

## 1. Introduction

An enormous challenge confronts developing Asia—the developing member countries (DMCs) of the Asian Development Bank (ADB). While the region as a whole has experienced a dramatic economic transformation in the last 30 years, the benefits of Asia’s transformation and dynamism have eluded significant portions of its population. Obtaining precise estimates of the magnitude of poverty is neither easy nor uncontroversial, as this theme chapter explains. Nevertheless, reasonable methods and approaches to measurement indicate that the magnitude of poverty in the region is staggering. For example, in terms of the most common international definition of people in extreme poverty—those who live on less than \$1 a day<sup>1</sup>—the estimates of this chapter reveal that almost 690 million Asians were poor in 2002. Using a more “generous” poverty threshold of \$2 a day, 1.9 billion Asians were poor that year.

The existence of widespread extreme poverty makes its removal the region’s greatest development challenge, and reliable estimates of poverty have an important role to play in meeting this challenge for several reasons. First, poverty estimates are a vital input in the design, implementation, and monitoring of antipoverty policies. Governments and development agencies routinely make use of estimates of the number and proportion of poor in their countries and monitor such figures over time. Among other things, analysts and development practitioners are interested in examining poverty profiles by region or socioeconomic group based on attributes such as landholding size, occupation, and social and demographic features. The development of such profiles is important for identifying target groups for poverty reduction programs and for analyzing the impact of various programs on different groups of people. Allocation of resources to different regions within a country and to various poverty reduction programs crucially depends on such impact analysis. Second, estimates of poverty also serve as a catalyst for action. As noted by experts in the field, credible poverty estimates can be a powerful instrument for focusing the attention of policy makers, domestically as well as internationally, on the conditions of the poor.

The starting point and a major focus of this chapter is therefore the measurement of poverty—covering not only the important conceptual issues involved in measurement but also the practices that underlie poverty

measurement in Asia. While poverty can be conceptualized in various ways, this chapter deals exclusively with the monetary (or material) approach to poverty. This approach identifies the poor in terms of households’ deprivation in income or consumption expenditure relative to a particular standard, or poverty line.<sup>2</sup> Simply put, measuring poverty then becomes contingent on carrying out surveys that provide information on households’ income or consumption expenditure and examining that in the context of a poverty line. A key contribution of this chapter is to cover in some detail the various issues that arise in measuring poverty accurately and consistently.

This chapter goes beyond measurement issues, however. It takes stock of what the available data reveal about poverty in Asia. In addition to covering poverty trends within the region, it explores the connections between poverty, growth, and distribution. The diverse experiences of Asian countries hold important lessons for policy makers, especially in those DMCs in South Asia where poverty remains both widespread and immense in magnitude. Finally, this chapter discusses Asia’s prospects for reducing poverty. In particular, it asks what the prospects are for meeting the first target of the first Millennium Development Goal (MDG) of halving, between 1990 and 2015, the proportion of people living on less than \$1 a day.<sup>3</sup> On the assumption that current rates of economic growth continue in most DMCs, but decline to more sustainable levels in the People’s Republic of China (PRC) and the Central Asian republics, and distributions remain similar to those experienced in recent years, the answer to the question is a positive one. Indeed, some DMCs, particularly in Southeast Asia, have already achieved the target while other populous DMCs are well on their way. Even allowing growth to be lower by 1 percentage point a year does not change this outcome. However, it can be argued that meeting the MDG target is easy because of the way that the target has been defined. In particular, the definition of poverty used is extreme poverty, which is arguably too miserly. Raising the poverty line to one that is more typical of that found in low-middle-income countries sees Asia’s performance as less stellar under the same scenarios for growth and distribution. Not only

<sup>1</sup> To be more precise, \$1.08 a day in 1993 purchasing power parity (PPP) prices (or exchange rates).

<sup>2</sup> A poverty line is defined in terms of either income or consumption expenditure as an indicator of welfare. For simplicity, the poverty line is often referred to in this chapter in terms of either of the two variables.

<sup>3</sup> The second target of the first MDG is to halve, between 1990 and 2015, the proportion of people who suffer from hunger.

do Asia's prospects of halving the proportion of people living on less than \$2 a day become far less certain, but well over 1 billion Asians will continue to live in poverty in 2015 under the scenarios considered here. From this perspective, Asia's most important challenge will continue to be poverty reduction for quite some time to come.

The rest of this chapter is organized as follows. Sections 2 and 3 focus on measurement issues: after describing briefly the basics of poverty measurement, Section 2 covers the theory and practice of setting poverty lines, while Section 3 describes issues relating to the household surveys that are used in conjunction with poverty lines to arrive at estimates of poverty. After this discussion the chapter moves on to an examination and analysis of poverty estimates in the region. Section 4 provides estimates of poverty based on both national and international poverty lines and discusses recent trends in poverty. It also provides an assessment of the relationship between poverty, growth, and distribution. This assessment provides a starting point for exploring Asia's prospects for reducing poverty, discussed in more detail in Section 5. Section 6 then presents some concluding remarks.

## 2. Measuring poverty: Theory and practice in Developing Asia

### 2.1 An overview

Poverty is multidimensional in nature. As a result, there are different conceptualizations of poverty. In this theme chapter, the focus is exclusively on the monetary approach to poverty (Box 1 provides a brief description of other important and relevant conceptualizations of poverty). One of the simplest and most commonly used measures of the extent of monetary poverty is the proportion of poor in a given population. This measure is often referred to as the poverty incidence or the headcount ratio (HCR), or even the poverty ratio or poverty rate. In discussing measurement-related issues, it is useful to focus on this approach. Other concepts pertinent to the monetary approach to poverty, including the depth and severity of poverty and measures of inequality, are described in Box 2.

There are two basic ingredients in measuring poverty. The first is a poverty line that refers to a benchmark level of consumption (or income) that enables a person

#### Box 1 Alternative Conceptualizations of Poverty

This chapter's exclusive focus on monetary (or material) poverty does not imply that it is the only important conceptualization of poverty. Poverty is clearly multidimensional in nature. It encompasses not only material deprivation in terms of income or consumption levels below some minimally adequate levels, but also the deprivations arising from illiteracy, malnutrition, bad health, poor access to water and sanitation, vulnerability to economic shocks, and lack of political freedom. While material deprivations are clearly linked in many cases to these other types of deprivation, they are not all-encompassing. In other words, deprivations in terms of some minimally adequate income or consumption do not always move together with other deprivations.

In addition to the monetary approach, there are other conceptualizations of poverty that are now widely recognized as important in understanding the nature and causes of poverty, and therefore in determining what types of policy actions become important in reducing poverty. These include the capabilities approach, the livelihoods approach, and the social exclusion approach.

Under the capabilities approach—pioneered by Amartya Sen—attaining high levels of human well-being depends on how well people can do the things that they value. From a poverty perspective, incomes become important to the extent that they expand people's basic capabilities to function in ways that they value. In addition to the ability to attain adequate nutrition and to be adequately

clothed and sheltered, these basic capabilities include the ability to access important public goods and participate in society and the community with dignity. This latter ability pertains to issues that are most likely to be missed by the monetary approach to poverty.

The livelihoods approach also accepts the multidimensional nature of human deprivation and is based on the recognition that poor households typically use a range of strategies to deal with their situations. Understanding these diverse strategies is essential for effective design and implementation of poverty reduction policies. Among other things, the livelihoods approach has been useful in sensitizing poverty analysts and policy makers to the concept of vulnerability and the related notion of risk insofar as deprivation is concerned. For instance, the perception of risk can induce the poor to remain engaged in subsistence activities at the expense of market-oriented activities, even if these activities offer higher average returns but are regarded as having greater volatility.

Social exclusion refers to the phenomenon whereby individuals or groups are unable to participate fully in society. The types of exclusion can be many. Certain groups, such as women or other people belonging to particular socio-ethnic groups, may be excluded from the labor market and education while still others may be excluded from participation in the political process. Since excluded individuals or groups might not be deprived materially, this concept is much broader than that of material poverty.

## Box 2 Definitions and Concepts Relating to the Monetary Approach to Poverty

The *poverty line* is the consumption level that is required to achieve the minimum acceptable standard of living in a society. This minimum standard may be defined in absolute or relative terms. The absolute poverty line is often defined as the threshold that allows minimum calorie requirements plus a small allowance for nonfood items. A relative poverty line is defined as a function of various income (or consumption expenditure) distribution parameters, such as the mean or median. (For example, a relative poverty line could be defined as 50% of the mean income.) When a person's consumption falls below this threshold, he or she is considered poor.

Since minimum acceptable consumption levels vary across countries, and over time, poverty lines also tend to vary across countries and over time. However, differences in the definitions and methodologies used for computing poverty lines tend to vary far more across countries than over time in the same country, especially when the time periods are not too far apart. Thus, national methodologies should not be used for making international comparisons of poverty.

The *\$1-a-day poverty line* represents the \$1.08 per person per day consumption level in 1993 purchasing power parity prices. This threshold stands as an internationally accepted minimum level of private consumption and thereby seeks to provide a more meaningful comparison of poverty across countries.

*Poverty incidence* is the proportion of individuals, whose income or expenditure falls below the poverty threshold, among the total population. The measure may be based on either the national poverty line or international poverty lines, such as the \$1-a-day poverty line. Poverty incidence is also often referred to as the headcount ratio, or even the poverty ratio or poverty rate.

The *poverty gap index*, unlike poverty incidence, gives a sense of how poor the poor are and reflects the depth of poverty.

It is equivalent to the shortfall of consumption below the poverty line per head of the total population, and is expressed as a percentage of the poverty line.

The *squared poverty gap index* adds the dimension of inequality among the poor to the poverty gap index and is said to reflect the severity of poverty. For a given value of the poverty gap index, populations with greater dispersion of incomes or expenditures among the poor will show up with a higher value for the squared poverty gap index.

The *transient poor* are those who are poor for a short period of time. These individuals are usually poor because of economic distortions or market imperfections. The temporary income shortfall among farmers due to drought in the absence of crop insurance or among displaced workers in the absence of any unemployment insurance are instances of transient poverty.

The *permanent or chronically poor* are those people who are poor for a long time because they have few assets or skills. The chronically poor earn inadequate incomes even in the best of circumstances with no market distortions.

The *Lorenz curve* is a curve that represents the relationship between the cumulative proportion of income and the cumulative proportion of the population in income distribution, beginning with the lowest income group. If there were perfect income equality, the Lorenz curve would be a 45-degree line.

The *Gini coefficient*, another commonly used measure of inequality, is the area between the Lorenz curve and the 45-degree line, expressed as a percentage of the area under the 45-degree line. With perfect income equality the Gini coefficient would be equal to zero; with perfect inequality, it would be equal to one. Internationally, Gini coefficients range from a low of 0.3 to a high of 0.7.

to attain a threshold standard of living. A person whose consumption is below this benchmark level does not attain the threshold standard of living and is thereby defined as poor. The poverty line is said to be absolute, as opposed to relative, when the threshold standard of living is held fixed both over time and space. Given that absolute poverty lines, and the poverty measures derived from these, are widely believed to be the appropriate bases on which to inform antipoverty policies in developing countries, the discussion focuses on these. Box 3 describes an early attempt—made more than a century ago—to set a poverty line and analyze the poverty problem in India.

The second ingredient in measuring poverty is a survey that collects data on income and/or consumption levels from a sample of households representative of a given population.<sup>4</sup> The choice of income or consumption as an indicator of household welfare is often determined

by the availability of data. Where choice is available, researchers have normally preferred consumption to income on the grounds that the former is a better indicator of permanent income and standard of living of people due to consumption smoothing through savings and insurance opportunities. It has also been argued that it is easier to collect information from respondents on consumption than on income.<sup>5</sup> Once a poverty line has been set and survey data are available, it is a simple matter to determine how many households or people are poor.

Unfortunately, the setting of poverty lines always involves some elements of subjective methodological choice. The poverty line refers to a minimum level of living necessary for physical and social development of a person. A minimum level of living defined in monetary terms comprises both food and nonfood components of

<sup>4</sup> The Family Income and Expenditure Survey conducted in the Philippines, for example, collects both income and consumption data.

<sup>5</sup> Consumption data are presumably more reliable because better consistency checks could be built in the survey information. The various problems with such surveys and other poverty data are discussed in Section 3.

### Box 3 An Early Attempt to Construct a Poverty Line in India

In a classic work on the Indian economy written as early as 1876 and published in 1901, Dadabhai Naoroji considered what was “necessary for the bare wants of a human being, to keep him in ordinary good health and decency.” He considered quantities of various items of food and clothing, valued them at prices prevailing in some major centers, and added the costs of a hut, oil for lamp, barber, and domestic utensils to arrive at “subsistence per head.” It is worth noting that even the colonial government of the time felt it necessary to consider diets essential for nourishment of the people and to monitor availability of some basic needs. In

the absence of income distribution data, Naoroji compared the computed subsistence level with per capita production to draw attention to mass poverty.

*Poverty and Un-British Rule in India* is a remarkable work that parallels Rowntree’s early work on British poverty (Rowntree 1901). One of the current approaches to poverty line estimation very much echoes the approach pioneered by Naoroji. A century or so later, many authors have followed this tradition of estimating the cost of a basket of essential goods to derive poverty lines.

consumption. An objective approach could, in principle, be adopted for computing minimum food expenditure, the dominant component in the total consumption bundle of the poor. However, nonfood expenditure is clearly affected by social needs and the minimum on this count obviously differs from one society (or region) to another. As discussed in Section 2.2 below, it is difficult to consider even the physical component of minimum needs *entirely* on an objective basis. Despite such problems, recent literature has grown sufficiently to define the absolute poverty line on a reasonably, though not completely, objective basis.

Once the poverty line is defined, data are required on size distribution of income or consumption to compute the number and proportion of the population below the poverty line. Household income or consumption expenditure surveys are the principal source of such data. Fortunately, several DMCs have a long history of conducting household income or consumption surveys to monitor the standard of living of lower income groups. It is useful at this stage to give a typical example of the distribution data obtained from a survey and to show how the poverty ratio is calculated.

Such an example is given in Table 1 from Indian survey data. Households are classified by various monthly per capita consumption expenditure (MPCE) classes in the first column and percentage distribution of people corresponding to the MPCE classes in the second column. Suppose the poverty line is given as an MPCE of Rs325, then all the persons in the first three MPCE classes are poor. In addition, a fraction of the population in the MPCE class 300–340 is also poor. Assuming a uniform distribution within this class, this fraction could be approximated as 6.25%. The proportion of poor is then estimated as 26.55%.

While most DMCs have a fairly good statistical infrastructure in place for estimating the proportion of poor, attention has shifted in recent years to comparisons of such estimates across regions or over time. The

Table 1 **Distribution of Consumption Expenditures in Rural India, 1999/2000**

Monthly Per Capita Expenditure Class (Indian Rupees)	% of Persons
000–225	5.2
225–255	5.0
255–300	10.1
300–340	10.0
340–380	10.3
380–420	9.7
420–470	10.2
470–525	9.3
525–615	10.3
615–775	9.9
775–950	5.0
Above 950	5.0
All classes	100.0

Source: Government of India, 2001. “Level and Pattern of Consumer Expenditure in India 1999–2000.” Report No. 457. National Sample Survey Organisation. New Delhi.

concept of a minimum level of living has some elements of society-specific subjectivity and hence comparisons of poverty estimates across regions have become difficult in the absence of a common yardstick. Adopting such a yardstick helps in making consistent comparisons of poverty but inevitably sacrifices, in part, the dimension of specificity. This gives rise to a trade-off between the principles of consistency and of specificity in setting poverty lines (discussed further in Section 2.3).

Some poverty analysts are also raising concerns about the ability of survey data to capture accurately incomes or consumption expenditure, as the case may be. Clearly, the reliability of poverty estimates depends crucially on how accurately the surveys are capturing income or expenditure, especially among the poor. In a number of developing (and industrial) countries, survey-based estimates of mean income or expenditure have generally been found to be lower than the corresponding estimates from national accounts statistics (NAS). Some researchers have argued that, on balance, the discrepancy has to do with deficiencies in the survey data, which lead to systematic underreporting of income or expenditure

across households. These researchers have estimated poverty by combining the *distribution* of income or expenditure from survey data, but using mean income or expenditure data from the NAS.<sup>6</sup> Some other researchers, however, believe that there is no valid reason to prefer NAS data to survey data.

These issues are discussed in detail in the rest of Section 2 and in Section 3. Section 2.2 describes the alternative methods of setting poverty lines, while Section 2.3 discusses the issues of comparability of poverty lines over time and space, an issue that has generated much debate in recent years. Section 2.4 then briefly describes the actual practices adopted by selected DMCs in setting poverty lines.<sup>7</sup> Section 3 then analyzes issues related to survey data. For ease in presentation, some of the issues are first explained with a typical example from a DMC and then variations arising from the typical case are discussed.

## 2.2 Methods of setting poverty lines

As part of their efforts to analyze poverty, most developing countries establish country-specific poverty lines. Such country-specific poverty lines, henceforth referred to as national poverty lines, are based on country-specific methods, and provide internationally noncomparable information on poverty, including its incidence, depth, and severity. In order to measure poverty across countries on a comparable basis and to provide an estimate of the poverty headcount at supranational levels, researchers at the World Bank developed the standard \$1-a-day poverty line.<sup>8</sup> This poverty line, often referred to as an “international poverty line,” was chosen as being representative of national poverty lines (not necessarily “official,” as many of the national poverty lines were estimates from independent researchers) found among low-income countries.

There are different methods of setting a poverty line. The extent of poverty in a society obviously depends on the poverty line used. Different countries have followed a variant of one or more of three broad methods discussed below—the social consensus method, the energy

<sup>6</sup> Poverty estimates can be easily obtained with data on the distribution of income or expenditure and the value of mean income or expenditure.

<sup>7</sup> Not all poverty lines have been officially endorsed by the national authorities in individual DMCs. In some countries, poverty lines have been computed by nongovernment agencies. Both official and nonofficial poverty lines are subject to debate in several countries.

<sup>8</sup> This poverty line was subsequently adopted by the United Nations system and by other bilateral and multilateral aid agencies. The \$1-a-day poverty line is the main indicator for the first target of the first MDG.

intake method, and the cost of basic needs method. Details on international poverty lines can be found in Box 4.

### 2.2.1 Social consensus method

The simplest way to determine a poverty line is to agree upon a particular income level as necessary to meet the basic essentials of life. The poverty lines in such cases may be deemed to represent just a social consensus on a desirable minimum level of living for all persons in the society. Unlike the energy intake method and the cost of basic needs method, this method is not founded on any normative consideration, but may be viewed as based on a perceived notion of the minimum desirable level, contingent upon the overall level of development of society or affordability of the government to transfer funds to the poor. Rural poverty standards in the PRC were, for example, set in the mid-1980s, and were in the range of CNY150–300 (in 1985 prices) of net per capita income per year in different counties, depending on their level of development and other special considerations. There have also been instances where a certain percentage of the bottom-most population is selected as poor for policy action. The Philippines, for example, focused on the bottom three deciles of the population for poverty assistance during the mid-1980s.

Such poverty lines were meant for relief measures and Hussain et al. (2002) terms them “benefit lines” that serve to identify potential recipients of social assistance at a given time and to determine the magnitude of assistance. Normative poverty lines, as they are normally understood now and as discussed in the following two subsections, are not constrained by availability of assistance, though these may not be independent of the prevalent living standard in a society. While these poverty lines were no doubt set as a “rule of thumb” based on a broad consensus among policy makers, they served to focus on policies for improving the standard of living of the low-income groups identified by the adopted criteria. However, comparing poverty across regions and monitoring progress on poverty reduction over time by this method became difficult since the underlying living standard was not kept fixed for comparison (a point further discussed in Section 2.3).

### 2.2.2 Energy intake method

This method attempts to provide a normative basis to the derivation of poverty lines and relies on the relationship between income or consumption expenditure and nutritional intakes. The human body needs various types

## Box 4 Basics on International Poverty Lines

The “\$1-a-day” international poverty line was first computed by researchers at the World Bank in 1990. They first compiled national, but not necessarily official, poverty lines for 33 countries, both developing and industrial. These poverty lines were then converted from local currencies into a common currency, the US dollar. However, rather than use official or market exchange rates to carry out this conversion, the researchers used purchasing power parity (PPP) prices (or exchange rates). These PPP prices, based on the 1980s’ rounds of the International Comparisons Program (ICP), attempt to account for differences in the purchasing power of currencies at official exchange rates. The researchers found that a poverty line of \$31 a month in 1985 PPP prices was representative of the poverty lines of the sample low-income countries.<sup>a</sup> In fact, this poverty line was shared, to the nearest dollar, by six sample countries (Bangladesh, Indonesia, Kenya, Morocco, Nepal, and United Republic of Tanzania). Two other sample countries had poverty lines that were very close to this figure (Pakistan and the Philippines). In time, the term “\$1-a-day” poverty line came to be used.

In 1993, the ICP provided more comprehensive data (covering 110 countries versus 64 in 1985 and a larger set of commodities),

based on which the World Bank estimated new PPP data. In 1999, the \$1-a-day poverty line was reassessed to be consistent with the new set of PPPs. Since the 1985 and 1993 sets of PPPs are based on noncomparable price and commodities data, the conversion of \$1 from 1985 PPP to 1993 PPPs could not be done by simply applying the inflation rate in the US between 1985 and 1993. Instead, the international poverty line was reassessed based on a similar methodology to the one used for computing the original one. The \$1-a-day poverty line was established at \$1.08 per person per day, or \$32.74 per person per month, in 1993 PPP prices. This represents the median of the lowest 10 poverty lines within the set of countries used originally. For convenience, the \$1.08 a day poverty line in 1993 PPP prices continues to be referred to as the \$1-a-day poverty line.

Since the \$1-a-day poverty line is based on national poverty lines in the poorest countries, it gives a very conservative measure of poverty. An alternative international poverty line can be obtained by simply doubling the \$1-a-day poverty line. The so-called “\$2-a-day” poverty line (around \$2.15 per day in 1993 PPP prices), reflects poverty lines more commonly used in low-middle-income countries (Chen and Ravallion 2000).

<sup>a</sup> The poverty line of \$31 a month was later recomputed as \$30.42 per person per month in 1994.

Sources: Ravallion, M., G. Datt, and D. van de Walle. 1991. “Quantifying Absolute Poverty in the Developing World.” *Review of Income and Wealth*, Series 37, No. 4, December; Chen, Shaohua and M. Ravallion. 2000. “How Did the World’s Poorest Fare in 1990s?” *Review of Income and Wealth*, Vol. 1. No. 1; ADB Poverty and Development Indicators Database.

of nutrients, such as energy (calories),<sup>9</sup> protein, fat, vitamins, and minerals. Of these, calories are required for carrying out various activities of life, including the metabolic activities of a body at rest. The quantity of food needed by the human body is normally determined by the calorie needs, while other nutrients enrich the quality of food and make the diet a balanced one.

An empirically observed fact is that when household per capita income (or consumption expenditure) increases, the average per capita energy intake rises and tends to reach a plateau at a fairly high income level. Table 2 and Figure 1 show the average calorie intake of households for rural India in 1993/94 classified by per capita expenditure levels.<sup>10</sup> The energy intake method of setting a poverty line exploits such a relationship and defines the poverty line as that level of consumption expenditure (or income) at which energy intake is just sufficient to meet a given calorie requirement level (or norm). Thus, a simple interpolation of the data in the last two columns of Table 2 gives a poverty line of Rs322 per capita per month, corresponding to a calorie

<sup>9</sup> Energy is also referred to by its unit of measurement, calorie or kilocalorie. Kilocalorie is often called calorie in the nutrition literature.

<sup>10</sup> Given the groups in the published data, the plateau is not clear here. Further disaggregation of the highest expenditure class could reveal the tendency to reach the plateau.

Table 2 Per Capita Calorie Intake by Monthly Per Capita Expenditure Class, Rural India, 1993/94

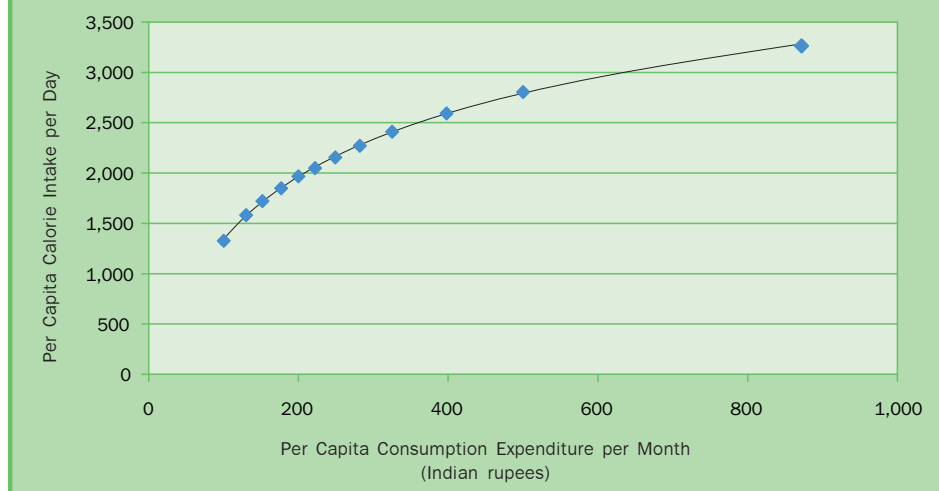
Monthly Per Capita Expenditure Class (Indian Rupees)	Per Capita Per Day Calorie Intake	Average Monthly Per Capita Expenditure
Less than 120	1,327	100
120–140	1,583	130
140–165	1,721	152
165–190	1,850	177
190–210	1,968	200
210–235	2,048	222
235–265	2,154	249
265–300	2,271	282
300–355	2,410	325
355–455	2,592	398
455–560	2,804	500
560 and above	3,262	872
All classes	2,153	281

Source: Government of India. 1997. *Sarvekshana: Journal of the National Sample Survey Organisation*. Vol. XXI, No. 2.

norm of 2,400 per capita per day.<sup>11</sup> Several variations of this method are found in practice. For example, a bit of sophistication can be introduced by regressing per capita calorie intake on per capita consumption expenditure and inverting the estimated function to determine the poverty line corresponding to the norm. Bangladesh and Pakistan have, in fact, used the regression method in a semilog form to obtain the official poverty line.

<sup>11</sup> This calorie norm is used by the Indian Government for the rural poverty line, though the base official poverty line is for 1973/74 and not 1993/94 as in this example.

Figure 1 **Relationship Between Calorie Intake and Consumption Expenditure, Rural India, 1993/94**



Source: Government of India. 1997. *Sarvekshana: Journal of the National Sample Survey Organisation*. Vol. XXI, No. 2. October–December.

Once the poverty line is determined, the percentage of people with income or expenditure below the poverty line can then be estimated using distribution data as in Table 1. This gives the HCR, which could be supplemented, if needed, by other measures designed to capture the depth and severity of poverty. Box 5 provides technical details on these other measures.

**The Calorie Norm.** As seen in the above example, the setting of the poverty line crucially depends on how the calorie norm, such as 2,400 per capita per day as used above, is determined. If a higher calorie norm was used, the corresponding poverty line and extent of poverty too would be higher—and vice versa. Nutritional experts associated with several national or international organizations have worked out the nutritional requirement for maintenance of a healthy and active life under different geographic and climatic conditions. The Food and Agriculture Organization of the United Nations (FAO)/World Health Organization (WHO) expert groups have thus recommended the nutritional intakes for various groups of countries. National-level organizations have further refined them to suit individual country conditions.

The calorie requirement of a person depends on age, sex, weight, height, activity level of the person, and climate. The calorie intakes recommended by expert groups are for a typical person belonging to a particular age-sex-activity group. For instance, Table 3 shows the dietary energy requirements recommended by the Indian Council of Medical Research and Thailand’s Ministry of Public Health. As can be seen from the table, a person’s energy needs vary considerably across age-sex groups. They also depend on the activity status of the labor force

as the Indian data show.<sup>12</sup> Children obviously need fewer calories, mostly due to lower body weight.<sup>13</sup> The energy requirements of an adolescent, on the other hand, are more than those of an adult engaged in sedentary activity. Males above age 10 require considerably more calories than females of corresponding age groups.

Table 4 documents the calorie norms adopted by various DMCs. The norms tend to range from 2,100 to 2,400 calories per capita per day. The Indian calorie norm of 2,400 per capita per day for rural areas is relatively high compared with those used by many other countries. While the “moderate” work assumption has presumably been followed in many countries, India has

<sup>12</sup> The Indian Planning Commission worked out age-sex-activity distribution of the population using available demographic data and making certain assumptions about the proportion of the labor force engaged in sedentary, moderate, and heavy work. It then worked out the population-weighted average of recommended calorie intakes to arrive at the norm of 2,400 calories per capita per day for rural India considered in the calculation of the poverty line in the earlier example. The corresponding average calorie norm for urban areas was 12.5% lower at 2,100, mainly because urban areas have more workers in sedentary activities while rural areas have more workers in heavy activities. The recommended intakes for Thailand do not distinguish the activity levels of adults. These are presumably for average activity levels. Unlike India, the calorie needs of senior citizens in Thailand are distinguished from those of other adults. Given their data on calorie recommendations, the authorities in Thailand determine the per capita norm based on age-sex composition of the population. While the demographic composition of the population is fairly well established and reliable for most countries, the distribution of adult population by activity level is a matter of judgment.

<sup>13</sup> Children need more proteins per kilogram of body weight for helping growth of their body as proteins are needed for building, maintaining, and repairing body tissues.

## Box 5 Technical Details on Poverty Measures

Though the headcount ratio (HCR) is both simple and useful, it fails to give a full account of the poverty problem. For example, the HCR does not describe how poor a poor person is. Thus, if the goal is to reduce poverty as measured by the HCR alone, a policy of providing income transfers to the poor would be most “effective” if it allocated a given amount of funds to those closest to the poverty line, ignoring the plight of the poorest of the poor.

Sen (1976) pointed out some underlying conceptual difficulties with HCR insofar as it violates two desirable axioms:

- *Monotonicity axiom:* All else being equal, a reduction in the income of a poor person should increase poverty.
- *Transfer axiom:* A transfer of income from a poor person to someone less poor should increase poverty.

Other measures of poverty can help overcome some of the shortfalls of the HCR. The poverty gap index (PGI) is based on the proportionate consumption or income shortfalls of all the poor from the poverty line. It takes into account intensity of poverty and satisfies the monotonicity axiom, but violates the transfer axiom. In order to solve the conceptual problems in measurement of poverty, Sen (1976) derived an index based on the weighted sum of the poverty gaps with a rank order weighting pattern such that the poorest among the poor get the highest weight and the richest poor the lowest weight.

Foster, Greer, and Thorbecke (1984) followed this approach further and derived a class of decomposable poverty measures using a function of the income shortfall itself as the weight attached to the poverty gap. Many investigators have used the

Foster-Greer-Thorbecke (FGT) index in recent years. It takes the following form:

$$FGT = \frac{1}{n} \sum_{i=1}^m \left( \frac{z - y_i}{z} \right)^\epsilon$$

where  $y_i$  = consumption or income of  $i$ -th poor  
 $z$  = poverty line  
 $n$  = total population  
 $m$  = number of poor

This index in fact is a general form of the poverty indexes discussed above. For  $\epsilon = 0$ , it reduces to the proportion of people living below the poverty line:

$$HCR = \frac{m}{n}$$

For  $\epsilon = 1$ , it turns out to be the poverty gap index:

$$PGI = \frac{1}{n} \sum_{i=1}^m \frac{z - y_i}{z}$$

If we define the poverty gap as zero for the nonpoor, PGI could be interpreted as the average income gap expressed as a proportion of the poverty line, the average being taken over the entire population.

Another form of FGT used often is when  $\epsilon = 2$  and referred to at times as the squared poverty gap (SPG) index:

$$SPG = \frac{1}{n} \sum_{i=1}^m \left( \frac{z - y_i}{z} \right)^2$$

Table 3 Recommended Daily Calorie Allowance, India and Thailand

	India		Thailand	
	Male	Female	Male	Female
<b>Children</b>				
1–3 years	1,200	1,200	1,200	1,200
4–6 years	1,500	1,500	1,450	1,450
7–9 years	1,800	1,800	1,600	1,600
10–12 years	2,100	2,100	1,850	1,700
<b>Adolescents</b>				
13–15 years	2,500	2,200	2,300	2,000
16–18 years <sup>a</sup>	3,000	2,200	2,400	1,850
<b>Adults</b>				
20–29 years			2,787	2,017
30–59 years			2,767	2,075
60 years and above			1,969	1,747
Sedentary worker	2,400	1,900		
Moderate worker	2,800	2,200		
Heavy worker	3,900	3,000		

<sup>a</sup> 16–19 years for Thailand.

Sources: Indian Council of Medical Research. 1968. “Dietary Allowances for Indians.” *Special Report Series* No. 60. New Delhi; Ministry of Public Health, Thailand (as reported in Kakwani. 2003. “Issues in Setting Absolute Poverty Lines.” *Poverty and Social Development Papers* No. 3. ADB, Manila).

also taken into account activity status of the population. WHO (1985) stresses that any assessment of observed energy intake must be with respect to the *specified level of the physical activity*. But given that there have been very few studies on how to use in practice the recommended activity-wise calorie levels for adult men and women, more thought needs to be given before accepting activity status assumptions in working out average calorie norms.<sup>14</sup>

The recommended calorie levels refer to the observed average among healthy and active people. Questions have been raised about whether recommended dietary allowances (RDAs) could at all be used to judge nutritional adequacy of an *individual*. RDAs are meant for the average daily amount of nutrients that population

<sup>14</sup> Several questions could be raised on activity levels. It is not clear whether a rural agricultural laborer and an urban rickshaw puller could be classified in the same category of work intensity. Pedaling rickshaws (with or without passengers), sawing logs by hand, felling trees with an ax, cutting sugarcane, clearing hard ground, and loading sacks are among the most calorie-intensive works. It is interesting to note that WHO (1985) states that calorie recommendations assume that the time really working on the relevant tasks might be no more than half of a 7–8-hour work shift. Certain questions arise: Do we need to allow for additional

Table 4 **Calorie Norms Used for Poverty Line Estimation by Various Developing Member Countries**

Country	Calorie Norm (per capita per day)	Remark
Azerbaijan	Upper Poverty line: 2,200 Lower poverty line: 60% of median	Lower poverty line is relative.
Bangladesh	Absolute poverty: 2,122 Hard core poverty: 1,805	Official estimates have variously used three methods: direct calorie intake; food-energy intake; and cost of basic needs. Since the mid-1990s, cost of basic needs method has been used.
Cambodia	2,100	
China, People's Rep. of	2,100	Adopted by the National Bureau of Statistics in 1993 for setting the rural poverty line.
India	Rural: 2,400 Urban: 2,100	Official estimates are based on age-sex-activity composition of the population.
Indonesia	2,100	Derived by taking into account the population distribution by sex and age and the corresponding energy requirement.
Lao People's Dem. Rep.	2,100	Used as poverty indicator. Lao PDR has no official poverty line.
Kyrgyz Republic	2,100	Based on World Health Organization recommendation.
Malaysia	9,910 per day per family of 2 adults and 3 children	Official estimates of poverty line income are based on this calorie norm.
Mongolia	2,100	
Nepal	2,124	Estimated by Nepal Planning Commission based on age-sex composition and assuming moderate activity level.
Pakistan	2,350	Per adult equivalent.
Philippines	2,000	Low-cost menus that satisfy the 100% recommended dietary allowance for energy, proteins, and 80% of the other nutrients are used to determine the food poverty line.
Sri Lanka	2,500	Various individual researchers use different methods.
Thailand	2,099 (in 1994)	Poverty lines use calorie norms that vary with age and sex.
Viet Nam	2,100	Determined by the General Statistical Office.

Source: Asian Development Bank. Regional Technical Assistance 5917: *Building a Poverty Database*.

groups should consume over a period of time. As the Committee on Dietary Allowances<sup>15</sup> (1980) puts it: "RDA should be applied to population groups rather than to individuals....The basis for estimation of RDA is such that, even if a specific individual habitually consumes less than the recommended amounts of some nutrients, his diet is not necessarily inadequate for those

calories for working children? How do we relax the work intensity for activities with a large number of disguised laborers? It is clear that calorie requirement differs substantially across activity categories; heavy workers need about 60% more calories than sedentary workers (Table 3) and bias in activity classification could lead to large errors. It is not clear if the resulting net bias from questions such as these would be negligible. Moreover, a changing demographic and occupational structure of the population would require that the calorie norms be worked out anew every decade or so.

<sup>15</sup> A committee set up by the Food and Nutrition Board of the National Academy of Sciences, Washington, DC.

nutrients. However, since the requirements of each individual are not known, it is clear that the more habitual intake falls below RDA and the longer the low intake continues, the greater is the risk of deficiency" (p.10).

**Adaptation Process.** The story on calorie norms, however, does not end there. Some nutritionists (Sukhatme 1978, Sukhatme and Morgan 1982) have challenged the view that the requirement level of calories (or other nutrients) of an individual is fixed; they argue that it lies within a range. They point out that there is considerable variation in calorie intake of individuals from one day to another even when they are engaged in similar work and maintain their body weight. Their hypothesis is that energy is used with variable efficiency by the body in order to regulate stress and maintain energy balance. Since the calorie needs are controlled by

an auto-regulatory “homeostasis” system,<sup>16</sup> there are no fixed energy needs for any period and the body adapts energy need to energy intake within the homeostatic range. Hence, they suggest that the lower limit of this range, and not the average, should be used as the calorie norm for calculating the poverty line. Based on available evidence, Sukhatme has shown that the lower limit could be two standard deviations lower than the average and this can make a difference of about 25–30% to the calorie norm.

WHO (1985) states that the observed positive correlation between energy intake and “actual” energy requirement could be “seen as either a regulation of intake to satisfy energy need or an adjustment of expenditure to match intake or a combination of both” (p.165). Experts have questioned the assumption that permanent adaptation at the lower range is possible without any functional impairment.<sup>17</sup> The WHO report emphasizes the need to concentrate future research on “the extent to which the body can adapt to different levels of intake by a change in either basal metabolic rate or in the efficiency of physical work” (p.172).

Since the debate on the above questions remains inconclusive, some countries such as Bangladesh have preferred to use two poverty lines, one corresponding to the average calorie norm and one to the lower limit. The somewhat detailed discussion on calorie norms above is basically to draw attention to the fact that poverty line calculations depend on several assumptions to suit local needs, which must be kept in mind while comparing the poverty lines for various DMCs.

**Poverty Versus Undernourishment.** The poverty line refers to an income level that is just sufficient to meet the average calorie norm (however defined). This does not mean that calorie intakes of all poor people are below the specified calorie norm and intakes of all nonpoor people are above the norm. The increasing relationship between calorie intake and consumption expenditure depicted in Figure 1 holds good on average. Per capita income or expenditure is a major determinant of calorie intake, but there are also other factors such as household composition, share of food expenditure, location, and tastes that determine food consumption and energy intake. Thus, while calorie intake is highly correlated with income, it is not a perfect correlation. The ranking of households by per capita income and per capita calorie intake in a community are not identical.

<sup>16</sup> Homeostasis refers to the ability of a living organism to maintain stability in the body (in, e.g., body temperature or blood pressure) by making internal adjustments within a certain range in response to changes in the external environment.

<sup>17</sup> See various papers in Osmani (1992) for a debate on this issue.

In the method described above, households having a per capita income less than the poverty line are identified as poor. Most, but not all, of these households would also be calorie deficient or undernourished in relation to the norm. As Table 5 illustrates, while 57.6% of the rural population in India were poor in 1977/78, only 45.3% were deficient with respect to the per capita calorie norm. But the rest of those in the poor category, 12.3%, could meet their calorie needs due to better household management and better priorities of expenditure from the point of view of their calorie intake. Conversely, some households remaining above the poverty line would be calorie deficient if, for example, they spent a smaller proportion of their income on calorie-intensive food than the average proportion. Table 5 shows that while 42.4% of the total population were nonpoor, 12.5% from the nonpoor category were calorie deficient. In order to estimate the proportion of undernourished people in society, households need to be ranked by their per capita calorie intake and all those who fall below the calorie norm considered. In other words, the cut-off line is in terms of per capita income for identifying the poor, and of per capita energy intake for identifying the undernourished.

**Table 5 Classification of Population by Poverty Line and Calorie Norm, Rural India, 1977/78 (%)**

	Below Poverty Line	Above Poverty Line	Total
Below calorie norm	45.32	12.47	57.79
Above calorie norm	12.31	29.21	42.21
<b>Total</b>	<b>57.63</b>	<b>42.37</b>	<b>100.00</b>

Source: Government of India. 1993. “Report of the Expert Group on Estimation of Proportion and Number of Poor.” Planning Commission, New Delhi.

This method of identification of undernourishment when a household’s per capita calorie intake is less than its per capita calorie requirement has also been called the direct calorie intake method of identifying the poor; it has been used in Bangladesh along with other methods. As Kakwani (2003) notes, this method yielded the “counterintuitive” result that the urban poverty ratio was higher than the rural poverty ratio because two households with the same calorie intake may have vastly different standards of living.

### 2.2.3 Cost of basic needs method

This method starts with the specification of a basket of goods considered as the basic consumption needs of life. It then quantifies the needs of an average person and estimates the cost of the basic needs basket at prices

prevailing in various localities or in different time periods. This cost provides a basis for determining the poverty line. This is the approach adopted by pioneers like Naoroji (1901) for India and Rowntree (1901) for York in the United Kingdom more than a century ago, and by several studies for different DMCs in recent years.

An important point is that, even though the basic needs basket thus represents the normative minimum essentials of life for a given community, poverty is not measured by comparing the cost of the basket, item by item. In other words, a person is not called poor if he or she consumes less milk or meat than the stipulated minimum. Rather, poverty is measured by comparing actual income (or total expenditure) with the cost of the basket as a whole and a person is called poor if his or her income is not high enough to afford the cost of the basket.

There are two broad steps in this method: evaluating the cost of the food component and the cost of the nonfood component.

**Food Poverty Line.** While the approach in the cost of basic needs method is to spell out a basket of basic needs, the normative consideration is often confined to food needs.<sup>18</sup> These could be specified objectively on the basis of nutritional considerations, while the needs are more subjective for other items. One major difference between the energy intake method and cost of basic needs method is that the former considers only energy needs while the latter could potentially consider all major nutrients, such as energy, protein, fat, vitamins, and minerals, that are considered essential for a healthy and active life. A nutritionally adequate food basket from the point of view of all of these nutrients might include food items such as cereals, milk, meat, edible oil, sugar, vegetables, and fruits. The desirable quantities of consumption of these items have been worked out by nutritionists for most countries or regions such that they satisfy the various conditions relating to nutrition, food habits, and climate. For example, a basket suggested by FAO (1973) for Southeast Asia is given in Table 6. Variations on such baskets have been worked out to better suit national or provincial specificities. In some cases, the food baskets have been stipulated in terms of locally preferred food menus, as in the Philippines. The cost of the food basket is then estimated using prevailing market prices to arrive at the minimum expenditure level that permits consumption of the stipulated food basket. This expenditure level is often referred to as the food poverty line.

<sup>18</sup> Some early basic needs literature advocated that norms could be specified for nonfood needs, such as clothing and shelter, but they are rare in practice.

Table 6 **Diet Suggested by the Food and Agriculture Organization of the United Nations for Southeast Asia**

Item	Quantity (grams per person per day)
Cereals	395
Pulses	75
Starchy roots	160
Sugar	35
Milk	98
Meat	36
Fish and egg	27
Fruits and vegetables	225
Oils and fats	16

Source: Food and Agriculture Organization of the United Nations. 1973. *Monthly Bulletin of Agricultural Economics and Statistics*. January. Rome.

**Nonfood Expenditure.** To take into account nonfood items of consumption, the cost of the basket is normally inflated by a factor to obtain total consumption expenditure. This factor is usually obtained by looking at the relationship between total consumption expenditure and food expenditure. One simple way of considering nonfood items is to calculate the share of food in total expenditure by households around an approximate (expected) poverty line and to divide the food poverty line by this share to obtain the poverty line. Another variation that avoids the initial approximation of the poverty line is to look at the relationship between food expenditure and total expenditure and to set the poverty line at that level of total expenditure where consumers' actual food expenditure equals the normatively required food expenditure, namely the estimated food poverty line. The total consumption expenditure so obtained is then considered to be the poverty line. The difference between the poverty line so derived and the food poverty line is the allowance made for nonfood expenditure in either variant.

The poverty line derived in this way represents the minimum income or expenditure level necessary to meet the basic needs of life. There are merits and demerits in this approach. Taking up merits first, the most attractive feature is the reasonably objective basis provided for determination of food needs on the basis of nutritional science. Second, consumers who just meet their food needs would normally not have luxury items of consumption. Hence, actual average consumption of nonfood items of such consumers may be considered as essential nonfood needs. In this sense, a consumption basket that just satisfies the nutritional needs has the advantage of being considered as providing the "bare necessities" of life in respect of all items of consumption. Third, as prices change, the expenditure required to purchase the consumption basket of the poor could be recalculated using the new prices, since the consumption basket is known.

There are, however, limitations to these merits. The first is that the basis for determining the food consumption is not as scientific as one would like. The RDAs have not been established for all of the essential nutrients, and all nutrients contained in several foods are unknown (Committee on Dietary Allowances, 1980, p.11). Nutritional norms of people are not precise estimates (for reasons discussed in Section 2.2.2). With so many nutritional constraints, it is impossible to meet all the recommended nutrients at exactly the standards set by experts. Intake of some nutrients would exceed the standard when the diet just meets—or even fails to meet—the standard for some other nutrients. For example, the diet might contain excess protein in order to meet some micronutrients that are in low concentrations in the normal food of the locality. Among all the feasible food baskets that satisfy nutritional needs, the one with the minimum cost is chosen through a formal or informal<sup>19</sup> “linear programming” optimization exercise. Moreover, a nutritionally adequate diet basket is obtained from various possible alternative consumption baskets, since the consumer takes into account (wittingly or unwittingly) not just nutritional satisfaction but also factors such as palatability, food habits, and social customs. These other factors generally involve specification of subjective upper or lower bounds on consumption of various items, keeping in mind the consumer’s food preferences. Thus there is nothing sacrosanct about the exact quantities stipulated in the food basket.

The second limitation is that consumption levels of nonfood items considered in this method of setting poverty lines are behavioral rather than normative. As seen in the following section, behavioral or specificity considerations might lead to problems in comparability across poverty profiles. Third, the prices relevant for computing the cost of the food basket should be the average prices that are actually faced by the people around the poverty line. Given that prices actually differ across locations, seasons, and product varieties, it is not easy to obtain reasonable average prices relevant for the poor from general price data compiled in most countries. Additional complications arise when poor groups, such as marginal farmers, meet part of their consumption needs from own production; retail prices need to be adjusted for the trade and transport margins for such consumption.

Lastly, the actual consumption pattern of people at the poverty line might differ substantially from the recommended food basket. Consumers in practice

<sup>19</sup> When a formal linear programming exercise is not carried out, the consumer usually selects from among cheaper varieties of food.

consume more of some goods and fewer of others than those specified by nutritionists. The poor thus would not be identified as those who suffer from deprivation of basic needs but as those who do not have the income ability to meet the basic needs.

### 2.3 Comparing poverty across groups and over time: Some issues

Issues related to comparison of poverty across groups and over time are important for judging whether the extent of poverty in one group (or region) is greater than in another group (or region) and for tracking changes in poverty over the years. Box 6 discusses the issue of pricing a given poverty line across different years and regions while Box 7 discusses related issues associated with international poverty lines. Here the focus is trained on comparability issues as they apply to a “base” poverty line.

#### Box 6 Price Adjustments

The use of a poverty line over different years and across regions needs adjustments to the monetary value of the poverty line. The standard method is to adjust the base poverty line’s value by an appropriate price index. The general price index for the whole population does not often indicate the price change actually faced by the poor whose consumption basket is more dominated by food items of different qualities. An appropriate procedure for updating prices would be to start with relevant consumer price indexes for commodity groups such as food, fuel, clothing, and housing and then to estimate a weighting diagram based on consumption patterns of consumers around the poverty line from consumption expenditure surveys. The price indexes of the commodity groups could then be aggregated to obtain the index for all commodities using the estimated weights.

Another procedure would be to use a consumer price index meant for the working class, rather than a general price index. For example, if price indexes for agricultural laborers or the urban working class were available, these could be used to update the poverty lines in rural and urban areas, respectively. Such a procedure is used at the state level in India.

How should the poverty line be set to address issues in comparison? There are two practical issues that have attracted attention in the context of poverty comparisons:<sup>20</sup>

- *Consistency:* Poverty comparison across regions or over time should be consistent in the sense that the poverty lines used to create a poverty profile should represent the same welfare level (or fixed real value of income or expenditure). Ravallion (1998) says:

<sup>20</sup> See Ravallion and Bidani (1994), Lanjouw and Lanjouw (1997), Ravallion (1998), Kakwani (2003), and Asra and Santos-Francisco (2003). The last reference discusses these issues in the context of poverty lines set in Asian countries.

### Box 7 International Comparison of Poverty and Purchasing Power Parity Exchange Rates

A critical first step in compiling comparable poverty estimates based on the \$1-a-day (or \$2-a-day) poverty line is to convert these into the currency units of different countries. Once converted, the international poverty lines can be applied to survey data on household expenditures or incomes to estimate poverty. The conversion of the international poverty lines into local currencies is currently made by using consumption-related purchasing power parity (PPP) exchange rates from the 1993 round of the International Comparison Program (ICP), which collected price data in 110 countries. For other countries, the PPP rates are imputed by extrapolation. It is worth noting that the People's Republic of China (PRC) has remained outside the PPP benchmarking process and India has not participated in it since 1985.

Several problems are associated with the current practice of using consumption PPPs for poverty analysis. First, PPP exchange rates are designed for making comparisons of average national income or consumption of various countries and not of poverty lines. The prices used in the consumption PPPs are not representative of the prices faced by the poor. Second, PPPs are essentially spatial price index numbers and the weighting pattern used for such indexes should reflect the composition of the consumption basket of the poor. The weighting pattern in consumption PPP corresponds to aggregate consumption and might be representative of the 70<sup>th</sup> or 75<sup>th</sup> percentile in the population. Third, the PPP rates depend on the structure of the relative prices of commodities prevailing in different countries in the base year. World prices of some commodities, particularly staple foods such as rice and wheat, exhibit sharp year-to-year volatility and this could lead to large changes in PPP rates in some countries.

Deaton, Friedman, and Alatas (2004) calculate consumption PPPs using information on unit values (expenditure divided by quantities) from household surveys for rural and urban areas in India and Indonesia for 1999. Since they use information on household-level transactions, they can calculate PPPs specifically for the poor group. They find that their Indonesian rupiah to Indian rupee exchange rates are substantially higher than those based on either the Penn World Table or those calculated by the World Bank based on the 1993 round of the ICP. Such a check is instructive, despite its limitations that prices and unit values are not the same thing and that coverage of consumption is only partial since consumption surveys do not provide quantity data for all items.

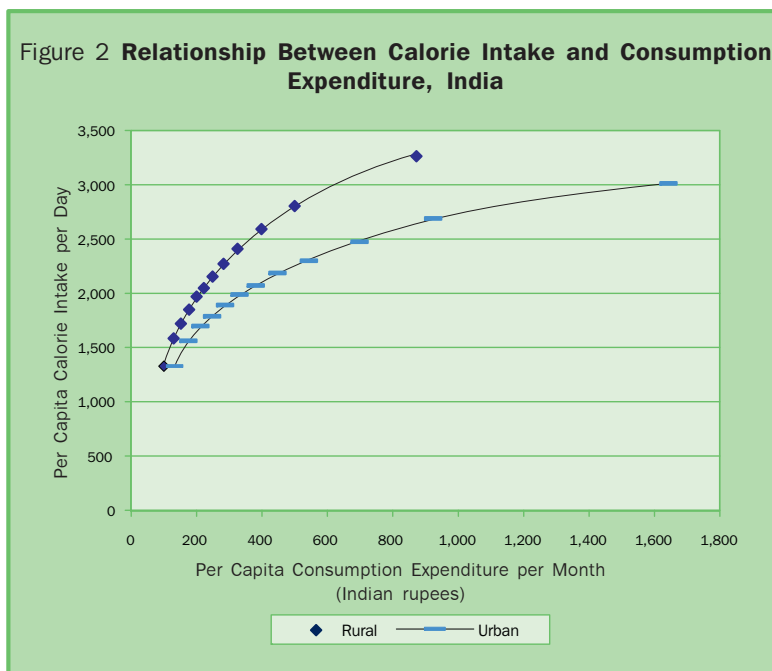
Fortunately, the latest round of the ICP is about to commence and is providing an opportunity to compute poverty-specific PPPs for the first time. The task of computing PPP exchange rates relevant for the consumption bundle of the poor is not going to be easy, though. The collection of appropriate data on prices—whether through special price surveys or through the approach of Deaton et al—and consumption patterns of the poor requires considerable resources. Moreover, the consumption baskets of the poor are very different across countries (and can also be different within larger countries). Goods considered as essential by the poor in one country or subregion might be a luxury in another country or subregion, or might not be available at all. Appropriate methods for aggregation of price indexes will therefore be needed. Meeting these challenges may well be worth the effort given that poverty-specific PPP exchange rates are sure to improve the basis for making more reliable and credible international comparisons of poverty.

“two individuals with the same level of welfare should be treated the same way.” If poverty lines used to identify their poverty status are inconsistent, one individual might be identified as poor and the other as nonpoor even when they have the same welfare level. Such a comparison would be misleading, according to these criteria. Similarly, if poverty lines do not represent a consistent welfare level—a Pareto improvement situation where one person gains in welfare and no one loses—then this might lead to a rise in poverty, which is counterintuitive.

- *Specificity:* A poverty profile is judged to be specific if the underlying poverty lines take into account specific characteristics of the groups or periods under comparison. As discussed in Section 2.2, existing social norms and local perceptions of bare minimums are taken into account when the poverty line is defined. For example, the minimum clothing needs of a population depend on society's cultural values as well as climatic conditions. Incorporation of region- or group-specific differences in tastes, consumption patterns, or needs has been referred to as “specificity.”

The performance of the two normative methods of deriving poverty lines—the energy intake method and the cost of basic needs method—with respect to the above two features is now analyzed. Recall that the energy intake method derives the poverty line as that income or expenditure level where expected calorie intake equals the calorie norm. If, for example, this method is applied to rural and urban areas, the poverty line of urban areas would normally turn out to be higher, for two main reasons.<sup>21</sup> First, the preferences of urban consumers, being richer on average, are tilted in favor of superior varieties of food, e.g., more rice or wheat and less coarse cereal. The food basket of urban consumers is also more diversified insofar as it contains less cereal and more of other items, such as meat or fruits. Hence, the calorie intensity per unit of food expenditure among urban consumers is lower than among rural consumers and so the income required to meet the given calorie norm is higher (Figure 2). Second, the budget share of food in urban areas is normally lower than in rural areas (Figure 3) because of higher

<sup>21</sup> This may lead to a situation where a richer region has a higher incidence of poverty than a poorer region because this method “cannot separate the effect of differences in regional costs of living from that of differences in living standards across regions” (Kakwani 2003).



Source: Government of India. 1997. *Sarvekshana: Journal of the National Sample Survey Organisation*. Vol. XXI, No. 2. October–December.

expenditure on items such as housing and transport; this raises the urban poverty line further when nonfood items are included. This point also holds good for the cost of basic needs method when the poverty lines are derived separately for rural and urban areas.

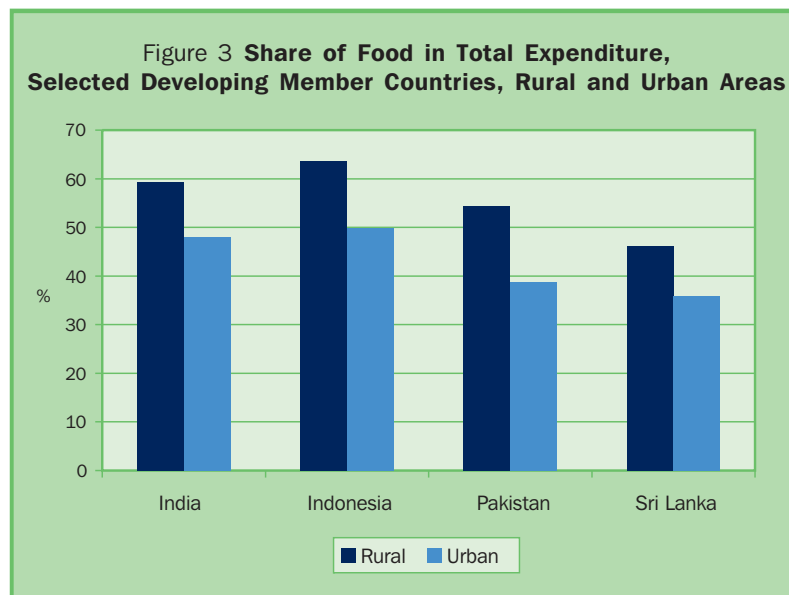
Both the methods for deriving the poverty line thus violate the consistency property across rural and urban poverty lines. Such violation takes place because the methods aim at satisfying the specificity feature. If the stylized parameters of urban areas were indeed different from those in rural areas, the specificity feature would mean that these should be taken into account and the corresponding poverty lines might be different in real terms. But the consistency feature would require that both rural and urban poverty lines be based on the same level commanded over consumption in real terms and be different only to the extent of price differences. Thus, there could be a conflict between specificity and consistency, and these two considerations might pull in different directions.

It is useful in this context to draw attention to the suggestion of Ravallion (1998) to specify a lower and an upper bound for the nonfood component of the poverty line. He assumes that the poor would attempt first to meet survival food needs and, once these are satisfied, would then attempt to meet basic nonfood needs and,

lastly, other basic food needs for social and economic activities. Given this hierarchy of basic needs, he argues that the upper bound would be the total consumption expenditure where actual food expenditure equals the food poverty line. Figure 4 shows the relationship between food expenditure and total expenditure given by the Engel curve OE. If OF is the food poverty line, consumers spend OF amount on food at total expenditure level OU, which gives the upper poverty line.

Now, consider those households whose *total* consumption expenditure equals the food poverty line given by OF on either axis in Figure 4. Their nonfood expenditure is given by amount AB. Such households do not meet their total food needs since they sacrifice some basic food needs to meet their nonfood expenditure AB. Hence, amount AB could be viewed as the minimum required allowance for nonfood items. Adding up amount AB to food poverty line OF produces the lower poverty line OL advocated by Ravallion.

Examining various poverty lines constructed for Bangladesh, Wodon (1997) found that the lower poverty lines suggested by Ravallion in the cost of basic needs method were more consistent for comparison, while the upper poverty lines were more specific. He also noted that the drawbacks of the energy intake method from a consistency point of view could be severe.



Sources: India: National Sample Survey Organisation Report No. 457 (1999-2000);

Indonesia: Biro Pusat Statistik, SUSENAS. 1993; *Australian Agribusiness Review*, 1996, Vol. 4, No. 2, Paper 7, available: <http://www.agribusiness.asn.au/Review/1996V4No2/96Widjajanti.htm>;

Pakistan: *Household Integrated Economic Survey 2001-02*, available: [www.statpak.gov.pk/depts/fbs/statistics/hies0102/summary.pdf](http://www.statpak.gov.pk/depts/fbs/statistics/hies0102/summary.pdf);

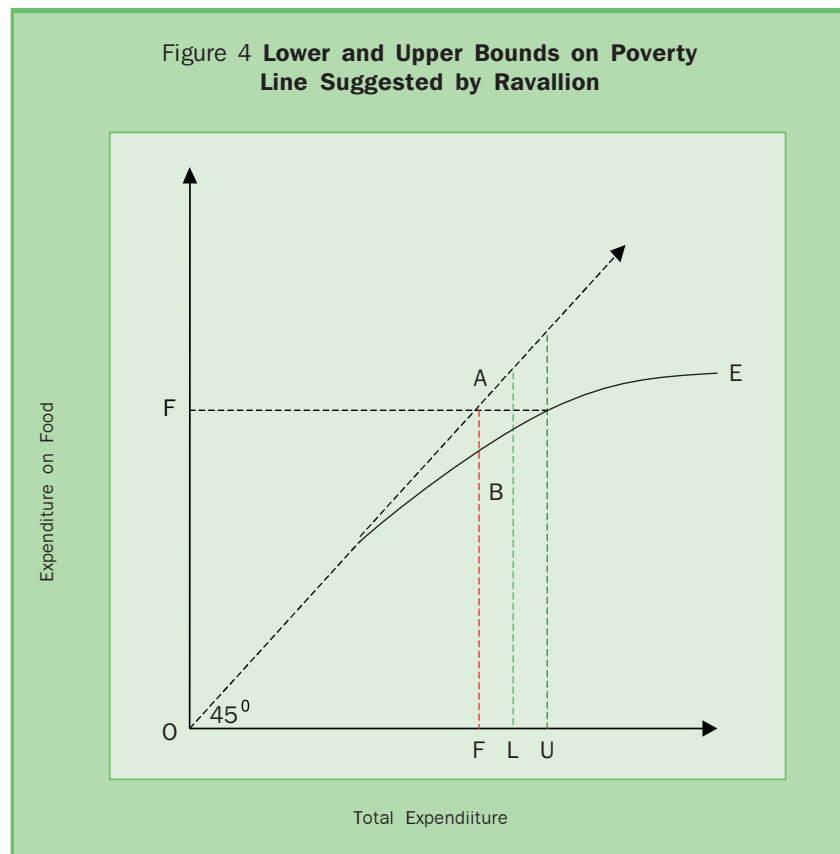
Sri Lanka: *Household Income and Expenditure Survey 2002*, available: [www.statistics.gov.lk/poverty/HIES2002\\_DistrictLevel.pdf](http://www.statistics.gov.lk/poverty/HIES2002_DistrictLevel.pdf).

The consistency requirement implies that standards of living across regions are controlled for. Under such conditions, Kakwani (2003) observes that differences in food poverty lines across regions “should be entirely because of regional price differences.” Two regions with the same price vectors should have the same food poverty lines. For consistency, he favors deriving a national food basket as a weighted average of region-specific baskets and then calculating the cost per unit of calorie in different regions.

Three decades ago, Dandekar and Rath (1971) estimated poverty lines separately for rural and urban areas in India. They explicitly favored a higher poverty line for urban areas on the grounds that urban households have other “pressing” needs, such as housing. This tradition has continued, explicitly or implicitly, to the present in India and some other countries. Separate *base* estimates of the poverty lines for rural and urban areas by the energy intake method seem to violate the consistency property and one should therefore be careful in comparing rural poverty with urban poverty. But the Indian price updating procedure mentioned later suggests that comparison of rural (or urban) poverty *across Indian states* and *over time* is welfare consistent in terms of command over a given consumption basket.

In Indonesia, on the other hand, poverty lines are based on different food and nonfood baskets, specified separately for each province. Further, the baskets are revised over time to take into consideration society’s dynamics and changes in consumption patterns. For example, only primary-level schooling expenditure was included earlier in calculating the poverty line, but junior high school expenditure was added later when this level of schooling became compulsory. Critics have thus argued that official poverty lines in Indonesia have forfeited comparability over time as well as across provinces.

In the Philippines, low-cost nutritionally adequate food baskets are separately derived using prices that vary between provinces and between rural and urban areas. While the baskets satisfy the calorie norm of 2,000 per day, they differ from one another insofar as they take into account regional preferences, cultures, climates, and differences in the standard of living. The food poverty line is then divided by the share of food in consumption expenditure of households around the food poverty line to account for consumption of nonfood items. This adjustment is carried out at the province level. The province-specific poverty lines are thus rendered inconsistent in terms of command over purchasing power, despite conformity to a common nutritional standard.



Note:  $AB = FL$ .

Source: Adopted from Ravallion. 1998. *Poverty Lines in Theory and Practice*, Living Standards Measurement Study Working Paper No. 133. World Bank, Washington, D.C.

Do all these arguments mean that consideration of specificity should be given up completely in poverty line estimates? Should not the base poverty line be revised at all? Should the urban poverty line have the same real content as the rural poverty line? There is no consensus in the literature on these important questions. To some extent, the answers would depend on the uses of the poverty line. As a matter of practice, several countries have found it useful to calculate different poverty lines for rural and urban areas, considering the large variations in the consumption baskets. While this is justified to keep the lines practically relevant, one should be careful in drawing conclusions from any comparison of rural versus urban poverty ratios because of the consistency problem. Indeed, some authors might advise readers to refrain from making such comparisons unless the poverty lines are consistent.

What has been the practice of countries for comparisons over time? In short, it has varied from country to country. The underlying consumption standards have been kept fixed in some countries such as India for more than three decades, but not in others such as Indonesia or the Philippines, though some of them recognize the noncomparability aspect.

The definition of “basic needs” or “subsistence” always had a sociocultural angle of the country or region in classical literature. Even Adam Smith’s definition of necessities includes items needed for not being “ashamed in public.” And Pigou (1952) considered “apparatus of sanitary convenience and safety where work is carried on and so on” (p.759). He also added that “the minimum can be advantageously set higher, the larger is the real income per head of the community” (p.761). Similarly, his approach to poverty lines talks of essentials of life for a “healthy and decent life.” These statements are made in obvious recognition that specificity matters.

The Expert Group in India formed in the late 1980s that recommended use of a national standard for all states in the country notes that one of the members differed from the majority view and argued that the standardization procedure ignores differences in normative calorie requirements and consumption patterns across states in “a country as large and diverse as India.” In his opinion, “it is also a matter of interest to consider how State X stands in relation to State Y in terms of their *respective* poverty profiles defined on the basis of standards *appropriate to each.*”

Sen (1981) makes a persuasive argument that comparison of deprivation of two communities could be made in terms either of a common standard of minimum needs or of their respective standards of minimum needs. It is then possible to find that: (i) Community A is less deprived than community B in terms of a common standard; or (ii) Community A is more deprived than community B in terms of their respective standards, which are higher in A than in B. Sen asserts: “It is rather pointless to dispute which of these two senses is the ‘correct’ one, since it is quite clear that both types of questions are of interest. The important thing to note is that, the two questions are quite distinct from each other.” The two types of comparisons, using a common standard or respective standards, have their own merits.

Some commentators also question whether the consumption basket that is implicitly or explicitly used to construct the poverty line in the base year should be fixed on a long-term basis. Income level good enough to command sufficient nutrients in the base year cannot be expected to do so in subsequent years if changes in tastes and preferences lead to substantial changes in consumption patterns. Why should one then keep to only price updating of the base poverty line if such lines in effect allow a calorie intake 20–25% lower than the norm?<sup>22</sup> If nutrient satisfaction on a consistent basis is not deemed a good basis for welfare comparison, why does one bother so much to anchor the base poverty line to nutrients? According to such commentators, much time and energy would be saved if one could simply start with a socially acceptable level of the poverty line without giving it a normative connotation.

On the basis of the above discussion, it seems prudent for future policy analysis to adopt multiple poverty lines that satisfy, to the extent possible, consistency and specificity separately. The consistency issue is relevant for short- and medium-run comparisons for monitoring and evaluation of poverty reduction policies or programs. In the long run, the poverty line may need to be recalculated taking into account a society’s changing tastes and preferences. As new products develop and society’s perception of the essential minimum changes, the lines would lose relevance, in exactly the same manner as price index numbers based on two- or three-decade-old weights. It might be desirable to use poverty lines with a fixed consumption basket for 10–15 years and then construct poverty lines with a new base by anchoring them to a new set of minimum needs. While strict comparison of poverty may not be possible when the base year changes, the new poverty lines would be less irrelevant over time. Comparison is not the only

objective of poverty analysis and consistency is not the only virtue. It is also important to have sound enough estimation of *current* poverty incidence prevailing in a country or region for determining the size of the poverty reduction programs and for allocating resources to various regions.

## 2.4 Poverty line construction in selected developing member countries

This section describes some of the practices in setting poverty lines in selected DMCs with large numbers of poor.<sup>23</sup> In many countries, it is common to have a multiplicity of poverty lines. To the extent possible, and where they exist, official poverty lines have been used. It may be noted that more and more countries are finding it essential to adopt an official poverty line with a standardized methodology for poverty analysis. For example, Pakistan notes in its *Economic Survey 2003-04*: “Pakistan did not have an official poverty line until recently. In the absence of this various researchers used their own methods to arrive at different poverty lines to measure the incidence of poverty. Accordingly, a large number of estimates were available which made analysis difficult” (Government of Pakistan 2004, p.41).

Table 7 provides a snapshot of the poverty lines in selected DMCs, including the local currency value of the poverty line in a recent year and the reference period to which the poverty line refers.

**Bangladesh.** Three methods of deriving a poverty line have been used by official and nonofficial agencies in Bangladesh (Ahmed 2003). The early official poverty estimates in Bangladesh used the direct calorie intake method to estimate the poverty line since 1983/84. This defines poor households as those that do not meet the prescribed per capita energy intake of 2,122 calories per day. A household falling below a lower limit of 1,805 calories per capita per day is considered “hard core poor.” The advocates of the direct calorie intake method argue that this method results in consistency in terms of the same nutrient intake. But since the method directly considers the calorie intake of households and not their income ability to afford the calorie norm, it deals with undernourishment rather than income poverty as such. Responding to this criticism, official estimates have adopted the energy intake method and cost of basic needs method as well.

<sup>23</sup> This subsection draws heavily on various country poverty papers written for ADB regional technical assistance (RETA) 5917 and a review of country experiences by Asra and Santos-Francisco (2003) and Kakwani (2003). Country-specific references appear in the appropriate places.

<sup>22</sup> See Panda and Rath (2004) for such evidence on India.

Table 7 Per Capita Poverty Lines of Selected Developing Member Countries, Various Periods

Region/Country	Poverty Line				Reference Period	Income/Expenditure Measure	Remarks
	Amount	Currency	Symbol	Period			
<b>East Asia</b>							
China, People's Rep. of—Rural	625.00	yuan	CNY	2000	Year	Income	
<b>Southeast Asia</b>							
Cambodia	1,837.00	riel	KR	1999	Day	Expenditure	Method of Kakwani: weighted average of poverty lines by age and sex.
Lao People's Dem. Rep.	20,911.00	kip	KN	1997–98	Month	Expenditure	
Philippines	11,605.00	peso	P	2000	Year	Income	
Thailand	882.00	baht	B	2000	Month	Expenditure	
Viet Nam	1,790,000.00	dong	D	1998	Year	Expenditure	
<b>South Asia</b>							
India	Urban: 454.11 Rural: 327.56	Indian rupee	Re/Rs	1999–2000	Month	Expenditure	No explicit national poverty line.
Nepal	4,404.00	Nepalese rupee	NRe/NRs	1996	Year	Expenditure	Per adult equivalent
Pakistan	748.56	Pakistan rupee	PRs/PRs	2000–01	Month	Expenditure	
Sri Lanka	791.67	Sri Lanka rupee	SLRe/SLRs	1995–96	Month	Expenditure	
<b>Central Asia</b>							
Azerbaijan	120,000.00	Azerbaijan manat	AZM	2001	Year	Expenditure	1996 line updated by the consumer price index.
Kazakhstan	4,007.00	tenge	T	2000	Month	Expenditure	
Kyrgyz Republic	7,005.63	som	Som	2000	Year	Expenditure	
<b>Pacific</b>							
Fiji Islands <sup>a</sup>	83.00	Fiji dollar	F\$	1990–91	Week	Expenditure	
Micronesia, Fed. States of	767.58	US dollar	US\$	1998	Year	Expenditure	
Samoa	37.49	tala	ST	2002	Week	Expenditure	
Tonga <sup>a</sup>	8,061.00	pa'anga	T\$	2001	Year	Expenditure	
Tuvalu <sup>a</sup>	84.24	Australian dollar	A\$	1994	Week	Income	

<sup>a</sup> Refers to poverty line per household instead of per capita.

Source: Asian Development Bank. Regional Technical Assistance 5917: *Building a Poverty Database*; Regional Technical Assistance 6047: *National Poverty Reduction Strategies for PDMCs*; Government of Pakistan. "Economic Survey 2003–04" (available: <http://www.finance.gov.pk/survey/home.htm>).

While the energy intake method has been applied to data from the Poverty Monitoring Survey, the cost of basic needs method has been used for estimating poverty on the basis of household income and expenditure surveys. The food poverty line in the cost of basic needs method is based on a food basket comprising 11 items: rice, wheat, pulses, milk, sugar, edible oil, meat, fish, potatoes, other vegetables, and fruits. It meets the calorie norm of 2,122 per capita per day. The food basket is valued using implicit prices derived from value and quantity information in household income and expenditure surveys for 14 different regions of the country. Such unit prices are affected by the quality of goods consumed since richer households buy higher-quality goods than their poorer counterparts. Hence, to control for quality differences, unit prices are regressed on a set of variables that include total consumption as well as occupation and education of the household head.

The nonfood poverty line is determined separately from the food poverty line on the basis of consumption expenditure data for each region using Ravallion's suggestion on lower and upper lines (discussed in Section 2.3). These two lines are added to the food poverty line to obtain two different total poverty lines. The cost of the food basket or the food poverty line is the same for upper and lower poverty lines within each region. Since the cost of the nonfood component does not represent a fixed basket across various regions, the differences in nonfood poverty lines across regions may thus be the result not only of price differences but also of behavioral differences, giving rise to problems of consistency in welfare comparison.

**People's Republic of China.** Poverty lines in the PRC have been closely linked to the need for criteria to allocate poverty reduction funds. The central Government

launched a large-scale rural poverty reduction program in 1986 and poor counties were identified for receiving benefits under this program. The poverty cut-off lines were set at CNY150–300 of net per capita income per year in different counties.

In the early 1990s, the National Bureau of Statistics (NBS) began to set *rural* poverty lines following more internationally standard practice.<sup>24</sup> Necessary living expenditure is divided into two components: food expenditure and nonfood expenditure (including but not limited to clothing, housing, communication, fuel, medicine, education, and entertainment). The minimum income necessary for food expenditure was calculated on the basis of a fixed food bundle considered enough to maintain a minimum daily intake of 2,100 calories. The food bundle contained only necessities and not items considered harmful (alcohol, cigarettes, candies) and was intended to reflect actual consumption patterns. The NBS used 1984 household survey data to determine the actual shares of grain, vegetables, fruits, meat, poultry, seafood, dairy products, oil, sugar, salt, and other items to be included in the bundle. Nonfood expenditure was calculated as a fixed percentage of food expenditure, using a ratio of food expenditure to total expenditure of 0.6. Among other things, this ratio is equal to the average share of food expenditure to total expenditure among rural households in 1984 in the PRC, when many of the poor were just escaping from poverty. The resulting poverty line was calculated to be CNY199.6 in 1984. For subsequent years, NBS adjusted the 1984 poverty line to account for inflation using the national rural retail price index. In 1990, however, the prices used to value consumption of own production in calculating incomes changed from the plan price to a weighted purchasing price, and the poverty line was readjusted accordingly. Since the early 1990s, this poverty line has been the official rural poverty line, and in 2000 prices worked out to CNY625.<sup>25</sup>

In contrast to its approach to rural poverty, the PRC has not adopted an official urban poverty line for the whole country. There are however “benchmarks,” below which urban residents are eligible for poverty relief benefits. These benchmarks can vary considerably across

cities with the variation unlikely to be explained by the price differentials across these cities. In other words, these benchmarks have been influenced by relative standards of living of different localities.<sup>26</sup>

**India.** India has a long tradition of measurement of poverty because it has one of the longest series of household consumption expenditure surveys on a reasonably comparable basis. These surveys have been conducted by the National Sample Survey Organisation (NSSO) since 1951 at different intervals. As early as 1962, a working group set up by the Planning Commission recommended adopting a minimum level-of-living target of Rs20 for rural areas and Rs25 for urban areas on a per capita per month basis at 1960/61 prices, though the exact basis of this recommendation is not known.<sup>27</sup> Later, Dandekar and Rath (1971) estimated the calorie intake levels by expenditure classes utilizing information on foodgrain consumption and calculated the poverty line as the consumption expenditure level that corresponded to a given calorie norm. The Government subsequently adopted a modified version of this method.

The official poverty line is based on the recommendation of a task force report published in 1979 (Government of India 1979). It used the energy intake method for the base year 1973/74 and estimated the poverty line as the monthly per capita total consumption expenditure level that meets the calorie norm of 2,400 and 2,100 per capita per day for rural and urban areas, respectively. The line worked out to Rs49.09 for rural areas and Rs56.64 for urban areas at 1973/74 prices. The same rural and urban poverty lines were used by various states until the mid-1990s.

In order to capture the price rise over time faced by people around the poverty line, India experimented with alternative price updating procedures until the early 1990s. The initial practice of using the wholesale price index invited criticism because this index covered capital and intermediate goods not meant for private consumption. Similarly, the implicit deflator for private consumption in the national accounts was also found to be unsuitable.

An expert group was constituted in the late 1980s to examine the methodology of poverty estimation at national and state levels. This group (Government of

<sup>24</sup> This discussion draws extensively on ADB (2004a).

<sup>25</sup> As pointed out in ADB (2004a), the NBS has decided to complement its annual update of the official rural poverty line with a diagnostic line unrelated to benefit entitlements under official poverty reduction programs. A key point of departure in computing this poverty line is that the contents of the minimum food basket are made with reference to the average pattern of consumption of food items by the bottom 25% of rural households ranked by per capita incomes. The resulting diagnostic poverty line was CNY865 in 2000 prices (CNY869 in 2002 prices).

<sup>26</sup> Recently, however, the NBS has set a diagnostic poverty line for the urban sector as well. This poverty line is equivalent to an income of CNY1,875 per capita per year in 2000 (ADB 2004a).

<sup>27</sup> The Planning Commission document is published in Srinivasan and Bardhan (eds., 1974).

India 1993) accepted the task force's base poverty line for 1973/74, but recommended a new method of price adjustment. First, state-specific poverty lines for the base year were obtained using spatial price indexes to capture interstate differentials in the cost of living measured by Fisher's index. Second, the poverty lines for 1973/74 were converted to later years using a state-specific rural or urban price index, specially constructed using weights from a fixed consumption basket for the poor at the national level. The Indian price updating procedure suggests that comparison of rural (or urban) poverty across states and over time is welfare consistent in terms of command over a given consumption basket, though comparison of rural and urban poverty lines is not welfare consistent because of the use of the energy intake method as well as different calorie norms.

The NSSO surveys have run into problems of thick and thin samples in recent years. While surveys with a fairly large sample size are conducted every 5 years, the intervening annual surveys have a thin sample. The official agencies have refrained from using the thin samples for poverty estimates, but many individual analysts as well as international bodies have used them to understand movements and determinants of poverty.

**Indonesia.** The country has been conducting a National Household Socio-Economic Survey (SUSENAS) since 1976. Detailed questions on key topics are asked at intervals of about 3 years in rural and urban areas of 27 provinces. A noteworthy feature of Indonesia's poverty calculation is that special surveys have been conducted in some years on prepared food consumed outside the household to correct for possible underestimation in SUSENAS data. Separate surveys have also been conducted to secure more representative data on nonfood consumption. Thus, the general household survey database from SUSENAS has been supplemented by other benchmark surveys. Data from these surveys are utilized to estimate poverty, defined as the inability to afford 2,100 calories per capita per day.

Since 1993, the food poverty line has referred to expenditure on a bundle of commonly consumed food items based on the consumption pattern of a reference group (i.e., households living around an expected poverty line) that meets the calorie norm. In order to account for wide differences in consumption patterns across provinces, the food baskets used for the food poverty line are allowed to vary across each province so as to meet the same calorie norm. The approach followed in 1996 and 1998/99 was similar to 1993's, though with some refinements. For example, food bundles were updated to allow for shifts in consumption patterns and prices.

Next, an absolute amount of expenditure on a bundle of selected essential nonfood items is added to the food poverty line to estimate the total poverty line. A bundle of 46 nonfood items was selected in 1993 on the basis of a special survey conducted on nonfood consumption of the reference group (the near poor) using criteria such as whether the item was consumed by a majority of the reference households and its share in expenditure of the subgroup to which it belongs. The bundle of nonfood items differs between urban and rural areas. The nonfood items are valued by applying the expenditure share of the selected items in the relevant subgroup from the special survey to the total subgroup expenditure from the SUSENAS. Essential nonfood expenditure at the province level is estimated on the assumption that the proportion of nonfood expenditure to total expenditure of the reference group in each province is the same as at the national level. The nonfood bundle in subsequent years is updated on the basis of new surveys on nonfood consumption of the reference group, enabling separate determination of provincial nonfood bundles.

Thus, the reference consumption basket, as well as the methodology for computing the food and nonfood components of the poverty line, have changed over time in Indonesia and, as mentioned above, this has led to a debate among experts about their comparability.

**Pakistan.** Pakistan did not have an official poverty line until recently. Both the energy intake method and the cost of basic needs method had been adopted by individual researchers to determine poverty lines with the help of data from the Household Integrated Economic Survey conducted by the Federal Bureau of Statistics. Pakistan's Planning Commission has recently used the energy intake method to estimate rural and urban poverty lines separately. It uses a norm of 2,350 calories per adult equivalent per day (see Section 3.2 for a discussion on adult equivalent scales). To calculate the poverty line, a calorie consumption function is estimated by regressing calorie intake on total expenditure and estimating the level of expenditure that corresponds to the calorie norm. Since this relationship is between calorie intake and total consumption expenditure (food and nonfood together), the actual expenditure of households that meet the calorie needs is implicitly considered as the necessary minimum for nonfood items. The poverty line was estimated at PRs748.56 per month per adult equivalent in 2000/01.

According to the 2003 Poverty Reduction Strategy Paper of the Government of Pakistan, a number of methodology issues relating to the poverty line are still being debated. These issues include the choice of price indexes to adjust the poverty line across years and the

method for computing spatial price indexes to adjust consumption expenditures for differences in prices across regions (p.12).

**The Philippines.** Official poverty lines are estimated by the National Statistical Coordination Board (NSCB). The methodology starts with the computation of a food threshold or food poverty line.<sup>28</sup> This refers to the income needed to pay for the cost of basic food requirements and is based on low-cost nutritionally adequate menus that are 100% sufficient for protein and energy and 80% adequate for vitamins and minerals. The calorie norm used is 2,000 per capita per day. There are 16 menus for urban sectors and 15 menus for rural sectors for different regions of the country.<sup>29</sup> Because the region-specific menus are priced using prevailing market prices in rural and urban areas by province, the resulting food poverty lines vary in monetary terms across rural and urban areas of each province. The total poverty line is derived by applying province-specific inflation factors to the food poverty line. This factor is based on the observed pattern of food to total expenditure among families whose total expenditure is within a 10% band around the food poverty line. In this way, the total poverty line comprises the cost of basic food requirements and nonfood items including clothing, housing, medical care, education, transportation, nondurable goods, and personal care.

Since food menus reflect the regional diets across the country, the standard of living underlying the poverty line for different regions varies. Richer regions derive calories from more expensive food items. Similarly, the method employed for moving from the food poverty line to the total poverty line again has the danger of involving a higher standard of living for poverty lines in richer provinces. Hence, poverty comparison across regions or over time would not be consistent. Balisacan (2003) has attempted to adopt an alternative, consistent approach by using an average consumption of a reference group fixed nationally and using an approach similar to the lower nonpoverty line suggested by Ravallion. He finds that poverty ratios fell faster during 1994–1997 by this alternative method than by the official method.

**Thailand.** Estimates of poverty lines in Thailand have been mostly based on the World Bank's pioneering efforts in the 1970s to ground them in calorie-adequacy measures. Until recently, the World Bank's poverty lines were extensively used with price adjustment for other years and poverty estimates were obtained using

socioeconomic survey data gathered by the National Statistical Office. In 1998, Kakwani proposed a new method of estimating the poverty line that takes into consideration household differences in calorie needs, price differentials between regions, and changes in relative prices of food and nonfood items; the Government officially adopted this method in 1999 (Kakwani 2003).

The new method uses nine different consumption baskets provided by the Ministry of Commerce for rural and urban areas in the four regions around the country as well as the national capital region of Bangkok. Detailed information on market prices and quantities of 125 food items and another 196 nonfood items are available for each of the baskets. This helps the authorities compute spatial price indexes for the regions, reflecting regional cost-of-living differences in the base year of 1992. They are updated for other years using region-specific rural and urban price indexes for food and nonfood items.

The costs of the food components of the nine baskets are obtained using market price information, and the corresponding unit energy cost (number of calories per baht of food expenditure) is estimated for each region using calorie conversion factors relevant for Thailand. It was found that rural baskets were more cost-efficient than urban baskets and so it was considered appropriate to use the average of the rural food baskets as the basis for constructing poverty lines. This average rural basket was used for all regions so as to keep the underlying standard of living fixed. The food poverty line was computed by dividing the calorie requirement of a household by calories per baht obtained using the average rural basket (Kakwani 2003, p.33). It is clear that the imposition of a calorie cost corresponding to the average rural basket on the urban food poverty line entirely sacrifices the specificity or relevance aspect for urban consumers, while using an average national basket could have partially satisfied specificity for both urban and rural areas.<sup>30</sup> Urban households with food expenditure equal to the food poverty line cannot meet the targeted calorie norms unless they adopt the rural consumption pattern.

The nonfood poverty line is determined on the basis of spending habits of the poor in Bangkok, who spend 60% of their income on food. The nonfood poverty line for other regions is obtained using spatial price indexes for nonfood items. Updating of the poverty line over time is undertaken with the help of region-specific food and nonfood consumer price indexes.

<sup>28</sup> This discussion is based on ADB RETA 5917.

<sup>29</sup> However, three regions have adopted the same menus.

<sup>30</sup> Such a point is made by Kakwani himself (2003, p.14).

**Viet Nam.** There are two important methods by which households may be deemed poor in Viet Nam. The Ministry of Labor, Invalids and Social Affairs uses a methodology based on household income. A household for which income per capita falls below a certain threshold is considered poor. The threshold, which is based on the income requirements needed for consuming a particular quantity of rice, varies between urban, rural, and mountainous areas. In particular, provincial authorities can adjust the threshold income on the basis of local knowledge and circumstances. Thus the resulting “poverty lines” do not necessarily represent a fixed real value of goods over which households have command.

The General Statistical Office, on the other hand, uses the cost of basic needs method to construct poverty lines. Using both income and expenditure, it defines a poverty line based on the cost of a consumption basket that includes food and nonfood items. The consumption basket should deliver at least 2,100 calories per day per person. The composition of the consumption basket is based on the living standards survey itself using data from households that are neither destitute nor well-off.<sup>31</sup> (It may be noted in passing that the sampling frame of the living standards survey in 1998 probably excluded migrants who did not have permanent residence registration in urban areas. This resulted in an underestimation of urban poverty since such migrants are likely to be among the poorest groups [Weeks et al. 2004, p.43]).

### 3. Issues with survey data used to estimate poverty

#### 3.1 General issues

The discussion has so far focused on poverty lines. To compute poverty, one needs to know how much people are actually consuming or earning. Household expenditure or income surveys provide this information. It is time now to discuss the various data problems that an analyst has to face in measuring poverty on the basis of household surveys, starting off with a brief discussion of a few old issues concerning poverty-related survey data.

As noted earlier, poverty lines are defined either in terms of income or consumption. In practice, this choice is restricted by the availability of household survey data since most countries collect data on either household

income *or* consumption. A few countries, such as Indonesia and the Philippines, collect data on both income *and* consumption. Income is a better measure of opportunity for consumption than actual consumption in the case of households that save. But, consumption might be a better measure of opportunity for poor households that save little or in fact dis-save. Most practitioners also prefer to define poverty in terms of total consumption expenditure because income data collection faces a wider range of measurement problems. Consumption is less affected by short-term fluctuations due to the consumption-smoothing opportunities available to a household. Hence, total consumption expenditure is thought to be a better indicator of the permanent income of a household, particularly in an agrarian economy.

One basic requirement of a survey is that samples selected should be random in the sense that each household should have an equal chance of being selected so that population parameters, including poverty incidence, can be estimated in an unbiased manner. Proper stratification could help in reducing the sample size for obtaining estimates with a given precision. Household surveys often miss a subgroup of poor households, namely people living in informal settlements and the homeless, and might underrepresent the poor population in a country. Similarly, poor households living in very remote and isolated tribal areas might be excluded from surveys on logistic grounds. On the other hand, affluent households may refuse to cooperate or the enumerator may find it difficult to have access to them.

Most of the surveys are intended to produce an unbiased estimate of population mean income or consumption expenditure, and the sample size is selected to produce the estimate of mean with a given precision. But the surveys may not be able to capture cumulative distribution of population by size of income with the same precision. Sampling error for cumulative distribution, and hence for the poverty ratio, might be unduly large if there are inadequate samples from some income strata, particularly at the lower end. A good practice to reduce sampling error is to use income or consumption information from a previous survey as a stratifying variable in sample selection. Adequacy of the precision for a variable at the national level will not imply the same degree of precision at the regional level.

The surveys normally attempt to cover income or consumption from all sources. For example, consumption would include food produced on a family farm or garden. Surveys, however, might value such items differently from those purchased in the market. For example, consumption from own production is valued at farm-

<sup>31</sup> These living standards surveys include the Viet Nam Living Standard Survey 1993 and 1998 and the Viet Nam Household Living Standard Survey 2002 carried out by the General Statistical Office.

gate prices in India. Such prices are normally 10–15% lower than the retail prices prevailing in villages. Since consumption of staple food from own production can be significant for certain groups of poor households, such as marginal farmers, the average prices used for valuation of the basic needs basket must take this into account.<sup>32</sup> Similarly, the rental value of owner-occupied houses or transactions in kind must be imputed carefully.

Most poverty estimates do not take into account nonmarket access to public services, such as health and education. So long as both the poverty line and the survey data do not consider this, the estimation of the poverty ratio could still be valid. But given the rising prominence of social sector budget allocations, this consideration needs to be factored into calculating poverty. The pace of poverty reduction in recent decades might well vary considerably once these transfers are apportioned to the various social classes, though it is not an easy task to do this appropriately.

Longitudinal household surveys are rare in Asia. Such surveys have the advantage of generating panel data to trace the same households over time. One could then monitor and study characteristics of households that remain chronically poor over time and who are poor in one period and become nonpoor in another. More detailed discussion of a few other issues now follows.

### 3.2 Adult equivalent scales

Most surveys consider the household as a unit of observation rather than the individual. While consumption decisions are generally made for the household as a whole, households differ in size and composition. The normal practice of considering household expenditure or income on a per capita basis takes into account size of the household, but ignores composition. Two households of a given size may have different demographic compositions: one household may have one male adult, one female adult, and two children while the other household may have all four adult males. Per capita expenditure may be a poor guide to compare the standards of living of these two households. Table 3 showed how the calorie needs of people in various age-sex groups differ: women and children need fewer calories than adult males. The demographic composition differences can be taken care of by a “normalization” procedure, such as converting consumption expenditure of all household members into “consumption per equivalent adult male.” The equivalent scale might then

measure the first household in the above example as equivalent to 3.1 adult males, while the second household would be equivalent to 4. Equivalent scales have been designed by examining variations in household consumption by age and sex groups and could easily be used in household surveys, which normally record information about household composition.

Despite this, poverty lines are often estimated on a per capita, rather than per adult equivalent, basis (see Table 4). One reason could be that household composition changes very slowly over time at the aggregate level in a society and might not affect the analysis most of the time. Another reason could be that observed consumption behavior at the household level partly reflects the need of individual members and partly their bargaining strength within the household. As Ravallion (1992) states, analysts would like to incorporate the need aspect into welfare comparison, but not the bargaining aspect “as this would perpetuate and even reinforce an existing welfare inequality” (p.20). On the other hand, in a situation where intra-household bargaining actually affects household decisions, normative policy analysis could be sharper when it is not ignored by the analyst.

### 3.3 Accuracy of the data collected: Surveys versus national accounts statistics

Since the survey data used for estimating poverty provides information on per capita income or expenditure of households (for the survey periods only, of course), it is possible to examine how these numbers compare to corresponding variables as reported in the NAS. Such an examination is potentially useful as a check on the accuracy of the data collected.

Unfortunately, there are large discrepancies between the two sources of data in almost all countries, including several industrial countries. Survey estimates are not only lower than NAS estimates, but the discrepancies seem to have grown during the 1990s in many countries. One notable example from the poverty point of view is India, where the discrepancy has increased to as much as 30–40% in recent years. This means that the higher income and consumption growth rate measured by NAS data in postreform India<sup>33</sup> has not led to faster reduction in the official poverty estimates, which are now exclusively measured from survey data. Considerable divergence, though not to the same extent as in India, can also be found in the PRC, other countries in South

<sup>32</sup> See Bardhan (1974) for a review of such details.

<sup>33</sup> The reform process was initiated in a comprehensive and substantive manner in 1991.

Asia, the United States, and countries in Latin America. Based on such findings, critics have questioned the validity of survey data used for poverty estimates (Bhalla 2002).

It is instructive to remember that there are often considerable differences between the two sources of data in terms of concepts and coverage. In accordance with international convention, “private” consumption in NAS for most countries includes expenditure not only by households, but also by nonprofit private enterprises such as charities and nonprofit nongovernment organizations. Household surveys, on the other hand, miss the homeless. NAS consumption estimates for most countries are derived as a “residual” item using the commodity balance equation. Survey-based consumption data are, of course, subject to both sampling and nonsampling errors. Sampling errors can be reduced by proper design of the survey. Refusal by respondents to answer survey questions means missing such households from surveys. If unwilling respondents are replaced by willing ones, the impact on precision needs to be examined. Large underreporting of consumption or income is a well-known common problem in surveys, though it is more likely to be so for rich households where the refusal rate is also likely to be higher. Ravallion (2001a) finds that the degree of discrepancy with the NAS is generally significantly larger for income surveys than consumption surveys.

Since the incidence of poverty is ultimately affected by the mean and inequality in distribution, some researchers like Bhalla (2002) have advocated that poverty incidence be calculated using mean consumption from the NAS coupled with an inequality parameter from the household surveys. Since the NAS estimate of per capita consumption is higher than the survey-based measure, this procedure would naturally result in a reduction in poverty. This procedure assumes that a survey-based mean is wrong, but that the distribution is right on a priori grounds. How valid is this assumption? It is difficult to justify that the distribution inferred from the surveys is right even if the mean from the surveys is wrong. Consider what would happen if richer households underreport their consumption and/or refuse to participate in the survey as a number of experts believe is the case. In such a scenario, the survey mean is lower than actual—but the distribution from the survey is also more equal than actual.<sup>34</sup>

<sup>34</sup> An attempt to compensate for the artificially more equal distribution by adjusting the survey mean by less than the full extent of the survey mean to NAS mean differential could be used. But such an attempt is likely to be ad hoc.

Moreover, the NAS consumption estimates suffer from major weaknesses. In particular, these are derived as residuals from commodity flow balances by deducting other components of demand, such as intermediate inputs, investment, and net exports from supply of output. Treatment of private consumption as a residual thus means that it automatically absorbs errors and omissions made in estimation of other components so as to ensure the supply-demand balance. Such a residual cannot be considered a superior estimate to the survey estimate.<sup>35</sup> There seems to be no strong evidence in favor of the NAS estimate.<sup>36</sup>

### 3.4 Survey design: Choice of recall period

One particular aspect of survey design that has received attention in recent years is the choice of an appropriate recall period in consumption expenditure survey questionnaires. The recent Indian experience is noteworthy. The NSSO in India used a 30-day recall period from its inception in the early 1950s until 1993/94. Given the more common practice of a 7-day or 14-day recall period for food in most other countries, it incorporated some changes in the method of data collection starting with the survey in 1994/95. It divided the sample households into two equal groups. In one group, the data were collected with a uniform recall period of 30 days for all the items in conformity with past practice. For the other group, three recall periods of 7, 30, and 365 days were chosen for different categories of items.<sup>37</sup>

The two sets of households were covered by two different investigators independent of each other during 1994/95 to 1998/99. But this practice was given up during the large sample survey in 1999/2000 when the NSSO collected consumption data on food items using two different recall periods of 7 days and 30 days from

<sup>35</sup> See Deaton (2001), Ravallion (2001a and b), and Srinivasan (2001) for discussion of these issues.

<sup>36</sup> In the context of this debate, it is instructive to remember another point noted by Srinivasan (2001). Household surveys are designed to provide estimates of population mean within an acceptable precision level. But the precision of estimates of cumulative population distribution obtained from the surveys is unknown. It is the cumulative distribution that matters for poverty estimates. This point could be interpreted to imply that the inequality parameters from the survey, along with the mean, must be within desired precision limits to place strong confidence on poverty estimates. This certainly is a potential area for future research on poverty estimates.

<sup>37</sup> For example, food was covered in terms of a 7-day recall, fuel and light in terms of a 30-day recall, and durable goods (including footwear and clothing) in terms of a 365-day recall.

the same households. Information was collected for some nonfood items (such as clothing and footwear and durable goods) using a 365-day recall period and for the remaining nonfood items using a 30-day recall period. This process of administering the questionnaire led to two changes: (i) monthly per capita consumption expenditure for some nonfood items was based on 365-day recall period in 1999/2000 whereas it was based on 30-day recall period in earlier large-scale surveys, and (ii) the data on food expenditure were collected based on two different recall periods from the same households in 1999/2000.

The magnitude of resulting changes can be judged from Table 8.

estimates. Too long a period may lead to a recall bias downward, and too short a period can create bias in the opposite direction. There is a need for more research on recall periods in different countries with a view to establishing some best practices.

#### 4. Poverty in Developing Asia

The discussion now turns to an examination of poverty estimates in the Asia and Pacific region. In addition to presenting estimates of poverty incidence based on country-specific or national poverty lines, estimates based on the World Bank's \$1-a-day and \$2-a-day poverty lines are presented.<sup>38</sup> The national poverty lines discussed

**Table 8 Per Capita Consumption Expenditure, Sensitivity to Changes in Recall Period, India, Selected Periods, 1994–2000**

Period	National Sample Survey Round	Difference Between 7-day and 30-day Recall (%)	
		Rural	Urban
1. July 1994 to June 1995	51 <sup>st</sup>	14.3	18.4
2. July 1995 to June 1996	52 <sup>nd</sup>	17.5	13.2
3. January 1997 to December 1997	53 <sup>rd</sup>	12.7	14.0
4. January 1998 to June 1998	54 <sup>th</sup>	18.1	13.3
5. July 1999 to June 2000	55 <sup>th</sup>	3.9	2.8

Source: Sharma, S. 2004. "Poverty Estimates in India: Some Key Issues." Economics and Research Department Working Paper Series No. 51, May, p. 18. Available: [http://www.adb.org/Documents/ERD/Working\\_Papers/WP051.pdf](http://www.adb.org/Documents/ERD/Working_Papers/WP051.pdf).

The consumption expenditure collected on a 7-day recall period basis during the 51<sup>st</sup>–54<sup>th</sup> rounds is 13–18% larger than that obtained from a 30-day recall period basis. This difference is reduced to 3–4% in the 55<sup>th</sup> round. Critics attributed this reduction to the mix-up of recall periods by respondents. This could affect comparability with previous large-scale surveys.

Visaria (2000) found that a 7-day recall period led to reporting of more food expenditure and a very significant fall in the poverty ratio. Some critics raised doubts over the validity of using an old poverty line with a new reporting period. Examining the data, Deaton (2001) argues that the switch to a 7-day period would move the Engel curve for food upward so that the new poverty line would be lower, given the same nutritional norm. But his experiments with the data showed that the Engel curves for the two recall periods nearly coincided until the poverty line so that there was no need to revise the poverty line in practice unless the calorie intake per unit food expenditure was different between the two recall periods.

The above experience makes the point clearly that the length of the recall period influences consumption

in earlier sections, though of critical importance in monitoring and designing poverty reduction strategies at the national level, should not be used for comparing poverty across countries. As noted in Section 2, national poverty lines tend to exhibit a relative element in the sense that countries with a higher per capita income tend to have a higher poverty line. In contrast, an international poverty line, such as the \$1-a-day line, is applied uniformly across all countries and can therefore provide a better basis on which to make international comparisons of poverty.

<sup>38</sup> For non-Pacific DMCs, the \$1-a-day and \$2-a-day estimates are largely drawn from the World Bank's PovcalNet poverty database (available: <http://iresearch.worldbank.org/PovcalNet/jsp/index.jsp>). In addition to presenting a variety of poverty measures, this web site enables users to extract the grouped distribution data on incomes or consumption expenditures and associated survey means in 1993 PPP dollars. In a few cases, namely for Pakistan (1999), Lao PDR (1992 and 1997), and Viet Nam (1993, 1998, and 2002), information was used from other sources to adjust the survey means and/or update the grouped distribution data and recompute poverty measures. See Chen and Ravallion (2004) for more details on the methods on which PovcalNet estimates are based. Data for the Pacific DMCs were obtained from various ADB RETAs including RETA 6002: *Consultation Workshops for Poverty Reduction Strategies in Selected PDMCs* and RETA 6047: *National Poverty Reduction Strategies for PDMCs*.

#### 4.1 Recent estimates and trends in poverty

Survey-based estimates of poverty incidence from both national and international (\$1-a-day and \$2-a-day) poverty lines are listed in Table 9 for a large number of DMCs for the latest year available.<sup>39</sup> The national

estimates are obtained from a variety of sources, official and otherwise, and are helpful in understanding the incidence of poverty from a national perspective—i.e., based on country-specific conditions and norms. As the estimates based on national poverty lines make clear, barring a few cases rural poverty rates are almost everywhere higher than urban poverty rates. But rural

Table 9 **Poverty Estimates Based on National and International Poverty Lines, Urban-Rural, Selected Developing Member Countries, Various Years**

Region/Country	National Poverty Rates (%)				International Poverty Measures				
	Year	National	Urban	Rural	Year	\$1-a-day		\$2-a-day	
						HCR (%)	Magnitude ('000)	HCR (%)	Magnitude ('000)
<b>East Asia</b>									
China, People's Rep. of	2003			3.1	2001	16.6	211,865.8	46.7	596,032.1
Mongolia	1998	35.6	39.4	32.6	1998	27.0	648.5	74.9	1,797.8
<b>Southeast Asia</b>									
Cambodia	1999	35.9	18.2	40.1	1997	34.1	3,966.9	77.7	9,045.4
Indonesia	2002	18.2	14.5	21.1	2002	7.5	15,902.0	52.4	110,985.4
Lao People's Dem. Rep.	1997	38.6	26.9	41.0	1997	39.0	1,882.7	81.7	3,945.6
Malaysia	1999	7.5	3.4	12.4	1997	0.2	36.8	9.3	2,004.5
Myanmar	1997	22.9	23.9	22.4	...	...	...	...	...
Philippines	2000	34.0	20.4	47.4	2000	15.5	12,136.3	47.5	37,224.3
Thailand	2002	9.8	4.0	12.6	2000	1.9	1,204.5	32.5	20,264.5
Viet Nam	2002	28.9	6.6	35.6	2002	13.1	10,509.4	58.5	47,058.1
<b>South Asia</b>									
Bangladesh	2000	49.8	36.6	53.0	2000	36.0	46,756.1	82.8	107,475.5
India	1999	26.1	23.6	27.1	1999	36.0	359,145.8	81.3	810,170.8
Maldives	1998	43.0	20.0	50.0	1998	0.1	0.3	2.9	7.5
Nepal	1996	42.0	23.0	44.0	1995	39.1	8,150.8	80.9	16,859.8
Pakistan	1999	32.6	25.9	34.8	1999	25.3	34,031.0	77.2	103,841.7
Sri Lanka	1995	25.2	14.7	27.0	1995	6.6	1,144.9	45.4	7,914.9
<b>Central Asia</b>									
Azerbaijan	2001	49.6	...	...	2001	3.7	297.7	33.4	2,709.9
Kazakhstan	2002	27.9	20.3	36.9	2001	0.1	16.3	8.5	1,255.2
Kyrgyz Republic	2000	52.0	43.9	56.4	2001	0.9	42.6	27.2	1,344.9
Tajikistan	2003	56.6	47.7	59.9	1999	13.9	840.5	58.7	3,555.4
Turkmenistan	1998	29.9	20.1	31.1	1998	12.1	593.8	44.0	2,164.3
Uzbekistan	2000	27.5	22.5	30.5	2000	17.3	4,260.7	71.7	17,640.7
<b>Pacific</b>									
Fiji Islands <sup>a</sup>	1990	25.5	27.6	22.4	1990	25.0	184.3	...	...
Micronesia, Fed. States of	1998	27.9	...	...	1998	5.2	5.5	19.7	21.0
Kiribati	...	...	...	...	1996	38.0	30.0	...	...
Marshall Islands	...	...	...	...	1999	20.0	10.2	...	...
Papua New Guinea	1996	37.5	16.1	41.3	1996	24.6	1,023.4	54.4	2,263.0
Samoa	2002	20.3	...	...	2002	5.5	9.8	...	...
Tonga <sup>a</sup>	2001	22.7	...	...	2001	4.0	4.0	12.6	12.7
Tuvalu <sup>a</sup>	1994	29.3	...	...	1994	17.2	1.6	...	...
Vanuatu <sup>a</sup>	...	...	...	...	1998	40.0	72.8	...	...

... = data not available, HCR = headcount ratio.

<sup>a</sup> Per household (the rest are per capita).

Sources: *National Poverty Rates:*

Asian Development Bank. Regional Technical Assistance 5917: *Building a Poverty Database* and Regional Technical Assistance 6047: *National Poverty Reduction Strategies for PDMCs.*

*\$1-a-day and \$2-a-day Headcount Ratios:*

ADB staff estimates for Lao PDR, Viet Nam, Pakistan, Maldives; World Bank, *East Asia Update: Regional Overview*, October 2003, for Papua New Guinea; Regional Technical Assistance 6047 for other Pacific developing member countries; World Bank, PovcalNet Database for the rest.

<sup>39</sup> Thus, "synthetic" or "projections-based" estimates are not displayed. Neither are estimates that may be based on small-scale surveys that are not nationally representative.

populations account for a large proportion of the DMCs, at over two thirds of the population in many cases. Thus, across the region, the number of poor in rural areas is far larger than the number of poor in urban areas. In India's case, for example, while the urban poverty incidence is just 3.5 percentage points lower than the rural poverty incidence (Table 9), the fact that a little over 70% of India's population is rural implies that around 75% of the total poor (or the rural poor divided by the sum of rural and urban poor) lived in rural areas in 1999.<sup>40</sup> In Thailand and Viet Nam, where urban poverty incidence is much lower than rural poverty incidence (Table 9), rural poverty accounts for around 90% of total poverty. The fact that so many of the poor live in rural areas can have important implications for antipoverty policies (an issue taken up in Section 4.2).

As noted just above, national estimates of poverty should not be used to compare poverty incidence across countries. For such a comparison, the estimates of poverty incidence based on the \$1-a-day and \$2-a-day poverty lines are used (Box 8 describes two other measures of \$1-a-day poverty for selected DMCs). From these it can be seen that the incidence of extreme poverty as captured by the \$1-a-day poverty line is severe in South Asia. When absolute numbers are taken into account, the picture is even worse. The poor constitute between around a quarter and a third of the populations of the larger South Asian economies; given the large populations of not only India but Bangladesh and Pakistan as well, South Asia is home to a majority of Asia's poor. However, extreme poverty is also a significant problem in Cambodia, Lao PDR, Mongolia, and in some of the Pacific DMCs, afflicting more than a fifth of these countries' populations.

Extreme poverty tends to be less of a problem elsewhere in Asia when viewed in terms of incidence, but, given large populations, the absolute number of extremely poor can be large. Thus, while the PRC has done a remarkable job in reducing extreme poverty, more than 200 million can be counted among the extremely poor in that country. Similarly, while Indonesia and Viet Nam, especially, have made significant inroads in reducing extreme poverty, the number of poor in these countries and in the Philippines—around 16 million, 10 million, and 12 million, respectively—would easily swamp the entire population of smaller countries with a higher incidence of poverty.

<sup>40</sup> If urban poverty lines unwittingly represent a higher standard of living than rural poverty lines (for example, due to some of the reasons mentioned in Section 2), then an even larger proportion of the poor would be counted as residing in rural areas.

Moving to a more “generous” poverty line of \$2 a day, it is seen that for many DMCs, either a majority or nearly a majority of their populations are poor. This is disturbing, because although the \$2-a-day poverty line may be double the \$1-a-day poverty line, obviously it does not represent a high standard of living. Indeed, as noted in Box 4, the \$2-a-day poverty line is more typical of poverty lines found in low-middle-income countries. Thus, while a narrow focus on \$1-a-day poverty would lead one to conclude that the problem of poverty was not significant in either Indonesia or Sri Lanka, a quick look at the incidence rate of \$2-a-day poverty in both of these countries should clearly convey the fact that the battle for eradicating poverty in these countries is far from coming to a close. The large percentages of poor in terms of the \$2-a-day poverty line also suggest vulnerability of those who have escaped \$1-a-day poverty. In other words, adverse economic shocks faced by the nonpoor (in terms of \$1-a-day poverty) could easily lead to their becoming poor. Table 10 reveals this quite clearly by displaying poverty incidence rates for poverty lines that are only slightly higher than the \$1-a-day poverty line. As can be seen, relatively small increases in the poverty line can lead to large increases in the percentage of poor.

What about trends in poverty? In principle, it is possible to utilize information on poverty based on both international poverty lines and those from national sources to examine this issue. As long as the methods used to update poverty lines over time maintain the real values of lines, trends should exhibit broad similarities.<sup>41</sup> Tables 11 and 12 report poverty estimates, based on international and national poverty lines respectively, for selected DMCs based on surveys that are generally spaced at least 3 years apart. In reporting the poverty estimates, an effort has been made to include comparable time-series data. Thus a national poverty estimate was not included if it was known to be based on a poverty line with different real value from other years' estimates. Additionally, in the case of India use is only made of large-scale (or “thick”) sample surveys carried out approximately every 5 years.<sup>42</sup> Similarly, the lack of

<sup>41</sup> This is an especially crucial issue in the case of national estimates where several alternative estimates may be available based on different definitions and methods used in constructing and updating the poverty lines.

<sup>42</sup> Strictly speaking, the differences in the recall period used in canvassing information on consumption expenditures across the 1993 and 1999 national sample survey rounds in India create problems of comparability as noted in Section 3. The World Bank's PovcalNet estimates used here, however, attempt to ensure greater comparability across the two rounds' data by making some adjustments to the 1999 distribution. See Chen and Ravallion (2004) for more details.

### Box 8 Alternative Measures of \$1-a-Day Poverty

The discussion on poverty thus far has been based on poverty incidence or the headcount ratio. While the headcount ratio measures how widespread poverty is, the poverty gap index (PGI) measures how poor the poor are, and the squared poverty gap index (SPG) measures the severity of poverty by giving more weight to the poorest of the poor (see Box 2 and Box 5 for precise definitions of these two measures). The table below displays the PGI and SPG for selected developing member countries based on the \$1-a-day poverty line. In general, the conditions of the poorest tend to be the worst in countries with the highest incidences of poverty. Thus, of the DMCs that are common across Table 9 and the table below, the five countries with the highest \$1-a-day headcount ratios in Table 9 also have the five highest values for the PGI (and nearly so for the SPG). However, the PGI and SPG

add useful information on the poverty problem. For example, the PGI, being based on the average consumption shortfalls of the poor (from the poverty line), can also give some sense of the resources required to pull the poor out of poverty. Seen in this light, although the \$1-a-day poverty incidence in Bangladesh may be 9 percentage points higher than in Mongolia (Table 9), on a per capita basis it would take a roughly equivalent transfer of resources to lift the consumption of the poor up to the poverty line in both countries. This is because the poor in Bangladesh on the whole are nearer to the poverty line than in Mongolia. Similarly, the considerably lower SPG in Bangladesh than in Mongolia, for an almost identical PGI, indicates that the degree of inequality among the poor is lower in Bangladesh. Examining headcount ratios alone would not convey these pieces of information on poverty.

Country	Year	Poverty Gap Index	Squared Poverty Gap Index
Azerbaijan	2001	0.63	0.20
Bangladesh	2000	8.10	2.44
Cambodia	1997	9.68	3.72
China, People's Rep. of	2001	3.94	1.26
India	1999	8.57	2.78
Indonesia	2002	0.91	0.18
Kazakhstan	2001	0.02	0.01
Kyrgyz Republic	2001	0.10	0.02
Lao PDR	1997	10.77	3.99
Malaysia	1997	0.02	0.00
Mongolia	1998	8.08	3.40
Nepal	1995	11.01	4.24
Pakistan	1999	5.20	1.43
Philippines	2000	2.98	0.76
Sri Lanka	1995	1.00	0.26
Tajikistan	1999	3.44	1.47
Thailand	2000	0.05	0.00
Turkmenistan	1998	2.59	0.82
Uzbekistan	2000	4.26	1.86
Viet Nam	2002	1.58	0.26

Source: Poverty gap and squared poverty gap: PovcalNet except for Lao PDR, Pakistan, and Viet Nam, which are ADB staff estimates.

comparable time-series data for the urban sector in the PRC leads to a focus only on that country's rural sector.<sup>43</sup>

While the broad, qualitative trends in poverty are similar across the international \$1-a-day estimates and national estimates of poverty incidence for many countries, in some cases there are large divergences in even these broad trends. In the case of Bangladesh, for example, the national estimates reveal that poverty declined only marginally (by less than 2 percentage

points) between 1995 and 2000. In contrast, the \$1-a-day estimates show a significant increase—of around 7 percentage points—in poverty. Conversely, \$1-a-day poverty incidence declined by almost half between 1996 and 2002 in Indonesia while national estimates suggest a marginal increase in poverty. Pakistan is another case where divergences are wide: while \$1-a-day poverty shows a decline of around 9 percentage points between 1993 and 1999 (even after adjusting the 1999 estimates upward),<sup>44</sup> national estimates suggest that poverty

<sup>43</sup> Since the early 1990s, a relaxation of travel restrictions combined with an increase in demand for unskilled labor in urban areas (for example, in construction) has led to significant flows of rural residents into cities. Since this “floating” population is ineligible for urban welfare entitlements and faces volatile employment, it is likely to contain many poor people. To the extent that household surveys are not capturing this floating population to the appropriate degree, conventional estimates of urban poverty will be underestimates and noncomparable with earlier surveys carried out in a period in which the floating population did not exist to any significant degree. See ADB (2004a) for more details on urban poverty issues in the PRC.

<sup>44</sup> The \$1-a-day HCR for Pakistan in 1999 is listed as 13.4% in the PovcalNet database. This was recomputed as 25.3% by adjusting the 1999 survey mean by applying the growth rate of per capita private consumption expenditures from the NAS to the 1992 survey mean. Although the NAS estimates of consumption can diverge from survey-based estimates, as noted in Section 3, some sort of adjustment seemed to be required to the 1999 \$1-a-day estimates to reduce their very large divergence from trends based on national estimates.

**Table 10 Headcount Ratios and Small Changes in Poverty Line, Selected Developing Member Countries, Various Years (%)**

Country	Year	\$1 a Day	\$1 a Day plus 10%	\$1 a Day plus 20%	\$1 a Day plus 30%
Azerbaijan	2001	3.67	5.70	8.18	10.99
Bangladesh	2000	36.03	43.59	50.59	56.86
Cambodia	1997	34.08	40.13	45.95	51.42
China, People's Rep. of	2001	16.64	20.23	23.77	27.19
India	1999	36.04	43.41	50.31	56.45
Indonesia	2002	7.51	11.97	16.76	21.63
Lao PDR	1997	39.00	45.73	51.92	57.47
Mongolia	1998	27.02	32.42	37.99	43.56
Nepal	1995	39.13	45.57	51.48	56.82
Pakistan	1999	25.30	32.62	39.72	46.34
Philippines	2000	15.48	19.29	22.99	26.53
Sri Lanka	1995	6.56	9.97	13.80	17.83
Tajikistan	1999	13.87	18.13	22.71	27.44
Thailand	2000	1.93	5.35	8.71	11.99
Turkmenistan	1998	12.07	15.40	18.78	22.13
Uzbekistan	2000	17.32	22.85	28.81	34.93
Viet Nam	2002	13.10	18.45	23.77	28.93

Source: ADB staff estimates.

**Table 11 Headcount Ratios for \$1 a Day, Selected Developing Member Countries, Various Years (%)**

Region/Country	Mid-1980s	Early 1990s	Mid-1990s	Late 1990s, Early 2000s
<b>East Asia</b>				
China, People's Rep. of—Rural	53.1 (1984)	44.3 (1990)	24.8 (1996)	26.5 (2001)
Mongolia	...	...	13.9 (1995)	27.0 (1998)
<b>Southeast Asia</b>				
Indonesia	37.8 (1984)	20.5 (1990)	13.9 (1996)	7.5 (2002)
Lao People's Dem. Rep.	...	47.9 (1992)	...	39.0 (1997)
Malaysia	2.0 (1984)	0.4 (1992)	1.0 (1995)	0.2 (1997)
Philippines	22.8 (1985)	19.8 (1991)	14.4 (1997)	15.5 (2000)
Thailand	17.8 (1988)	6.0 (1992)	2.2 (1996)	1.9 (2000)
Viet Nam	...	39.4 (1993)	18.3 (1998)	13.1 (2002)
<b>South Asia</b>				
Bangladesh	22.0 (1985)	35.9 (1991)	28.6 (1995)	36.0 (2000)
India	46.3 (1987)	42.3 (1993)	...	36.0 (1999)
India—Rural	51.8 (1987)	49.1 (1993)	...	41.8 (1999)
India—Urban	28.1 (1987)	22.4 (1993)	...	19.3 (1999)
Nepal	40.3 (1984)	...	39.1 (1995)	...
Pakistan	49.6 (1987)	33.9 (1993)	...	25.3 (1999)
Sri Lanka	9.4 (1985)	3.8 (1990)	6.6 (1995)	...
<b>Central Asia</b>				
Azerbaijan	...	...	10.9 (1995)	3.7 (2001)
Kazakhstan	0.2 (1988)	0.4 (1993)	1.9 (1996)	0.1 (2001)
Kyrgyz Republic	0.0 (1988)	8.0 (1993)	0.2 (1998)	0.9 (2001)
Turkmenistan	0.0 (1988)	20.7 (1993)	...	12.1 (1998)
Uzbekistan	0.0 (1988)	3.4 (1993)	19.2 (1998)	17.3 (2000)

... = data not available.

Note: Reference years are enclosed in parentheses.

Sources: ADB staff estimates for Lao PDR, Viet Nam, and Pakistan (1999); World Bank, PovcalNet Database for the rest.

Table 12 National Estimates of Headcount Ratios,  
Selected Developing Member Countries, Various Years (%)

Region/Country	Mid-1980s	Early 1990s	Mid-1990s	Late 1990s, Early 2000s
<b>East Asia</b>				
China, People's Rep. of—Rural	...	...	7.1 (1995)	3.5 (2000)
Mongolia	14.8 (1985)	9.4 (1990)	36.3 (1995)	35.6 (1998)
<b>Southeast Asia</b>				
Cambodia	...	39.0 (1994)	36.1 (1997)	35.9 (1999)
Indonesia	...	15.1 (1990)	17.7 (1996)	18.2 (2002)
Lao People's Dem. Rep.	...	45.0 (1992)	...	38.6 (1997)
Malaysia	20.7 (1984)	12.8 (1992)	8.7 (1995)	7.5 (1999)
Philippines <sup>a</sup>	49.3 (1985)	45.3 (1991)	36.8 (1997)	39.4 (2000)
Thailand	32.6 (1988)	23.2 (1992)	11.4 (1996)	14.2 (2000)
Viet Nam	...	58.2 (1993)	37.4 (1998)	28.9 (2002)
<b>South Asia</b>				
Bangladesh	...	...	51.0 (1995)	49.8 (2000)
India	38.9 (1987)	36.0 (1993)	...	26.1 (1999)
Nepal	41.4 (1985)	...	42.0 (1996)	...
Pakistan	29.1 (1987)	26.1 (1991)	28.7 (1994)	32.1 (2001)
Sri Lanka <sup>b</sup>	30.9 (1985)	19.9 (1990)	25.2 (1995)	...
<b>Central Asia</b>				
Azerbaijan	...	...	68.1 (1995)	49.6 (2001)
Kazakhstan	...	...	34.6 (1996)	30.9 (2001)
Kyrgyz Republic	...	40.0 (1993)	51.0 (1997)	52.0 (2000)
Tajikistan	...	...	65.4 (1999)	56.6 (2003)
Turkmenistan	...	37.0 (1993)	...	29.9 (1999)

... = data not available.

<sup>a</sup> Based on methodology used prior to new methodology introduced in 2003. Under the new methodology, poverty incidence for 1997 and 2000 are 33% and 34%, respectively. Estimates for earlier years cannot be computed using the new methodology.

<sup>b</sup> Refers to upper poverty line.

Note: Reference years are enclosed in parentheses.

Source: Asian Development Bank. Regional Technical Assistance 5917: *Building a Poverty Database*.

increased over this period. Differences as large as these clearly indicate the need for a careful examination of the underlying data that are used to hold constant, in real value, the respective poverty lines being used.

Fortunately, broad trends in the poverty figures tend to be more in line with one another for many of the other DMCs. Focusing attention on the \$1-a-day poverty estimates for these countries, the most dramatic reductions in poverty are seen to have occurred in East Asia and Southeast Asia. In rural PRC, the early to mid-1980s and early to mid-1990s were years of rapid poverty reduction. For example, poverty fell by 4.8 percentage points a year on average between 1993 and 1996—a rate lower than that registered between 1980 and 1984 when poverty fell by 6.6 percentage points a year on average.<sup>45</sup>

In Malaysia, poverty reduction in the 1970s and early 1980s had already led to the virtual eradication of poverty by the late 1980s. Rapid progress in reducing poverty has also been made in Indonesia (2.9 percentage point reduction a year between 1984 and 1990), and Thailand (almost 3 percentage point reduction a year between 1988 and 1992). Significant poverty reduction has been seen more recently in Viet Nam, where poverty fell by 4.2 percentage points a year between 1993 and 1998. In several instances, however, the most recent trends suggest a marked slowdown in the rate of poverty reduction.<sup>46</sup> The most glaring is the case of rural PRC, where poverty increased by a little over 1.7 percentage points between 1996 and 2001. As will be described in more detail later, this increase has taken place despite an increase in the mean consumption in rural areas, indicating that distribution changes favored the nonpoor.

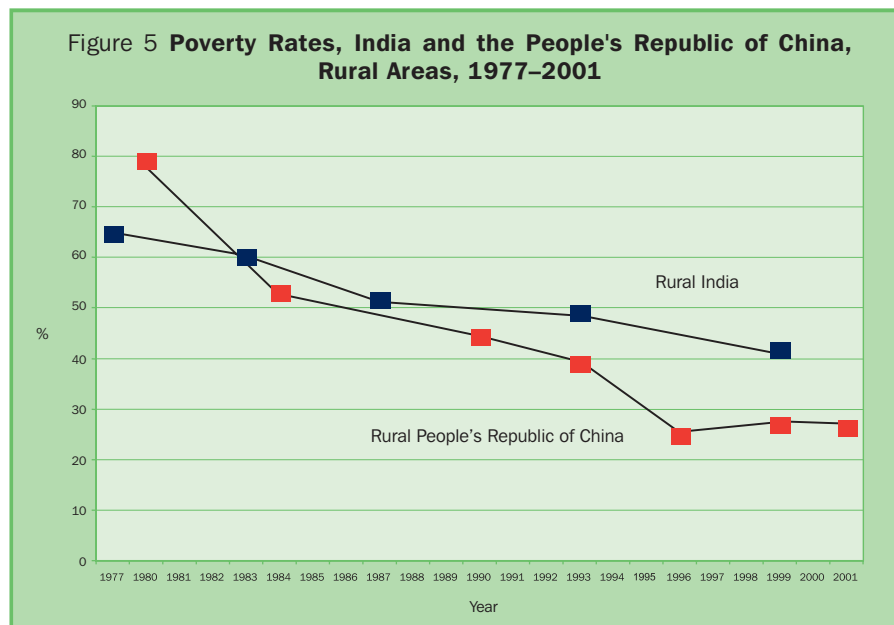
<sup>45</sup> The estimate of \$1-a-day poverty in rural PRC for 1980 is 79.4%. This number and the 1984 number reported in Table 11 are based on income surveys with smaller samples than surveys carried out from 1985 onward.

<sup>46</sup> Thailand's case however is not strictly comparable with the others since \$1-a-day poverty is already at historically low levels. As for Indonesia, the discrepancy between international and national estimates, which show largely unchanged poverty over the late 1990s to 2001, throws a cloud of doubt over the rapid reduction in \$1-a-day poverty between 1999 and 2002.

In general, South Asia's track record in reducing extreme poverty has been less impressive. Apart from Sri Lanka, where the magnitude of extreme poverty has been much less than its neighbors, the dramatic reductions registered at different times in various East Asian and Southeast Asian countries has been missing. This may be seen by comparing the profile of poverty over time across rural PRC and rural India (Figure 5). As the figure indicates, reductions in rural PRC have been much larger than those in rural India. Nevertheless, as the figure also suggests, poverty reduction has taken place at a fairly consistent rate in rural India. Consolidating the urban and rural sectors, the rate of poverty reduction in India across the six large-sample rounds of the national sample surveys from 1977 to 1999 has ranged from 0.7 to 1.6 percentage points a year on average (and almost 1 percentage point a year on average if one compares 1977 and 1999 alone).<sup>47</sup> In contrast, progress in fighting poverty has been disappointing in Nepal during the period for which relatively high quality data exist: poverty fell by only 0.1 percentage point a year on average between 1985 and 1995. In the case of Bangladesh and Pakistan, the other two South Asian nations with a large incidence of extreme poverty, the discrepancies in poverty trends based on international poverty lines versus those based on national poverty lines, as noted above, make assessment less firm. However, in Bangladesh's case, it

is notable that even under the more optimistic set of results based on national poverty lines, poverty reduction has been marginal (ADB RETA 5917). For Pakistan, the discrepancy across trends is more serious in terms of the qualitative picture one sees on success in reducing poverty. The rate of \$1-a-day poverty reduction between 1993 and 1999 has been respectable (around 1.4 percentage points a year on average). However, trends based on national estimates suggest stagnation in the fight against poverty over the same period (ADB RETA 5917).<sup>48</sup>

While availability of comparable poverty estimates over time are most patchy in the case of the Central Asian republics and Mongolia, there is evidence suggesting that in the former group, good progress has generally been made in reversing the sharp declines in standards of living and welfare that accompanied the breakup of the Soviet Union (Osmani 2003b). The estimates of Table 11 corroborate this for at least three of the Central Asian republics (Azerbaijan, Kyrgyz Republic, and Turkmenistan). Since extreme poverty has not been much of an issue in Kazakhstan over the 1990s, this leaves Uzbekistan among the Central Asian republics as having had a comparatively more difficult time in reducing poverty. Unfortunately, recent data for Mongolia are not available. In terms of the data covering the mid- to late 1990s, however, poverty increased significantly.



Source: Based on World Bank PovcalNet data.

<sup>47</sup> The \$1-a-day poverty estimates for India in 1977 and 1983 are 57.3% and 52.7%, respectively.

<sup>48</sup> As indicated already, the 1999 \$1-a-day poverty estimate for Pakistan has been adjusted upward in comparison to that reported in the PovcalNet database. Without this adjustment, the rate of poverty reduction over the 7-year period 1993–1999 would have been nearly 3 percentage points a year.

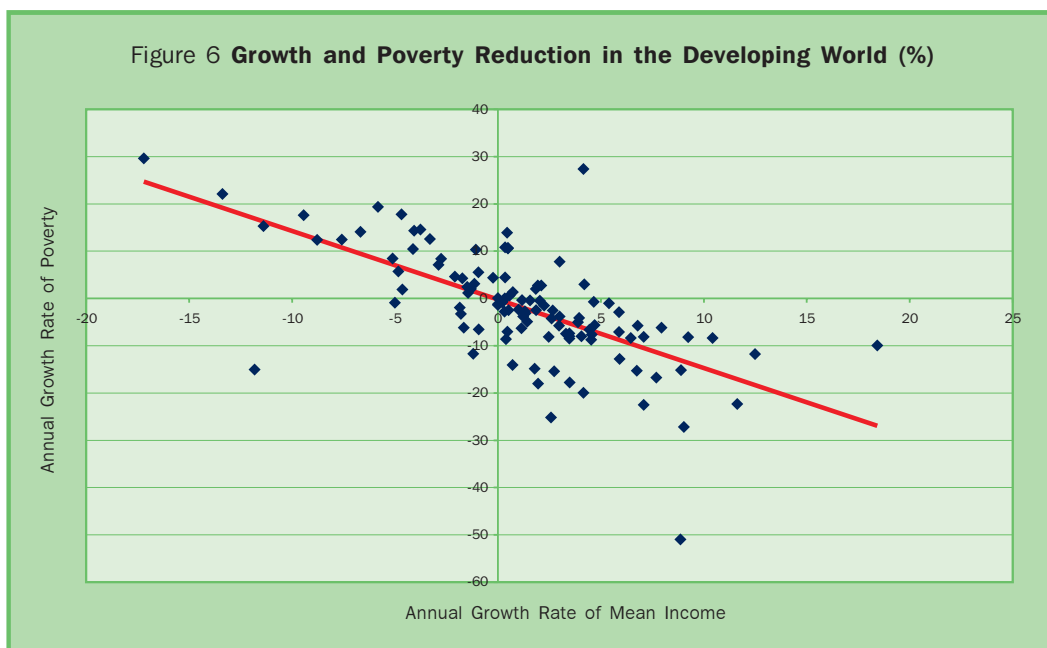
## 4.2 Poverty reduction: Links to growth and distribution<sup>49</sup>

Among their many functions, poverty estimates allow an investigation of the relationships among poverty and its correlates. Such an investigation sheds light on the causes of poverty and thus informs antipoverty policies. This section uses household survey data to examine the relationships among poverty, growth, and distribution in developing Asia. Revealing these relationships clarifies the role of growth and distribution changes in influencing poverty reduction in Asia, and sets the stage for a discussion of Asia's future prospects for reducing poverty.

A useful starting point for examining growth-poverty linkages is Figure 6. This plots within-country reduction in \$1-a-day poverty against growth in survey-based per capita income or expenditure. Each point depicts the experience during a “spell,” defined here as a time period over which income/expenditure and poverty data from comparable and contiguous household surveys spaced at least 3 years apart are available. Over 100 such spells (111 to be precise) from 51 developing countries from around the world are used.<sup>50</sup> The data indicate that

on average, growth is strongly associated with poverty reduction. In particular, growth of 1% is associated with a 1.5% decline in the incidence of \$1-a-day poverty on average.<sup>51</sup> These data lend strong support to the notion that economic growth is an important driver of poverty reduction.

However, it is also clear from the figure that the relationship between growth and poverty reduction is not perfect. First, there are some growth spells that lie in either the first or third quadrants of the figure. These spells refer to situations where either poverty increased despite growth in income, or poverty declined despite contraction in income. Second, even where growth has been associated with poverty reduction, it is clear that the degree to which a given amount of growth is translated into poverty reduction varies across countries and even over time within countries. In statistical terms, growth has “explained” only 43% of the variation in changes in poverty on average among this set of developing countries. In other words, as much as 57% of the variation in changes in poverty is unexplained by growth among a sample of developing countries from around the world.



Source: ADB staff estimates.

<sup>49</sup> Growth and distribution pertain to per capita income or expenditure from household survey data. The term *economic growth* is used for referring to growth in a national account aggregate, such as GDP per capita. As before, the source of the household survey data used to compute growth and distribution is mainly the PovcalNet database.

<sup>50</sup> Data for the PRC refer only to rural PRC. Data from Central Asia, the Pacific, and Eastern Europe are not included in this analysis. The upheavals associated with the breakup of the Soviet Union, including those experienced by the statistical agencies in Central Asia and Eastern Europe, combined with the low incidences of

\$1-a-day poverty in many of these countries at one point or other during a growth spell, led to very large fluctuations in both poverty and survey-based incomes or consumption. The results of statistical analysis can then be driven to an undesirable degree by the extreme events in these countries. The Pacific countries are not included because of the lack of survey data for multiple years.

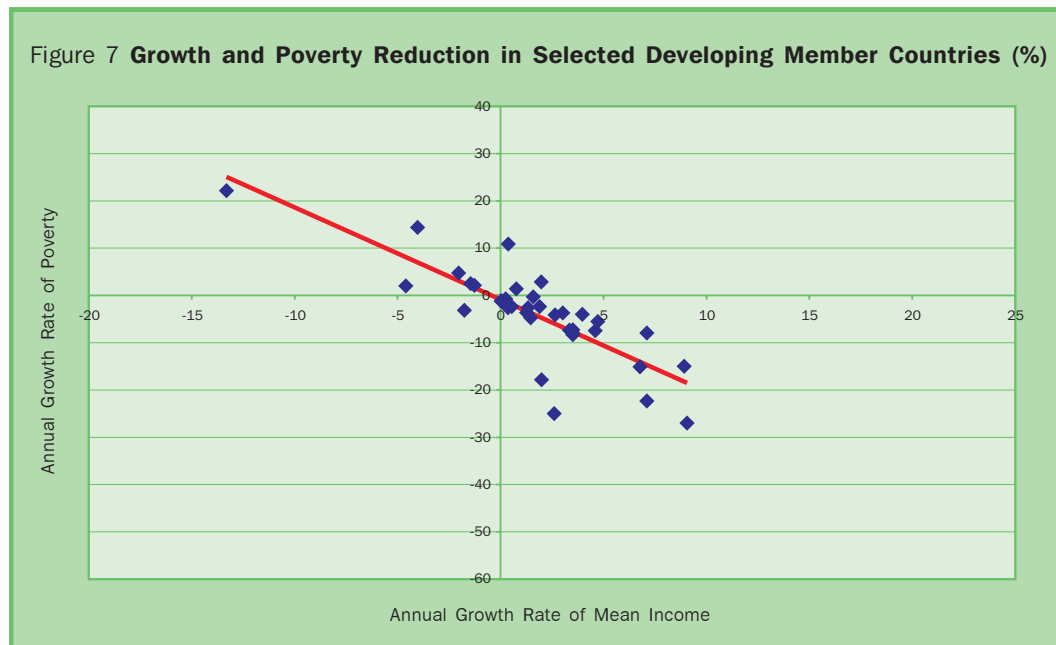
<sup>51</sup> Replacing growth in survey-based income or expenditure with growth in GDP per capita does not alter the basic finding. Though the impact of growth in GDP per capita on poverty reduction is smaller in magnitude, it is still both statistically and economically significant.

Interestingly, the relationship between growth and poverty reduction appears much tighter when one examines growth spells in developing Asia. Figure 7 is similar to Figure 6 but only includes growth spells in East Asia, Southeast Asia, and South Asia.<sup>52</sup> Each 1% of growth is associated with an almost 2% decline in poverty incidence on average. In addition, growth “explains” 65% of the variation in changes in poverty on average among the DMCs.

Why has growth served the poor in Asia better than the rest of the developing world on average? Will it continue to do so? And, more generally, what explains the variation in how a given growth rate affects poverty reduction? Ravallion (2004) points to two sets of proximate factors: the initial level of inequality and changes in inequality over time. An economy where the level of inequality is high is one where either the participation of the poor in higher-valued income-generating activities is relatively limited and/or the poor share only weakly from their participation in such activities. In either case, a given amount of aggregate growth will be associated with more limited gains for the poor in such an economy as compared with an economy with stronger and fuller participation of the

irrigation, roads, and electricity. Box 9 describes research by Martin Ravallion and Gaurav Datt that sheds important light on how inequalities in these dimensions impact the poverty-reducing effects of growth.

If the degree of inequality *increases* over time, the poor will benefit still less from growth. There are many factors that affect distribution. Demographic changes, agricultural policies, trade and industrial policies, labor market policies, taxation, and social expenditure policies all play a role. Large increases in the proportion of unskilled workers due to a combination of demographic changes and an underperforming educational system, for example, would tend to put downward pressure on the wages that unskilled workers can secure for themselves as the supply of unskilled labor rises (other things, including the demand for such workers, remaining equal of course). Conversely, if trade and industrial policies raise the relative profitability of producing labor-intensive goods, then the demand for labor should increase. This could lead to a rise in wages of labor and thus lower inequality if the labor were provided by individuals belonging to lower-income groups. Indeed, such a process is believed to have taken place in the Republic of Korea and Taipei, China from the 1960s to the early 1980s



Source: ADB staff estimates.

poor in more remunerative economic activities. The reasons for the limited or weak participation of the poor—and thus the sources of inequality—can be many. Important ones include limited access by the poor to education, land, credit, and infrastructure such as

(Quibria 2002). In Asia, levels of inequality have typically been lower than other parts of the developing world. On examination of the Gini coefficient (a popular measure of inequality and defined in Box 2) across countries, it is found that distribution tends to be more equal in East Asia, Southeast Asia, and South Asia than in Latin America and Africa, for example. This can be seen from Table 13, which displays Gini coefficients for selected

<sup>52</sup> See footnote 50 on the exclusion of DMCs from Central Asia and the Pacific.

### Box 9 Initial Conditions and Poverty Reduction—Evidence from India

Research by Ravallion and Datt (1999) on the determinants of poverty reduction across India's major states between 1960 and 1994 shows empirically how initial conditions—and thus initial inequalities—matter. Similar to the findings from cross-country comparisons of poverty-growth linkages, Ravallion and Datt find that the impact of a given amount of growth in nonfarm output on poverty reduction can vary considerably across India's states. For example, a 1% increase in nonagricultural state domestic product leads to a 1.2% decline in poverty rates in the states of Kerala and West Bengal versus only a 0.3% decline in Bihar. The fact that growth of nonfarm output was also relatively meager in Bihar over the period under consideration exacerbated the poverty problem there.

Ravallion and Datt then explore which factors “explain” this differential impact of nonfarm sector growth on poverty by state.

Differences in initial conditions relating to rural development and human resources are found to be a key source of the interstate differential in poverty impacts of nonfarm output. The role played by initial literacy appears especially large. In particular, Ravallion and Datt find that more than half of the differential impact of nonfarm output on poverty rates is attributable to Kerala's much higher levels of initial literacy. Their results suggest that while the transition from (low-wage) agriculture to (higher-wage) nonfarm sectors may be key for the removal of poverty, making the transition is not easy or automatic for the poor. In other words, there are costs to be incurred on the part of a poor agricultural worker in making the transition. These costs are not only pecuniary but also nonpecuniary, associated with investments in minimum levels of education, nutrition, and health, enabling him or her to work productively in the nonfarm sector.

Sources: Ravallion, M. 2000. “What is Needed for a More Pro-Poor Growth Process in India?” *Economic and Political Weekly*; Ravallion, M. and G. Datt. 1999. “When Is Growth Pro-poor? Evidence from the Diverse Experience of India's States.” *Policy Research Working Paper WPS 2263*. World Bank, Washington, DC.

DMCs and other developing countries. Estimates for an initial and final year are presented.<sup>53</sup> Thus a given growth rate would tend to raise the incomes of the poor and therefore reduce poverty more in Asian countries than, for example, in countries in Latin America and Africa at similar levels of development.

However, as the comparison of Gini coefficients between initial and final years within the DMCs indicates, inequality as measured by the Gini coefficient has increased over time in many DMCs. There is cause for concern since higher inequality and increases in inequality over time would both tend to reduce the impact of growth on poverty. The experience of rural PRC, though by far the most extreme one, illustrates the point. Between 1990 and 1993, survey-based per capita consumption grew by 8% and \$1-a-day poverty declined by 12% (and 5.3 percentage points). Between 1996 and 2001, however, while per capita consumption grew by a little less than 4%, poverty *increased* by almost 7% (and 1.7 percentage points). In other words, while each 1% of growth was associated with a more than 1% decline in poverty in the early 1990s, each 1% of growth was associated with an increase in poverty in the late 1990s and beyond. In terms of the growth-distribution-poverty nexus, there was some growth. But this growth was not broad-based and ended up bypassing the poor. According to Osmani (2003b), the main factor behind the fall in poverty in rural PRC in the early 1990s was a significant rise in farm purchase prices, which translated into higher incomes

for the rural poor as a result of relative equality in the distribution of land. Farm prices, however, stopped increasing after the mid-1990s.

If the growth process is becoming more unequal in Asia generally, a given growth rate may be expected to have a smaller impact on poverty. Does this indicate that growth in Asia is becoming less “pro-poor”? To some extent, the answer to this question is a matter of how one defines pro-poor growth. If it is defined, in effect, as a situation whereby incomes of the poor grow faster than incomes of the nonpoor, then indeed many parts of Asia have not witnessed pro-poor growth in recent years. One deficiency of such a definition of pro-poor growth, however, is that it minimizes the benefits of a growth process that is associated with distribution change in favor of the nonpoor but that still raises significantly the incomes of the poor (Ravallion 2004). Since growth in Asia, especially in East Asia and Southeast Asia, has continued to be stronger than in many other parts of the developing world, it is possible that while distribution shifts may favor the nonpoor, poverty reductions may still be significant.

Table 14 sheds light on these issues. The table uses spells from selected DMCs for time periods of particular interest and presents decompositions of poverty reduction into growth and distribution components using the method of Datt and Ravallion (1992). The growth component of poverty reduction is computed as the reduction of poverty that would result if the actual growth experienced had taken place in the context of unchanged distribution. The distribution component of poverty reduction is the reduction of poverty that would result if the distribution change actually registered had taken place in the context

<sup>53</sup> While it is true that there could be some upward shift in Gini coefficients for Latin America due to that region's greater reliance on income surveys as opposed to consumption surveys, it is very unlikely that this alone is responsible for the higher Gini coefficients there.

Table 13 **Gini Coefficients of Selected Developing Member Countries and Other Developing Countries, Various Years**

Country	Initial		Later	
	Gini Coefficient	Year	Gini Coefficient	Year
<b>Developing Member Country</b>				
<b>East Asia</b>				
China, People's Rep. of—Rural	30.57	1990	36.33	2001
<b>Southeast Asia</b>				
Indonesia	33.12	1987	34.30	2002
Lao People's Dem. Rep.	30.40	1992	37.00	1997
Malaysia	48.63	1984	49.15	1997
Philippines	41.04	1985	46.09	2000
Thailand	45.22	1981	43.15	2000
Viet Nam	34.91	1993	37.63	2002
<b>South Asia</b>				
Bangladesh	26.92	1985	31.79	2000
India—Rural	28.59	1993	28.11	1999
India—Urban	34.34	1993	35.00	1999
Pakistan	33.35	1987	32.99	1999
Sri Lanka	32.47	1985	34.36	1995
<b>Other Developing Countries</b>				
Brazil	57.57	1981	59.25	2001
Chile	57.88	1989	57.61	2000
Ghana	35.99	1988	40.71	1998
Kenya	44.54	1994	44.93	1997
Mexico	46.26	1984	54.93	2000
Nigeria	38.68	1985	50.56	1996
South Africa	56.59	1995	57.77	2000

Sources: World Bank, PovcalNet Database; ADB staff estimates.

of zero growth. A residual component captures the poverty reductions that are not accounted for by the pure growth and pure distribution components of poverty reduction.

Table 14 presents several features worth highlighting. First, the decompositions suggest quite strongly that the driver of rapid poverty reduction in Asia has been growth and not distribution change. Indeed, the largest reductions in poverty in Asia have all taken place in the context of distribution changes that went *against* the poor. There were nine spells in which poverty declined on average by 1.5 percentage points or more a year. In each of these nine spells, distribution changes were such that poverty would have increased in the absence of growth. In the case of rural PRC, for example, the table reveals that distribution changes alone (i.e., in the absence of any growth), would have increased poverty by 1.2 percentage points a year on average during the 1993–1996 spell. Nevertheless, poverty reduction was rapid over this period (4.8 percentage points a year on average) because the positive growth effect more than matched the adverse effects of purely distribution change on the poor. Episodes in which growth led to significant poverty reduction, despite distribution changes that were adverse

to the poor, have been experienced widely across the region, encompassing countries not only from East Asia and Southeast Asia but even two South Asian economies (namely, Bangladesh and Pakistan in the late 1980s and early 1990s). Interestingly, the largest poverty reducing effect of distribution change has occurred in the context of an economic contraction—the case of Indonesia over the 1996–1999 period and during the financial and economic crisis of 1997–98. However, the contraction of economic activity was so dramatic as to more than balance any improvements in distribution and, overall, poverty increased over the period.

Second, large adverse changes in distribution should not be seen as inevitable in the face of high growth. With regard to poverty reduction over 1993–1998 in Viet Nam, it can be seen that poverty fell by a remarkable 4.2 percentage points a year on average. Yet while changes in distribution worked against the poor during this period, they did so almost imperceptibly.

Third, distribution changes that work against the poor can detract significantly from growth. To see this, one can compare poverty reduction over the 1987–1993 spell for Pakistan with that of the 1999–2002 spell for

**Table 14 Decomposition of \$1-a-Day Poverty in Selected Developing Member Countries, Various Years**

Country	Reference Years	Change in Poverty (percentage points per annum)	Poverty Decomposition		
			Growth	Distribution	Residual
Azerbaijan	1995–2001	-1.42	-0.87	-0.40	-0.15
Bangladesh	1991–1995	-1.72	-3.36	1.94	-0.29
Bangladesh	1995–2000	1.41	1.59	-0.17	-0.01
China, People's Rep. of—Rural	1990–1993	-1.77	-2.21	0.52	-0.07
China, People's Rep. of—Rural	1993–1996	-4.75	-6.32	1.22	0.35
China, People's Rep. of—Rural	1996–2001	0.34	-0.42	0.76	0.00
India—Rural	1983–1987	-2.13	-2.49	0.42	-0.06
India—Rural	1987–1993	-0.47	-0.18	-0.28	-0.01
India—Rural	1993–1999	-1.19	-1.18	-0.04	0.03
India—Urban	1983–1987	-0.24	-0.96	0.73	-0.02
India—Urban	1987–1993	-0.93	-0.73	-0.21	0.01
India—Urban	1993–1999	-0.61	-0.98	0.35	0.03
Indonesia	1996–1999	0.36	2.65	-2.05	-0.24
Indonesia	1999–2002	-2.58	-3.50	1.21	-0.29
Lao People's Dem. Rep.	1992–1997	-1.79	-3.41	1.02	0.60
Pakistan	1987–1993	-2.60	-2.84	0.22	0.02
Pakistan	1993–1999	-1.38	-0.97	-0.35	-0.06
Philippines	1994–1997	-1.53	-2.77	1.28	-0.04
Philippines	1997–2000	0.57	0.56	0.00	0.01
Sri Lanka	1985–1990	-1.10	-0.68	-0.53	0.11
Sri Lanka	1990–1995	0.49	-0.09	0.62	-0.04
Thailand	1992–1996	-1.48	-0.92	-0.67	0.11
Thailand	1996–2000	0.45	0.56	-0.03	-0.08
Viet Nam	1993–1998	-4.21	-4.23	0.14	-0.12
Viet Nam	1998–2002	-1.32	-1.75	0.68	-0.25

Note: Poverty estimates are exclusively based on the general quadratic Lorenz curve.

Source: ADB staff estimates.

Indonesia. The annual rate of poverty reduction in Pakistan was virtually the same as in Indonesia, on average. Yet an examination of the relative contributions of the growth and distribution components of poverty reduction suggests that this was not because growth was the same across Pakistan and Indonesia. Rather, this was because Indonesia's faster growth was accompanied by a more significant distribution shift against the poor. A similar case is that of urban India during 1993–1999. Growth in real per capita survey mean consumption was almost 12% over the 6-year period. Had this growth taken place in the context of an unchanged distribution, poverty would have declined by almost 1 percentage point a year. Instead, poverty declined by much less due to adverse distribution changes.

Taken together, these results emphasize that growth has been critical for poverty reduction in Asia and, thus, a key focus of policy must be to generate growth in DMCs where it has been lacking. At the same time, policy makers must factor in the distribution impacts of alternative growth-oriented policies. In particular, policy makers need to explicitly consider the links between different types of policy and their impact on the sector and geographic composition of growth. As noted at the outset of Section 4.1, a large majority of Asia's poor are

in rural areas. While the situation of the rural poor is certainly linked to growth in the urban sector—through migration, trade, and transfers—an expanding rural economy is important for the reduction of poverty. Since agriculture tends to be the dominant sector in rural areas, growth in agriculture can be particularly helpful in reducing poverty. This is found by both country-specific studies examining the impact of sector-specific growth on poverty (Ravallion and Datt 1996, Kakwani 2001) and by research using cross-country data (Hasan and Quibria 2004).<sup>54</sup> Unfortunately, agricultural growth has not been particularly robust and stable in important parts of Asia. In South Asia where the majority of Asia's poor reside, for example, agricultural production remains highly dependent on weather conditions. An important part of weakness in agricultural growth stems from policy and institutional neglect. In particular, a lack of public investment in rural infrastructure (irrigation, roads, electrification, and communications), social infrastructure (basic education and health care),

<sup>54</sup> See, in particular, Ravallion and Datt (1996) for India and Kakwani (2001) for the Philippines. Both studies find that rural and national poverty in these countries has responded more favorably to growth in the agricultural sector than growth in the industrial sector. Using a cross-country dataset, Hasan and Quibria (2004) find agricultural growth to be key in reducing poverty in South Asia.

and agricultural research and extension services have variously led the agricultural sector to perform below its potential (Mellor 2000). These underinvestments have been reinforced by a policy and institutional environment that has inhibited the development of the nonfarm economy in rural areas. The combined effect has been that unfavorable initial conditions—such as an unequal distribution of land, limited irrigation facilities, and low stocks of human capital—remain prevalent.

By the same token, a different sort of policy and institutional failure suggests itself when relatively high growth in the industrial and services sectors is accompanied by increasing inequality and limited effects on poverty reduction. As noted above, this was the situation of urban India over the period 1993–1996 when adverse distribution changes led to poverty reduction one third lower than what the pure growth effect would have led to.<sup>55</sup> Why has this happened? It is difficult to be certain, but India's industrial and labor market policies could well have been responsible. It is well recognized that policy-induced barriers to entry and exit are likely to dampen investment. When these barriers apply to labor-intensive sectors in particular—for example, via reservation of labor-intensive industrial goods for small-scale firms or barriers to layoffs—they are likely to end up dampening employment-generating investments as private businesses focus investments on sectors where barriers either do not apply or apply with less importance (such as capital-intensive industries or the formal services sector, which tends to be less intensive in labor). In this context, it is instructive to note that while industrial growth has not been particularly effective in reducing poverty in South Asia, Hasan and Quibria's (2004) examination of the impact of sector-specific growth on poverty reduction indicates that industrial growth in East Asia and Southeast Asia (including the Republic of Korea and Taipei, China) was of critical importance in reducing poverty. The fact that industrial growth in the high-performing East Asian and Southeast Asian economies took place in the context of trade and industrial policies that made it profitable to employ labor intensively in production is suggestive of the important role that policy plays in determining not only how much an economy or a sector will grow, but what the distribution impacts of that growth and the implications for poverty reduction will be.

<sup>55</sup> As Table 14 shows, the pure growth effect would lead to a 0.98 percentage point reduction in poverty. The pure distribution change would, however, take away 0.35 percentage points over the 1993–1999 period.

## 5. Asia's prospects for reducing poverty

What are the prospects for reducing poverty in Asia? In particular, how well is Asia positioned to meet the MDG target of halving the 1990 \$1-a-day poverty rate by 2015? The answers to these questions depend not only on what one expects poverty rates to be like in 2015, but also what poverty rates were in 1990 and very recently. Due to the fact that poverty-related household surveys are typically carried out every 3 to 5 years, the existence of poverty measures for either 1990 or a very recent year such as 2002 is not a given. In fact, only five DMCs carried out surveys in 1990, while survey data pertaining to 2002 are available for only a few DMCs. In this section, the discussion first analyzes how synthetic poverty estimates may be arrived at both for 1990 and for a very recent year, such as 2002, when not all countries have carried out poverty-related surveys.<sup>56,57</sup> The methodology used to compute poverty in such reference years can easily be extended to computing poverty in 2015, by factoring in expected values for income and distribution in individual countries. The discussion then turns to the various synthetic estimates to yield some insights into Asia's prospects for meeting the MDG target and Asia's performance thus far.

### 5.1 Estimating poverty in 1990, 2002, and 2015

To estimate poverty in years for which poverty-related survey data are not available, it is necessary to apply some methods of interpolating and extrapolating poverty rates. The widely cited global and regional poverty counts used by the World Bank for 1990 and other reference years, for example, are based on the method of Chen and Ravallion (most recently seen in Chen and Ravallion 2004) whereby the mean consumption expenditures from actual survey data neighboring the reference year in question are projected forward (for example, if the latest available survey is for 2001 and poverty estimates are needed for 2002) and/or backward (for example, if the earliest available survey is for 1992 and poverty estimates are needed for 1990) using data on the growth of per capita private consumption expenditures (PCE) from the NAS. The resulting estimates of mean consumption in the reference year are then combined with the corresponding survey-based distribution to derive poverty rates.<sup>58</sup>

<sup>56</sup> Data limitations lead to the choice of 2002 rather than 2003 as the recent reference year.

<sup>57</sup> Readers who are not interested in the details of how poverty estimates for 1990, 2002, and 2015 were obtained or estimated may wish to go straight to Section 5.2.

<sup>58</sup> See Chen and Ravallion (2004) for details.

While other methods of interpolating and extrapolating poverty estimates to nonsurvey years could be applied—such as using the relationship between GDP per capita and poverty rates in survey years as a basis for computing poverty in nonsurvey years—there appears to be no compelling reason to choose one method over another on technical grounds.<sup>59</sup> The following adopts Chen and Ravallion’s method to ensure consistency with what are the most widely cited counts of international poverty. Since poverty estimates based on the Chen and Ravallion method are available for 1990 by country, these are accepted for most countries.<sup>60</sup> The Chen and Ravallion numbers are also available for 2001 (but not 2002). To obtain estimates of poverty in 2002, their extrapolation procedure is applied to the 2001 data. A notable exception is the case of India where information from the “thin” sample survey of 2002 is utilized to extrapolate survey means from 1999 to 2002.<sup>61</sup>

Matters become more complex for projecting poverty up to 2015. Since changes in poverty are ultimately a function of the evolution of both economic activity and distribution, a simple approach is adopted, whereby two scenarios for economic growth are considered (“benchmark” versus “low” growth) as well as two scenarios for the evolution of distribution (“more equal” versus “less equal” distribution). Poverty is computed on the basis of these four scenarios.

The benchmark scenario for economic growth simply assumes that except for the PRC and the Central Asian republics, GDP per capita would grow by the average of

<sup>59</sup> Any method for interpolating and extrapolating poverty rates has its pitfalls. In the case of the Chen and Ravallion method, for example, a case could be made that growth in PCE from the NAS are not a good basis for projecting survey means to nonsurvey years (see the discussion in Section 3 on the relationship between consumption estimates from household surveys versus those from NAS). Fortunately, the problems caused by any discrepancy between PCE growth and consumption growth that would have resulted from a survey, had one been actually carried out in a nonsurvey year, are alleviated by the fact that, especially, for the largest countries, surveys have tended to be carried out very close to 1990 and 2002. Moreover, Chen and Ravallion’s practice of using information from surveys from before 1990 and after 1990 (when available, of course) to compute poverty in 1990 will tend to alleviate any discrepancies even further.

<sup>60</sup> The only exceptions are Cambodia, Lao PDR, and Viet Nam where poverty in 1990 is estimated on the basis of the Chen and Ravallion method using survey means that are based on an adjustment to the PPP exchange rates that are usually used for these countries. See World Bank (2003) for more details on these survey means and the adjustments made to PPP exchange rates.

<sup>61</sup> Other exceptions include Viet Nam, for which tabulated distribution data from the Viet Nam Household Living Standard Survey 2002 were used, and Lao PDR, Malaysia, Pakistan, and Nepal. For Lao PDR, Malaysia, Nepal, and Pakistan, 2002 poverty was estimated using staff-modified data on survey means.

annual growth rates registered over the 1999–2003 period.<sup>62</sup> In the case of the Central Asian republics, these growth rates are very high and the result of a rebound from the precipitous declines in economic activity since the breakup of the Soviet Union. It is unlikely that these DMCs will be able to sustain such high growth rates until 2015. A similar situation exists for the PRC, which has grown very fast in recent years. Thus for these DMCs, *region-specific* forecasts of growth in GDP per capita over 2002–2015 are used, available in the World Bank’s *Global Economic Prospects* (2004).<sup>63</sup> Growth in GDP per capita for all DMCs is then converted into growth in survey means by adjusting the former downward to reflect the empirical finding that a 1% increase in GDP per capita is associated with a 0.8% increase in survey-based mean consumption (in per capita terms).<sup>64</sup> In this way, survey means of 2002 can be projected all the way to 2015 on the basis of the benchmark growth rates. By comparison, a low growth rate scenario is defined as one that is equal to the benchmark growth rate minus 1 percentage point.

As regards distribution, the complexity of the connections between growth and distribution within countries means that there is little guidance on what distributions will look like in 2015 under the chosen growth rates. For example, while development economists have traditionally thought in terms of an inverse U-shaped relationship between growth and inequality following Simon Kuznets’ (1955) celebrated work on the issue, recent research has shown that there is very little systematic relationship between levels of development and the evolution of inequality (Deininger and Squire 1998). While growth has generally been accompanied by an increase in the Gini coefficient in the case of East Asia and Southeast Asia, as seen in Section 4.2 above, it is far from clear that this will continue indefinitely. In the case of the PRC and Viet Nam, for instance, transitions from planned to market-based production and exchange have yielded increases in inequality. Will these increases continue indefinitely up to 2015? It is difficult to say. Similarly, in the case of South Asia, there is a weaker relationship between changes in income and changes in distribution, especially in India.

<sup>62</sup> These growth rates were obtained from ADB 2004b.

<sup>63</sup> The 2002–2015 forecast growth rate for the Central Asian republics is 3.4% a year. Since the growth rate is region specific, each Central Asian republic is assumed to grow at this rate. The 2002–2015 forecast growth rate for the World Bank’s East Asia and Pacific region, of which the PRC is part, is 5.4% a year. This is taken to apply to the PRC on its own.

<sup>64</sup> This relationship is obtained by regressing the first difference of actual survey means in logs on a constant and the first difference of real GDP per capita in logs for the DMCs.

Thus an agnostic approach is adopted. For each DMC for which more than one survey dataset—and thus distribution—is available, multiple poverty rates are estimated by combining a given projected value of the survey mean in 2015 with every available distribution. The distribution that yields the lowest poverty rate is referred to as a “more equal” distribution while the distribution that yields the highest poverty rate is referred to as a “less equal” distribution. For example, in the case of Viet Nam, three survey datasets are available (Viet Nam Living Standards Survey 1993 and 1998 and Viet Nam Household Living Standards Survey 2002) and thus three distinct distributions. Whatever the projected value of the survey mean may be in 2015, applying it to each of these three distributions will yield three distinct values for poverty incidence, since the distributions vary. Because there are two possible values of the survey mean in 2015—one based on benchmark growth rates for GDP per capita and the other based on low growth rates—the procedure of applying the projected 2015 survey mean to all the available distribution data is carried out twice.<sup>65</sup>

## 5.2 The estimates

Table 15 presents the estimates of poverty for the \$1-a-day poverty line for 3 years: 1990, 2002, and 2015.<sup>66</sup> An examination of Table 15 reveals several interesting issues. First, under current growth trends—the benchmark growth scenario—Asia is well on its way to meeting the MDG target of halving the proportion of poor between 1990 and 2015. This is true both for the region as a whole and for most of the individual DMCs analyzed. The exceptions are some of the transition countries, most of which had low or marginal levels of poverty incidence in 1990. Most DMCs also meet the MDG target under a low growth scenario. In a few cases, notably Bangladesh and the Philippines, the target is *just* met with less equal distribution. Second, this overall positive result is so much dependent on events in the distant future that it becomes instructive to examine the progress that appears to have been made in poverty reduction at roughly the half-way mark—i.e., the progress made during 1990–2002. Good progress has certainly been made. But a good share of this progress stems from the performance of the PRC and

<sup>65</sup> Cambodia, Nepal, and Tajikistan have only one distribution. Therefore the poverty estimates based on more equal and less equal distributions will coincide for each growth scenario.

<sup>66</sup> Readers who skipped Section 5.1 may want to note that the numbers for 1990 and 2002 are not necessarily based on actual survey data pertaining to those dates. Where actual survey dates did not coincide with these years, estimates based on interpolation or extrapolation techniques were obtained or computed.

several Southeast Asian DMCs. Finally, even if the DMCs as a whole and many individual DMCs achieve the MDG target, it is legitimate to ask whether policy makers in the region have met the challenge of poverty reduction in a substantive way: given the meagerness of the \$1-a-day poverty line, one can reasonably argue in the negative. Each of these points is taken up in greater detail below.

### 5.2.1 Halving poverty incidence between 1990 and 2015

From the last row of Table 15, it can be seen that under the assumptions made on growth and distribution, Asia as a whole is well placed to meet the MDG target of halving \$1-a-day poverty. With the incidence of poverty around 34% in 1990, halving poverty incidence would require that it be around 17% by 2015. On the basis of the approach used here, poverty was already down to just under 22% in 2002 and thus not too far from the 17% required 11 years hence. Indeed, an examination of the third and fourth data columns reveals that most DMCs, including the PRC and Southeast Asian countries but also South Asian DMCs, comfortably meet the first MDG target under the assumption that current growth rates continue and under the two alternative scenarios for distribution.

The PRC and most of Southeast Asia also meet the first MDG target if growth rates are low and distribution is less equal. The Philippines in Southeast Asia, however, just about meets the target.<sup>67</sup> Under the low growth with less equal distribution scenario, its \$1-a-day poverty rate in 2015 is only 0.6 percentage points below its target rate. With the exception of Nepal, South Asian DMCs also meet the MDG target under a low growth with more equal distribution scenario. With less equal distribution, however, Bangladesh only just meets the target.

The Central Asian republics as a region and Mongolia miss the MDG target under benchmark growth rates and less equal distribution.<sup>68</sup> Mongolia misses the MDG target even if distribution is more equal but growth is low. For the Central Asian republics, two issues stand out. First, with the exception of Azerbaijan, which meets the MDG target under all of the scenarios for growth and distribution, countries in that region could miss the MDG target because of what is probably an

<sup>67</sup> Technically, Malaysia misses the target. But for all practical purposes, its poverty rate can be taken to be effectively zero under all the scenarios considered here.

<sup>68</sup> Tajikistan misses the MDG target under its only distribution scenario with both low and benchmark growth rates.

Table 15 **\$1-a-Day Poverty Index and Magnitude of Poor in Developing Countries, 1990, 2002, and 2015**

Country	Headcount Ratio (%)					
	1990	2002	2015			
			Benchmark Growth		Low Growth	
			More Equal Distribution	Less Equal Distribution	More Equal Distribution	Less Equal Distribution
China, People's Rep. of	33.0	15.9	0.3	3.4	0.5	4.3
Mongolia	28.0	19.3	12.1	14.8	15.3	18.9
<b>East Asia</b>	<b>33.0</b>	<b>15.9</b>	<b>0.3</b>	<b>3.4</b>	<b>0.5</b>	<b>4.3</b>
Bangladesh	34.0	32.0	3.9	11.2	7.8	16.5
India	42.1	34.0	9.3	13.8	13.7	19.4
Nepal <sup>a</sup>	44.1	27.0		20.4		26.1
Pakistan	47.8	18.7	4.7	17.6	9.3	23.1
Sri Lanka	3.8	1.3	0.3	0.5	0.5	0.7
<b>South Asia</b>	<b>41.3</b>	<b>31.6</b>	<b>8.3</b>	<b>13.9</b>	<b>12.6</b>	<b>19.4</b>
Cambodia <sup>a</sup>	46.0	34.2		10.9		15.2
Indonesia	20.5	7.5	1.3	5.0	2.6	8.5
Lao PDR	52.7	30.4	2.7	10.9	5.7	15.4
Malaysia	0.6	0.2	0.0	0.3	0.0	0.4
Philippines	19.7	15.2	0.5	6.1	1.4	9.3
Thailand	10.1	2.2	0.0	0.7	0.0	0.7
Viet Nam	50.7	13.1	0.3	0.8	0.8	1.5
<b>Southeast Asia</b>	<b>23.9</b>	<b>9.6</b>	<b>1.1</b>	<b>3.9</b>	<b>2.1</b>	<b>6.4</b>
Azerbaijan	11.4	4.0	0.7	1.8	1.1	2.7
Kazakhstan	0.0	0.1	0.0	0.1	0.0	0.2
Kyrgyz Republic	0.0	1.0	0.0	2.8	0.0	4.3
Tajikistan <sup>a</sup>	0.6	7.5		1.3		2.7
Turkmenistan	0.0	7.1	0.0	1.4	0.0	2.4
Uzbekistan	1.3	14.2	0.0	10.0	0.0	13.3
<b>Central Asia</b>	<b>1.9</b>	<b>7.4</b>	<b>0.2</b>	<b>4.8</b>	<b>0.4</b>	<b>6.7</b>
<b>Total</b>	<b>34.3</b>	<b>21.5</b>	<b>4.0</b>	<b>8.3</b>	<b>6.2</b>	<b>11.5</b>

<sup>a</sup> Only one distribution available.

Source: United Nations, Population Division. *World Population Prospects: The 2002 Revision*, medium variant projections; World Bank, PovcalNet Database for 1990 poverty estimates; ADB staff estimates for 2002 and 2015 poverty estimates.

unfair basis of comparison. Poverty rates were low in 1990 in large part due to the Soviet-era system of subsidies and transfers. Arguably, these low poverty rates were unsustainable. As a result, and along with the trauma resulting from the breakup of the Soviet Union, even moderate but steady growth may not be enough for the Central Asian republics to meet the MDG target. Second, the contrast between poverty under the two distribution scenarios is especially dramatic for Uzbekistan. Under both growth scenarios Uzbekistan meets the MDG target if distribution is more equal, though (also under both growth scenarios), it misses the target by a very large degree under the less equal scenario. In all likelihood, the very adverse distribution that is underlying this result for the country is a combination of data quality issues—after all, these countries were very young in terms of implementing living standard surveys even toward the end of the 1990s—and the hazards of undertaking survey work during a period of tumultuous change. Nevertheless, the figures for Uzbekistan illustrate an important general point, which is that even under steady growth, a significant worsening

of distribution can lead to an increase in poverty. Put differently, these projections are only as good as the assumptions made about economic growth and distribution. Where growth turns out weaker and/or where distribution changes work against the poor, poverty will be higher than projected.

### 5.2.2 Progress half-way to 2015

The positive results described above are conditional on future growth and distribution being as assumed in the calculations. It is therefore of considerable importance to examine what the actual progress in reducing poverty may have been at the half-way mark.<sup>69</sup> Focusing attention on the columns pertaining to poverty in 1990 and 2002, the region- and country-specific breakdowns reveal that

<sup>69</sup> "May" is used deliberately, since most poverty figures for 1990 and 2002 are not based on actual surveys carried out in those years. They are instead the result of interpolation and extrapolation procedures. Their accuracy therefore can in no way be guaranteed.

Table 15 **\$1-a-Day Poverty Index and Magnitude of Poor in Developing Countries, 1990, 2002, and 2015** (continued)

		Magnitude ('000)				Country
1990	2002	2015				
		Benchmark Growth		Low Growth		
		More Equal Distribution	Less Equal Distribution	More Equal Distribution	Less Equal Distribution	
377,054.9	203,153.4	3,539.8	47,374.7	6,725.6	59,899.4	China, People's Rep. of
594.5	471.9	369.1	450.6	465.5	576.2	Mongolia
<b>377,649.3</b>	<b>203,625.3</b>	<b>3,908.9</b>	<b>47,825.3</b>	<b>7,191.1</b>	<b>60,475.6</b>	<b>East Asia</b>
36,925.4	43,410.3	7,107.4	20,327.3	14,110.8	29,854.6	Bangladesh
351,244.5	356,785.0	116,506.8	171,700.5	171,285.8	241,781.3	India
7,993.8	6,524.1	6,526.5		8,364.0		Nepal <sup>a</sup>
51,599.9	27,127.0	9,616.1	35,933.4	19,102.6	47,328.6	Pakistan
621.4	247.0	68.1	92.9	105.3	150.7	Sri Lanka
<b>448,385.0</b>	<b>434,093.4</b>	<b>139,824.9</b>	<b>234,580.6</b>	<b>212,968.5</b>	<b>327,479.2</b>	<b>South Asia</b>
3,953.4	4,266.6	2,005.6		2,798.9		Cambodia <sup>a</sup>
36,789.4	15,902.0	3,198.5	12,405.0	6,620.5	21,383.6	Indonesia
2,183.4	1,683.6	199.3	792.2	418.5	1,120.3	Lao PDR
103.2	58.3	3.0	82.8	3.0	124.2	Malaysia
12,220.2	12,159.2	481.7	5,857.6	1,393.4	8,939.7	Philippines
5,651.0	1,353.7	0.0	466.2	0.0	466.2	Thailand
33,445.7	10,509.4	265.3	757.9	786.4	1,379.4	Viet Nam
<b>94,346.3</b>	<b>45,932.7</b>	<b>6,153.3</b>	<b>22,367.4</b>	<b>12,020.6</b>	<b>36,212.2</b>	<b>South East Asia</b>
819.4	324.0	64.3	172.9	106.2	250.5	Azerbaijan
0.0	8.9	1.5	18.4	1.5	27.6	Kazakhstan
0.0	47.5	0.0	165.4	0.0	255.0	Kyrgyz Republic
30.7	472.7		92.7		197.9	Tajikistan <sup>a</sup>
0.0	340.6	0.0	80.3	0.0	140.3	Turkmenistan
268.8	3,599.3	0.0	3,069.1	0.0	4,092.9	Uzbekistan
<b>1,118.9</b>	<b>4,793.1</b>	<b>158.5</b>	<b>3,598.8</b>	<b>305.6</b>	<b>4,964.2</b>	<b>Central Asia</b>
<b>921,499.6</b>	<b>688,444.4</b>	<b>150,045.5</b>	<b>308,372.1</b>	<b>232,485.8</b>	<b>429,131.3</b>	<b>Total</b>

much of the progress made in reducing the incidence of poverty between 1990 and 2002 is the result of the performance of the PRC and Southeast Asia. Indeed as an examination of the magnitudes of poverty from Table 15 reveals, the PRC accounted for 75% of the decline of 233 million people living in extreme poverty in Asia between 1990 and 2002. Southeast Asia accounted for a further decline of around 48 million. Among the countries of Southeast Asia, large reductions in poverty rates were fairly broad-based. They occurred not only in more developed countries, such as Thailand and Indonesia, but also among the transition countries of the region, especially Viet Nam, where poverty reduction over the 1990–2002 period appears to have been even more dramatic than in the PRC in terms of poverty rates. Indeed, the estimates of Table 15 suggest that several of the East Asian and Southeast Asian DMCs may have already achieved the goal of halving \$1-a-day poverty incidence by 2002, namely the PRC, Indonesia, Malaysia, Thailand, and Viet Nam.

The results for South Asia are more varied. Bangladesh, especially, registered only weak reductions in the poverty rate. India saw greater reduction in poverty rates, but a growing population still meant that there were more poor in absolute terms in 2002 than in 1990.<sup>70</sup> More surprisingly, Table 15 reveals that Pakistan has already achieved the MDG target. As noted in Section 4, however, there is a large discrepancy between the trends in poverty based on international and national poverty lines: in stark contrast to the \$1-a-day poverty estimates, those based on national poverty lines show increasing poverty over the 1990s. Moreover, Pakistan's poverty in 2002 may well have been higher than in the early 1990s (ADB 2002). If poverty trends based on national poverty lines are the more accurate ones due to

<sup>70</sup> Poverty estimates based on *national* poverty lines suggest that even the number of poor declined over the 1990s in India. However, this result is not necessarily certain and depends in part on how adjustments are made for the changes in recall period across the two large-scale expenditure surveys carried out in the 1990s. For details, see Sundaram and Tendulkar (2001).

Table 16 \$2-a-Day Poverty Index and Magnitude of Poor in Developing Countries, 1990, 2002, and 2015

Country	Headcount Ratio (%)					
	1990	2002	2015			
			Benchmark Growth		Low Growth	
			More Equal Distribution	Less Equal Distribution	More Equal Distribution	Less Equal Distribution
China, People's Rep. of	72.2	45.5	9.9	17.4	13.1	20.6
Mongolia	70.8	63.5	47.4	51.5	55.2	58.2
<b>East Asia</b>	<b>72.2</b>	<b>45.6</b>	<b>10.0</b>	<b>17.5</b>	<b>13.2</b>	<b>20.7</b>
Bangladesh	85.5	80.6	48.0	58.4	57.3	65.6
India	86.1	80.0	55.3	60.8	62.7	67.0
Nepal <sup>a</sup>	83.8	71.8	64.8		70.9	
Pakistan	87.9	71.7	56.7	63.1	65.8	69.4
Sri Lanka	40.6	26.7	9.6	14.5	13.7	19.7
<b>South Asia</b>	<b>85.5</b>	<b>78.3</b>	<b>54.3</b>	<b>60.3</b>	<b>62.1</b>	<b>66.7</b>
Cambodia <sup>a</sup>	84.3	77.6	52.8		59.6	
Indonesia	70.9	52.4	33.3	44.4	41.6	52.5
Lao PDR	91.1	75.7	49.1	53.8	57.9	60.8
Malaysia	11.4	10.0	2.2	5.4	3.6	7.4
Philippines	54.9	45.9	25.6	32.3	30.6	37.3
Thailand	43.3	30.4	11.5	15.5	15.6	20.0
Viet Nam	87.4	58.5	23.3	26.7	29.5	33.4
<b>Southeast Asia</b>	<b>65.0</b>	<b>48.3</b>	<b>26.9</b>	<b>34.2</b>	<b>33.3</b>	<b>40.7</b>
Azerbaijan	45.2	34.4	15.5	17.0	20.3	21.1
Kazakhstan	11.7	5.4	0.3	3.3	0.4	4.9
Kyrgyz Republic	0.0	28.1	3.5	23.7	8.6	28.5
Tajikistan <sup>a</sup>	3.3	39.6	18.8		23.8	
Turkmenistan	12.2	34.7	0.0	18.5	2.3	22.7
Uzbekistan	10.6	65.3	33.8	50.4	42.3	55.6
<b>Central Asia</b>	<b>13.9</b>	<b>39.9</b>	<b>18.1</b>	<b>28.8</b>	<b>23.3</b>	<b>33.0</b>
<b>Total Regions</b>	<b>75.3</b>	<b>59.9</b>	<b>32.7</b>	<b>39.6</b>	<b>38.5</b>	<b>44.7</b>

<sup>a</sup> Only one distribution available.

Source: United Nations, Population Division. *World Population Prospects: The 2002 Revision*, medium variant projections; World Bank, PovcalNet Database for 1990 poverty estimates; ADB staff estimates for 2002 and 2015 poverty estimates.

data quality issues—for example, unrealistic PPP exchange rates and/or nonrepresentative consumer price indexes used in updating the \$1-a-day poverty line—then this would mean that Pakistan has not halved poverty incidence in 2002 and its prospects for meeting the first MDG would not be as bright as the estimates of Table 15 indicate. In summary, taking into account the various issues that temper the performance of South Asia in reducing poverty over the 1990–2002 period, it is clear that there can be no room for complacency among policy makers there, especially among the largest countries.

### 5.2.3 Redefining the Millennium Development Goal target

In assessing Asia's prospects for reducing poverty, two issues must be kept in mind. First, even under the higher benchmark growth rates and more equal distribution in Table 15, the *number* of poor in Asia, and in particular

India, will still be very large in 2015: around 150 million, of whom around 117 million will be in India. If distribution turns out to be of the less equal variety, then these two numbers shoot up to 308 million and 172 million, respectively. If, in addition, growth then turns out to be of the lower type, there would be 429 million poor in Asia with around 242 million in India. Second, poverty as defined by the \$1-a-day poverty line pertains to an extremely low standard of living.

Moving to a somewhat more generous poverty line—\$2 a day—poverty will still be a significant problem in Asia. This is brought out in the numbers presented in Table 16. Thus while the estimates of Table 15 for Asia *as a whole* indicate that the first MDG target would be met under even the low growth with less equal distribution scenario, the estimates of Table 16 indicate that if the first MDG target was based on \$2-a-day poverty, Asia would meet this target only under the most favorable of the four scenarios considered here (benchmark growth with more equal distribution).

Table 16 **\$2-a-Day Poverty Index and Magnitude of Poor in Developing Countries, 1990, 2002, and 2015** (continued)

Magnitude ('000)						Country
1990	2002	2015				
		Benchmark Growth		Low Growth		
		More Equal Distribution	Less Equal Distribution	More Equal Distribution	Less Equal Distribution	
825,042.8	582,981.5	138,576.8	243,719.9	183,499.0	289,442.1	China, People's Rep. of
1,501.4	1,554.2	1,446.7	1,570.1	1,684.9	1,776.4	Mongolia
<b>826,544.2</b>	<b>584,535.7</b>	<b>140,023.6</b>	<b>245,289.9</b>	<b>185,183.9</b>	<b>291,218.4</b>	<b>East Asia</b>
92,895.0	109,296.8	86,997.8	105,886.2	103,986.4	118,942.5	Bangladesh
718,906.9	839,322.0	689,501.4	758,196.8	781,683.4	835,611.7	India
15,168.9	17,311.1	20,747.4		22,695.1		Nepal <sup>a</sup>
94,934.8	103,822.3	115,909.8	128,950.9	134,529.1	141,980.5	Pakistan
6,601.2	5,066.0	1,984.6	2,999.6	2,836.7	4,056.9	Sri Lanka
<b>928,506.7</b>	<b>1,074,818.2</b>	<b>915,141.0</b>	<b>1,016,780.9</b>	<b>1,045,730.6</b>	<b>1,123,286.7</b>	<b>South Asia</b>
7,248.1	9,686.2	9,732.7		10,976.2		Cambodia <sup>a</sup>
127,208.5	110,985.4	83,462.0	111,115.4	104,277.7	131,440.2	Indonesia
3,772.8	4,184.3	3,574.2	3,920.7	4,214.5	4,425.2	Lao PDR
2,065.2	2,435.0	663.9	1,597.9	1,069.5	2,194.8	Malaysia
34,044.2	36,719.6	24,619.2	31,134.2	29,493.8	35,908.3	Philippines
24,167.6	18,740.1	8,022.6	10,795.1	10,840.8	13,935.0	Thailand
57,675.1	47,058.1	22,057.7	25,302.9	27,945.3	31,661.9	Viet Nam
<b>256,181.4</b>	<b>229,808.8</b>	<b>152,132.4</b>	<b>193,598.9</b>	<b>188,817.9</b>	<b>230,541.6</b>	<b>South East Asia</b>
3,241.7	2,812.7	1,467.3	1,604.5	1,917.5	1,991.6	Azerbaijan
1,916.2	807.6	38.3	499.5	65.9	754.1	Kazakhstan
–	1,406.7	206.2	1,407.8	512.6	1,695.8	Kyrgyz Republic
176.0	2,482.4	1,366.3		1,723.0		Tajikistan <sup>a</sup>
460.2	1,663.8	0.0	1,076.4	132.3	1,322.7	Turkmenistan
2,175.1	16,491.5	10,384.1	15,474.9	12,989.5	17,087.1	Uzbekistan
<b>7,969.2</b>	<b>25,664.7</b>	<b>13,462.2</b>	<b>21,429.4</b>	<b>17,340.8</b>	<b>24,574.2</b>	<b>Central Asia</b>
<b>2,019,201.5</b>	<b>1,914,827.3</b>	<b>1,220,759.1</b>	<b>1,477,099.0</b>	<b>1,437,073.2</b>	<b>1,669,620.9</b>	<b>Total Regions</b>

Examining the different outcomes based on the various scenarios at the country level reveals an even more disturbing finding. Only a handful of DMCs would be able to meet a redefined \$2-a-day MDG target under all four scenarios considered here (Azerbaijan, PRC, Kazakhstan, Sri Lanka, Thailand, and Viet Nam). For Southeast Asian DMCs, this result is in sharp contrast to the situation for the actual target defined in terms of \$1 a day—as seen in Table 15, almost every Southeast Asian DMC is well placed to meet the MDG target under all four scenarios. Under the \$2-a-day definition, however, the MDG target would be missed by Cambodia and the Lao PDR under all four scenarios. Indonesia and the Philippines would meet the redefined target only under the benchmark growth with more equal distribution scenario. The situation for South Asia is even worse, with the notable exception of Sri Lanka: a halving of 1990 \$2-a-day poverty by 2015 would not even be achieved with benchmark growth with more equal distribution in Bangladesh, India, Nepal, and Pakistan. Clearly, the challenge of poverty reduction is one that is going to remain with Asia for a long time.

## 6. Concluding remarks

According to the estimates of this theme chapter, almost 690 million people in Asia—or 21.5% of its population—lived under the \$1-a-day poverty line in 2002. On the basis of a more “generous” poverty line—that of \$2 a day—1.9 billion people, or 60% of Asia’s population, lived in poverty in 2002. As these numbers indicate, Asia’s most important challenge is eradicating poverty. In this context, this chapter has brought together a discussion of key issues involved in the measurement of poverty, estimates of poverty in the region, and the prospects for poverty reduction under various scenarios for economic growth and its distribution. The focus, throughout, has been on monetary poverty, which defines the poor in terms of households’ deprivation in income or consumption expenditures relative to a particular standard, or poverty line.

The starting point for this chapter is that reliable and credible estimates of poverty are a crucial input into meeting the challenge of poverty reduction. Not only are poverty estimates vital for the design, implementation,

and monitoring of antipoverty policies, including targeted poverty reduction programs, they can also serve as a useful catalyst for action by focusing attention on the conditions of the poor. The reliability and credibility of any poverty estimate, in turn, depend crucially on the properties of the poverty line being used and the accuracy with which the distribution of incomes or expenditures across the population is captured by survey data. While some DMCs, notably India, have for a long time had in place a broadly acceptable practice for setting poverty lines as well as a well-developed technical and organizational infrastructure for carrying out the required household surveys, other DMCs, for example, the Lao PDR, have made excellent strides toward this more recently.

Nevertheless, measurement-related issues require attention. An issue that comes up in setting a poverty line is how to balance the demands for consistency and specificity. The former requires that a poverty line represent the same real standard of living for different subgroups of a population and over time; the latter makes an allowance for specific characteristics of the groups or periods under comparison. In some DMCs, unfortunately, the consistency of poverty lines is in some question and can make comparisons of poverty across groups or over time difficult. Given that well-established procedures exist for setting different types of poverty lines and that computing power for the analysis of survey data is both cheap and widely available, there is little reason for not setting different poverty lines to serve different purposes. Thus a way out of the dilemma of consistency versus specificity is simply to set poverty lines that capture each property independently and report estimates based on both.

Matters are more complicated when it comes to the issue of accuracy of the surveys used to measure incomes and expenditures and their distribution across the population. In many DMCs, there is a growing divergence between total incomes and expenditures as computed on the basis of household surveys and those reported in the NAS. While there can be no presumption that this divergence necessarily reflects deficiencies on the part of household surveys, getting a better understanding of the divergences is an important task for national statistical agencies in DMCs. Research is needed on understanding how the measurement of consumption is affected by the design of surveys, including the length of reference periods, and length and detail of questionnaires (among other things). More research is also needed in determining how accurately household surveys are capturing relevant information from the different subgroups of households. Two types of households are of particular interest. First, recent migrants and those in informal settlements are

likely to be among the most materially deprived in urban areas, yet many surveys have a difficult time capturing them. Second, across many countries, and not just DMCs, household surveys seem not to be adequately capturing the incomes or expenditures of the rich. This may be happening due to underreporting by the rich; it could also be the result of their refusal to participate in surveys. While missing out on the first group will very likely lead to an underestimation of poverty, missing out on the second leads to an underestimation of the true extent of inequality.

Clearly, national statistical agencies face various challenges in measurement. In meeting them, the agencies need all the technical and financial support they can get, especially from the international development community.<sup>71</sup> In the meantime, however, the surveys, with all their deficiencies, still represent probably the best basis available on which to derive estimates of poverty and describe the nature of distribution of incomes and expenditures. This chapter has thus relied on the surveys for both reporting available estimates of poverty and deriving them where needed.

Working with these estimates of poverty, this chapter has highlighted several important features of poverty in Asia today. First, poverty estimates based on national poverty lines reveal that, with a few exceptions, the incidence of poverty in rural areas is almost everywhere higher than in urban areas. With rural populations accounting for a large proportion of DMCs, rural poverty often accounts for two thirds or more of total poverty. Second, DMCs show a great deal of diversity in the incidence of poverty. A high incidence of \$1-a-day poverty and a large population mean that South Asia was home to almost two thirds of Asia's extremely poor in 2002. However, the incidence of extreme poverty is also a significant problem in Cambodia, Lao PDR, Mongolia, and in some of the Pacific DMCs, afflicting a fifth or more of these countries' populations. Incidence rates tend to be lower in the larger East Asian and Southeast Asian DMCs—but their large populations imply that the number of poor in these countries would easily swamp the entire populations of smaller countries with higher incidence rates of poverty. Third, poverty remains a problem even where the incidence of extreme poverty is low. Moving to a slightly higher poverty line such as \$2 a day—a poverty line close to that found in low-middle-income countries—a majority of most DMCs' populations are poor. The incidence rate of \$2-a-day poverty in Indonesia, for example, is almost seven times

<sup>71</sup> One area in which the international development community needs the cooperation of the national statistical agencies is in developing the PPP exchange rates that capture the relative prices of consumption bundles relevant to the poor.

that of \$1-a-day poverty and reveals, among other things, the vulnerability of those who have escaped \$1-a-day poverty.

The diversity in poverty incidence across DMCs is matched by a diversity in trends in poverty. As compared to the period before the breakup of the Soviet Union, for example, poverty rates today are higher in a number of the Central Asian republics, largely due to the traumatic transition from a planned to a market economy. On the other hand, several East Asian and Southeast Asian DMCs have seen significant reductions in extreme poverty over the last decade or so. Viet Nam's recent experience with poverty reduction is perhaps the most dramatic. But large reductions in poverty have taken place fairly recently in rural PRC, Indonesia, Malaysia, Thailand—and even earlier in the Republic of Korea and Taipei, China. Between these two groups lie most other DMCs, notably those in South Asia. Apart from Sri Lanka, where the magnitude of extreme poverty has been much less than in its neighbors, the substantial reductions experienced by various East Asian and Southeast Asian economies have been missing. Poverty reduction has been perhaps steadiest in India among the large South Asian countries, but it has been much slower than in the most dynamic parts of East Asia and Southeast Asia.

This diversity in trends in poverty is partly reflected in the finding that a large part of the region's progress in reducing poverty is due to progress made in parts of East Asia and Southeast Asia. Thus, while the estimates presented here indicate that the number of \$1-a-day poor people in Asia declined by 233 million people between 1990 and 2002, poverty reduction in the PRC accounted for almost 174 million of this decline (or 75%) with Southeast Asian countries contributing with a reduction of around 48 million. Although poverty rates declined in South Asia, progress has been slow: in 1990, around 448 million South Asians lived in extreme poverty, but by 2002 this figure was only 14 million lower.

What of Asia's prospects for reducing poverty? These depend on two variables: how incomes and expenditures grow on average, and how growth in incomes and expenditures are distributed. On the assumptions that (i) current rates of economic growth continue in most DMCs, but decline to more sustainable levels in the PRC and the Central Asian republics, and that (ii) distributions are no more unequal than those experienced in recent years, many DMCs are poised both to meet the MDG target of halving the 1990 proportion of extremely poor by 2015 and to reduce the number of people living in extreme poverty. (This

includes the large South Asian DMCs where magnitudes of poverty are very high.) Allowing growth to be 1 percentage point lower a year does not alter these conclusions materially. However, if the MDG target of halving poverty rates had been defined in terms of a \$2-a-day poverty line, Asia's performance would be much less impressive. Many DMCs would fail to halve \$2-a-day poverty between 1990 and 2015 under current growth rates and under the most equitable of distributions recorded in recent years.

How growth and distribution will actually evolve in the future is, of course, unknown. While external shocks can influence these variables in significant ways, in the final analysis it is policy makers in DMCs who will play the crucial role in deciding the fate of their poor. Rapid reductions in poverty among DMCs have virtually always taken place in the context of rapid economic growth. Thus policies that generate high, sustainable growth must be a key focus of poverty reduction strategies for the region's policy makers. At the same time, however, a given amount of growth can have various impacts on poverty reduction. First, a given amount of growth in the context of high levels of inequality will lead to less poverty reduction than if inequality were lower to begin with. For example, where poor health and illiteracy have led to weak participation by the poor in more remunerative economic activities, they will also limit the extent to which the poor can benefit from the opportunities thrown up by future growth. The case of a peasant farmer with only a small parcel of land to work on, limited access to credit, and rural infrastructure inputs is much the same. Although policy makers today cannot do anything about the inequalities of the past, they are in a position to make sure that initial conditions in the future are improved. At a bare minimum, they must make every effort to ensure that targeted poverty reduction programs and budget transfers reach those in greatest need, and provide the poor with the basic social services without which they would be hard-pressed to tap into any economic opportunities that may be generated.

Second, the effects of growth on poverty will also depend on how inequality evolves with growth. Of particular importance in this context is the sector and geographic composition of growth. While migration, trade, and transfers all link rural poverty to developments in the urban sectors, research has shown that the growth of economic opportunities in rural areas has an important impact on poverty. Raising agricultural incomes is particularly important not only for its direct impact on the well-being of farmers but also for the multiplier effects it has on opportunities for engaging in rural nonfarm activities. From the perspective of poverty

reduction, therefore, careful attention needs to be paid to public investments in strengthening rural infrastructure, agricultural research and extension services, and basic education and health care. Such investments, along with appropriate pricing policies and institutional arrangements for marketing and distributing production inputs and outputs, are likely to provide for growth that is more balanced across sectors and locations than has been the case in many DMCs of late. This would include the PRC, which had an excellent record of poverty reduction in the 1980s and 1990s, but which has shown relatively

slow poverty reduction in the western and central regions in recent years. Attention to the rural economy does not mean that modern industry and services have no role in poverty reduction. The experience of Asia's most dynamic economies has shown how industrialization can create significant opportunities for workers and thereby contribute to poverty reduction. Another key task for policy makers is therefore to ensure that trade, industrial, and labor market policies work together to make it profitable for private capital to flow to labor-intensive sectors and for firms to employ labor intensively.

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