

Estimation of Internationally Comparable Poverty Measures¹

For setting targets and formulating national and sub-national policies, countries rely on welfare measures and poverty lines specific to that country. These reflect local perceptions of poverty. The standard of living represented by the poverty line varies across countries, with the poverty line tending to increase as national income per capita increases. To make consistent poverty comparisons across countries it is necessary to set a common poverty threshold and apply it to all countries, taking into account differences in purchasing power that are not captured by official nominal currency exchange rates.

Setting the International Poverty Line

The World Bank sets the international poverty line on the basis of what poverty means in the world's poorest countries. The latest extreme poverty line of \$1.25/day is based on national poverty lines taken from World Bank poverty assessments completed between 1990 and 2005, covering 74 countries. Most of the national poverty lines were calculated using the "Cost of Basic Needs" methodology, which estimates the cost in national currency of securing basic food and nonfood needs, based on the actual consumption patterns of poor households.

National poverty lines must be converted to a common currency to set the international poverty line. Official exchange rates do not necessarily represent the relative prices of goods and services across countries (because exchange rates are also influenced by demand to finance investment and trade, as well as currency speculation). Therefore the World Bank uses Purchasing Power Parities (PPPs) from the 2005 round of the International Comparison Program. PPP can be defined as the number of units of a country's currency needed to buy the same amount of goods and services in that country as US\$1.00 would buy in the US in the reference year of 2005.

The national poverty lines were converted to 2005 PPP\$ terms and plotted against consumption per capita, also converted to 2005 PPP\$. The plot (Figure 1 below) shows that although poverty lines are higher in richer countries, among the poorest countries there is a lower bound of approximately PPP\$40 per month.² Through regression analysis, the average poverty line for these 15 countries is calculated as \$38 (2005 PPP\$), or \$1.25 a day.³ This is considered the extreme poverty line. A second poverty line of was set at the median poverty line for all developing countries, which is \$2.00 a day (2005 PPP\$).

Internationally Comparable Poverty Measures at the Country Level

The computation of internationally comparable poverty measures for each country requires three basic inputs and four methodological steps. The three inputs are consumption or income data from household surveys, PPP conversion factors to make values comparable, and a consumer price index (CPI) for each country. For each country, the four steps to calculate internationally-comparable poverty levels are

- (1) a vector of household consumption or income (normalized by household size) is constructed from the household survey data,

¹ This note was prepared by Juliana Helo Sarmiento and Ken Simler (PRMPR), and is based on "*The Developing World Is Poorer than We Thought, But No Less Successful in the Fight Against Poverty*" (Chen and Ravallion 2008) and "*Poverty Data: A Supplement to World Development Indicators 2008*" (World Bank 2008). The presentation is simplified, and the reader is referred to the original sources for further details.

² These 15 "reference countries" include, in order from poorest to least poor: Malawi, Mali, Ethiopia, Sierra Leone, Niger, Uganda, Gambia, Rwanda, Guinea-Bissau, Tanzania, Tajikistan, Mozambique, Chad, Nepal, and Ghana.

³ There are several reasons for the increase to \$1.25 from the previous international poverty line of \$1.08 that was based on 1993 PPP data. Among these are better control for quality of the items surveyed in the 2005 ICP data.

- (2) convert the established international poverty line to local currency by multiplying it by the base-period PPP rate,
- (3) as surveys may have been collected in a different year than the base period, the country-specific CPI is used to adjust for the international poverty line in local currency to the prices that prevailed during the survey period, and
- (4) the proportion of the population below the international poverty line is calculated from the survey distribution of consumption or income.

Aggregating Internationally Comparable Poverty Measures to Regional and Global Levels

To make poverty comparisons among different countries or regions, or to calculate regional or global poverty rates for a given year, the country-level estimates calculated in the preceding step must be “lined up” to a common reference year. For those countries that do not have survey data for the reference year, income or expenditure is interpolated using the survey data collected before and/or after the reference year.

Two assumptions are required for interpolating to the reference year. First, growth (or contraction) in income or expenditure is assumed to be distribution-neutral. Second, as annual survey data are not available for most countries, the rate of change in real private consumption per capita is measured from national accounts.

When the reference year falls between two survey years, an estimate of mean consumption at the reference year is constructed by extrapolating the means obtained from the surveys forward and backward to the reference year. The second step is to compute the headcount poverty rate at the reference year after normalizing the distributions observed in the two survey years by the reference year mean. This yields two estimates of the headcount poverty rates in the reference year. The final reported poverty headcount rate for the reference years is the average of the two. When data from only one survey year are available, the reference year mean is based on the survey mean by applying the growth rate in private consumption per capita from the national accounts. The reference year poverty estimate is then based on this mean and on the distribution observed in the one survey year.

