

In Focus

International Poverty Centre

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dollar a day
how much does it say?

FROM THE EDITOR

In Focus is an online bulletin of the **UNDP International Poverty Centre (IPC)**. Its purpose is to present succinctly the results of recent research on poverty and inequality in the developing world.

Based in Brazil, IPC joins the Oslo Governance Centre (Norway) and the Drylands Development Centre (Kenya) as the newest global thematic facility of UNDP. IPC is designed to facilitate, promote, and disseminate knowledge and experiences that may lead to tangible improvements in the lives of poor people in developing countries. A basic goal of IPC is to improve global understanding about the causes of poverty and inequality – a first step for devising policies and programs to tackle them. IPC's activities are aligned with UNDP's key objective of supporting the Millennium Development Goals, as unanimously adopted during the United Nations Millennium Summit in 2000.

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The poor', wrote Charles Booth in 1889, are those 'whose means are barely sufficient for decent independent life... according to the usual standard of life in this country'. In his *Life and Labour of the London Poor*, Booth defined a 'line of poverty' of 21 shillings per week below which an average family would be 'living under a struggle to obtain the necessaries of life and make both ends meet'. Shortly after Booth's work, another Englishman, Seebhom Rowntree, published a famous study of poverty in York that helped popularize the term 'poverty line' which, in Rowntree's view, represented 'a standard of bare subsistence rather than living'.

Clearly, the idea of a welfare threshold expressed in monetary terms has a long pedigree. Particularly since the 1960s, a growing number of countries began to adopt *national* poverty lines — sometimes defined in relative terms, as in most industrialized countries, but more often as absolute thresholds that typically refer to a bundle of commodities to satisfy minimum basic needs.

Because of differences in standards of living, data availability and survey definitions, comparing poverty rates across countries or aggregating them into regional and world totals proved elusive for many years. This also precluded assessing overall trends in poverty, which had to rely on evidence from individual countries or groups of countries. Then, in 1990, the World Bank proposed a common *international* poverty threshold of one dollar per day, in 1985 purchasing power parity prices. The '\$1-a-day' poverty line immediately grabbed much attention and gained further acceptance in recent years, when the UN Millennium Summit adopted it as the benchmark for monitoring progress in reducing extreme poverty around the world.

An international threshold of \$1 per day certainly has great intuitive appeal, even if these are not 'real' dollars of any existing country. Choosing any other dollar amount or fixing a threshold at a certain number of *kwacha* or *baht* per day clearly would not have attracted the same interest. Since \$1 per day corresponded roughly to the national poverty lines of some of the poorest countries in the mid-1980s, its adoption as a benchmark for determining who is poor in the world also made a great deal of sense. After all, who could argue that being poor in a poor country is *not* a good way of defining international poverty?

Obviously, the \$1-a-day poverty line is not without its problems. Some of its shortcomings are common to all money-metric poverty lines because of a lack of consensus on some key methodological choices and assumptions that have to be made at every step in the process of constructing them. The challenge becomes only greater when the aim is to set a yardstick that has universal validity and can serve for international comparisons.

In fact, there is no agreement on a uniform convention for poverty measurement such as already exists for other widely used welfare indicators, like a country's GDP. So it is important to explore the sensitivity of poverty estimates to the underlying definitions, choices and assumptions behind the statistics, as well as the use of alternative poverty lines and measures. Ultimately, poverty lines are no less and no more than *heuristic* tools, which are as good as the uses to which they are put.

These considerations apply critically to the 'dollar-a-day' poverty line, reviewed in this issue of *In Focus*. Collectively, the articles by T. N. Srinivasan from Yale University, Sanjay Reddy from Columbia University, Nanak Kakwani from UNDP and Martin Ravallion from the World Bank explain the origins of the \$1-a-day poverty line, discuss its strengths and limitations, propose alternative poverty standards for international comparisons, even provide new poverty estimates based on these alternative standards.

By presenting a range of views on the usefulness of '\$1 a day', we hope to contribute to the search for better ways of monitoring the Millennium Development Goals and assessing the degree of poverty that affects so many around the world.

Alejandro Grinspun

The Unsatisfactory State of Global Poverty Estimation

by T. N. Srinivasan,
Yale University,
USA

Poverty indicators serve three distinct purposes. First, they depict the extent of poverty and the socio-economic profile of the poor at one or more points in time in a given location — a country, a region or the whole world. Such depictions provide yardsticks for monitoring the performance of national governments and international agencies in achieving their professed objective of reducing poverty.

Second, poverty indicators make it possible to analyze the likely determinants of poverty and are, therefore, essential for formulating policy interventions that may contribute directly or indirectly to its alleviation. Finally, such indicators can help mobilize support for national and international policies for poverty reduction.

The usefulness of poverty indicators for the first two purposes becomes compromised when data are aggregated over either time or space. This happens, for instance, when data are lumped together over long periods of time involving major systematic changes, or across regions of a country with widely distinct characteristics. Similar problems arise from poverty estimates that take the *household* as the relevant unit. By aggregating information across all members of a household, such estimates preclude a meaningful analysis of the welfare of some of its individual members, particularly women and children.

In fact, aggregate indicators — national or global — tend to obscure the relationship between determinants of poverty and outcomes, which is likely to vary across the units being aggregated. By doing so, aggregation limits policy effectiveness insofar as policies are most effective in achieving their objectives when targets are clearly set.

But even if global poverty counts were useless for the first two purposes, they might still serve the third purpose well. Saying millions of people in the world go to bed hungry or live on less than \$1 a day certainly grabs attention. The goal of halving the number of poor by 2015 adopted at a global summit ostensibly signals certain purposefulness. Still, such resolve has not proved to be of value in raising resources for poverty alleviation. Despite long-standing commitments, some of the world's richest countries have yet to reach the target of 0.7% of GNP for official development assistance and are unlikely to be swayed by global poverty counts.

In defining necessities, Adam Smith argued that one must include not only necessary commodities but also those which “the custom of the country renders indecent for creditable people even of the lowest order to be without”. Obviously these ‘decent’ standards are subjective and would vary over time and space.

Moreover, important non-income aspects of poverty, such as deprivations in health, educational attainment and enjoyment of citizenship rights, cannot be meaningfully combined with consumption measures to define a comprehensive poverty indicator of relevance. Average indicators, such as life expectancy at birth, describe only the current mortality experience of the population as a whole at a particular time. Besides, life expectancy and the literacy rate usually move too slowly to be helpful for monitoring progress except in the very long run.

Any indicator that identifies an individual as poor has to be multidimensional. Whether an individual is poor does not only depend on the relevant economic and non-economic indicators pertaining

Global poverty counts based on \$1 a day are virtually meaningless. They are neither based on a common ‘poverty consumption’ bundle of goods and services nor apply conversion factors with commodity weights and prices that reflect the consumption basket of the poor.

Improvements in survey design and the quality of national accounts and household survey data are needed to make global poverty estimates more meaningful.

Defining a 'poverty consumption' bundle for a reference household should be the starting point for fixing a poverty line.

to him or her. It depends equally, if not more importantly, on that person's access to labor, credit and insurance markets, as well as political participation and social interactions. However, the most widely used poverty indicators, including the \$1-a-day poverty line, are one-dimensional and are usually defined as expenditure on consumption.

The simplest method for deriving a consumption-based poverty line is to start from a socially defined 'poverty consumption' bundle of goods and services for a household deemed representative — in size as well as age and gender composition. Valuing the private component of that bundle at appropriate prices yields the poverty line. Unavoidably, determining which goods and services are to be included in a poverty bundle, and in what amounts, is an arbitrary decision. Yet given a poverty bundle for a reference household, one can make appropriate adjustments for differences in household size and composition in order to fix a poverty line. A household will be deemed poor if it does not have the resources to buy the private component of *its* poverty bundle at the prices it faces.

Given adequate survey data, it is not difficult to estimate the numbers and percentage of poor people in a given location. All that is needed is that the constituents of the poverty bundle remain the same over time and space and data on household-specific resources and prices be collected systematically. One would need data on prices actually paid by a household in each of its purchases to compute a household-specific poverty line. But no survey collects such transaction-specific prices, which makes it impractical to update poverty lines through revaluation of a *given* poverty bundle at prices that are specific to each household, region and time period.

Instead, a common practice is to use some aggregate price index to adjust a poverty line at base year prices to arrive at a poverty line for a different year (or region). But it is unlikely that the commodity weights and prices used in constructing these price indices will reflect either the commodity weights or

the prices in the consumption bundle of a representative poor household. India's official poverty estimates, which use price indices for updating, show diverging trends in urban and rural poverty between 1987-88 and 1993-94. When these estimates were recalculated using commodity weights and unit values based on household surveys, no great difference was found in the rate of decline of urban and rural poverty between those years. This reveals that the use of a price index rather than actual prices makes a difference.

In a country as geographically and culturally diverse as India, it would be extremely implausible to meaningfully define a poverty bundle common to all of the country's regions. If such thing were possible, then the national poverty line for a given year would be the value of that bundle at the relevant *local currency* prices at that point in time. This method has the advantage of dispensing with the need for an exchange rate.

There are good reasons to believe that global poverty counts based on the dollar-a-day international threshold are meaningless. They are based on neither a common global poverty bundle nor conversions to local currency values using purchasing power parity (PPP) exchange rates with commodity weights that are relevant to the poor.

In fact, the origins of the dollar-a-day threshold lack a solid analytical basis. Poverty lines in local currency in use in 1985 were presumably converted to US dollars using the PPP exchange rate then available for each currency. Since they were found to cluster around \$1 a day in constant 1985 PPP dollars, this threshold was seen as representative of the poverty lines then in use.

Even assuming that local-currency poverty lines in 1985 represented the value of a national poverty bundle, it cannot be claimed that the \$1-a-day international standard in 1985 PPP dollars was representative of national poverty lines, even in that base year. Moreover, revisions of the PPP rates to reflect better and more accurate information wreak havoc with the poverty counts because of changes in the base year.

Since an internationally accepted poverty bundle does not exist, it makes no sense to simply convert \$1 a day to local currency values using PPP exchange rates that reflect world market price changes with no relevance to the poor. For example, a country's poverty line could shift as a result of a change in the world price of a commodity that is not consumed by that country's poor if such a price change affects its PPP exchange rate.

Yet poverty counts based on \$1-a-day poverty lines have been used to claim that poverty has not come down in spite of historically high rates of economic growth, both globally and in countries like China and India where a large majority of the world's poor live.

In such claims, growth estimates are based on national accounts statistics whereas poverty estimates are derived from household expenditure surveys. But it is well documented that consumption expenditures derived from national accounts differ from those estimated from household surveys. This is true both for developed countries like the US and developing countries such as India. Attempts to combine national accounts and household survey data have not been satisfactory, partly because of their different conceptual and measurement frameworks. In fact, it is disquieting that the discrepancy between them seems to be growing over time.

Clearly, the current state of global poverty estimation is far from adequate. There should be more experimentation in survey practice as well as research on how the measurement of consumption is affected by differences in survey design, including the length of reference periods, survey questionnaires and interviews, as well as the number of respondents from each household and of repeat visits to the same households. There also needs to be a serious research program aimed at improving and reconciling data from national income accounts and household surveys.

Most importantly, we need to find better ways of fixing internationally comparable poverty lines. Ideally one should start from a well-defined poverty bundle that reflects the essential requirements 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 bundle arises, if nothing else, from the existence of varying climates and dietary habits.

Given well-designed surveys and a poverty bundle appropriate to a subset of the population, it would be simple to define poverty lines that are specific to that subset and time period, based on prices faced by the poor. Unfortunately, there is no easy way of determining how many bundles would be needed to capture variations in all the relevant dimensions. In any case, once there is more than one bundle and an associated poverty line 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.

It seems that finding a poverty line that is representative and comparable across countries and regions is an impossible task. Global poverty counts have neither normative value nor empirical relevance for analyzing the determinants of poverty. It may be preferable to abandon the search for an international yardstick altogether, and stick to national poverty lines instead.

Yet the politics of resource mobilization may demand the use of international poverty lines that sound comparable, even when they are not. Should this be the case, then a compromise solution could be to maintain the existing \$1-a-day poverty lines in *local currency* terms, while recognizing that they are arbitrary thresholds. Poverty lines should only be adjusted for local price inflation, not for changes in PPP exchange rates. Doing so would at least eliminate the egregious errors arising from the use of periodically revised PPP exchange rates.



T. N. Srinivasan, "Comment on 'Counting the World's Poor,' by Angus Deaton", *The World Bank Research Observer*, 2001.

Global poverty counts based on \$1 a day have neither normative value nor empirical relevance for poverty analysis.

by Sanjay Reddy,
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A Capability-Based Approach to Estimating Global Poverty

Current approaches to global poverty estimation lack a sound criterion for identifying the poor. As a consequence, assessments of the extent and trend of global poverty are clouded by uncertainty.

We propose a criterion for identifying the poor that will allow for meaningful comparison and aggregation of poverty estimates across countries and regions. It is based on the elementary income-dependent human capabilities that every individual, regardless of place of residence, ought to be able to achieve.

Assessing the extent of poverty involves two conceptually distinct tasks. The first task is to *identify* which individuals in a population are poor, and how poor they are. The second task is to *aggregate* this information so as to determine the extent of poverty experienced by the members of the population considered together.

All existing approaches to estimating global poverty belong to the ‘money-metric’ family. Money-metric approaches start with an international poverty line defined in terms of a certain number of currency units of a base country, rather than any underlying conception of human requirements. They then use spatial and temporal conversion factors to translate that common international standard into the local currency units of a particular country and year. The resulting local poverty lines can then be compared with measures of income or consumption from household surveys to determine whether an individual’s command over resources falls short of the poverty line, and by what extent. Finally, estimates of the number of poor people are compared across countries as well as aggregated to determine how many poor persons live in each region and in the world.

Despite its apparent simplicity, the money-metric approach is in practice riddled with problems that can only be resolved by departing from it. These problems are of two types.

First, international poverty lines belonging to the money-metric family are not defined meaningfully. They do not lend themselves to properly identifying the poor and assessing the impact of policies. For example, the widely used \$1 and \$2 per day international poverty lines — defined in terms of hypothetical ‘international dollars’ — are arbitrary

and do not reflect the cost of meeting essential human requirements in any actual country. This is evidently true in the base country, the US, where the cost of meeting the nutritional component of these requirements alone is known to be substantially higher than either poverty line.

The second problem derives from the fact that, in the absence of an underlying notion of human requirements, there is no coherent way of translating the international poverty line across countries and over time. In fact, it is not possible to identify the ‘equivalent’ of the international poverty line in local currency units without some conception of what these units are intended to achieve. Unfortunately, such a conception is precisely what the money-metric approach lacks.

Instead, money-metric approaches rely on the use of general consumption purchasing power parity (PPP) conversion factors to translate the international poverty line into national currency units deemed ‘equivalent’ to it, and on consumer price indices for translating these national currency amounts through time. Existing methods for calculating the PPP conversion factors between any pair of countries require aggregating information from a wide range of countries on prices for a wide range of commodities. As a result, prices of both irrelevant commodities *and* irrelevant countries enter into the calculation of PPPs.

For example, the PPP between Zambia and the US, which is used to determine the Zambian currency equivalent of the international poverty line, depends on information about prices in third countries such as Brazil or Japan. It also depends on the prices of a wide range of commodities that are unlikely to play a significant role in the consumption of

poor people. When the relative price of such consumption items is low in poor countries (as is the case with non-traded services in comparison to internationally traded food grains), one might erroneously conclude that the cost of avoiding poverty is lower than it really is. Indeed, Thomas Pogge and I have found that the cost of general consumption in poor countries is about 30% to 40% lower than the cost of food. The use of PPPs based on general consumption to convert international poverty lines has led to lower local currency poverty lines than would have resulted from using more appropriate PPPs.

The impact of these problems is compounded by weaknesses in the data used to calculate PPPs. No price surveys for constructing PPP prices are available for important countries such as China. For others — in particular, India — such surveys took place only in the distant past. Consequently, PPP estimates for both countries vary widely. Current estimates of the extent and trend of regional and global poverty must therefore be viewed as unreliable.

Moreover, poverty estimates for the same country and year can change dramatically purely as a result of shifting the base year of the international poverty line. This is also true of poverty comparisons across countries or regions. These variations can go well beyond what one would normally expect from 'index number problems'. They arise because the data used for constructing PPPs reflect the structure of the world economy in a given base year. Our present judgments concerning the extent of poverty in different countries and regions thus depend substantially on arbitrary factors.

Three proposals have been made recently to improve global poverty estimates. The first proposal requires identifying a set of elementary income-dependent capabilities which an individual ought to be able to afford in order to be deemed non-poor. Once this set of capabilities is agreed at the global level, the specific resources required to achieve them would be identified in each country. A process of dialogue between national and international authorities will ensure the

consistency of each national poverty line with the globally shared notion of the relevant elementary capabilities. The resulting poverty lines will, by construction, refer to a common criterion for identifying the poor and thereby permit meaningful comparison and aggregation of poverty estimates across countries. The use of a common criterion for identifying the poor will eliminate the need for PPPs, hence removing a major source of the conceptual inadequacy and practical uncertainty that beset current global poverty estimates.

Some authors have suggested the adoption of an international standard based on minimal nutritional requirements.* The objective of this proposal is to define a poverty line for each country that represents the local cost of achieving an appropriate calorie standard, adjusted for non-food needs. Its focus is on the capability of being adequately nourished, interpreted in terms of calorie adequacy. The proposal does not differ conceptually from the one discussed previously, although its proponents fail to recognize that it makes money-metric international poverty lines and PPPs irrelevant to global poverty estimation.

The second proposal for improving poverty estimates consists of constructing more appropriate PPPs by collecting more and better information on the prices of commodities consumed by the poor. The proposal, being currently implemented by the World Bank in collaboration with the International Comparison Program, promises to lessen the degree to which prices of irrelevant commodities enter into the calculation of the PPPs used in global poverty assessment. In doing so, it will address one of the major deficiencies of the money-metric approach.

However, this initiative fails to address other equally important shortcomings of current approaches to global poverty estimation. Among these are the computation of prices from irrelevant countries in the construction of the PPPs, the lack of a meaningfully defined international poverty line, and the unreasonable dependence of poverty estimates upon the base year of the

Our present judgments about the extent of global poverty depend on highly arbitrary factors.

* See the article by Nanak Kakwani on pages 9-11 of this issue.

International cooperation under the aegis of the UN can help improve both national and global poverty statistics.

international poverty line. The construction of PPPs relevant to poverty estimation requires a focus on the commodities consumed by the poor. However, it is impossible to know what commodities the poor consume — or must consume to avoid poverty — without first identifying *who* the poor are. This problem of circularity cannot be resolved unless one specifies a concept of poverty based on an underlying notion of human requirements. In that case, however, PPPs are no longer needed.

A final proposal, advanced by Angus Deaton, requires fixing an international poverty line, determining its local currency 'equivalents' in a given base year, and holding their real value unchanged for a considerable period. Before fixing the national poverty lines, countries — in consultation with international agencies — would be allowed to adjust the local currency equivalent of the international poverty line so as to correct for "serious errors" at the country level. The resulting poverty lines would then be updated from year to year through the use of national price indices.

Deaton's proposal has two aims. It seeks to overcome the apparent inflexibility of any common international poverty standard by permitting some adjustments in accordance with national contexts. It also attempts to reduce the distortions arising from periodic changes in the base year of the international poverty line, by increasing the interval between such revisions.

Although these aims are commendable, Deaton's proposal also has drawbacks that severely undermine its value. If every country is permitted to adjust its national poverty lines without reference to a shared conception of elementary human requirements, then there will be no meaningful common criterion for identifying persons as poor regardless of where they live. The resulting global poverty estimates would have, at best, a hollow meaning — simply reflecting the sum of the number of persons who are deemed poor according to the local definitions applied in each country — and, at worst, no meaning at all. The role of the international poverty line and PPPs in this case would be merely indicative, as each country ultimately is allowed to

set a poverty line it deems appropriate. Calling the resulting standards \$1 or \$2 per day would seem nothing but a sleight of hand. If, in contrast, the local currency equivalents are not adjusted at all, we end up with the procedure that is currently in use, with every one of its problems.

Alternatively, countries may be allowed to adjust the local currency equivalents of the international poverty line so that everywhere they conform to the same underlying notion of elementary human capabilities. But if this is done, then this proposal essentially will not differ from the one that was discussed first.

It seems, therefore, that the first solution — the coordination of national poverty assessments so that they reflect a common capability-based understanding of poverty — is also the first-best. Absent a common criterion for identifying a poor person regardless of where she lives, it will not be possible to meaningfully compare poverty estimates across countries or aggregate them into regional and world totals.

Implementing this proposal at the global level requires encouraging all countries to adopt the capability-based approach to global poverty estimation that is already widely employed in individual countries. It also requires that countries adopt the *same* capability-based approach to poverty estimation.

The UN's System of National Accounts already provides a shining example of how, given sufficient time and effort, comparable and consistent data can result from international cooperation. It is high time to undertake a similar effort to coordinate and improve poverty estimation around the world.

If conducted in a transparent and consultative fashion, such an effort could provide a lasting foundation for the production of meaningful and credible poverty data. This will not only help strengthen national poverty statistics but also ensure that they can be compared and aggregated across countries and regions.



Thomas W. Pogge and Sanjay G. Reddy,
"Unknown: The Extent, Distribution and Trend of Global Income Poverty",
www.socialanalysis.org, 2003.

New Global Poverty Counts

by Nanak Kakwani,
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Every society has its own views on what constitutes a minimum standard of living. Such normative thresholds are commonly expressed by means of a poverty line, which specifies the minimum living standards to which everybody in a society should be entitled. A person is deemed poor if his or her income or consumption falls below that threshold.

This means that poverty lines are very country-specific, insofar as views about what individuals should be entitled to will differ from one society to another. Strictly speaking, therefore, we should not be able to make cross-country comparisons of poverty rates, since it will be virtually impossible to agree on a common poverty basket that is uniformly acceptable in every country.

In spite of this, global estimates based on a common international standard do play an important role in monitoring the level and change in poverty around the world. They can be used as a powerful tool to heighten public awareness about the need to fight poverty and achieve the Millennium Development Goals.

The first serious attempt to produce global estimates of poverty on the basis of an internationally comparable threshold dates back to 1990. That year, the World Bank released its global poverty counts based on a line of \$1 a day, measured in 1985 purchasing power parity (PPP) exchange rates. Since then, the \$1 poverty gauge has come to be regarded as providing the absolute minimum standard of living below which meeting basic needs is not fully possible.

The Bank derived the \$1-a-day threshold from a sample of national poverty lines from 33 countries. They were obtained from a broad range of sources, from

within and outside the Bank, and were based on the use of widely different methodologies. Many were estimates from independent researchers and cannot be considered 'official'.

Moreover, the sample included many rich countries such as Australia, Belgium, Canada, Germany, Japan and the US, where absolute poverty is not a paramount issue. Some countries had more than one line. Whenever a country had separate lines for urban and rural areas, the Bank chose the lowest even though the correct procedure would have been to compute the weighted average of the two lines, with weights proportional to the total population in each area.

Initially, the World Bank tried to derive the common international poverty standard by fitting a cross-country semi-logarithmic function that related a country's poverty line with its mean private consumption, both in 1985 PPP dollars. Since econometric analysis failed to yield a reasonable yardstick, the Bank decided to determine the international poverty line by eye-balling the scatter plot of that equation. This eye-balling method gave rise to the poverty line of \$31 per month, or \$1 a day.

In the late 1990s, the World Bank released the 1993 PPP exchange rates, which are based on prices and consumption baskets constructed by the 1993 International Comparison Program and have much broader country coverage than the previous ones. Essentially, the PPP conversion rates are the cost of living indices among countries. They take into account the local prices of goods and services that are not traded internationally, making it possible to adjust for cost-of-living differences across countries.

The global poverty counts produced by the World Bank are too low due to methodological problems with the construction of its \$1-a-day poverty line.

We propose two alternative poverty lines for the purpose of international comparison and aggregation. One is based on the local cost of a diet that ensures adequate calorie intake for the world's poorest. The other is the median of the existing national poverty lines in a sample of 19 low-income countries around the late 1990s.

As expected, both lines yield poverty estimates that are substantially higher than reported by the Bank.



* Poverty estimates for 96 countries, based on the three poverty lines, may be found at www.undp.org/povertycentre.

Many critics contend that the change in the base year from 1985 to 1993 has lowered the international poverty line in real terms. The US inflation rate between those years was roughly 50%, meaning that \$1 in 1985 would be equivalent to \$1.50 in 1993. But instead of adopting this line, the Bank calculated the median of the ten lowest poverty lines in its original sample of 33 countries. The calculation yielded a new threshold of \$1.08 in 1993 PPP dollars, which is still referred to as the '1-a-day poverty line'.

The Bank claims that one cannot simply adjust for inflation in the US to update the international poverty threshold because, from 1985 to 1993, there was a devaluation of PPP rates among poor countries relative to the US. This devaluation is said to have resulted from both the availability of new price data

and better methods of constructing the PPP rates. But even if this argument holds, the correct procedure would have been to estimate the degree of devaluation amongst poor countries *vis-à-vis* the US and then determine the equivalent poverty line in 1993 PPP dollars.

Moreover, the benchmark of \$1.08 a day cannot be regarded as a typical poverty line for low-income countries any more than the previous international standard was. The Bank's original sample had included only ten low-income countries, while in 1993 the ten countries with the lowest poverty lines were not necessarily countries with low incomes. Included among those ten were such countries as Indonesia, Thailand and even Tunisia, a relatively rich country with per capita consumption of \$8 in 1993 PPP.

Having established the value of the international poverty line, one can determine how many poor people live in any country in a given year. Utilizing the 1993 PPP conversion rates, one simply has to calculate the local currency equivalent of the \$1.08 benchmark in 1993 prices, then adjust for inflation between 1993 and the year in which a household survey took place in that particular country. Individual poverty rates can then be compared across countries or added up to produce estimates of the number of poor people around the world in that year.

Global poverty counts thus depend on the accuracy of both PPP exchange rates and national consumer price indices. One must stress, however, that PPP exchange rates were not designed for international poverty comparisons but rather for comparing aggregates from national accounts. PPP rates are based on prices and weights of commodities that are not representative of the consumption baskets of poor people. To complicate matters further, countries experiencing hyperinflation — such as those in the former Soviet bloc during the early to mid-1990s — would affect the accuracy of global poverty counts and, therefore, should be excluded from them.

The efforts made by the World Bank to produce global poverty counts based on an internationally comparable threshold must be applauded. Unfortunately, the

Bank has not paid sufficient attention to improving the database and methodology for constructing such threshold. The national poverty lines compiled for the purpose of determining the original international poverty standard were constructed around the mid-1980s. Many countries have revised them since; some have even changed the methodology for their calculation.

It is therefore important to fix an international poverty line that can be considered representative of the poverty lines found among low-income countries in the recent past.

To do that, we compiled the national poverty lines for a sample of 19 low-income countries, 15 in Sub-Saharan Africa and four in Asia. We then converted the national poverty lines, constructed around the late 1990s, from local currency to 1993 PPP dollars using the appropriate consumer price indices and 1993 PPP exchange rates. The median poverty line in our sample (IPC1) was exactly equal to \$1.50 a day, ranging from \$0.76 in Nigeria to \$2.52 in The Gambia.

Using the poverty line of \$1.50 per day, we computed the percentage and number of poor people per region based on the World Bank's regional classification. Our estimates show that nearly 1.9 billion people lived in poverty around the world in 2001. These numbers are considerably higher than the 1.1 billion poor reported by the Bank, revealing a wide divergence between the World Bank's figures and our own, which are based on a more *typical* poverty line among low-income countries.

We also computed a second international poverty threshold based on the food requirements to ensure adequate calorie intake for the world's poorest. Using the caloric norms developed by the Food and Agriculture Organization (FAO), which vary from country to country depending on such factors as population, race and climate, we constructed the poverty line for each country in our sample. The national poverty lines were obtained by adding up the respective food and non-food poverty lines, expressed in 1993 PPP dollars, in each country. The median poverty line among our 19 low-income countries was equal to \$1.22 per day, from \$1.05 in Burundi (1998) to

New international poverty lines, in 1993 PPP dollars, based on a sample of 19 low-income countries in late 1990s					
Country	Survey year	National poverty lines	Calorie-based poverty lines		Total
			Food	Non-food	
Bangladesh	2000	1.42	0.85	0.38	1.23
Burundi	1998	1.21	0.85	0.20	1.05
Burkina Faso	1998	0.99	0.85	0.50	1.35
Cameroon	1996	1.81	0.89	0.74	1.63
Ethiopia	2000	1.50	0.82	0.39	1.21
Ghana	1998	2.34	0.89	0.52	1.41
Guinea	1994	2.26	0.87	0.68	1.56
Gambia	1998	2.52	0.89	0.34	1.22
India	2000	1.00	0.88	0.41	1.29
Ivory Coast	1998	1.77	0.89	0.74	1.63
Kenya	1997	1.95	0.88	0.30	1.18
Laos	1998	1.09	0.82	0.28	1.10
Madagascar	2001	1.11	0.87	0.21	1.07
Mozambique	1996	1.73	0.90	0.35	1.26
Malawi	1997	1.86	0.85	0.30	1.16
Nepal	1996	1.11	0.87	0.34	1.21
Nigeria	1996	0.76	0.87	0.27	1.14
Uganda	1999	1.70	0.84	0.63	1.47
Zambia	1998	1.14	0.87	0.27	1.14
Median		1.50	0.87	0.35	1.22

\$1.63 in Ivory Coast (1998). According to this new international yardstick (IPC2), almost 1.4 billion people lived in poverty around the world in 2001.

Our calculations clearly suggest that an effort must be made to improve the database and methodology for estimating the number and percentage of poor people around the world. The figures produced by the World Bank, derived from poverty lines constructed around the mid-1980s, are rather low and apparently not relevant for the present times. In fact, the Bank's poverty counts are in need of serious adjustment if they are to reflect more accurately the situation of the world's poorest in the new millennium.



Nanak Kakwani, "New Global Poverty Counts", International Poverty Centre Working Paper No. 3, 2004.

IN REPLY

Since 1990, the World Bank has produced regional and global estimates of poverty using household survey data and international poverty lines at purchasing power parity, including the widely used \$1-a-day line.

The data on which the Bank bases its regional and global poverty monitoring has improved greatly since the effort began in 1990. But there is still much work to do in improving the quality and availability of existing data on the living standards of the world's poor.

Monitoring Progress Against Global Poverty

by Martin Ravallion, World Bank

By the World Bank's latest estimates, 1.1 billion people lived on less than a frugal \$1 a day in 2001, representing about one-fifth of the world's population. That is a lot of very poor people by anyone's standards, but thankfully there are signs of progress. The number was almost 400 million higher some 20 years earlier. In fact, the percentage of people living below \$1 a day was almost halved between 1981 and 2001.

The world's overall progress against poverty owes much to East Asia and, in particular, China. Once China is excluded from the global poverty counts, it turns out that the number of poor people in the developing world has barely changed; indeed, it rose slightly from 1981 to 2001.

In contrast, the composition of world poverty has changed noticeably. Numbers of poor have fallen in Asia, but increased elsewhere. The share of the world's poor living in Africa has risen dramatically in the last 20 years. Not only has Africa emerged as the region with the highest poverty incidence in the 1990s, but the depth of poverty is also markedly greater than in other regions. This suggests that without lower inequality, economic growth will have a harder time reducing poverty in Africa than in the rest of the developing world.

How does the Bank make these calculations? And what are the strengths and weaknesses of the data and methods used?

The first poverty counts based on the \$1-a-day international benchmark were published in the Bank's 1990 *World Development Report*. A lot has been written about these numbers since then. The overall approach to global poverty counting has essentially remained the same over the years, though there have been some refinements to the methods along with huge improvement in the quantity and quality of the primary data used for calculating global poverty.

Our latest estimates draw from over 450 nationally representative surveys from almost 100 countries around the world. Together, they represent about 93% of the population of all low and middle-income countries. The surveys were mostly implemented by government statistical offices as part of their routine operations. Taking the most recent survey for each country, about 1.1 million households were interviewed to obtain the Bank's latest figures of the number of people living under \$1 a day.

Like all data sources, surveys have their problems. Differences in survey methods — such as in questionnaire design — can create non-negligible differences in the figures obtained. Likewise, survey results are often compromised by underreporting of incomes and the difficulties of getting certain types of households — particularly the rich — to participate.

For this reason, some critics of the Bank's reliance on surveys prefer to obtain their poverty measures from national accounts data. They do so by replacing the mean income or consumption figures from the household surveys with per capita GDP or private consumption from the national accounts. But the latter provide no information on the shares of total income accruing to different income groups. As a result, proponents of this method have no choice but to rely on surveys to determine the income shares in order to measure inequality.

This, obviously, creates a conundrum. How can household surveys be trusted for measuring inequality but not poverty? In fact, there is no good reason for believing that anchoring poverty measures to national accounts would give better estimates, even acknowledging the problems in survey data. At the Bank, therefore, we follow widely accepted and long-standing practices that consider household sample surveys to be the best available source of quantitative data on people's living conditions. At the same time, we are constantly making an effort to eliminate any obvious comparability problems between the surveys.

In measuring poverty from country surveys, we rank households by consumption or income per person, including imputed values for consumption or income in-kind such as from own-farm products. Typically, the calculations are now based on the analysis of micro data. Whenever there is a choice, we use consumption rather than income on the grounds that it is generally a better measure of current welfare. Nevertheless, we recognize that even consumption is an imperfect welfare indicator, since it is unlikely to properly reflect differences in access to non-market goods as well as inequality within households. Consequently, in our publications we normally supplement poverty measures based on consumption or income with other indicators reflecting the non-income dimensions of welfare as well as the distribution below the poverty line.

Since each survey uses the currency of a given country at a particular date, we use purchasing power parity (PPP) exchange rates to convert international poverty lines into local currencies. Using official exchange rates would clearly be improper, as it would bias the estimates towards internationally traded goods and thus understate real incomes in poor countries where non-traded goods are cheaper.

The original calculations for the \$1 poverty line were based on 1985 PPP rates from the Penn World Tables, drawing on the price data collected for the UN's International Comparison Program. The latest estimates, by contrast, have used the consumption PPPs for 1993 produced by the World Bank.

It is important to note that the 1985 PPPs based on the Penn World Tables are not comparable with the Bank's PPPs at base 1993, either in terms of the primary data or the methods used. The 1993 PPPs draw on price data for a much larger set of countries — 110 compared with only 65 in the Penn World Tables. And the Bank's methods for measuring poverty appear to offer a better approximation to true cost-of-living differentials than the methods previously used.

Yet one also has to acknowledge that all existing PPPs have limitations for international poverty comparisons. The underlying price surveys for calculating PPP rates are incomplete, with some countries not participating in the International Comparison Program from which price data are collected. Moreover, PPP prices are typically based on national average consumption patterns, which will often differ from the consumption patterns in the neighborhood of the poverty line. To address some of these concerns, the Bank is currently engaged in a major update of existing PPPs drawing on new primary price surveys.

After converting the international poverty line to a country's local currency in 1993, we then convert the local currency equivalent of that line into the prices prevailing at each survey date. For this we use the best consumer price indices available in each country. This implies that, for each country, the PPP currency conversion is done only once. All the same, one must be aware that the weights in the country-specific consumer price indices may or may not accord well with consumer budget shares at the poverty line. In periods of shifting relative prices, this may bias our comparisons of the incidence of poverty over time depending on the extent of substitution possibilities for people at the poverty line.

Finally, to estimate regional poverty at a given reference year, the surveys are 'lined up' in time using an interpolation method that takes into account the growth in private

Global poverty counts			
Number of people living below \$1.08 a day (millions)			
	1981	1990	2001
East Asia	795.6	472.2	271.3
China	633.7	374.8	211.6
South Asia	474.8	462.3	431.1
India	382.4	357.4	358.6
Sub-Saharan Africa	163.6	226.8	312.7
Latin America and Caribbean	35.6	49.3	49.8
Middle East and North Africa	9.1	5.5	7.1
Eastern Europe and Central Asia	3.1	2.3	17.0
Total	1,481.8	1,218.5	1,089.0
Total excluding China	848.1	843.7	877.4

Poverty headcount indices			
% of people living below \$1.08 a day at 1993 PPP			
	1981	1990	2001
East Asia	57.7	29.6	14.9
China	63.8	33.0	16.6
South Asia	51.5	41.3	31.3
India	54.4	42.1	34.7
Sub-Saharan Africa	41.6	44.6	46.4
Latin America and Caribbean	9.7	11.3	9.5
Middle East and North Africa	5.1	2.3	2.4
Eastern Europe and Central Asia	0.7	0.5	3.6
Total	40.4	27.9	21.1
Total excluding China	31.7	26.1	22.5

Global poverty counts Number of people living below \$2.15 a day (millions)			
	1981	1990	2001
East Asia	1,169.8	1,116.3	864.3
China	875.8	824.6	593.6
South Asia	821.1	957.5	1,063.7
India	630.0	731.4	826.0
Sub-Saharan Africa	287.9	381.6	516.0
Latin America and Caribbean	98.9	124.6	128.2
Middle East and North Africa	51.9	50.9	69.8
Eastern Europe and Central Asia	20.2	22.9	93.3
Total	2,450.0	2,653.8	2,735.4
Total excluding China	1,574.2	1,829.2	2,141.8

Poverty headcount indices % of people living below \$2.15 a day at 1993 PPP			
	1981	1990	2001
East Asia	84.4	69.6	47.4
China	88.1	72.6	46.7
South Asia	89.1	85.5	77.2
India	89.6	86.1	79.9
Sub-Saharan Africa	73.3	75.0	76.6
Latin America and Caribbean	26.9	28.4	24.5
Middle East and North Africa	28.9	21.4	23.2
Eastern Europe and Central Asia	4.7	4.9	19.7
Total	66.7	60.8	52.9
Total excluding China	58.8	56.6	54.9

* For details, see the article by Nanak Kakwani on pages 9-11 of this issue.

consumption per capita from the national accounts for non-survey years. All numbers back in time are recalculated as new data become available — for instance, new country surveys or new price data for estimating the PPPs — and the calculations are fully revised at about three-yearly intervals. Obviously, one should not compare poverty estimates across different PPPs, which would clearly have little meaning. Failure to recognize this point has led to some confusion among critics of the Bank's global poverty counts.

The original international benchmark of \$1 a day recognized that countries naturally have different poverty thresholds, reflecting differences in their average standards of living. This was evident from a scatter plot of actual poverty lines from 33 countries, graphed against mean consumption. The scatter plot showed that higher average living standards are generally not associated with higher poverty lines among poor countries. After some point, however, poverty lines do tend to rise along with mean consumption. The \$1 standard was chosen as being representative of the poverty lines found among low-income countries. This was deliberately a conservative choice, intended to define aggregate poverty in the developing world in accordance with the perceptions prevalent among countries with the lowest poverty thresholds.

Updating this line with the new PPPs posed a problem. Because of the many differences in data and methods between the 1985 and 1993 PPPs, one cannot simply adjust for inflation in the US between those years. The result would be well above what is found in most low-income countries. Instead, the dollar value of the original set of 33 poverty lines has to be recalculated with the new PPPs so as to remain consistent with the aim of fixing a threshold that may be considered typical among poor countries.

On this basis, we selected a new international yardstick of \$1.08 a day in 1993 PPP prices. This is the median of the ten lowest poverty lines within the original set of 33 countries.

There are several tests of the robustness of the Bank's line. For instance, one can use the (non-linear) line of best fit in the scatter plot relating local poverty lines to mean consumption in order to find the predicted value of the poverty line for the poorest country in the sample. The result turns out to be \$1.05 a day, very similar to the Bank's own estimate.

Tests for robustness have also been made on a larger set of national poverty lines that includes more African countries, which were under-represented in the original calculations. These tests suggest that the choice of the \$1-a-day threshold is reasonably robust to the sample of national poverty lines used.

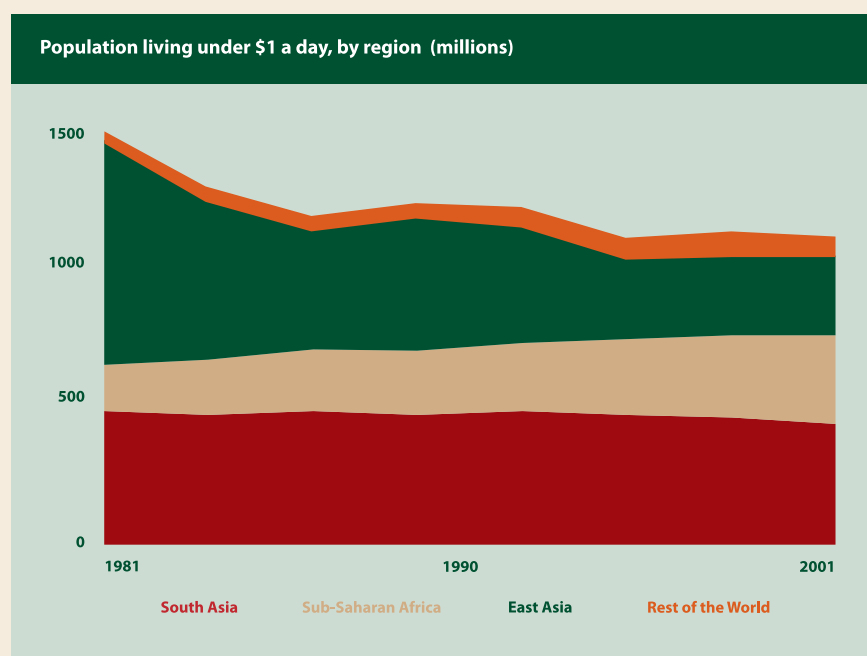
An interesting new test of robustness can be based on a largely independent compilation of poverty lines from a sample of 19 low-income countries around the late 1990s.* The sample has a median of \$1.50 a day — markedly higher than the Bank's line. Adopting this value as a new international yardstick, it is claimed, would better reflect prevailing notions of poverty today.

It should be noted, however, that the proposed threshold of \$1.50 a day derives from a wider range of country poverty lines than the one compiled by the Bank in 1989 for the calculation of the original \$1-a-day benchmark. Even so, the distributions of the two samples are in fact very similar. If one only focused on the median of the ten lowest lines, as the Bank does, then this new sample of 19 low-income countries would yield a poverty line of \$1.11 per day — again very close to the Bank's own. And, moreover, \$1.50 turns out to be exactly the median of the 19 lowest lines in the Bank's compilation for the 1990 *World Development Report*.

As it happens, these two largely independent samples of poverty lines, collected 15 years apart, are really no different. Consequently, it appears there is no compelling argument for an upward revision of the \$1-a-day benchmark.

This being said, one must acknowledge that any poverty line is to some degree an arbitrary reference point. Some observers would prefer to use a more generous yardstick. Still others have opted, explicitly or implicitly, for a lower one. So it is important to try different lines and see how the choice affects poverty comparisons across countries and regions as well as the conclusions about overall progress globally. In our original calculations back in 1990, we made estimates for a wide range of lines from \$0.75 to \$4 a day, thus tracing out all but the upper tail of the global distribution of income.

Since then, however, the Bank has tended to focus on two lines, one set at \$1.08 a day and the other at twice this value (\$2.15). Based on these two lines, one can see that aggregate progress among the poorest — those living under \$1 a day — has been uneven across regions, while the number of people living under \$2 a day actually rose between 1981 and 2001.



Ultimately, the Bank's purpose in producing these aggregate measures is simply to provide a reasonably consistent assessment of progress against absolute income poverty in the developing world. Our \$1 and \$2 a day poverty lines are not intended for use in policy discussions at the country level. Nor are they meant to determine the between-country allocations of development aid through the Bank's lending program — a far more complicated problem that must also take account of non-income dimensions of poverty as well as policies and institutions affecting a country's capacity to usefully absorb extra aid.

The Bank's lines, rather, are explicitly *international* poverty benchmarks. They apply the same standard to all countries, ignoring perceptions of relative deprivation. Lines considered appropriate to local perceptions of poverty are used in the Bank's country-level work, which is in fact a vastly larger task than its global poverty monitoring effort.

For our global poverty counts, we have but one overriding concern — that two people with the same standard of living, measured by their command over commodities, be treated the same way no matter where they live.

■
Shaohua Chen and Martin Ravallion, "How Have the World's Poorest Fared Since the Early 1980s?," *World Bank Research Observer*, Fall 2004.



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