with other indicators are likely to be just as serious, if not more so, as those associated with consumption poverty. In particular, problems in defining and measuring analogues of $1/day global poverty counts with respect of some consumption dimensions of poverty would be far more daunting.

Poverty indicators, whether multiple or just a single composite, serve three distinct purposes. The first is simply to depict the prevailing situation at one or more points of a time in each country or region and perhaps the world. Such a depiction provides a yardstick or scorecard for the performance of national governments and international agencies, such as the World Bank, in achieving their professed objective of poverty reduction. More important, it is a prelude to a positive analysis of likely determinants of different dimensions of poverty. Clearly, aggregations either of space (for example, subnational regions with distinct characteristics are aggregated into a nation) or of time (for example, aggregation over a long time involving major systematic changes) would most likely mask the influence of different determinants of poverty. The reason is that the relationship between determinants and poverty outcomes almost surely would be very different across the units being aggregated. It is most unlikely that global indicators, such as $1/day counts of the poor, would be the starting point for any useful analysis of determinants of poverty. However, national
and (even better) subnational poverty counts, even the ones not based on a fixed poverty bundle, are much better starting points for analysis.

The second purpose is the normative use of poverty indicators for policy formulation. For this purpose, certainly global indicators and even national indicators (in large, populous countries, such as India, where subnational entities are diverse in many dimensions) are not very useful. The reason is simple: A policy is likely to be most effective in reaching its targets and achieving its objectives if its locus is where the targets happen to be. Because most policies targeted at the poor are in the domain of subnational (or even lower) units, poverty indicators at higher levels are not helpful in policy formulation. This is not to say that national and international policies are irrelevant, only that their effects on aggregate indicators are best understood through the aggregation of their effects on indicators of poverty at lower levels.

There is a different and difficult problem in the normative use of poverty indicators at any level. Unless one has a framework that describes the mechanisms through which policies affect the determinants of poverty in all its dimensions and their quantitative significance, poverty alleviation policies cannot be well formulated. This is illustrated by the debate on whether more rapid aggregate growth, greater openness to international trade and investment, or more flexible labor markets have in the past or will in the future reduce poverty. Without a framework for analyzing the influence of these policies on the determinants of poverty, one cannot infer anything useful for policy formulation from any observed association (or lack thereof) between specific policies and greater reduction in poverty. This problem would remain even if there were some best way of counting the poor at any level of disaggregation.

The third purpose for a poverty indicator is its value for mobilizing support for aiding the poor and for policies (subnational, national, and international) that presumably could alleviate poverty. Even those who would readily concede that global poverty counts are useless for the first two purposes would think that they might serve the third purpose well. Certainly, saying that in 2000 so many millions of people in the world went to bed hungry or lived on less than $1/day grabs attention. Resolving to reduce that number by half by 2020 (or whatever future year) indicates a certain purposefulness for global policymaking. However, it is arguable whether such attention and resolve have concrete value in raising resources for poverty alleviation or changing policies. Long ago, exhortations based on appalling poverty in developing countries led to the target of 0.7 percent of gross domestic product for industrial countries to contribute for development assistance. Some of the richest countries of the world have yet to reach the target. Regardless of whether there would have been greater development if the development assistance target been reached, exhortations based on global poverty counts are unlikely to generate more resources from the rich for poverty alleviation.
Household Expenditure Surveys and National Accounts Statistics

Deaton’s discussion of the problems with the data from household expenditure surveys (HES) and NAS is comprehensive, illuminating, and disturbing. My discussion of the sources of differences between the two will be brief and touch on a few important ones. Minhas (1988) provides a more comprehensive and deeper analysis. The HES in some developing countries were initially meant to provide data for commodity weights to be used in consumer price indexes. As such, surveys were canvassed relatively infrequently. In India, the HES component of the NSS from the start was meant to track changes in levels of living. Until 1973–74, the HES component was canvassed every year and again from 1983.

However, survey periods did not always cover a full year; even if they did, the year varied (most often it was July–June, but sometimes it was January–December or October–September). There were also differences in sample design across years, particularly when the main topic of inquiry differed from household consumption expenditure. In such years, the HES component canvassed far fewer households and sometimes with an abbreviated schedule of inquiries. Almost always the ultimate sampling units—namely, households—were drawn from each sample village and urban block after a complete enumeration of households in that village and block. As such, because the sample universe was not the population of households, the fact that population censuses were conducted only every ten years did not affect the sample frame. However, the number of strata into which the rural and urban areas were first divided and from which villages and blocks were drawn has varied over the years.

Since 1948–49, the NAS have covered the fiscal year April–March. But the basic data from which the NAS were put together have remained a hodgepodge. They range from actual revenues and expenditures based on audited accounts (for example, for governments and organized enterprises) to estimates based on sample surveys (for example, for yields of principal crops or output of some small-scale industries), price imputations, and ratios and norms that were themselves based on often outdated and unrepresentative samples. NAS estimates are known to be subject to error, the magnitude of which has not been assessed since the report of the first national income committee in 1949.

Private consumption expenditure estimates in the NAS are residuals derived from estimates of the domestic availability of each commodity (domestic output plus imports minus exports) left after deducting nonprivate consumption uses (investment including net additions to stocks as intermediate inputs and for consumption by the public sector). Clearly, errors in estimating each of these components and also in their valuation affect the estimate of private consumption expenditure. In addition, the private sector in the NAS includes households as well as nonprofit institutions, but the HES component of the NSS covers households only.
Estimates of consumption expenditure in each annual round of the NSS are based on expenditures during the reference period reported by sample households canvassed at each subround. The expenditures include the value of their purchases from the market and consumption of home-produced goods and services at imputed prices (that is, the relevant retail prices). If the information provided by households were free of errors of any kind, then the total expenditure would be, by definition, the sum over all transactions by the household of the quantities purchased from the market (or consumed out of home production) and the corresponding purchase (or imputed) prices in each transaction. In principle, every transaction of every household should be reflected in the NAS. However, even if the quantities involved in each transaction were covered, it would be likely that the prices used in the NAS to value them would differ from those paid by households.

The NAS, being annual, are deemed free of seasonal effects. In the NSS, an independent sample is canvassed in each subround, and all subrounds together cover the whole year. As such, in principle in the estimate of average annual consumption expenditure from all rounds together, any purely seasonal element in prices and quantities should be absent. But intrayear trend, if any, in prices and quantities will remain. However, in the distribution of monthly consumption expenditure among households in the sample, seasonal as well as trend effects would remain. In other words, the monthly expenditure reported by a household is the sum of the average consumption per month over the relevant year plus the seasonal effect and deviation from trend of that month. Thus the variance of the distribution of reported consumption is higher than that of the monthly average over the year. This means that a poverty count from the reported consumption will be higher than the true count based on average monthly consumption over the year if the poverty line is below the mode of the true distribution.\textsuperscript{5}

The length of the reference period could influence the estimates of consumption. Too long a period may create a recall bias in the downward direction. Too short a period may create a bias of telescoping later purchases forward, a bias in the upward direction. Telescoping is more likely with respect to infrequently purchased items, such as appliances and expensive durables, where the act of purchase is remembered but not its precise timing. Because poor households are unlikely to purchase such items, even if nonpoor households telescope some of their purchases, telescoping to any serious extent would not bias poverty counts. In any case, biases of recall and of nonresponse could depend on the level of the aggregate consumption expenditures. In other words, the size of the bias may differ between poor and rich households. However, if the biases applied only to households above the poverty line, poverty counts would be unbiased.

Clearly, biases in the estimate ought to be distinguished from errors that affect the variance of the estimate. Sometimes a sample design is adopted that yields a consistent, although biased estimate of the population mean, but with a lower mean squared
error. The \textit{nss} sample design was meant to deliver an unbiased estimate of the aggregate mean consumption expenditure. From this perspective, a sample size that yields an unbiased estimate of mean consumption expenditure at the national level with given precision may be inadequate to yield estimates of adequate precision at subnational levels. The precision of the \textit{sample mean} as an estimate of the \textit{population mean} and the precision of the \textit{sample cumulative distribution} as an estimate of the \textit{population cumulative distribution} have to be distinguished. Most surveys are designed to deliver an estimate of the population mean with a desired precision. The precision of such surveys in estimating the population cumulative distribution, which is the basis for counting the poor in the population, may be very low. In other words, a survey that yields a reasonably precise estimate of the mean consumption expenditure of the population of households may yield a poverty count with a wide margin of error.\textsuperscript{6}

Enough has been said to demonstrate that there are prior reasons why estimates based on household surveys would differ from the \textit{nas}, even if there were no deterioration in the quality of the system that conducts surveys and puts together the national accounts. The fact that the difference between \textit{nss} and \textit{nas} estimates in India appear to have increased since the 1960s (for a contrary view, see Sen 2000) is a cause for concern. However, there is no strong evidence in favor of one or the other estimate. As such, there is no convincing rationale for counting the poor through a simplistic procedure using a synthetic distribution with a mean expenditure based on the \textit{nas} and a household cumulative distribution derived from the \textit{nss}.

\textbf{Conclusion and Recommendation}

I agree with nearly all of Deaton’s recommendations. There is an urgent need for a serious research program for reconciliation between \textit{nas} and \textit{hes} data in a few countries, including India. There should be more experimentation in survey practice. In particular, research is needed for a better understanding of how measurement of consumption is affected by the design of surveys, including the length of reference periods, length and detail of questionnaires, length of interviews, repeat visits to the same household, and whether to have more than one respondent from each household.

Most important of all, Deaton’s plea for finding better ways to set the poverty line is right on the mark. As should be evident from my comments, I prefer to start from a well-defined poverty bundle. Clearly, if it is to be time and space invariant, it has to be defined in terms of characteristics for healthy life and functioning, depending on an individual’s age, gender, work activity, and other relevant attributes. But this is impractical. As an alternative, one may try to define a few poverty bundles in terms of goods and services. The need for more than one arises from the fact of variation in climates and dietary habits if nothing else. Given the poverty bundle appropriate to a subset of the population and well-designed surveys, it would be simple to define
poverty lines that are specific to that subset and time period, based on prices faced by the poor. But this alternative may not be that much more practical than defining a single global poverty bundle. There is no easy way of determining how many bundles would be needed to capture the variations in relevant dimensions. In any case, once there is more than one bundle and an associated poverty line based on it that is appropriate for each region or subset of the population, index number problems reappear if one attempts to construct a global poverty line that is representative of all the regional poverty lines.

Comparability and global representativeness are therefore impossible to achieve. It is clear that the $1/day at a constant PPP exchange rate poverty line does not satisfy either. I would therefore prefer to abandon the search for the impossible and stick to national poverty lines. But if the politics of resource mobilization for poverty alleviation demand the use of poverty lines that sound comparable, even if in fact they are not, then the best solution is the one suggested by Deaton. It is to keep the current $1/day poverty lines in local currency terms, adjust them only for local price inflation and abandon the use of PPP exchange rate adjustments in the future. Doing so would at least eliminate the egregious errors arising from the use of periodically revised PPP exchange rates.

Notes

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1. There are two approaches for deriving such a poverty line. In one, a “poverty bundle” of goods and services is defined to include items of food whose total energy content meets the nutritional requirement. The other is based on the (Engel) curve relating energy content of food consumed by each household to its total expenditures on all items of consumption. This curve, assuming it is upward sloping, shows the level of total expenditure at which the nutritional requirement of the household is met. It constitutes the nutrition-based poverty line. My criticism applies to both. The second approach is to derive poverty lines that are specific to a region and period from corresponding nutrition Engel curves. Strictly speaking, if this approach is used only to derive a base-period poverty line for a region (which is adjusted using price indexes to derive poverty lines for other regions and periods), it ceases to be nutrition-based.

2. I thank Angus Deaton for this information.

3. Deaton pointed out that recent practice might differ from my description.

4. However, if villages and blocks had been chosen with probability proportional to the size of their population in the last decadal census before the date of the survey, then the “multiplier” for each sample village or block in the estimate of the consumption expenditures would not reflect the size of its population at the time of the survey. This could bias the estimate.

5. I thank Angus Deaton for this observation.

6. Deaton suggests the following example to illustrate this. Suppose households make purchases every fifth day for five days’ worth of consumption. All reference periods from one day to five days will deliver unbiased estimates of mean consumption. But, except for the reference period of five days, others will yield biased estimates of the headcount ratio.
References

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