

**POVERTY AND  
SHARED PROSPERITY  
2018**

**PIECING TOGETHER  
THE  
POVERTY  
PUZZLE**



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# Foreword

Five years ago, the World Bank Group set two overarching goals: to end extreme poverty by 2030, and to promote shared prosperity by boosting the incomes of the bottom 40 percent of the population in each country.

As this year's *Poverty and Shared Prosperity* report documents, the world continues to make progress toward eliminating poverty. In 2015, approximately one-tenth of the world's population lived in extreme poverty—the lowest poverty rate in recorded history. This is an impressive achievement, considering that in 1990, more than a third of people on earth lived in extreme poverty. Since we last reported on global poverty two years ago, the number of poor has diminished by 68 million.

But we cannot take success for granted. Poverty is on the rise in several countries in Sub-Saharan Africa, as well as in fragile and conflict-affected situations. In many countries, the bottom 40 percent of the population is getting left behind; in some countries, the living standard of the poorest 40 percent is actually declining. To reach our goal of bringing extreme poverty below 3 percent by 2030, the world's poorest countries must grow at a rate that far surpasses their historical experience. There is no room for complacency. We must intensify the effort to promote economic growth in the lagging countries and ensure that the poorest 40 percent of the population benefits more from economic progress.

Reducing extreme poverty to less than 3 percent by 2030 remains a considerable challenge, and it will continue to be our focus. At the same time, most of the world's poor now live in middle-income countries, and our research indicates that those countries tend to have a more demanding view of poverty. Drawing on national poverty lines, we now also report poverty rates at two higher thresholds—\$3.20 per day and \$5.50 per day—which are typical of standards in lower- and upper-middle-income countries.

These thresholds are a recognition that the concept of poverty itself is dependent on one's social circumstances. What is a luxury in one society could be a necessity in another. Even if minimum physical needs are met, people cannot be said to lead flourishing lives if they are not able to conduct themselves with dignity in the society in which they live. The societal poverty rate presented in this report gauges people's well-being by the standard of their surroundings.

Poverty encompasses a shortfall in income and consumption, but also low educational achievement, poor health and nutritional outcomes, lack of access to basic services, and a hazardous living environment. If we hope to tackle poverty "in all its forms everywhere" as the Sustainable Development Goals call for, we must understand and measure poverty in all of its manifestations. This report presents results of the World Bank's first exercise in multidimensional global poverty measurement to account for multiple and overlapping components of poverty.

Traditionally, poverty is measured at the household level, but because there is inequality within households, there are undoubtedly people living in poverty within nonpoor households. Current data and methods do not permit us to account for inequality within households in most countries, so a chapter of the report examines select country studies where this accounting is possible, and it describes how it affects the profile of poverty, including by gender and age.

The twin goals of ending extreme poverty and boosting shared prosperity will continue to guide our work. The new suite of poverty lines and measures broadens our conception of poverty. As this report shows, taking such an expansive view only reinforces how far we still need to go to rid the world of poverty in all of its dimensions.

A handwritten signature in black ink, appearing to read 'Jim Yong Kim', with a stylized flourish at the end.

Jim Yong Kim  
President  
World Bank Group

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# Abbreviations

CPI	consumer price index
FCS	fragile and conflict-affected situations
GDP	gross domestic product
GDSP	Global Database of Shared Prosperity
GMD	Global Monitoring Database
GNI	gross national income
HFCE	household final consumption expenditure
IDA	International Development Association
IPL	international poverty line
LMIC	lower-middle-income country
MDG	Millennium Development Goal
MMRP	Modified Mixed Reference Period
MPI	Multidimensional Poverty Index
MRP	Mixed Reference Period
NSS	National Sample Survey (India)
OECD	Organisation for Economic Co-operation and Development
OPHI	Oxford Poverty and Human Development Initiative
PPP	purchasing power parity
SDG	Sustainable Development Goal
SP	shared prosperity
SPL	societal poverty line
SPP	shared prosperity premium
UMIC	upper-middle-income country
UNDP	United Nations Development Programme
URP	Uniform Reference Period
WDI	World Development Indicators
WID	World Inequality Database
WIR	<i>World Inequality Report</i>





# Overview

The world has made remarkable and unprecedented progress in reducing extreme poverty over the past quarter century. In 2015, more than a billion fewer people were living in extreme poverty than in 1990. The progress has been driven by strong global growth and the rising wealth of many developing countries, particularly in the world's most populous regions of East Asia and Pacific and South Asia. This impressive progress has brought us closer to achieving the World Bank's target of reducing extreme poverty to less than 3 percent of the world's population by 2030. Half of all countries included in the global poverty counts already have less than 3 percent of their populations living under the international poverty line (IPL), which defines extreme poverty for global monitoring.

Despite this good news, the fight against extreme poverty is far from over—and in some ways is getting harder. The number of poor worldwide remains unacceptably high, and it is increasingly clear that the benefits of economic growth have been shared unevenly across regions and countries. Even as much of the world leaves extreme poverty behind, poverty is becoming more entrenched and harder to root out in certain areas, particularly in countries burdened by violent conflict and weak institutions. Poor households are overwhelmingly located in rural areas, have a large number of children, and suffer from a lack of education.

They are ill served in essential elements of well-being such as health care and sanitation, and often are exposed to natural hazards and physical insecurity.

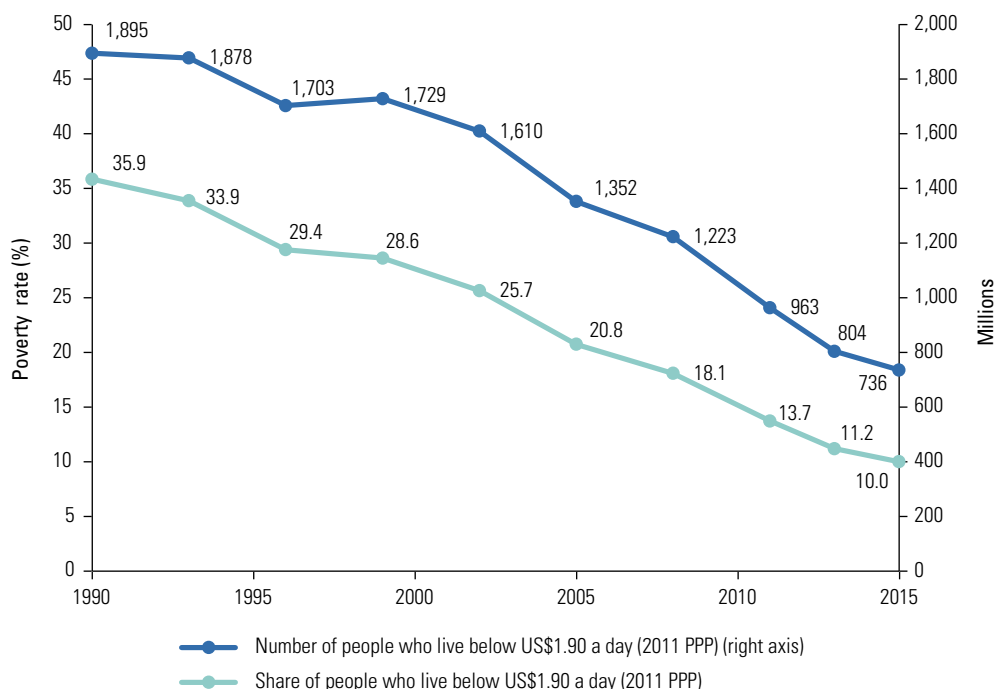
Back in 1990, 36 percent of the world's people lived in extreme poverty, defined by the IPL as consumption (or income) less than US\$1.90 a day in 2011 purchasing power parity (PPP). By 2015, that share had plunged to 10 percent, down from 11.2 percent in 2013. The number of people living in extreme poverty stood at 736 million in 2015, down from nearly 2 billion in 1990 (figure O.1).

Despite the more sluggish global growth of recent years, the total count of people in extreme poverty declined by more than 68 million people between 2013 and 2015—a number roughly equivalent to the population of Thailand or the United Kingdom. Tens of millions of people have escaped poverty every year since 1990, reducing the global poverty rate by an average of 1 percentage point per year between 1990 and 2015.

Much of the progress in the past quarter century has been in East Asia and Pacific, where China's economic rise has helped lift millions of people out of extreme poverty. The countries of this region went from an average poverty rate of 62 percent in 1990 to less than 3 percent in 2015. More recently, South Asia has made impressive inroads against extreme poverty, helping to reduce the global rate further. The number of poor in South Asia dropped to 216 million people in 2015, compared to half a billion in 1990.

These two regions have fared well on the World Bank's other core goal—to increase shared prosperity to ensure that the relatively poor in societies are participating in and benefiting from economic success. This goal is measured by monitoring the aver-

**FIGURE 0.1 Global Extreme Poverty Rate and Headcount, 1990–2015**



Source: Most recent estimates, based on 2015 data using PovcalNet.  
Note: PPP = purchasing power parity.

age consumption (or income) growth rate of the poorest 40 percent of the population (the bottom 40) within each and every country. On that score, the progress in East Asia and Pacific and South Asia is all the more impressive because the economic growth in those regions is being shared. On average, the consumption (or income) of the bottom 40 in these two regions grew by 4.7 percent and 2.6 percent per year, respectively, according to the latest estimates for 2010–15.

But the huge progress against poverty in these regions contrasts sharply with the much slower pace of poverty reduction in Sub-Saharan Africa. Extreme poverty is becoming more concentrated there because of the region's slower rates of growth, problems caused by conflict and weak institutions, and a lack of success in channeling growth into poverty reduction. Sub-Saharan Africa now accounts for most of the world's poor, and—unlike most of the rest of the world—the total number of poor there is increasing. The number of people living in extreme poverty in the region has grown from an estimated 278 million in 1990 to 413 million in 2015.

Whereas the average poverty rate for other regions was below 13 percent as of 2015, it stood at about 41 percent in Sub-Saharan Africa. Of the world's 28 poorest countries, 27 are in Sub-Saharan Africa, all with poverty rates above 30 percent.

In short, extreme poverty is increasingly becoming a Sub-Saharan African problem. Sub-Saharan African countries have struggled partly because of their high reliance on extractive industries that have weaker ties to the consumption and income levels of the poor, the prevalence of conflict, and their vulnerability to natural disasters such as droughts. Despite faster growth in some Sub-Saharan African economies, such as Burkina Faso and Rwanda, the region has also struggled to improve shared prosperity. The bottom 40 in the dozen Sub-Saharan African countries covered by the indicator saw their consumption (or income) rise by an average of 1.8 percent per year in 2010–15 (slightly below the global average of 1.9 percent per year). More worrying, however, is that the consumption (or income) level of the bottom 40 shrank in a third of those 12 countries.



The stark contrast between Asia and Africa explains why it is getting harder to reduce poverty globally. Although overall progress against poverty has been steady, not all regions have shared in global growth and some are being left behind. As extreme poverty becomes rarer, there is less scope for gains to shift to different regions and countries. With extreme poverty in East Asia and Pacific down to 2.3 percent in 2015, for example, the region has little more to give in terms of reducing the global rate. A similar trend is well under way in South Asia.

The result is a slowdown in overall poverty reduction that makes it unlikely the World Bank's 2030 target will be met. From 2013 to 2015, global poverty declined by 0.6 percentage points per year, well below the 25-year average of a percentage point a year. Our forecasts suggest that the rate of reduction further slowed between 2015 and 2018 to less than half a percentage point per year.

Looking ahead to 2030, forecasts indicate that the world would need to grow at an unusually strong pace in order to meet the 3 percent target. For example, the target would be met if all countries grow at an average annual rate of 6 percent and the consumption (or income) of the bottom 40 grows 2 percentage points faster than the average. Alternatively, the landmark could be reached if all countries grow at an average pace of 8 percent. But, in either of these scenarios, extreme poverty would still be in double digits in Sub-Saharan Africa by 2030.

In an alternate scenario where all countries grow in line with the average in their region over the last 10 years, our forecasts indicate that the global poverty rate would be above 5 percent in 2030. This "business as usual" scenario leads to a bifurcated world where more than a quarter of the people in Sub-Saharan Africa live in extreme poverty whereas it is less than 2 percent in most of the rest of the world.

These contrasting regional poverty trends have two important implications. First, the primary focus of the international community's efforts to eliminate the worst forms of deprivation must remain firmly in Sub-Saharan Africa and those few other countries elsewhere with very high poverty rates. At the same time, we must not forget the plight of

billions of people living above US\$1.90, who are still very poor by the standards of their own societies. Now that extreme poverty continues to be high in some regions while heading down to single digits in most of the rest of the world, we need to build a more complete picture of what is meant by a world free of poverty. Certainly, the world could not be said to be free of poverty if most countries achieve the 3 percent rate while large pockets of extreme poverty linger. To have a better understanding of what it means to end poverty, we need more ways of measuring and conceptualizing the problem. We need more pieces of the puzzle to better understand what a world free of poverty means.

The World Bank's focus remains on lifting people from extreme poverty, and the IPL will continue to be a crucial way of monitoring this progress. But we also need to recognize that societies have not stopped thinking or caring about poverty even if it has become much less apparent in its extreme forms. There is a need to expand our understanding of poverty as a complex, multifaceted problem and identify pockets of people who are impoverished but who have remained unnoticed.

To do so, we introduce three new pieces of the poverty puzzle. The addition of these new ways to measure and conceptualize poverty follows from the recommendations of the Commission on Global Poverty, led by Professor Sir A. B. Atkinson, to consider complementary indicators to the core indicator of extreme poverty (in *Monitoring Global Poverty* published by the World Bank in 2017). The new measures recognize that people can be defined as poor relative to their societies even at consumption levels well above the US\$1.90 level. They also broaden our view of poverty to include elements of basic well-being such as access to sanitation and core health services. Finally, they go beyond the household level in a first attempt to measure poverty as it affects individuals.

These new measures will help both in those countries where extreme poverty is currently at very low levels and in countries where it is pervasive. Even while maintaining a focus on the poorest countries of the world, with this broader view we can better understand the various dimensions of poverty

globally. And that better understanding can provide guidance for policy and help identify areas of greatest need.

The new measures can also help us monitor progress in reducing poverty in a growing world. Even in those countries where extreme deprivation rates are very low, there continue to be significant concerns about poverty more broadly defined. Having enough money is critical to living a life free of poverty, but it is not all that matters. To truly end poverty, we need to better monitor people's progress in achieving nonmonetary aspects of well-being, such as safe drinking water and access to education.

When it comes to measuring extreme poverty, the US\$1.90 yardstick is used to assess how well people are doing relative to the basic needs in the world's poorest countries. But, for people living in countries with higher overall consumption (or income) levels, there is value in monitoring progress with higher poverty lines that reflect the greater needs in a growing world. By using these new lines and measures in coordination with the existing measure of extreme poverty—both in those countries with high rates of extreme poverty and those that have nearly vanquished extreme poverty—we can better monitor poverty in *all countries*, in *multiple aspects of life*, and for *all individuals* in every household. This broader monitoring promises to give us a more nuanced understanding of the nature of poverty in all its forms, so we can develop better policy tools to tackle the problem.

## Staying focused on the poorest

Ending extreme poverty will require a renewed focus on Sub-Saharan Africa and states suffering from weak institutions and conflict. Estimates for 2015 indicate that India, with 176 million poor people, continued to have the highest number of people in poverty and accounted for nearly a quarter of the global poor. The extreme poverty rate is significantly lower in India relative to the average rate in Sub-Saharan Africa, but because of its large population, India's total number of poor is still large. In a sign of change, however, forecasts for 2018 suggest that India's

status as the country with the most poor is ending—Nigeria either already is, or soon will be, the country with the most poor people. The extreme poverty rate and the number of poor in South Asia have been steadily declining and are expected to continue that trend. The result of this trend is a shift in poverty from South Asia to Sub-Saharan Africa.

By 2030, the share of the extreme poor living in Sub-Saharan Africa could be as large as 87 percent on the basis of historical growth rates. Even if every other country in the world had zero extreme poverty by 2030, the average rate in Sub-Saharan Africa would have to decrease from the 2015 rate of 41 percent to about 17 percent for the global average to be 3 percent. That would require an unprecedented annual growth rate for the region.

Stronger economic growth and renewed efforts to resolve violent conflicts will be crucial to speed up the rate of poverty reduction in Sub-Saharan Africa and elsewhere. But business as usual will not be enough. More needs to be done to ensure that growth is inclusive, with a stronger focus on raising the productive capacity of the poor.

If Sub-Saharan African and other fragile situations are to have a chance of reaching the 3 percent goal, not only will their growth rates have to be high but consumption (or income) levels among the bottom 40 in their societies will also have to rise at a higher rate. Yet, in two-thirds of the 13 extremely poor countries (with poverty rates above 10 percent) covered by the World Bank's shared prosperity indicator, average consumption (or income) levels of the bottom 40 are growing at a slower rate than the global average of 1.9 percent per year. That is a worrying trend for the poorest economies and conflict-affected situations, precisely the countries least likely to reach the 2030 target.

A second and crucial worry is that data needed to assess shared prosperity are weakest in the very countries that most need them to improve. Only 1 in 4 low-income countries and 4 of the 35 recognized fragile and conflict-affected situations have data that allow us to monitor shared prosperity over time. Because a lack of reliable data is associated with slow growth in consumption (or income) for the poorest, the situation could even be worse than currently observed.

In the fragile situations that are covered by data, the recent trend is discouraging. After falling sharply between 2005 and 2011, the rate of extreme poverty in these countries rose to 35.9 percent in 2015 from a low of 34.4 percent in 2011. The share of the global poor in these countries has risen steadily since 2010 to reach 23 percent in 2015.

In many low-income countries, the bottom 40 live on less than US\$1.90 a day and disproportionately live in rural areas, making them vulnerable to disruptions caused by the climate. Uganda, for example, has suffered significant setbacks in poverty reduction and shared prosperity largely due to droughts and pests that affected harvests starting in 2016. Uganda’s poverty rate rose from 35.9 percent in 2012 to 41.6 percent in 2016. Real consumption for its bottom 40 shrank by 2.2 percent a year.

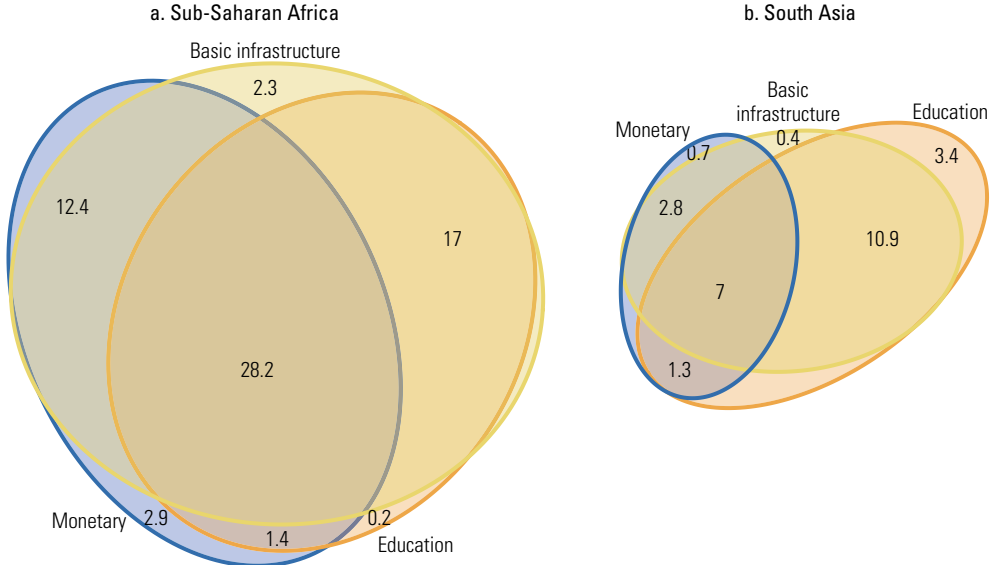
As we seek to end poverty, we also need to recognize that being poor is not defined just by inadequate consumption or a lack of income. Other aspects of life are critical for well-being, including education, access to basic infrastructure, health care, and secu-

rity. Someone may earn more than US\$1.90 a day but still feel poor if lacking access to such basic needs. Equally, someone earning less than that could be in even direr need without clean water to drink or a safe environment for his or her family.

This expanded, “multidimensional” view reveals a world in which poverty is a much broader, more entrenched problem, underlining the importance of investing more in human capital. At the global level, the share of poor according to a multidimensional definition that includes consumption, education, and access to basic infrastructure is approximately 50 percent higher than when relying solely on monetary poverty. In Sub-Saharan Africa, more than in any other region, shortfalls in one dimension go hand in hand with other deficiencies. Low levels of consumption are often accompanied by challenges in non-monetary dimensions.

Figure O.2 presents the share of the population in Sub-Saharan Africa and South Asia that are considered multidimensionally deprived according to consumption (blue oval), education for children and adults (orange oval),

**FIGURE O.2 Share of Individuals in Multidimensional Poverty, circa 2013**



Source: Estimates based on the harmonized household surveys in 119 economies, circa 2013, GMD (Global Monitoring Database).  
 Note: The diagram shows the share of population that is multidimensionally poor, and the dimensions they are deprived in. The size of the ovals is scaled such that they represent the respective proportions in each of the regions. For example, the numbers in the blue oval for Sub-Saharan Africa add up to 44.9 percent, which is the monetary headcount ratio. Adding up all the numbers for Sub-Saharan Africa results in 64.3 percent, which is the proportion of people that are multidimensionally deprived. (Numbers may not add to totals because of rounding.)

and access to basic infrastructure services including drinking water, sanitation, and electricity (yellow oval). Almost half of the multidimensional poor in Sub-Saharan Africa (28.2 percent out of a total of 64.3 percent multidimensionally poor) experience simultaneous deprivations in consumption, education, and access to some basic infrastructure service. This proportion contrasts with other regions, including South Asia, in which only a quarter of the multidimensionally poor suffer deprivations in all three of these dimensions. The implication is that in Sub-Saharan Africa, the cumulative deprivations reinforce one another and make it much harder to fight poverty.

To build a true picture of poverty as experienced by individuals, we also need to go beyond the traditional household-level measures to consider how resources are shared among families. Women and children tend to have disproportionately less access to resources and basic services, especially in the poorest countries. Women in poorer countries often withdraw from the labor force and lose their earning potential when they reach reproductive age. The gender gap in poverty rates is largest during the reproductive years when care and domestic responsibilities, which are socially assigned to women, overlap

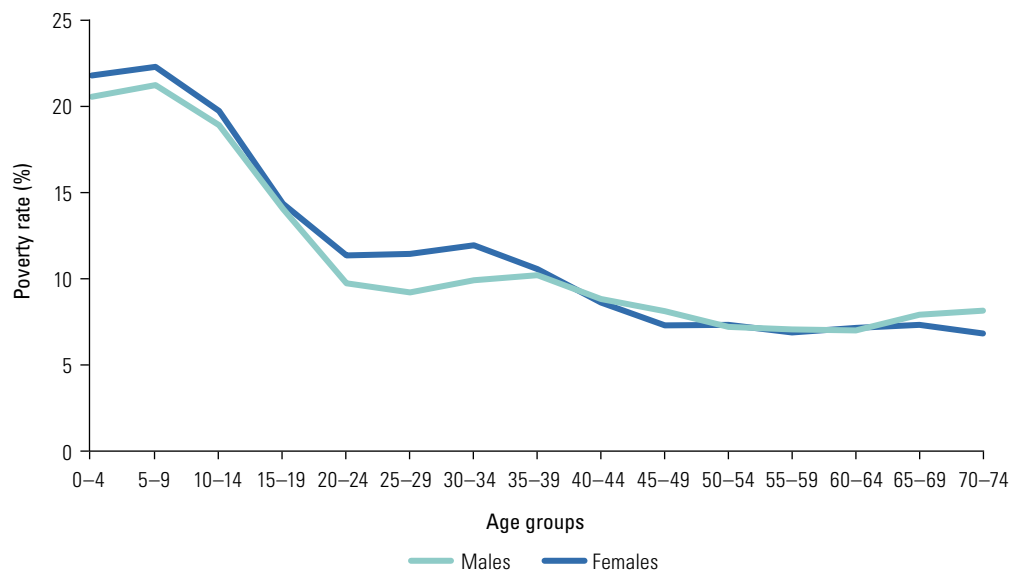
and conflict with productive activities. This tension is often most pronounced among the poorest countries and the poorest groups in society. For example, the average gender gap in poverty rates for 20–34-year-olds in Sub-Saharan Africa is 7 percentage points, compared to a global average of 2 percentage points (figure O.3) and virtually zero in Europe and Central Asia.

There is evidence from studies in several countries that resources are not shared equally within poor households, especially when it comes to more prized consumption items. Evidence also shows complex dynamics at work within households that go beyond gender and age divides. For example, a woman's poverty status may be related to her position as mother versus wife of the household head.

Another way to explore disparities within the household is to look at how food is shared within families. In Bangladesh, for example, household survey data reveal that household heads—mostly men—have much smaller calorie shortfalls than individuals who are not household heads. Such differences are invisible in standard measures of poverty.

When we estimate individual poverty rates on the basis of broader consumption patterns

**FIGURE O.3** Percent of Females and Males Living in Households in Extreme Poverty, by Age Group, circa 2013



Source: Muñoz Boudet et al. 2018.  
 Note: Data are from 89 countries.

including nonfood goods, women fare slightly better than men in Bangladesh. In Malawi, by contrast, women have a significantly higher poverty rate (73 percent) than men (49 percent). Children in both countries suffer from significantly higher poverty rates.

We need more comprehensive data to deepen our understanding of how poverty affects individuals and to assess how social programs can be better tailored to meet their needs. The initial findings of this approach suggest that current assistance programs risk missing many poor people who are hidden in nonpoor households.

## Monitoring progress in a growing world

As the world grows wealthier and extreme poverty becomes rarer, legitimate questions arise over whether US\$1.90 (2011 PPP) is too low to define whether someone is poor in all countries of the world. Even as the number of extreme poor declines, many people continue to live in poverty when measured by standards that are more appropriate for a wealthier world. The success in reducing extreme poverty allows us to broaden our focus to assess whether such people are also benefitting from economic development.

Two decades ago, 60 percent of the global population lived in low-income countries. By 2015, that had fallen to 9 percent, meaning that the majority of people and most of the world's poor now live in middle-income countries. To reflect this shift and the rise in what may constitute basic needs for many people, the World Bank now reports on two higher-value poverty lines of US\$3.20 and US\$5.50 per person per day, expressed in 2011 PPP. The value of these lines is derived from the typical poverty line in lower- and upper-middle-income countries, respectively, in the same way that the value of the IPL is derived from the typical poverty line for some of the poorest countries in the world. These higher-valued poverty lines therefore reflect social assessments of what defines minimum basic needs in countries at these income levels.

As may be expected, these two standards for measuring poverty portray a less encouraging picture of the level of well-being in

the world relative to the measure of extreme poverty, which is forecast now to be in single digits. Nearly half the world (46 percent) lives on less than US\$5.50 per day, a standard that defines poverty in a typical upper-middle-income country (table O.1). A quarter of the world lives on less than US\$3.20 per day.

These higher poverty lines also portray a different regional story of poverty reduction from the US\$1.90 line. The Middle East and North Africa is a case in point. In 1990, extreme poverty in the region was 6 percent, and in 2015, it was 5 percent. This discouraging picture of very little progress in reducing extreme poverty looks different when examined through the lens of the US\$3.20 line. Over this same time period, the countries of the Middle East and North Africa reduced the proportion of people living on less than US\$3.20 from 27 percent to 16 percent. Important progress in reducing poverty in this region is hidden when one examines only extreme poverty. The US\$5.50 line, reflecting basic needs in upper-middle-income countries, presents two distressing findings: (1) almost half the world lives on less than US\$5.50 per day, and (2) in the regions of the Middle East and North Africa, South Asia, and Sub-Saharan Africa, despite progress in reducing their poverty rates, more people were living on less than US\$5.50 in 2015 than in 1990 due to their growing populations.

As we seek a broader understanding of poverty, it is important to recognize that what constitutes a basic need can vary depending on a country's level of consumption or income. In a poorer country, for example, participating in the job market may require only clothing and food, whereas someone in a richer society may also need access to the internet, transportation, and a cell phone. The cost of performing the same function may differ across countries depending on their overall level of consumption or income.

To assess this type of poverty, the World Bank is introducing the societal poverty line (SPL) as a complement to its existing lines. The SPL is a combination of the absolute IPL and a poverty line that is relative to the median consumption (or income) level of each country. Specifically, it is equal in value to either the IPL or US\$1.00 plus half of daily median consumption in the country, whichever

**TABLE 0.1 Poverty at Higher Poverty Lines, US\$3.20 and US\$5.50 (2011 PPP)**

Poverty rate by region at US\$3.20	1990	1999	2008	2013	2015	Percentage point change, 1990–2015
East Asia and Pacific	85.3	67.1	37.4	17.5	12.5	–72.8
Europe and Central Asia	9.9 <sup>a</sup>	21.1	7.5	5.7	5.4	–4.6
Latin America and the Caribbean	28.3	27.0	15.7	11.4	10.8	–17.5
Middle East and North Africa	26.8	21.7	16.7	14.4	16.3	–10.5
South Asia	81.7	76.0 <sup>a</sup>	67.9	53.9	48.6 <sup>a</sup>	–33.1
Sub-Saharan Africa	74.9	78.3	72.2	67.8	66.3	–8.6
Rest of the world	0.8	0.8	0.7	0.8	0.9	0.1
World	55.1	50.6	38.2	28.8	26.3	–28.9

Poverty rate by region at US\$5.50	1990	1999	2008	2013	2015	Percentage point change, 1990–2015
East Asia and Pacific	95.2	87.0	63.6	42.4	34.9	–60.3
Europe and Central Asia	25.3 <sup>a</sup>	44.5	17.1	14.1	14.0	–11.3
Latin America and the Caribbean	48.6	47.0	33.3	27.2	26.4	–22.2
Middle East and North Africa	58.8	54.5	46.6	42.3	42.5	–16.3
South Asia	95.3	93.1 <sup>a</sup>	89.8	84.2	81.4 <sup>a</sup>	–14
Sub-Saharan Africa	88.5	90.5	88.1	85.4	84.5	–4.1
Rest of the world	1.7	1.3	1.2	1.5	1.5	–0.2
World	67.0	66.8	56.5	48.7	46.0	–21.0

Source: PovcalNet (<http://iresearch.worldbank.org/PovcalNet/>), World Bank.

Note: PPP = purchasing power parity.

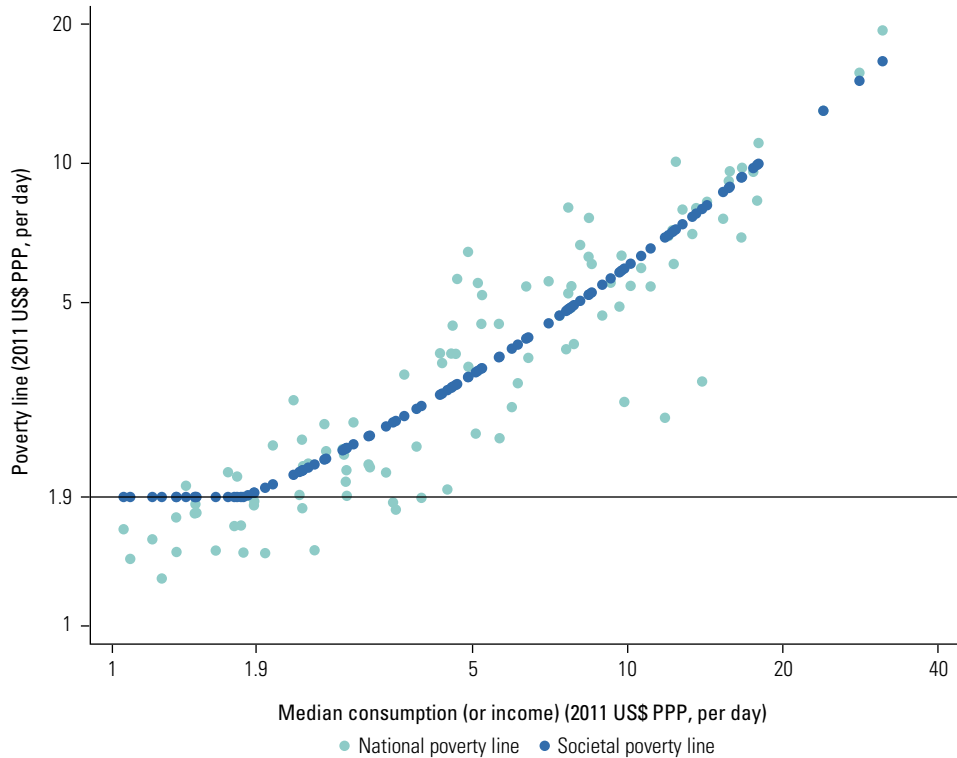
a. The estimate is based on regional population coverage of less than 40 percent. The criteria for estimating survey population coverage is whether at least one survey used in the reference year estimate was conducted within two years of the reference year.

is greater. This means that, for the poorest of countries, the value of the SPL will never be less than the IPL. But, after a certain point as countries get richer, the value of the SPL will increase as the consumption level of the median individual in that country increases. This increasing value of the SPL corresponds with the fact that the value of national poverty lines typically increases as countries grow richer. In fact, the SPL is constructed in such a way that it directly corresponds to the average value of national poverty lines at different levels of (median) consumption for each country of the world. Figure O.4 illustrates how the value of the societal poverty line (in dark blue) runs through the middle of the national poverty lines (in light blue) at different levels of median consumption in each country. In this sense, societal poverty provides a global measure of poverty that

corresponds on average with how all countries of the world define being poor.

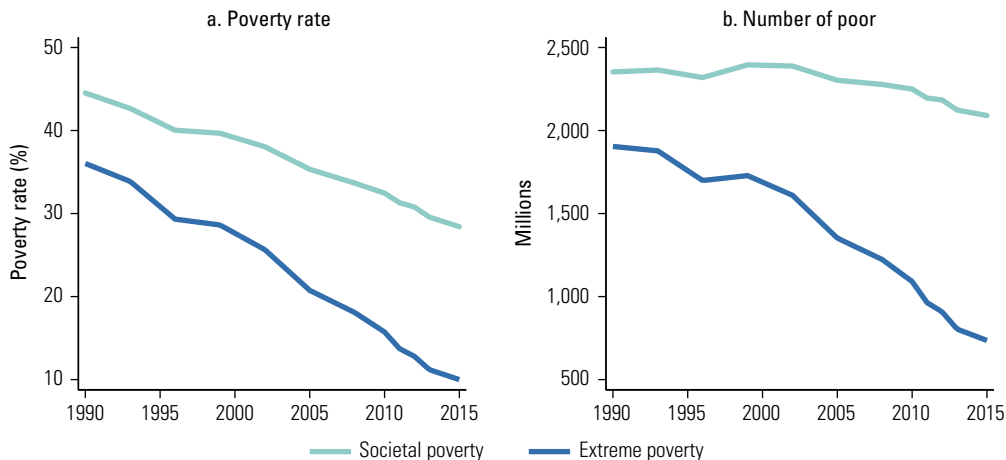
When poverty is defined this way, the number of people who are poor stood at 2.1 billion as of 2015, almost three times more than those living under the US\$1.90 level (figure O.5). Strikingly, the number of people identified as poor by the SPL has largely stayed the same over the last 25 years even as the number in extreme poverty has plunged. The global rate of societal poverty has fallen steadily since 1990, but still at a much slower rate than the decline of extreme poverty. In 1990, the rate of societal poverty (45 percent) was about one-fourth greater than the rate of extreme poverty (36 percent). For many low-income countries, societal and extreme poverty were the same. The economic growth of the past quarter century means significantly fewer countries in 2015 have

**FIGURE 0.4 National and Societal Poverty Lines in a Growing World**



Source: Based on data and analysis from Jolliffe and Prydz (2016, 2017).  
 Note: Both axes use log scales. PPP = purchasing power parity.

**FIGURE 0.5 Societal Poverty, Global Estimates, 1990–2015**



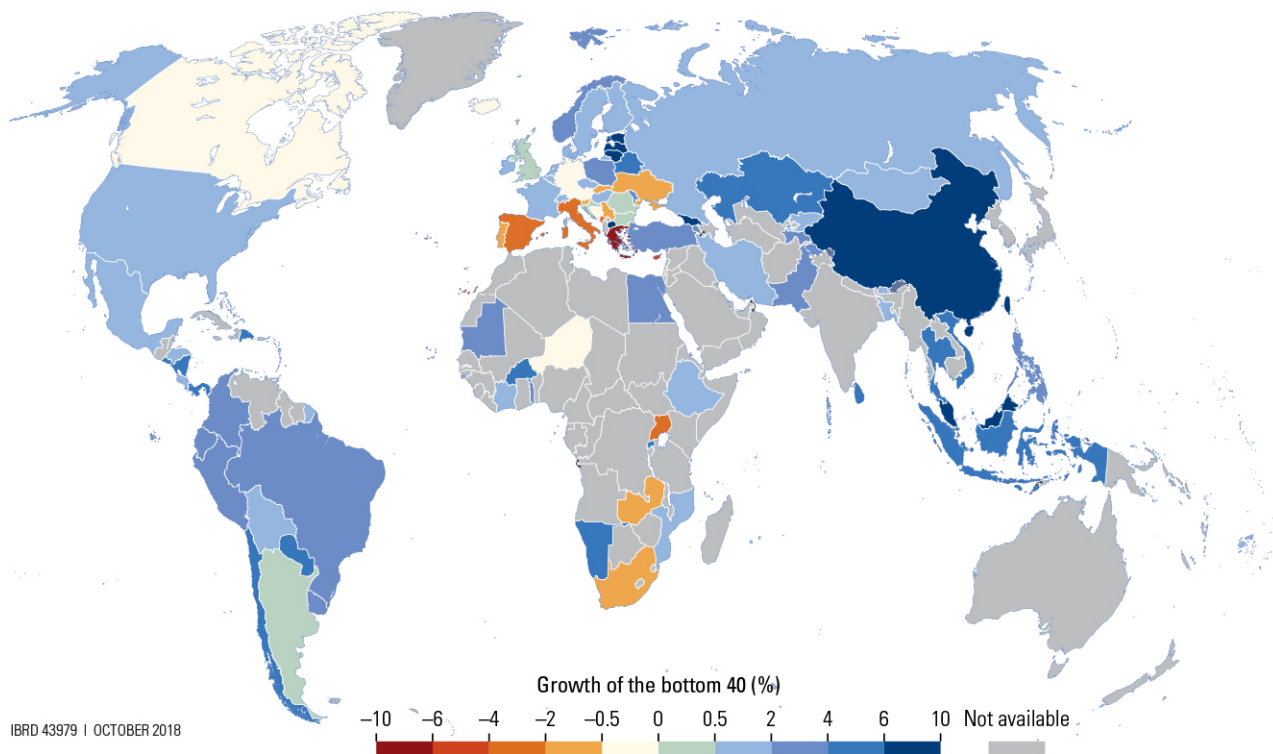
Source: Updated analysis from Jolliffe and Prydz (2017).  
 Note: The international poverty line reflects the extreme poverty rate (in panel a) and the headcount (in panel b) as assessed by the US\$1.90 per day threshold (2011 purchasing power parity). The societal poverty line provides the same information for societal poverty.

an SPL that is the same as their IPL, and the rate of societal poverty (28 percent) is almost three times the rate of extreme poverty (10 percent).

Whereas societal poverty is based on a poverty line that is in part relative to the median consumption levels across countries, the shared prosperity measure monitored by the

### MAP 0.1 Shared Prosperity across the World, 91 Economies, circa 2010–15

Consumption or income growth among the bottom 40 percent of the population



IBRD 43979 | OCTOBER 2018

Sources: GDSP (Global Database of Shared Prosperity) fall 2018 edition.

Note: The map shows annualized growth rates in mean household per capita consumption or income among the poorest 40 percent of the population in each country.

World Bank is similarly relative to how individuals are doing in each and every country. By assessing how the bottom 40 are doing in each economy, the World Bank's measure of shared prosperity is relevant to countries of all income levels. Overall, the news on shared prosperity is positive, with almost 80 percent of the countries for which data are available showing income growth for the bottom 40 (map O.1). But the progress was restrained by modest global growth and, despite the overall improvement, some countries have experienced slowdowns and even reversals in shared prosperity.

Latin America and the Caribbean, for example, saw less growth in shared prosperity from 2010 to 2015 than in previous years as its economies cooled amid a downturn in global commodity prices. Many countries in Europe and Central Asia also experienced

setbacks on the measure even if several economies in the region, whose bottom 40 suffered large declines linked to the 2008 financial crisis, are now recovering. This is the case in Estonia, Latvia, and Lithuania, where current levels of shared prosperity are above 6 percent a year. The mixed progress on shared prosperity highlights the need to renew our focus on inclusive growth.

Shared prosperity and societal poverty capture different aspects of how the relatively less well-off are doing in each country. But the two measures are nonetheless linked, as an example of two upper-middle-income countries—Costa Rica and Ecuador—shows. Between 2011 and 2016, both countries' economies grew at similar rates. But the bottom 40 in Ecuador did better than their counterparts in Costa Rica, growing their income by a percentage point more than the



mean in the country. Costa Rica’s bottom 40 grew in line with their country’s mean. As a result, societal poverty fell faster in Ecuador than in Costa Rica.

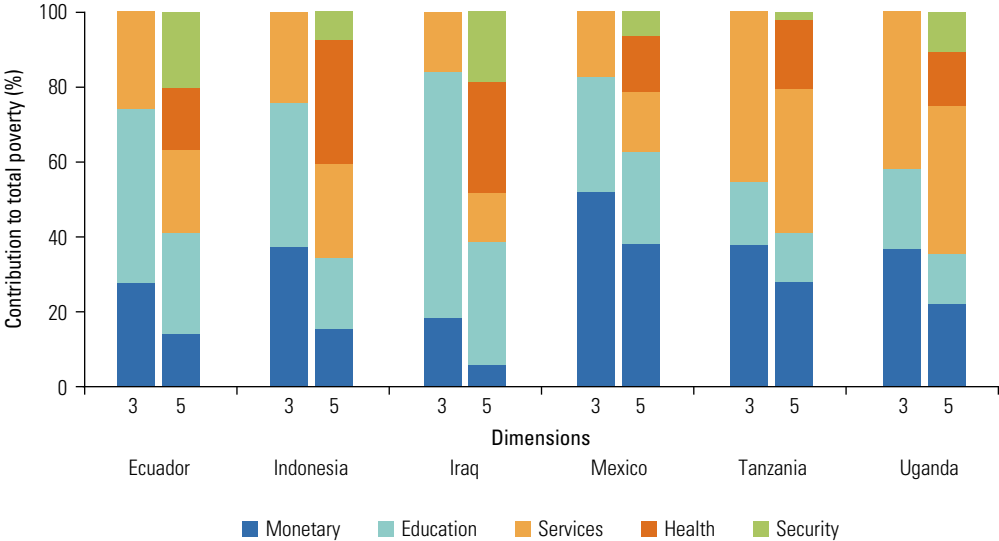
Our view of poverty expands again when we define it not just as a shortage of money but also as a lack of basic elements of well-being. Many countries have made great strides in reducing monetary poverty but still lag in crucial areas—such as basic infrastructure, education, and security—that have a very real impact on people’s quality of life. In the Middle East and North Africa and Latin America and the Caribbean, despite the low prevalence of monetary poverty (less than 6 percent), almost one in seven people lacks adequate sanitation.

South Asia is another case in point. Despite having made progress in poverty reduction, the region’s shortfalls in education remain high for both adults and children and are not strongly associated with monetary poverty. In addition, the number of people in the region living in households without access to an acceptable standard of drinking water, adequate sanitation, or electricity is far

greater than those living in monetary poverty. This means that the challenge in securing higher living standards for the population of South Asia is far more daunting when poverty in all its forms is considered. Although South Asia is expected to meet the goal of reducing extreme poverty to below 3 percent by 2030, many people will still be living in unsatisfactory conditions if the region does not make progress on other components of well-being.

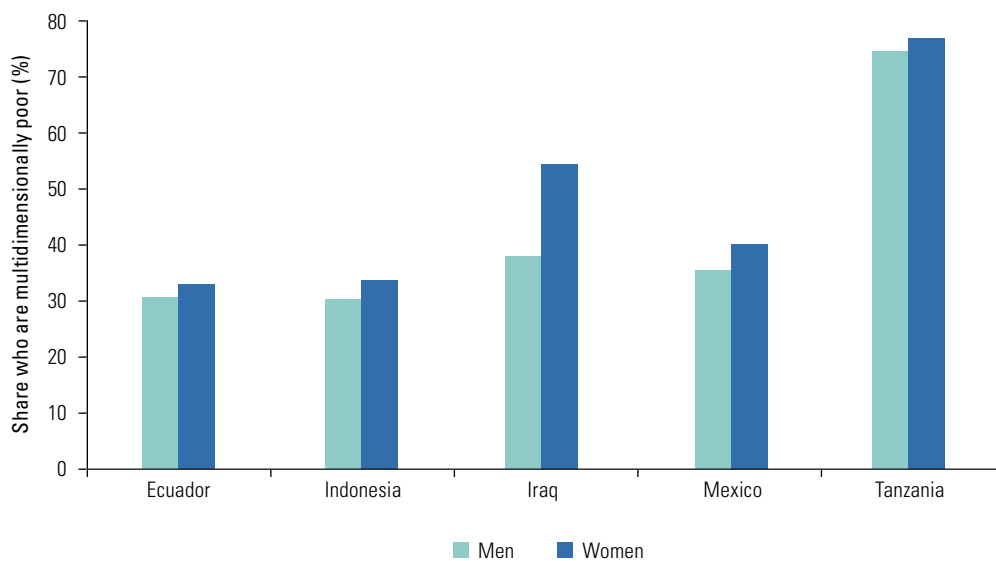
The multidimensional approach highlights how the ways deprivations interact vary widely from country to country. In richer regions such as Latin America and the Caribbean, the Middle East and North Africa, and East Asia and Pacific, nonmonetary deprivations are much less associated with monetary ones than in other regions. In a sample of six countries, the multidimensional approach can be extended to include, in addition to education and access to basic infrastructure services, two other dimensions: health and nutrition, and security from crime and natural disaster (figure O.6). The higher-income countries of Ecuador, Iraq, and Mexico suffer from higher crime rates and greater

**FIGURE O.6 Contribution to Multidimensional Poverty, by Dimension, Selected Countries**



Sources: Calculations are based on Ecuador’s Encuesta de Condiciones de Vida 2013–14; Indonesian Family Life Survey, 2014; Iraq Household Socio-Economic Survey, 2012; Mexican Family Life Survey, 2009–12; Tanzania’s National Panel Survey, 2012–13; Uganda National Panel Survey 2013–14. See annex 4B for details.  
 Note: The figure shows the contribution of each dimension to the multidimensional poverty measure based on the dimensional breakdown method of Alkire et al. 2015.

**FIGURE 0.7 Gender Gaps, Individual Multidimensional Poverty, Selected Countries**



Source: Klasen and Lahoti forthcoming.

insecurity than the lower-income countries included in the analysis. In Indonesia, multidimensional poverty is largely driven by poor outcomes in children’s health and nutrition.

Including additional dimensions of deprivation in our measures of poverty can provide valuable insight into how policies can be directed to have the most effect on poverty. The profile of the poor can change as we take a multidimensional view of poverty. For example, a five-dimension picture of Indonesia shows that the country may need a stronger focus on combatting health care deprivations, whereas efforts in Ecuador may be better directed toward education and security, particularly in urban areas.

The multidimensional approach, when combined with data at the individual level, can also provide new insights into who is poor. Applying this approach to five of the six countries reveals that poverty is greater among women than men, especially in Iraq (figure O.7). Women are revealed as multidimensionally poorer than men in all five countries, and the gender gap may be even wider for specific vulnerable groups. Widows, for example, are found to be significantly poorer than widowers in all countries except Ecuador.

This more nuanced picture highlights new pockets of poverty and can help in formulating policies to address them. For example, policies to expand infrastructure and social services should take into account the different needs of women, children, and men. In some regions, improvements in access to education can particularly help women, who continue to be held back by gender inequalities in schooling.

### **Piecing together the poverty puzzle**

This report provides a more complete picture of poverty that reinforces much of the positive story revealed by the tremendous progress in reducing extreme poverty over the last quarter century. But it also uncovers previously hidden details about the nature and extent of poverty throughout the world. Particularly distressing findings are that extreme poverty is becoming entrenched in a handful of countries and that the pace of poverty reduction will soon decelerate significantly. Reaching the target of reducing extreme poverty to less than 3 percent by 2030 will require a redoubling of efforts and greater focus on those countries where poverty is

the worst. The work of the World Bank will continue to focus on monetary poverty with respect to the IPL; however, truly bringing an end to global poverty requires thinking more broadly and recognizing the greater complexity inherent in the concept of poverty around the world.

Going forward, the World Bank will continue its focus on reporting progress toward the twin goals of ending extreme poverty and boosting shared prosperity. But, to assure that poverty is also tracked in a relevant manner in countries with very low levels of extreme poverty, our regular poverty updates will also include progress at the two higher poverty lines of US\$3.20 and US\$5.50 and on the new societal poverty line. Likewise, the next global poverty update in 2020 will report on advances in multidimensional poverty for the countries where data are available. Between global updates, these new measures will become part of our biannual country reports on poverty and shared prosperity—Poverty and Equity Briefs.

The use of these new measures for global poverty monitoring and the findings of the report have three important and distinct implications for the work and priorities of the World Bank:

1. **Transformational change is needed in Sub-Saharan Africa and conflict-affected areas.** The battle against extreme poverty will be won or lost in Sub-Saharan Africa and fragile and conflict-affected settings. Global extreme poverty is increasingly becoming a Sub-Saharan phenomenon, and the share of the poor in fragile and conflict-affected situations is growing. Of all regions, Sub-Saharan Africa has one of the worst performances in shared prosperity and the poor there suffer from multiple deprivations more than in any other region. Reaching the 3 percent tar-
2. **The new measures can enhance policy dialogue.** Welfare monitoring and policy dialogue at the country level will continue to be based on national poverty measures. Grounded in tools that countries already use to monitor progress, the lines and measures introduced here open new possibilities for countries to benchmark their performance against relevant comparators using a richer set of instruments. This is particularly the case in middle-income countries, where extreme poverty is less prevalent, but where the higher poverty lines and the new multidimensional poverty measure reveal there is still much work to be done.
3. **Data investments are critical.** World Bank investments in data have helped provide a more comprehensive picture of poverty, but there is a need for continued and deeper investment in data. More and better welfare data are needed to compare poverty across time, for multiple dimensions, for all individuals, and particularly among low-income and conflict-affected countries. Very few of these countries have shared prosperity estimates, and few countries have data for estimating all dimensions of poverty. Ensuring that no one is left behind in the fight against extreme poverty requires that we expand investments in country systems and capacity to measure and monitor welfare in a timely, comparable manner using both traditional and newer types of data and methods.





# Introduction

The last 25 years have seen tremendous progress toward the goal of ending extreme poverty. The share of the global population living in extreme poverty as measured by the international poverty line (IPL, currently valued at US\$1.90 in 2011 purchasing power parity dollars) fell from 35.9 percent in 1990 to 11.2 percent in 2013. As noted in this Poverty and Shared Prosperity report, an additional 68 million people were lifted out of extreme poverty between 2013 and 2015—the last year for which we have globally comparable data—to bring the global rate to a historical low of 10 percent.

However, a more careful look at these numbers, particularly in recent years, reveals two concerning and interrelated trends. First, progress toward the elimination of extreme poverty has been uneven. Whereas in 1990 80 percent of the extreme poor lived in East Asia and Pacific or South Asia, in 2015 more than half of the global poor resided in Sub-Saharan Africa. The changing regional concentration of extreme poverty reflects the highly uneven rate of poverty reduction across regions and countries of the world. Four of the six developing regions had extreme poverty rates below 10 percent in 2015, compared to a rate of over 40 percent for Sub-Saharan Africa. Similarly, of the 164 countries for which the World Bank monitors extreme poverty, more than half—84 countries—had already reached levels below 3 percent as of 2015. In contrast, three-fourths of countries in Sub-Saharan Africa had extreme poverty rates above 18 percent in 2015; of the world's 28 poorest countries (that is, those with the highest rates of extreme pov-

erty), 27 are in Sub-Saharan Africa, all with rates above 30 percent.

Second, the pace of poverty reduction has slowed in recent years. Over the 25 years from 1990 to 2015, the global extreme poverty rate fell by slightly more than 25 percentage points, or an average decline of 1 percentage point a year; however, over the two years between 2013 and 2015, it declined by only 1.2 points, or 0.6 percentage points a year. One of the main reasons for the slowdown is the growing concentration of extreme poverty in Sub-Saharan Africa, where the combination of slower than average economic growth, often concentrated in capital-intensive sectors, higher than average population growth, low levels of human capital and access to basic infrastructure, and increased levels of fragility and conflict, has resulted in limited progress in poverty reduction and, consequently, the region's growing number of people living in extreme poverty.

If economic growth over the next 15 years is similar to historical growth patterns, regional disparities will only become larger over time: forecasts for 2030 put the share of the global extreme poor residing in Sub-Saharan Africa at about 87 percent and extreme poverty rates in the double digits for many countries in the region. Even in a forecast where countries grow at a rate of 8 percent per year, significantly above historical averages in the region and the world, the prevalence of extreme poverty in Sub-Saharan Africa would still be in double digits (13.4 percent), whereas the average for the rest of the world would be close to zero (0.4 percent).

Reaching the goal of reducing global extreme poverty to less than 3 percent by 2030 will require that the countries of Sub-Saharan Africa realize historically unprecedented and sustained economic growth rates. But it will also require that this growth be highly inclusive, not just globally but in every country, because a world where extreme poverty is eliminated everywhere except in one region does not portray a picture of a world free of poverty.

Similarly, as the world gets richer and progress is made in the battle against extreme poverty, we must not forget that many around the world, and particularly in middle-income countries, still live in deprivation, unable to meet their basic needs, even if their income levels are higher than the IPL. In the early 1990s, when extreme poverty was pervasive in most regions of the world, focusing the world's attention on one core indicator served as a galvanizing force for coordinated action. It was not necessarily a weakness that progress in this indicator could be attained through significant improvements in some regions or countries. With the high global prevalence of extreme poverty, a rapid reduction of extreme poverty was critical. And in this dimension there has been tremendous success. Now that the extreme poverty rate is in single digits (as indicated by the 2018 nowcast) and is becoming increasingly concentrated, finishing the job will require constructing a more detailed and comprehensive picture of what is meant by a world free of poverty.

This report builds on the desire to construct a more complete picture of what it means to live in a world free of poverty and in which all prosper. A key point of the report is that we must broaden our view of poverty. After an update on global extreme poverty in chapter 1, the remaining chapters of this report can be viewed as expanding our understanding of poverty. Chapter 2 provides an update on shared prosperity as measured by growth in consumption or income of the bottom 40 percent of the population in each country for the period around 2010–15. One important reason the concept of monitoring shared prosperity was introduced was to expand our view of how to think about poverty reduction and growth. Monitoring

extreme poverty at the global level is inattentive to how progress is distributed across the world. The shared prosperity indicator was built to ensure the monitoring of progress in all countries. Ending poverty and sharing in prosperity cannot happen in a satisfactory way if the need for equitable and sustainable economic development is ignored in certain regions or countries.

To complete this picture of what poverty means, we need more information. Just as one can recognize the picture in a puzzle only when enough of the pieces are in place, so too must there be more pieces of the puzzle to better bring the state of poverty into full view. A more comprehensive picture helps us understand what meeting the goal requires. The rest of the report introduces three new pieces to the poverty puzzle, broadening the way poverty is defined and measured. To do this, the report goes beyond extreme monetary poverty to start the process of monitoring poverty in all its forms. The new lines and measures introduced in this report allow one to better monitor poverty in *all countries, in multiple aspects of life*, and for *all individuals* in every household. They also reflect the first steps taken by the World Bank in responding to recommendations from the Atkinson Commission on Global Poverty (World Bank 2017b), and present an evolving view of poverty and shared prosperity.

Chapter 3 expands on the notion introduced with the shared prosperity indicator, that it is important to monitor progress in all countries. The chapter presents two new sets of monetary poverty lines intended to complement the IPL of US\$1.90 a day. First, it presents higher poverty lines, at US\$3.20 and US\$5.50 per day, reflecting typical national poverty thresholds in middle-income countries. In addition, the chapter introduces a concept of *societal poverty* that reflects differences in the overall level of well-being in each country. The societal poverty line is constructed to reflect social and economic assessments of basic needs in each and every country. It integrates both the idea of monitoring absolute extreme poverty and the more relative notion of ensuring that the less well-off in each society benefit as that soci-

ety grows. In this way it reflects both absolute poverty and the relative notion of shared prosperity.

Chapter 4 previews a new *multidimensional poverty measure*, which goes beyond consumption or income poverty by adding nonmonetary dimensions into the measure. Access to education, health, electricity, water, sanitation, and physical and environmental security are critical for well-being. Because many of these goods cannot be purchased in the market, they are typically not included in the measure of extreme poverty. This work builds on the tradition pioneered by the United Nations Development Programme and the Oxford Poverty and Human Development Initiative with the Global Multidimensional Poverty Index, and complements it by placing the monetary measure of well-being alongside nonmonetary dimensions. For 119 countries, consumption poverty is combined with education and access to basic utilities for circa 2013. In addition, the chapter explores, for only six countries, the addition of dimensions on health and nutrition and on security from crime and natural disaster. Extending and complementing the monetary measure with deprivation in other dimensions gives a more comprehensive picture and helps better understand the interaction among the various dimensions of poverty.

Finally, in most countries of the world, poverty is measured at the household level, implicitly assuming that everyone in a poor household is poor. But, because there is in-

equality within households, there undoubtedly are people living in poverty within nonpoor households, as well as nonpoor individuals living in poor households. Chapter 5 sheds light on this issue, with a focus on differences by sex and between children and adults. Current data and methods do not permit accounting for inequality within households in most countries, so the chapter examines select country studies where this is possible and describes how this affects the global profile of poverty.

Pieced together, the chapters of this report provide a more comprehensive picture of poverty that reinforces much of the positive story revealed by the tremendous progress in reducing extreme poverty over the last quarter century. But they also uncover some previously hidden details about the nature and extent of poverty throughout the world. Monetary poverty with respect to the IPL will continue to be the focus of the World Bank's work. Alarming findings from the forecasts reported in the first chapter are that extreme poverty appears to be entrenched in a handful of countries and that the pace of poverty reduction will soon decelerate significantly. The goal of ending extreme poverty as measured by the IPL itself will require a redoubling of efforts and a greater focus on those countries where poverty is the worst. But, to truly bring an end to poverty, we now also need to think more broadly and recognize the greater complexity inherent in the concept of poverty around the world.





# Ending Extreme Poverty: Progress, but Uneven and Slowing

Chapter 1 presents the latest data on global and regional extreme poverty rates using the international poverty line of US\$1.90 in 2011 purchasing power parity dollars. The chapter discusses the trends, the geographical concentration, and the profile of extreme poverty. It also reflects on data coverage and methodological issues and their consequences on global estimates.

Extreme poverty declined to 10 percent of the world's population in 2015, meaning 1 person in every 10 in the world was living in extreme poverty. This rate dropped from nearly 36 percent in 1990, resulting in a world with more than a billion fewer people living in extreme poverty. Although this progress is remarkable, 10 percent equates to 736 million people still living in extreme poverty in 2015, and there is evidence that the pace of poverty reduction is starting to decelerate. There remain significant challenges to reaching the goal of a world free of poverty. Meeting the global target of reducing extreme poverty to less than 3 percent will require substantially greater efforts.

## Monitoring extreme poverty: A quarter century of progress

The World Bank is committed to eradicating poverty. The twin goals of ending extreme poverty and promoting shared prosperity in a sustainable manner accord well with the post-2015 development agenda and the Sustainable Development Goals (SDGs) to ensure that all people can fulfill their potential in dignity and equality and in a healthy environment (box 1.1). Monitoring global poverty is critical for tracking progress and identifying areas that require additional policy actions.

In 2015, an estimated 736 million people were living below the international poverty line (IPL), currently set at US\$1.90 in 2011 purchasing power parity (PPP) dollars. This count of people living in extreme poverty is down from 1.9 billion people in 1990. Despite the world population increasing by more than 2 billion people over this period, more than a

billion fewer people lived in extreme poverty in 2015 than in 1990. Not only are there now fewer poor people but, on average, the poor are also now less poor. In 1990, the average shortfall between what the poor consumed and the IPL was 35 percent (of the IPL). This shortfall shrank to an average of 31 percent in 2015. The total consumption shortfall of the poor (the sum of all consumption shortfalls of the poor) in 2015 had shrunk to about one-third of its size from 1990. (For more details on the consumption shortfall of the poor, and the depth and severity of poverty, see annex 1A.) Despite this impressive progress in terms of the declining poverty rate, the number of poor, and the consumption shortfall of the poor, the number of people living in extreme poverty globally remains unacceptably high.

The World Bank has set a specific target to help guide the work in eradicating poverty: reduce the global share of people living in extreme poverty to less than 3 percent. Over

### **BOX 1.1 Alignment of the SDGs and the Twin Goals of the World Bank Group**

On April 20, 2013, the Board of Executive Directors of the World Bank adopted two ambitious goals: *ending extreme poverty* globally and *promoting shared prosperity* in every country in a sustainable way. Progress toward the first of these goals is measured by monitoring the share of the global population living below the international poverty line. The World Bank set a target of reducing extreme poverty to less than 3 percent by 2030 and to ensure continued focus and steady progress toward the goal, the institution set an interim target of 9 percent by 2020.

The second goal is not defined globally, but rather tracks progress at the country level. Progress on the shared prosperity goal is measured by the growth in the average consumption or income expenditure of the poorest 40 percent of the population (the bottom 40) in a country. This goal is not associated with a target in 2030, but it reflects the aim that every country should promote the welfare of its least privileged citizens for a more inclusive and equitable society.

On September 25, 2015, the United Nations General Assembly adopted the 17 Sustainable Development Goals (SDGs) and 169 targets as part of the 2030 Agenda for Sustainable Development,

building on the Millennium Development Goals (MDGs). *Ending poverty in all its forms and dimensions* is the first of the 17 SDGs. The General Assembly Resolution recognizes that eradicating poverty is the greatest global challenge and an indispensable requirement for sustainable development.

The SDGs and the World Bank's twin goals are aligned. The goals of ending extreme poverty within a generation and promoting shared prosperity in a sustainable manner accord with the 2030 Agenda for Sustainable Development to ensure that all human beings can fulfill their potential in dignity and equality and in a healthy environment. In contrast to the SDGs, the World Bank's twin goals do not set distinct country-specific targets or targets for the multiple dimensions of poverty, equity, and sustainability. However, the World Bank recognizes that poverty is multidimensional, and sustainability is critical. The pursuit of these goals will require the concerted effort of all stakeholders. Over the years, the World Bank has collaborated with the United Nations in nearly every region and sector, and its engagement has deepened since the adoption of the MDGs, and now with the SDGs.

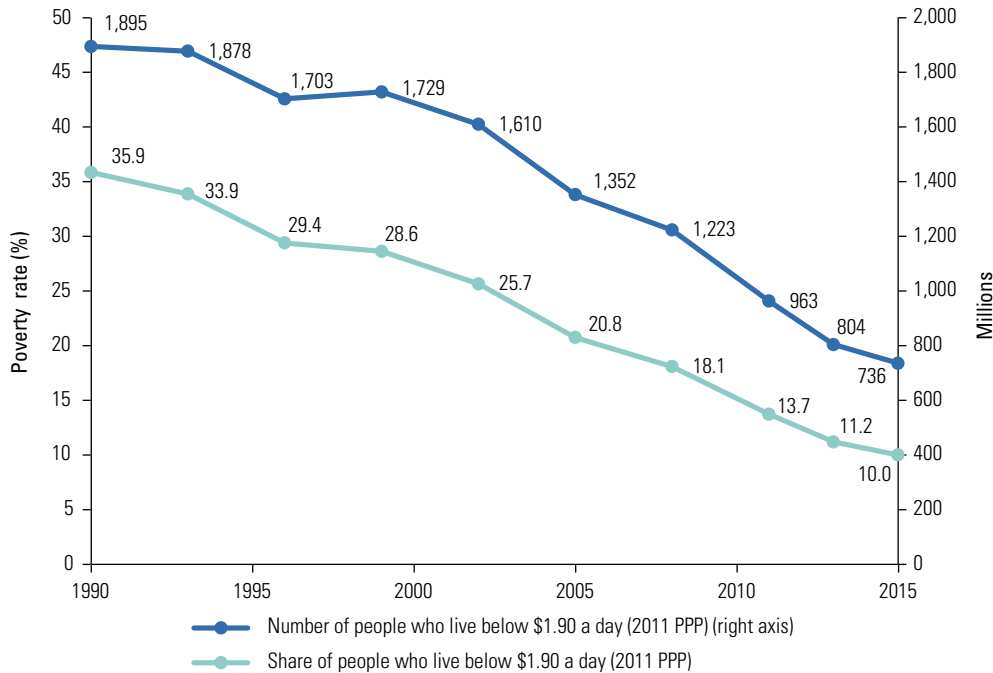
the last decades, remarkable progress has been made in reducing extreme poverty (figure 1.1; see box 1.2 for details on the data used). The world attained the first Millennium Development Goal—to cut the 1990 poverty rate in half by 2015—six years ahead of schedule. With continued reductions, the global poverty rate—the share of the world's population living below the IPL—dropped from about 36 percent in 1990 to 10 percent in 2015, that is, more than a 70 percent reduction.

Over the 25 years from 1990 to 2015, the global rate of extreme poverty fell by slightly more than 25 percentage points, or an average decline of 1 percentage point a year. (Gauged according to today's population, 1 percent equates to about 76 million people.) Given

this trend of steady poverty reduction, the world is clearly on track to reach the interim poverty target of 9 percent by 2020 set by the World Bank to monitor progress toward the 2030 goal.<sup>1</sup> Forecasts for 2018 indicate that this target has already been surpassed.

Reducing extreme poverty to 3 percent by 2030 from 10 percent in 2015 will require an additional 7-percentage-point reduction in the poverty rate in 15 years. If, over the last 25 years, poverty has steadily declined at 1 percentage point a year, it would seem reasonable to assume that the world is well on track to reducing poverty by at least 7 percentage points over the next 15 years. The rate of poverty reduction could be cut in half to a 1-percentage-point decline every two years, and the world would still reach the 3 percent target.

**FIGURE 1.1 Global Extreme Poverty Rate and Headcount, 1990–2015**



Source: PovcalNet (online analysis tool), World Bank, Washington, DC, <http://iresearch.worldbank.org/PovcalNet/>.  
 Note: PPP = purchasing power parity.

**BOX 1.2 Chapter 1: Data Overview**

*Data source*

The data for this chapter come from PovcalNet, which is an online analysis tool for global poverty monitoring hosted by the World Bank (<http://iresearch.worldbank.org/PovcalNet>). PovcalNet was developed with the purpose of public replication of the World Bank’s poverty measures for the IPL. PovcalNet contains poverty estimates from more than 1,600 household surveys spanning 164 countries.<sup>a</sup> Most of the surveys in PovcalNet are harmonized through the Global Monitoring Database, the World Bank’s repository of household surveys.

*Derivation of country-level estimates*

The national poverty rates from household surveys are based on measures of household consumption or income. In the current 2015 estimates, about 40 percent of the countries covered use income, but the use of income rather

than consumption has been increasing over time. The differences between income and consumption measures matter for comparing trends and patterns in poverty. To assure that the income and consumption levels from different countries are comparable, they need to be expressed in the same unit. To this end, consumer price indexes and purchasing power parities are applied. Because the frequency and timing of household surveys vary across countries, comparable country-level estimates require projecting the survey data to the reference year for which global poverty is expressed, here 2015. When the timing of surveys does not align with the reference year, PovcalNet “lines up” the survey estimates to the reference year.

*Derivation of regional/global estimates*

To arrive at a regional and global estimate of poverty, population-weighted

(continued)

### **BOX 1.2 Chapter 1: Data Overview (continued)**

average poverty rates are calculated for each region.<sup>b</sup> Some countries have no household survey data to monitor poverty. No direct value is imputed for these countries; rather it is assumed that the average for the region based on the countries with data available is the same as the regional average for all countries. The number of poor in each region is the product of the region's poverty rate and the total regional population. The global

estimate of the number of poor is the product of the population-weighted mean of the regional poverty rates and the total world population.

#### *Further information*

For further information regarding the data sources, geographical regions, data issues, and assumptions underlying the global, regional, and country-level estimates, see appendix A at the end of the report.

- a. The term country, used interchangeably with economy, does not imply political independence but refers to any territory for which authorities report separate social or economic statistics.
- b. Population estimates are usually based on national population censuses. Estimates for the years before and after the census are interpolations or extrapolations based on demographic models (Source: World Development Indicators).

Despite this optimistic portrait of the path toward the target, there are reasons for concern. One reason is the existence of some evidence that the rate of poverty reduction has recently slowed. Between 2011 and 2013, extreme poverty declined by 2.5 percentage points, but, over the two years between 2013 and 2015, it declined by only 1.2 points. Although this change in the rate of poverty reduction over these two years should be interpreted with caution because of data challenges, it is a first potential signal of change.

To assess whether this recent change in the path of poverty reduction is an aberration or a warning sign of what the future holds, forecasts of how extreme poverty may evolve up to 2030 can be very informative. Such forecasts should be viewed with caution though, because the factors that affect global poverty reduction are complex, and because the future is uncertain. For example, economic growth is a key factor in reducing poverty, but it can be volatile and difficult to predict. Nonetheless, without forecasts, it is not possible to clarify whether the current trajectory is adequate to reach the target.

### **Nowcasts and forecasts to 2030**

The current estimate of the global extreme poverty rate—10 percent—refers to 2015,

which is three years out of date. Why in 2018 is poverty reported for 2015? The global estimates are based on household surveys from 164 countries, and these surveys are carried out independently, typically by national statistical offices or national planning ministries. The surveys are complex and lengthy, requiring significant amounts of labor and time to be implemented effectively; and, in most countries, they are not carried out every year. Countries implement household surveys that measure poverty status once every three to five years (Serajuddin et al. 2015). It also takes time to gather, process, and analyze these data. There is thus frequently a lag between the completion of the survey fieldwork and the publication of the data for the global poverty counts (Independent Evaluation Group 2015). For these reasons, 2015 is the most recent year for which there are sufficient data to estimate a global poverty rate.<sup>2</sup> (For details on how data are shifted forward and backward in time to produce the 2015 estimate, see appendix A at the end of the report.)

However, if assumptions are made about the relationship between economic growth as observed in national accounts (such as the real growth in gross domestic product [GDP]) and in surveys, as well as on population projections, it is possible to nowcast the global poverty rate in 2018 and also generate scenarios about global poverty in 2030.<sup>3</sup> To

nowcast poverty in 2018, it is assumed that each household's welfare grows at a fraction of the growth in GDP per capita. Only a fraction of the growth in GDP per capita is passed through to the welfare vector because there is a historical divergence between growth in consumption or income observed in surveys and the growth observed in national accounts. The fraction that is passed through to the welfare vector is based on examining past data on the average relationship between survey means and national accounts data (Prydz, Jolliffe, and Serajuddin, forthcoming).<sup>4</sup> With this approach, it is assumed that the scaled growth accrued equally (in proportionate terms) to everyone in a country regardless of individual income level. If inequality changed from 2015 to 2018, this assumption will not hold, and poverty will be higher or lower depending on the change in inequality (World Bank 2016b; Lakner, Negre, and Prydz 2014).

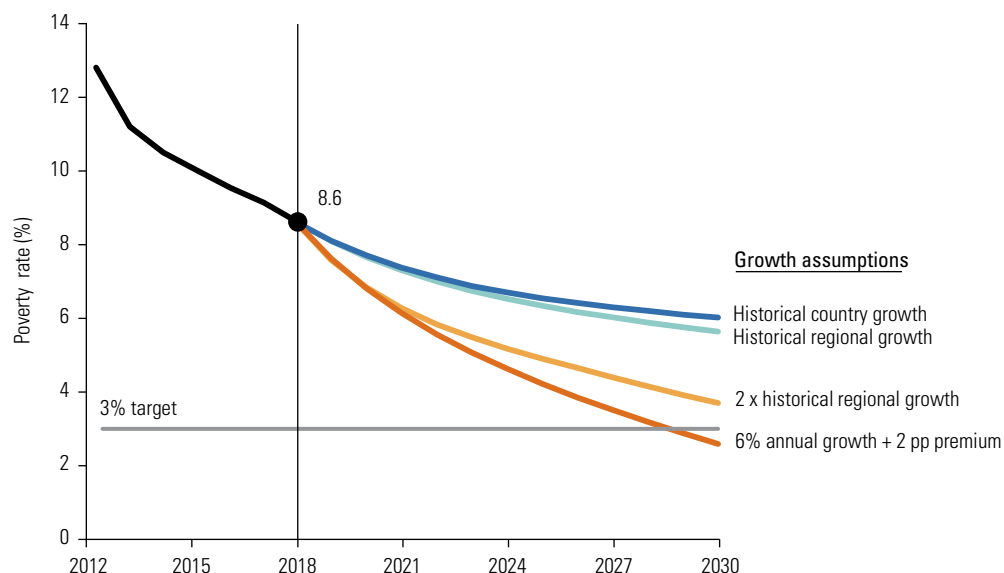
Under these assumptions, the 2018 nowcast for the global extreme poverty rate is 8.6 percent (figure 1.2). This means that the 2020 interim target has likely already been achieved. One implication of this estimate is that it

provides another piece of evidence that there seems to be a significant slowdown in the rate of global poverty reduction. From 2013 to 2015, poverty declined by 0.6 percentage points per year; this is slower than the 25-year average decline of a percentage point per year. Between 2015 and 2018 the nowcast suggests that the rate of poverty reduction has further slowed to less than half a point per year.

Projecting global poverty to 2030 is more challenging, but it is possible to consider how global poverty may evolve under different scenarios. Four scenarios are considered as described below. The first scenario assumes that every country grows at its average growth rate from 2005–15. This growth rate is then used to “grow” the household survey mean over time, in a way that does not change the level of inequality. This approach makes it possible to move the entire distribution of consumption or income forward in time, starting with the 2018 nowcast and moving up to 2030.

The second scenario is like the first, except for one difference: the growth rate for each country is not its historical average, but rather the historical average for its region.

**FIGURE 1.2 Projections to 2030 of Global Extreme Poverty**



Source: PovcalNet (online analysis tool), World Bank, Washington, DC, <http://iresearch.worldbank.org/PovcalNet/>; World Development Indicators; World Economic Outlook; Global Economic Prospects; Economist Intelligence Unit.

Note: The 2018 nowcast uses realized and projected growth in GDP per capita and household final consumption expenditure per capita from 2015 to 2018 to grow the 2015 welfare vector. “Historical country (regional) growth” assumes that the annual growth rates countries (regions) experienced from 2005 to 2015 continue from 2018 to 2030. “6% annual growth + 2 pp premium” assumes that all countries grow by 6 percent annually from 2018 to 2030, and that the bottom 40 percent on average grow with an additional 2 percentage points (pp). All assumed growth rates are real, per capita growth.

For each region, the average annualized real growth rate between 2005 and 2015 is estimated and then used as the growth rate for each country in the region. The third scenario is identical to the second but uses *twice* the historical regional growth averages. These three scenarios all assume that inequality in the country remains unchanged until 2030.

The final scenario explores what happens if growth is pro-poor; if the bottom 40 percent on average grows faster than the country as a whole. This scenario, not anchored to any empirical data, assumes that each country grows by 6 percent annually toward 2030, but that the bottom 40 percent, on average, grows by 8 percent annually (while the top 60 percent grows at 4.7 percent, resulting in the average of 6 percent). Because the bottom 40 percent grows at a rate that is 2 percentage points faster than the average, this is referred to as a shared prosperity premium of 2 percentage points. In all these scenarios, growth rates in either GDP per capita or household final consumption expenditure (HFCE) per capita are rescaled to account for the difference between survey means and national accounts as discussed above.<sup>5</sup>

The scenarios based on growth rates that correspond with historical performance of the countries, or of the average performance of the region do not come close to reaching the target (figure 1.2). Both scenarios suggest global poverty rates in the range of 6 percent in 2030. The third scenario, where it is assumed that all countries grow by *twice* the average regional growth rate over the past ten years, also falls short of the 3 percent target. This scenario predicts a global extreme poverty rate of 3.7 percent in 2030.

This is an alarming finding.

The only scenario where the 3 percent target is met is when a real annual growth rate of 6 percent and a shared prosperity premium of 2 percentage points are assumed.<sup>6</sup> The most important element of this scenario is that Sub-Saharan Africa is assumed to grow steadily at this rate for 12 straight years up through 2030. In considering this scenario, it is useful to note that between 2000 and 2015 Sub-Saharan Africa has never had a 10-year average growth rate near 6 percent—let alone 8 percent for the bottom 40. The highest average growth rate was around 2010, when its

10-year historic average growth rate (based on growth from 2000 to 2010) was almost 4 percent, but this was sustained for only a few years and has since declined slightly.

How can it be that poverty has declined by 25 percentage points over the last 25 years, yet the only forecasts that suggest poverty will be reduced by 7 percentage points over the next 15 years are based on unprecedented growth patterns and rates?

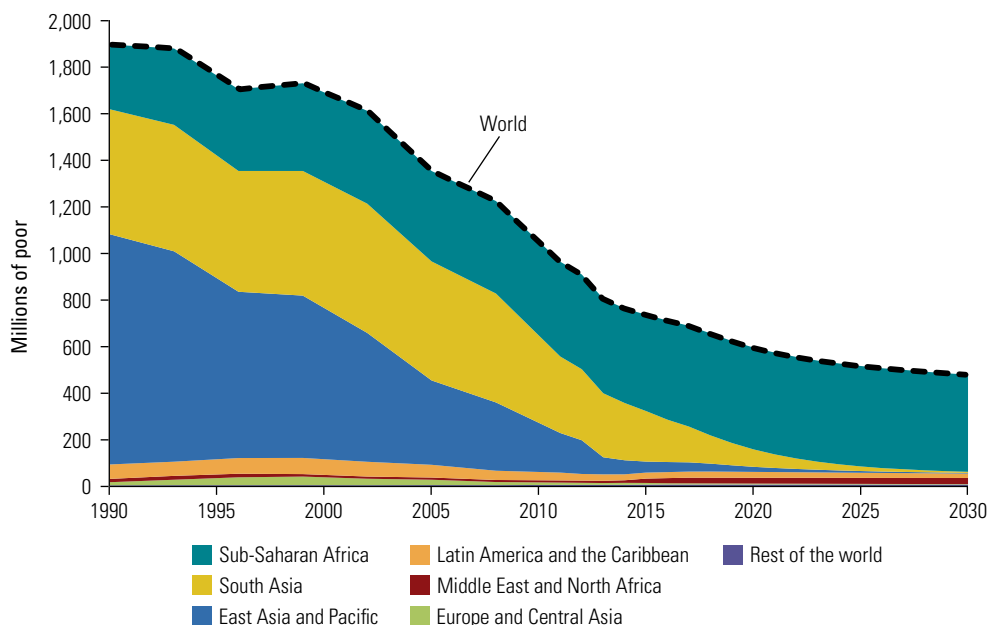
## Uneven progress: A regional profile of poverty reduction

There are several parts to the answer of this question and many of them hinge on the general idea that progress has been uneven, which is linked to the theme of this report. A slightly more specific answer to the question posed above is that not all regions have shared in the benefits of the global reduction in poverty.

To better understand why the simulations forecast a challenging path for reaching the target, it is useful to examine the changing regional profile of poverty that has been brought about by the differing rates of poverty reduction. Between 1990 and 2015, the regional profile of poverty has changed significantly. In 2015, more than half of the global poor resided in Sub-Saharan Africa and more than 85 percent of the poor resided in either Sub-Saharan Africa or South Asia (figure 1.3). The remaining 14 percent of the global poor, or about 106 million poor people, lived in the other four regions or in high-income economies.<sup>7</sup>

This is a dramatic shift from 1990, when over half of the poor were living in East Asia and Pacific. The two regions with the most poor people in 1990 were East Asia and Pacific and South Asia, which were home to 80 percent of the poor. With China's rapid reduction of poverty, the concentration of the global poor shifted from East Asia and Pacific in the 1990s to South Asia in 2002, and then to Sub-Saharan Africa in 2010. In South Asia, both the poverty rate and number of poor have been steadily declining, but, given the sheer size of the populations, the contribution to global poverty continues to be high. This contrasts with Sub-Saharan Africa, where the total count of poor people in this region has been increasing, essentially lead-

**FIGURE 1.3 Number of Extreme Poor by Region, 1990–2030**



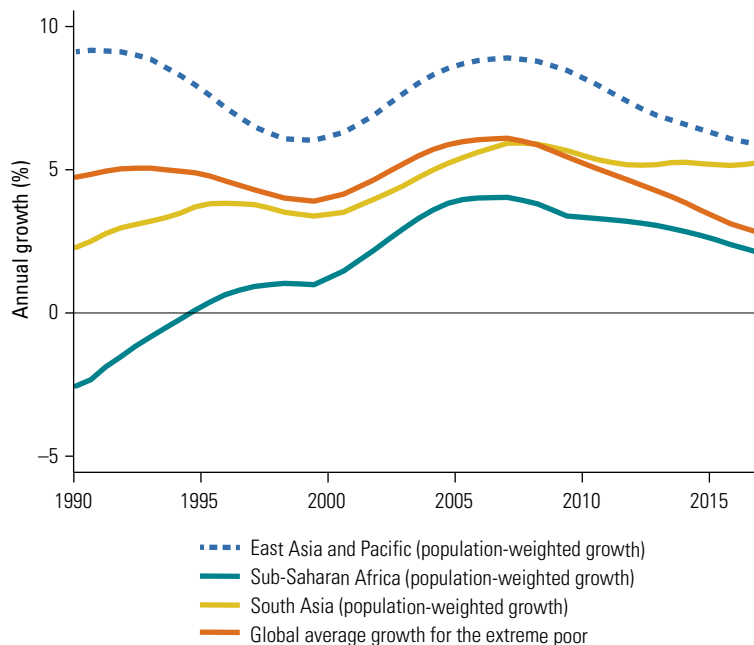
Source: PovcalNet (online analysis tool), <http://iresearch.worldbank.org/PovcalNet/>. World Bank, Washington, DC, World Development Indicators; World Economic Outlook; Global Economic Prospects; Economist Intelligence Unit.

ing to the shifting concentration of poverty from South Asia to Sub-Saharan Africa.

This pattern is likely to continue in the coming decade. Simulations show that, as the number of extreme poor continues to decline in South Asia, the forecasts based on historical regional performance indicate that there will be no matching decline in poverty in Sub-Saharan Africa (figure 1.3). In 2030, the share of the global poor residing in Sub-Saharan Africa is forecasted to be about 87 percent, if economic growth over the next 12 years is similar to historical growth patterns. (For more details on the simulations, see annex 1B.)

One important reason for the changing regional concentration of extreme poverty, and the projected increase in the share of the global poor residing in Sub-Saharan Africa, is the regional differences in per capita GDP growth. Focusing on the three regions that have accounted for the bulk of the poor, the average annual growth rate since 1990 has consistently been highest in the East Asia and Pacific region (between 5 and 10 percent), followed by South Asia, and then Sub-Saharan Africa. South Asia has maintained an average growth rate between 5 and 6 percent over the last decade (figure 1.4). The average growth

**FIGURE 1.4 Regional GDP per Capita Growth and Average Growth for the Extreme Poor, 1990–2017**



Source: PovcalNet (online analysis tool), <http://iresearch.worldbank.org/PovcalNet/>. World Bank, Washington, DC, World Development Indicators.

Note: The orange line reflects the average growth rate as experienced by the population of people in extreme poverty. It is a weighted average of country growth rates where the weights are the number of extreme poor in each country. All curves fit a local polynomial through the annual growth rates to smooth out year-to-year fluctuations.

rate in Sub-Saharan Africa has rarely exceeded 5 percent and has decreased in recent years.

Growth is an important driver of poverty reduction, and, throughout the 1990s and early 2000s, the vast majority of the poor lived in countries with relatively high growth rates. Over the last few years, as the concentration of poverty has shifted to Sub-Saharan Africa, the majority of the poor now live in countries with lower-than-average growth rates (figure 1.4). The orange line in figure 1.4 reflects this change because it is a weighted average of country growth rates where the weights are the number of extreme poor in each country. As the concentration of poor moved from high-growth to low-growth countries, this shift led to a significant deceleration in the rate at which poverty has been declining.

Not only has the growth rate in the countries with the most poor declined in recent years but the conversion of growth to poverty reduction—the growth elasticity of poverty—has also historically been lower in Sub-Saharan Africa. Hence, a given growth rate buys less poverty reduction in Sub-Saharan Africa than in most other regions of the world.

The changing regional concentration of extreme poverty reflects the highly uneven rate of poverty reduction across countries of the world. Of the 164 countries for which the World Bank monitors poverty, more than half—84 countries—have already reached rates below 3 percent as of 2015. The median poverty rate of the 164 countries in 2015 is 2.7 percent; this median in 2018 is estimated to be 1.9 percent. This success in having more than half the countries of the world with poverty rates below 3 percent is also part of the reason why the world is now starting to experience a slowdown in the rate of poverty reduction. There are now fewer countries than before with large populations of poor people. Previously, progress in poverty reduction could shift over time from one country or region to another, but now there is less scope for this. The slowdown that is observed at the global level does not mean that poverty reduction is declining in every country; however, it does mean that the number of countries where there have been significant declines in the number of poor people is shrinking.

As extreme poverty becomes increasingly concentrated, significant progress in reduc-

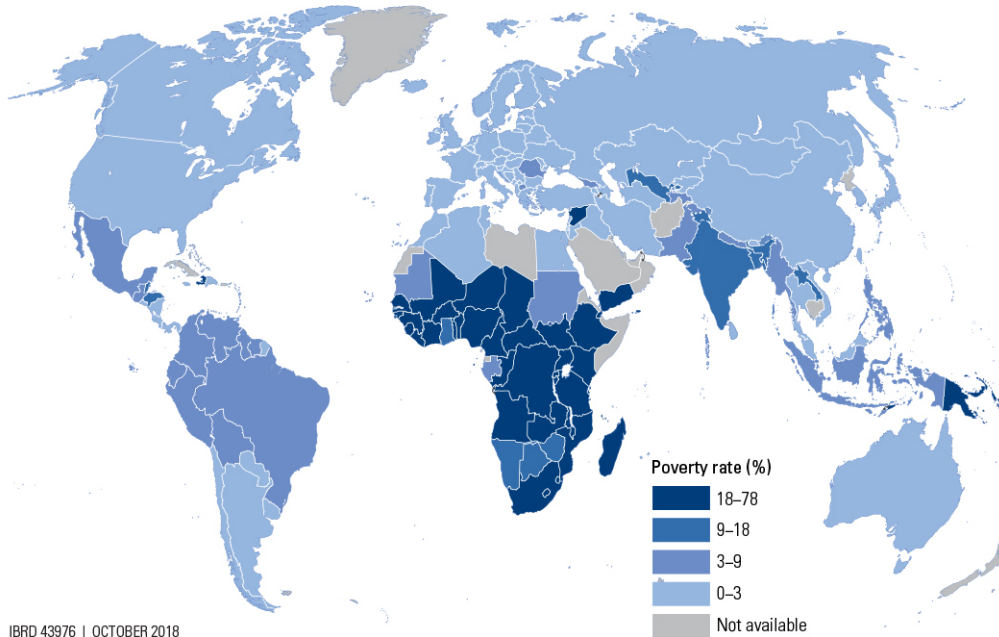
ing the global poverty count will occur only if progress is primarily made in those countries where poverty is greatest. This is not to say that countries with extreme poverty rates below 3 percent cannot make further progress. Where there is poverty, there is still much work to be done. But the core indicator the World Bank will track up through 2030 is to reduce the global rate of extreme poverty to less than 3 percent.

If the goal is a world free of poverty, why is progress monitored toward 3 percent and not zero percent? The 3 percent target comes from both empirical and conceptual considerations. Empirically, poverty in some countries remains deep, entrenched, and widespread; and, when the target was initially set, 3 percent was considered an ambitious but feasible target (Jolliffe et al. 2015). Conceptually, however, there is also an important reason for setting the target at some level greater than zero percent. The purpose of a target is to assist in efforts to attain goals. For targets to help, they need to be credibly measured and monitored. The key conceptual concern then is that, in general, sample surveys from large populations cannot measure rare outcomes well. As countries make progress toward eliminating extreme poverty, the accuracy with which samples can measure the increasingly lower rates deteriorates. In particular, sample surveys cannot reliably measure the complete eradication of a phenomenon in a population. In part for this reason, progress is monitored toward 3 percent, which can be credibly measured and is also an ambitious goal.

Map 1.1 shows the countries that have extreme poverty rates in 2015 of less than 3 percent and highlights the countries that have reached the interim 9 percent target set for 2020. In addition to the 84 countries with poverty rates less than 3 percent, there are 23 countries with poverty rates less than 9 percent. Two-thirds of the countries have rates less than 9 percent. Of the remaining one-third, though, the story is different. In about half of these countries, the poverty rate is greater than 30 percent; and, in 11 countries, the poverty rate is greater than 50 percent. The impressive progress in terms of reducing global poverty to 10 percent masks significant variation in success at the country level in reducing extreme poverty.



**MAP 1.1 Extreme Poverty Rate by Country, 2015**



IBRD 43976 | OCTOBER 2018

Source: PovcalNet (online analysis tool), World Bank, Washington, DC, <http://iresearch.worldbank.org/PovcalNet/>.

Map 1.1 also marks countries with extreme poverty rates between 9 and 18 percent in 2015. This subsample has been created using the simplistic assumption that these countries, if they succeed in reducing poverty by 1 percentage point a year, will have poverty rates less than 3 percent by 2030. There are 121 countries with rates at or below 18 percent in 2015, and only 43 countries have extreme poverty rates that are higher than this. A closer examination of these countries provides more evidence as to why the 2030 forecasts indicate that attaining the 3 percent target will be a hard battle.

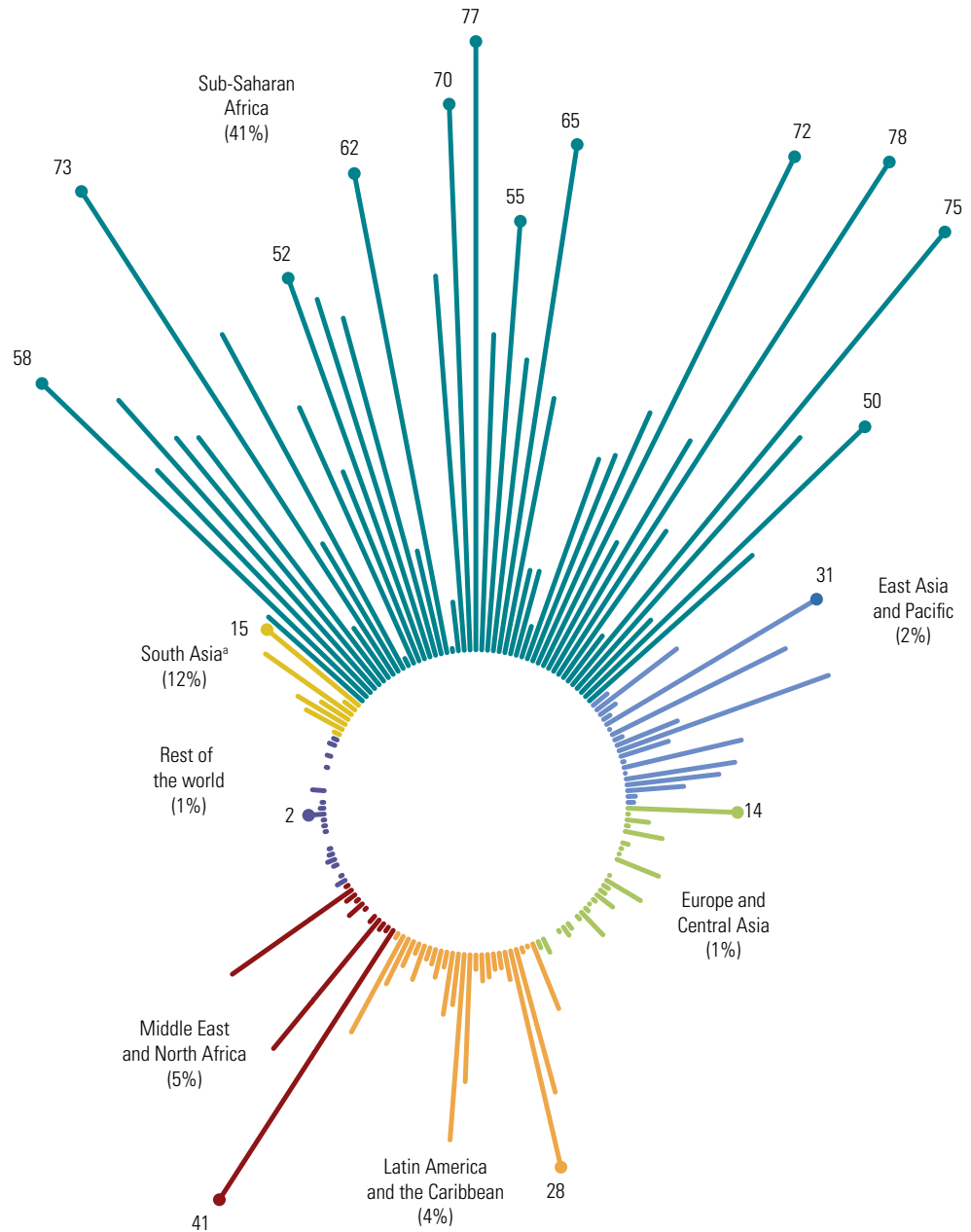
The map reveals that most of the 43 countries with poverty rates above 18 percent are in Sub-Saharan Africa. Three-fourths of Sub-Saharan African countries had poverty rates above 18 percent in 2015, and, of the world's 28 poorest countries (that is, those with the highest rates of poverty), 27 are in Sub-Saharan Africa, all with poverty rates above 30 percent. In 11 countries, all in Sub-Saharan Africa, more than half the population live in extreme poverty (figure 1.5).

In all regions except for Sub-Saharan Africa, the regional average is well below 18 percent, whereas in Sub-Saharan Africa about

41 percent live below the IPL (figure 1.5). It hasn't always been like this. In 1990, the average poverty rate in countries from the East Asia and Pacific region was higher; but, whereas the rates in these countries quickly declined over the years, the decline in the poverty rate in Sub-Saharan Africa was much slower (figure 1.6). Although the percentage of poor in Sub-Saharan Africa has slowly declined, this decline has not been fast enough to counter a growing population—the total population of poor people there has steadily increased from 1990 to 2015 (table 1A.1 in annex 1A).<sup>8</sup> Economic growth and pro-poor policies in Sub-Saharan Africa over the last 25 years have had anemic effects on reducing poverty. For simulations that use historical average growth rates as estimates for future growth, the predicted future path of poverty reduction in Sub-Saharan Africa is inadequate to bring global extreme poverty to below 3 percent.

Although extreme poverty is comparatively much lower in the Middle East and North Africa, the rate increased to 5.0 percent in 2015, up from 2.6 percent in 2013, while the number of poor almost doubled from 9.5 million in 2013 to 18.6 million in 2015.

**FIGURE 1.5 Extreme Poverty Rate by Region and Country, 2015**



Source: PovcalNet (online analysis tool), World Bank, Washington, DC, <http://iresearch.worldbank.org/PovcalNet/>.

Note: Population-weighted regional average shown in parentheses. Each spike represents a country and all countries within a region are the same color. Within each region, spikes are numbered with the poverty rate if they have the highest rate within the region or if their poverty rate is greater than 50 percent.

a. This estimate is based on a regional population coverage less than 40 percent. The criterion for estimating survey population coverage is whether at least one survey used in the reference year estimate was conducted within two years of the reference year.

These recent estimates should be interpreted with caution because of underlying data challenges, but they are, nonetheless, a stark reminder that past gains cannot be taken for granted. To ensure that progress does not un-

ravel, the risks of falling back into economic deprivation must be managed efficiently and collectively (World Bank 2013). If not, the risks can turn into economic, environmental and political crises, as in the Middle East

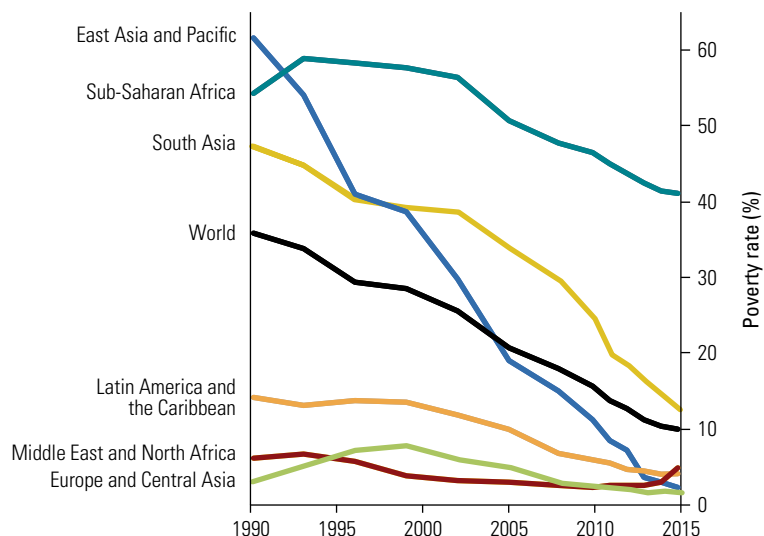
and North Africa, where fragility and conflict in the region are impacting livelihoods and manifesting in the recent spike in poverty.

## Drilling down: The countries with the most poor

Over time, many of the countries with high poverty numbers, including Bangladesh, India, Indonesia, Kenya, and Nigeria, have grown their economies out of low-income-country status and are now middle-income countries. With this growth, most of the extreme poor have also moved from being in low-income to being in middle-income countries, and nearly two-thirds of the world's poor people now reside in middle-income countries (figure 1.7). However, as more countries shift from low- to middle-income status, so does the population share. As of 2015, 5.5 billion people lived in middle-income countries as opposed to about 640 million in low-income countries, explaining why most of the extreme poor—over 400 million—now reside in lower-middle-income countries. As countries develop and per capita GDP increases, poverty rates tend to fall as economic opportunities are expanded. This general trend can be seen in figure 1.7, with the poverty rate declining from 42 percent for low-income countries to 14 percent for lower-middle-income countries, and close to 2 percent for upper-middle-income countries. This situation is promising for continued poverty reduction if more poor people can benefit from economic growth. Conversely, nearly every low-income country is in Sub-Saharan Africa (and a few countries in other regions, namely Afghanistan, Haiti, the Democratic People's Republic of Korea, and Nepal according to the fiscal year 2018 classification), highlighting the need to stimulate and sustain economic growth in low-income countries.

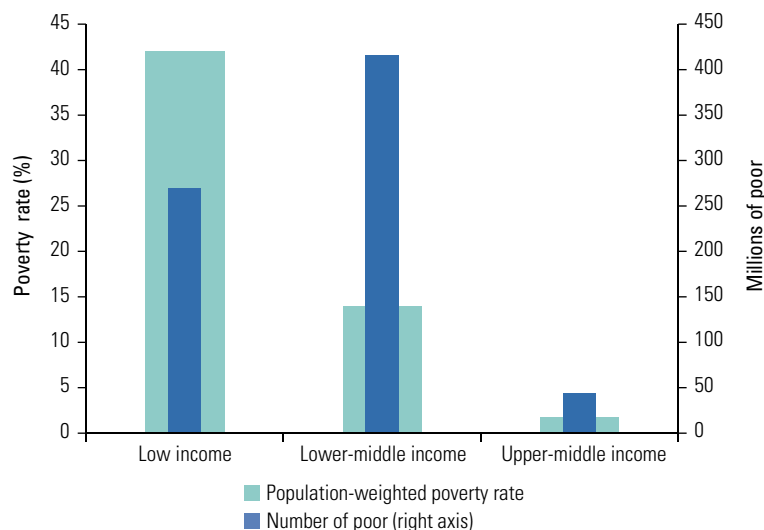
Drilling down a bit further into the countries that have the largest population of poor people, figure 1.8 represents all countries by the share of the global poor in 2015. Half of the people living in extreme poverty in 2015 can be found in just five countries. The most populous countries in South Asia (Bangladesh and India) and Sub-Saharan Africa (Democratic Republic of Congo, Ethiopia,

**FIGURE 1.6 Extreme Poverty, Regional and World Trends, 1990–2015**



Source: PovcalNet (online analysis tool), <http://iresearch.worldbank.org/PovcalNet/>. World Bank, Washington, DC.  
 Note: The regional estimates for Europe and Central Asia in 1990 and South Asia in 1999 and 2015 are based on regional population coverage of less than 40 percent. The criterion for estimating survey population coverage is whether at least one survey used in the reference year estimate was conducted within two years of the reference year. Because of the low coverage, these numbers are censored in PovcalNet.

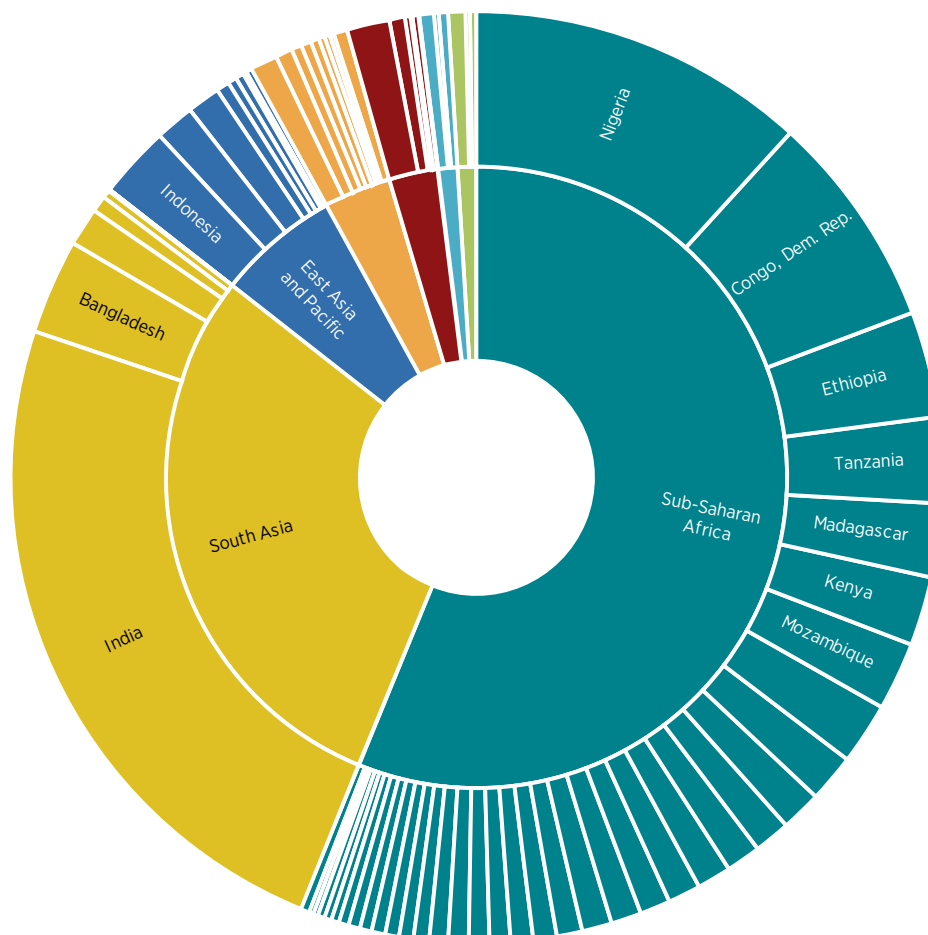
**FIGURE 1.7 Rate and Headcount of Extreme Poor, by Income Group, 2015**



Source: PovcalNet (online analysis tool), <http://iresearch.worldbank.org/PovcalNet/>. World Bank, Washington, DC.

and Nigeria) are the five topping the list of countries with the greatest number of extreme poor. India, with over 170 million poor people in 2015, has the highest number of poor people and accounts for nearly a

**FIGURE 1.8 Global Distribution of the Extreme Poor by Region and Country, 2015**



Source: PovcalNet (online analysis tool), <http://iresearch.worldbank.org/PovcalNet/>. World Bank, Washington, DC.  
 Note: The inner circle is divided proportionally to each region's share of the total population living in extreme poverty. The outer circle is similarly proportionate, but at the country level. The 10 countries with the most extreme poor in the world are listed.

quarter of global poverty. In the South Asia region, four out of five extreme poor reside in India. Despite a poverty rate of 13.4 percent, India's large population of 1.3 billion results in a high number of extreme poor. To achieve the global poverty goal, progress in poverty reduction needs to continue in India.

India's placement as the country with the most poor people in the world is likely to change in the near future. In fact, projections indicate that Nigeria may already have overtaken India. The uncertainty about whether India or Nigeria is currently the country with the most poor people is in part simply because the countries are near a crossing point (having either recently switched or being on

the verge of switching). But the uncertainty about when they have switched or will switch also reflects a series of difficult measurement issues related to global poverty counts. Discussing some of these issues is useful because it can help convey a sense of the level of (im)precision of the poverty counts, and it allows for transparency in the strengths and weaknesses of the data and methods.

In the case of Nigeria, there is one key concern with current poverty estimates. Both the 2015 estimate and the 2018 nowcast for Nigeria are based on household survey data collected in 2009. To estimate extreme poverty in 2015 for Nigeria, the survey mean from the 2009 data was increased at a rate equal to the

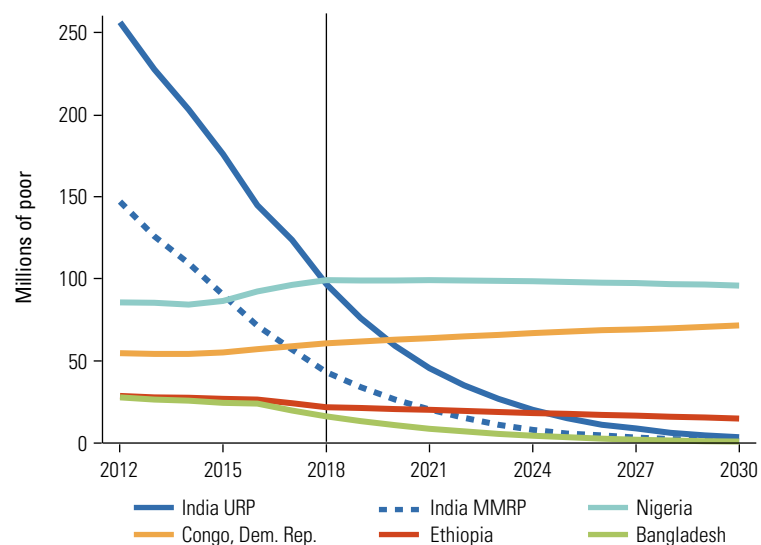
country's GDP per capita growth rate (which is estimated annually) and it is assumed that the level of inequality was unchanged over those six years. Similarly, for 2018, the mean is shifted forward on the basis of nine years of growth estimates and assuming unchanged inequality. Although growth measured in surveys used for poverty estimation is correlated with growth as measured by national accounts data such as GDP, there can be sizeable differences and these differences can have substantial impact on estimated poverty rates. Similarly, if the assumption that the distribution (or inequality) has not changed since 2009 is wrong, this too can lead to substantial error in the estimated poverty rate (Jolliffe et al. 2015).

There are two important measurement issues that also temper confidence in the India poverty estimates. The first is similar to the issue for Nigeria. The last round of poverty data available was collected in 2011–12. For India, however, an additional round of the National Sample Survey (NSS), collected in 2014–15, has the same socioeconomic and demographic information as the 2011–12 round, and both provide data on household expenditures on services and durables. The 2014–15 NSS also contains three additional schedules with consumption data that were designed to test the questionnaire design, but these data are not in the public domain and were not available for analysis. Given the importance of India to the total poverty count, and the availability of the same socioeconomic, demographic, geographic, and limited consumption data at two points in time, a model of consumption was estimated on the basis of the common variables at these two points in time. The change in the characteristics of the population of India is leveraged to estimate how much consumption increased over time (in a manner that avoids assuming that inequality did not change). For the cases of both India and Nigeria, the lack of recent data available for analysis results in poverty estimates that are almost certainly much less precise than many other estimates in this report.

The other measurement issue is that there are many different ways to ask survey respondents about their consumption habits,

and how one asks has a significant effect on how people respond (Backiny-Yetna, Steele, and Djima 2017; Beegle et al. 2012; Gibson, Huang, and Rozelle 2003; Jolliffe 2001). Over the years, changes have been introduced in the recall period in the NSS Consumer Expenditure Survey, the official instrument for estimating poverty in India. The extreme poverty rate for India as reported here is currently based on an old questionnaire design. With the next NSS data that will be made publicly available, it will no longer be possible to estimate consumption using the same questions and the extreme poverty measure will be estimated using a new questionnaire design. The 2018 nowcast estimates for India indicate that switching from the old to the new questionnaire results in a significantly higher level of total consumption that reclassifies more than 50 million people from poor to not poor. Whenever the next round of NSS data is released (using the new questionnaire), backcasted estimates of poverty in 2015 will most likely show significantly fewer people living in extreme poverty (figure 1.9). For more details on these measurement issues for India, see box 1.3.

**FIGURE 1.9 Projections to 2030 for the Five Countries with the Most Extreme Poor in 2015**



Source: PovcalNet (online analysis tool), <http://iresearch.worldbank.org/PovcalNet/>. World Bank, Washington, DC, World Development Indicators; World Economic Outlook; Global Economic Prospects. Note: India URP (Uniform Reference Period) relies on poverty estimates and projections based on a uniform recall period; India MMRP (Modified Mixed Reference Period) relies on poverty estimates and projections based on the modified mixed recall period.

### BOX 1.3 India: Issues with the 2015 Poverty Estimate and 2030 Forecasts

The 2015 estimate, 2018 nowcast, and 2030 forecasts for India merit special mention given both the importance of India to the global poverty count and the particularly challenging measurement issues. One source of the problem arises from the fact that only a subset of the 2014–15 survey data was released by the government. There are two key issues, the first of which is linked to how survey data from 2011–12 and 2014–15 are used to estimate poverty in India for 2015. The second issue is linked to a change in how India measures consumption, which is the foundation of the poverty estimate.

#### *2015 poverty estimates for India: Imputing consumption*

The usual methodology for lining up countries to the reference year (for this report, 2015) is based on two assumptions: the survey mean grows at the same rate as HFCE or GDP per capita, and there is no change in the distribution of consumption. These assumptions may be reasonable when adjusting over a short period of time, but they become problematic as the distance between the survey year and the lineup year increases (Jolliffe et al. 2015).

The latest survey with official poverty estimates for India was conducted in 2011–12, so a 2015 lineup would imply adjusting the survey forward four years. With an HFCE growth rate of 21 percent in India from 2011–12 to 2015, the welfare aggregate for all

households in the 2011–12 survey would be given a growth rate of 21 percent, and poverty in 2015 would be estimated using this adjusted welfare vector. Given India's importance for the global poverty rate, and the availability of a newer survey (albeit without a full consumption aggregate), it was felt that this extrapolation method needed to be cross-validated.

For this reason, the 2015 poverty estimate for India is based on survey-to-survey imputation method to estimate the growth rate in HFCE. The method uses the 2014–15 National Sample Survey (NSS) that collected consumption information on only a small subset of items but included questions on several correlates of household consumption like household size, age composition of the household, caste status, and labor market indicators. In the first step, a model of the relationship between per capita household consumption and household characteristics is developed using the NSS data from 2004–5, 2009–10, and 2011–12. These surveys have the full consumption questions as well as the variables used in the model. In the second step, the estimated relationship is imposed on the 2014–15 data to predict household consumption and poverty status. See Newhouse and Vyas (2018) for more details on the modeling exercise.

PovcalNet uses the poverty rates at US\$1.90 estimated by Newhouse and Vyas (2018) (10.0 percent for urban and 16.8 percent for rural

areas) to calibrate the growth rate in survey mean consumption between 2011–12 and 2014–15. The fraction of growth from national accounts that is passed through to growth in the survey mean implied by this procedure is 55.9 percent for urban India and 73.3 percent for rural India. Earlier projections had used a pass-through of 57 percent (for both urban and rural areas), which was based on the observed historical relationship between the survey and national accounts growth rates (Jolliffe et al. 2015, chapter 1, footnote 14; Ravallion 2003).

The new method used for India marks the first time the World Bank is using inputs from survey-to-survey imputation methods. Thus, there can be a variation in the poverty estimate obtained from the new method and the conventional HFCE-based method. The 2015 extreme poverty rate for India with the imputation-based growth rate is 2.5 percentage points higher than with the HFCE growth rate (13.4 percent versus 10.9 percent).

In the coming years, when countries do not have surveys with full consumption modules, but have other smaller surveys with partial coverage, similar methods may be applied to minimize reliance on the two assumptions implicit in the HFCE approach. Household surveys with full consumption modules are undoubtedly the preferred approach, and only in exceptional cases will the imputation approach be relied upon.

The new imputation approach implies that the poverty estimate

*(continued)*

With the cautions in mind that consumption in 2015 for both India and Nigeria is based on projections, not direct enumerations of consumption from recent household surveys, the nowcast for 2018 suggests that

Nigeria is now the country with the most poor people in the world (figure 1.9). When examining a scenario where the consumption measure for India is based on the new questionnaire rather than the old one, the esti-

### **BOX 1.3 India: Issues with the 2015 Poverty Estimate and 2030 Forecasts** *(continued)*

for India in 2013 needs to also be updated. It has been revised from 16.5 percent to 17.8 percent. The new estimate is based on an average of the estimate from the 2011–12 survey and the 2014–15 survey, where, prior to averaging, the estimates have been lined up to 2013 using the HFCE-based approach described above. This lineup is based on a shorter time period where the two assumptions are less problematic.

#### *Changes in how consumption data are collected: Questionnaire design*

Recall period affects reported consumption through two main channels: memory decay and telescoping. A longer recall period is better at encompassing expenditure on infrequently purchased items, but it can lead to underreporting if respondents forget about the past purchases. Despite lower average consumption, measured poverty might be lower under the longer recall period because it captures the purchases of low-frequency items of households in the lower parts of the distribution. Short recall periods can mitigate underreporting but can lead to telescoping, where respondents mistakenly report the consumption that took place outside of the reference period.

Until 1993–94, the consumption data in India were collected using the Uniform Reference Period (URP)

method under which questions on household expenditure data for all items were asked for the previous 30-day period. After a series of experiments in the “thin” survey rounds from 1994–95 to 1998, the Mixed Reference Period (MRP) method was introduced in the 1999–2000 survey round in which expenditure on food, *pan*, and tobacco was collected using 7-day and 30-day recall periods, and the expenditure data for five nonfood items—clothing, footwear, durable goods, education expenses, and institutional medical expenses—were collected using a 365-day recall period (Deaton and Kozel 2005).

With the 2011–12 round of the NSS, the Modified Mixed Reference Period (MMRP) was introduced where the recall period was set at 7 days for perishable items, 365 days for the five low-frequency items, and 30 days for the remaining items (Government of India, Planning Commission 2014). For the sake of comparability over time, the World Bank global poverty count has been based on consumption measures derived from the URP instrument. With the next NSS Consumption and Expenditure Survey, India is no longer enumerating consumption with the URP. This means that the global poverty count produced by the World Bank will soon no longer be based on the URP for India and a switch to the MMRP will occur.

The choice of method can significantly affect total household consumption and poverty estimates. The official 2004–05 poverty rate for India with the URP-based consumption data was 27.5 percent. The corresponding figure for the MRP-based consumption data was 21.8 percent (Government of India 2007). These changes did not, however, affect the estimates of extreme poverty because the World Bank continued to use the URP-based aggregate for international poverty monitoring to maintain comparability with historical estimates. The poverty estimates and forecasts for India presented here, based on MMRP (figure 1.9), similarly indicate a significant decline in the number of poor people. An important caveat, however, is that the difference in the count of extreme poor as measured by URP and MMRP dissipates with economic growth.

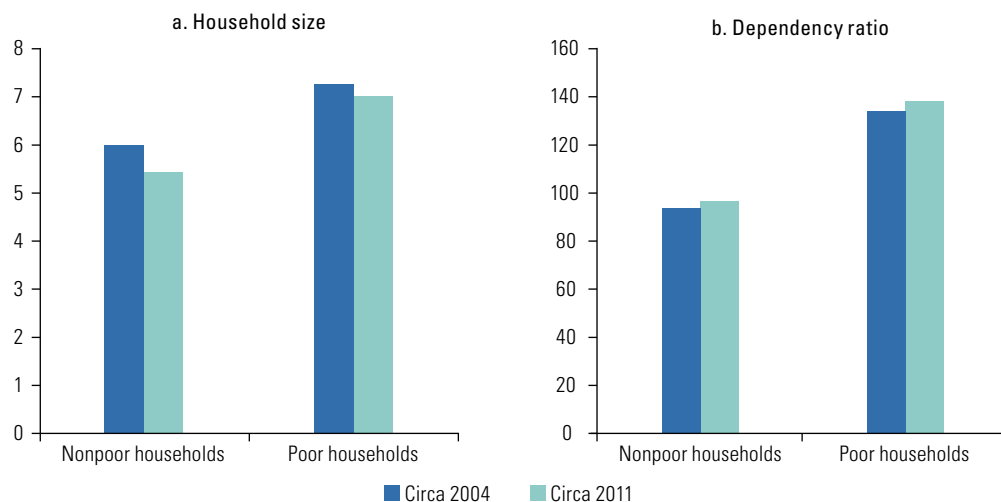
In the most recent “thick” round of the NSS Consumer Expenditure Survey, India has phased out the URP as well as the MRP questions, which means extreme poverty can no longer be tracked using the URP-aggregate. The next update of global poverty will likely show a sizeable drop in the extreme poverty, both because of economic growth and because of India’s switch to the MMRP-based consumption aggregate.

mates indicate that Nigeria overtook India in 2015 as the country with the most poor people in the world. These projections are based on old surveys and strong assumptions, but, if the historically observed patterns in India and Nigeria continue, Nigeria either already is or soon will be the country with the most people living in extreme poverty.

### **Drilling down: Africa and fragile and conflict-affected situations**

In 2002, Sub-Saharan Africa was home to less than a quarter of the world’s extreme poor, whereas, in 2015, more extreme poor lived in the region (413 million) than everywhere else in the world combined. If this trend con-

**FIGURE 1.10 Household Size and Dependency Ratio in Sub-Saharan Africa**



Source: World Bank Africa Poverty database.

Note: The median years for the base period and the terminal period are 2004 and 2011, respectively. Dependency ratio is the ratio of dependents (people younger than 15 or older than 64) to the working-age population (ages 15–64).

tinues as the forecasts suggest, extreme poverty will soon become a predominantly African phenomenon. An important first step in tackling poverty in the region is to better understand the factors associated with poverty in Sub-Saharan Africa.

One such factor is the demographic structure of the household. In many parts of the world, the poor generally live in larger households and have more economically dependent members per working-age adult (Castaneda et al. 2016). In many regions of the world, the ratio of dependent household members to working-age adults is declining. However, this is not the case in Sub-Saharan Africa. Household surveys from the region show no appreciable decrease in average household size or in the dependency ratio over the 2000s (figure 1.10).

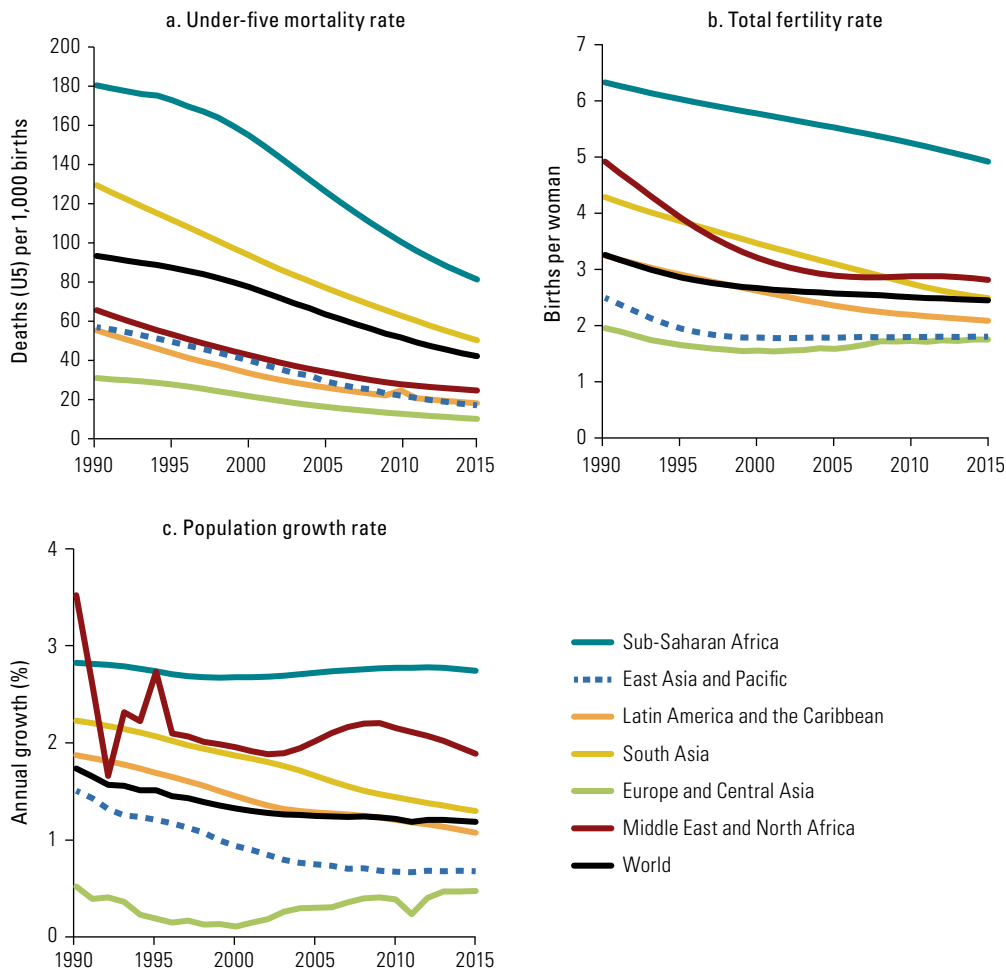
The good news of a declining under-5 mortality rate in Sub-Saharan Africa, and elsewhere in the world (figure 1.11, panel a), has combined with a relatively small drop in the total fertility rate to keep Sub-Saharan Africa's population growing at a higher rate than that of every other region in the world (figure 1.11, panels b and c) (Canning, Raja, and Yazbeck 2015; Groth and May 2017). Although poverty rates have declined slightly in

the region, the fast rate of population growth has led to the increase in the total population of poor people in Sub-Saharan Africa. These demographic features of the region will continue to pose a challenge for poverty reduction, a point that was anticipated by the first World Development Report on poverty (World Bank 1990).

A second contributing factor for the slow decline in extreme poverty in Sub-Saharan Africa is that growth in this region has been less effective in reaching the poor than growth in other regions. One indicator of this is the region's low growth elasticity of poverty. For every percentage increase in GDP per capita, poverty in a typical non-African developing country falls by 2 percent, whereas in a typical African country it falls by only 0.7 percent (Christiaensen, Chuhan-Pole, and Sanoh 2013). There is a caveat to the elasticity comparison—the level of poverty is much higher in Sub-Saharan Africa so a smaller percentage change in a higher level can still be a significant reduction in poverty—but the general point is that growth in Sub-Saharan Africa has been less effective in reducing poverty than elsewhere. Some of the leading explanations for this ineffectiveness of growth in reducing poverty include the overall high levels



**FIGURE 1.11 Under-5 Mortality, Fertility, and Population Growth in Sub-Saharan Africa**



Source: World Development Indicators (<http://databank.worldbank.org/data/source/world-development-indicators>).

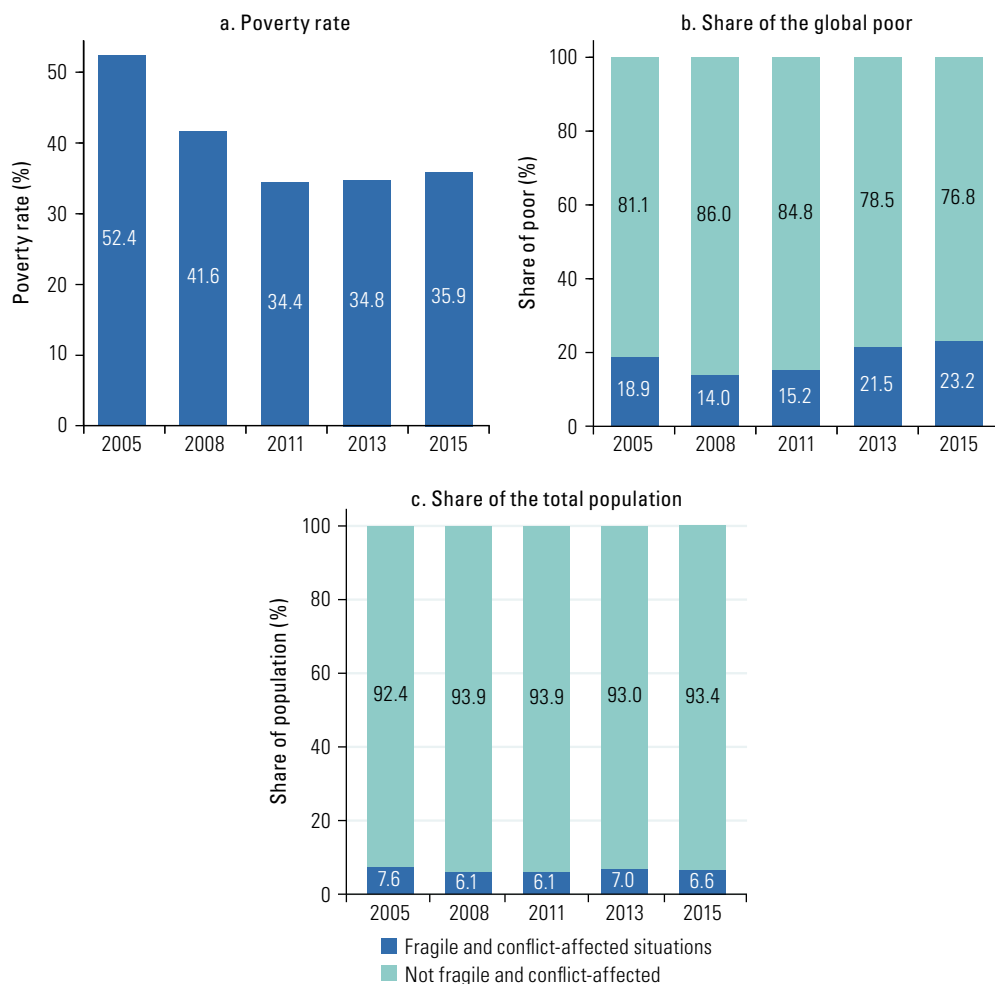
of inequality in several countries and growth that is predominantly in capital-intensive sectors like natural resource extraction.

As the global poverty rate declines, there is concern that extreme poverty will become a phenomenon increasingly associated with institutional fragility and conflict. It is also the case that most people (54 percent) living in fragile and conflict-affected situations (FCS) in 2015 are in Sub-Saharan Africa.<sup>9</sup> To see if there is evidence that poverty is already beginning to pool in FCS, trends in the poverty rate and the share of the global poor living in fragile situations are analyzed.<sup>10</sup> Figure 1.12, panel a, shows the poverty rate in economies in FCS from 2005 to 2015.<sup>11</sup>

After falling sharply between 2005 and 2011, the poverty rate has since gone up: in 2015, the poverty rate in 35 economies in FCS was 35.9 percent, up from a low of 34.4 percent in 2011. The share of the global poor living in FCS has risen steadily since 2010, culminating in 23 percent of all poor people in 2015 (figure 1.12, panel b).<sup>12</sup>

This rise has not come about because populous countries have joined the ranks of fragile situations, except for a small drop between 2005 and 2008, the share of the world population living in fragile situations has stayed level through much of the period (figure 1.12, panel c). Were more countries to become fragile, the goal of rooting out global poverty

**FIGURE 1.12 Concentration of Extreme Poverty in Fragile and Conflict-Affected Situations**



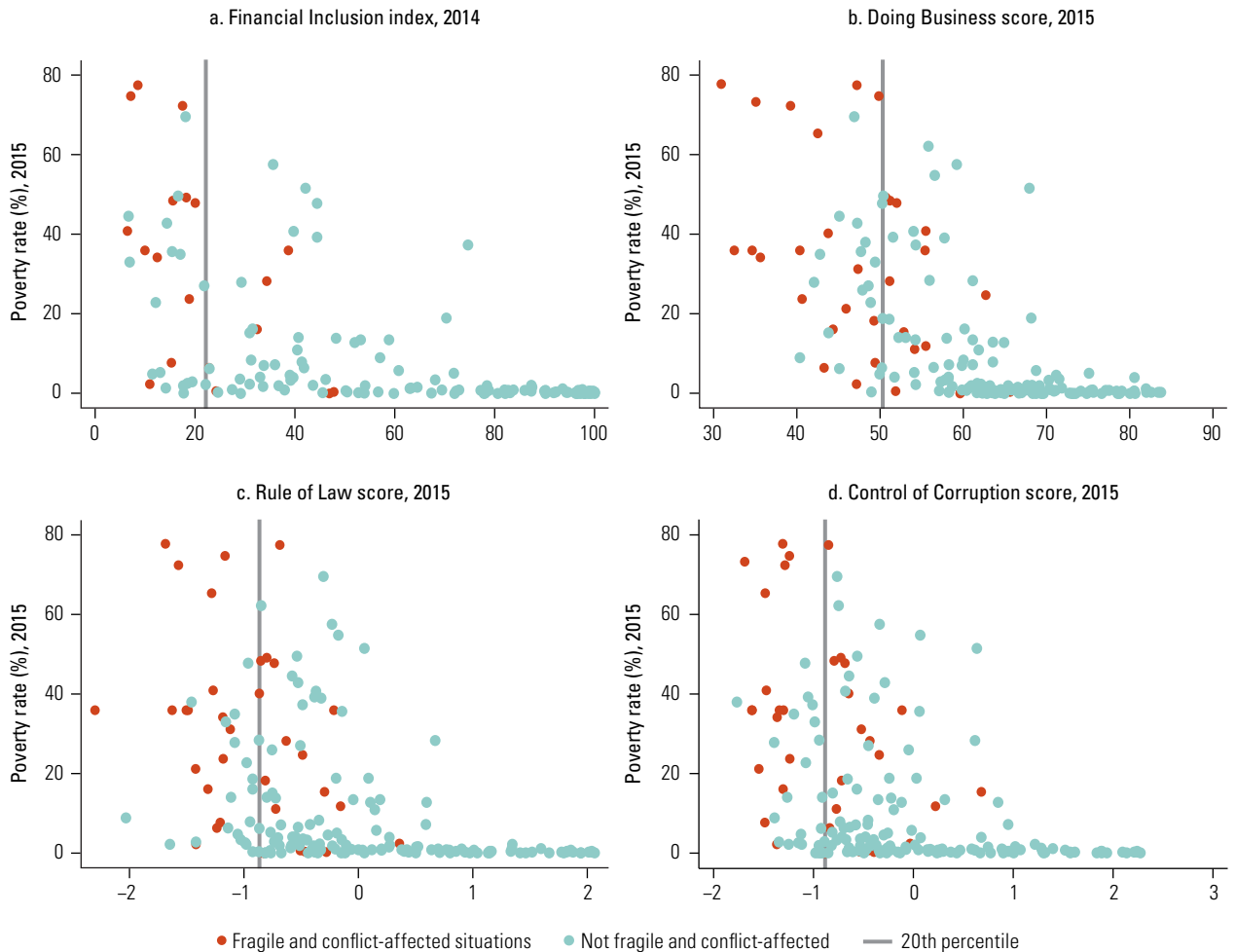
Source: PovcalNet (online analysis tool), <http://iresearch.worldbank.org/PovcalNet/>. World Bank, Washington, DC. Harmonized List of Fragile Situations (<http://www.worldbank.org/en/topic/fragilityconflictviolence/brief/harmonized-list-of-fragile-situations>)  
 Note: See appendix A for more details on the list of countries in fragile and conflict-affected situations.

would only get more challenging. Panels b and c together also reveal the “poverty burden” borne by the economies in FCS: they have 6.6 percent of the global population but 23 percent of the poor, which is 3.5 times higher than would be expected if poverty were equally prevalent everywhere. Despite this significant pooling of poverty, these estimates almost certainly undercount the extent of poverty in FCS for several reasons, including technical measurement reasons such as missing data on refugees and displaced persons (see appendix A).

Fragility comprises many elements, and countries that are in fragile situations are characterized by policy failures and institutional weaknesses in multiple dimensions

(World Bank 2017a).<sup>13</sup> For illustration, figure 1.13 plots the performance of countries on a few fundamental indicators of economic and institutional quality against poverty rates. In general, there is a negative correlation between poverty rates and the strength of institutions; countries with high poverty rates have lower financial penetration (panel a; correlation =  $-0.59$ ), poorer business climate (panel b; correlation =  $-0.62$ ), weaker rule of law (panel c; correlation =  $-0.46$ ), and higher perceived corruption (panel d; correlation =  $-0.43$ ). Notably, fragile situations (marked in red) are often among the poorest performers in these areas, falling in the bottom quintile of the distribution. They must make signifi-

**FIGURE 1.13** Fragile Situations Perform Poorly in Multiple Constituent Components of Fragility



Source: PovcalNet (online analysis tool), <http://iresearch.worldbank.org/PovcalNet>; World Bank, Washington, DC. The Global Index Database (<https://globalindex.worldbank.org/>); Doing Business (<http://www.doingbusiness.org/>); and Worldwide Governance Indicators (<http://info.worldbank.org/governance/wgi/index.aspx#home>).  
 Note: Financial Inclusion Index is the proportion of individuals with a bank account in 2014. Doing Business indicator is the "Distance to Frontier" score for 2014. The 2015 Rule of Law Indicator and the Control of Corruption Indicator are drawn from the Worldwide Governance Indicators (WGI) project. These indicators are used as guideposts to set the World Bank's CPIA ratings (<http://pubdocs.worldbank.org/en/600961531149299007/CPIA-Criteria-2017.pdf>).

cant progress on several constituent components of fragility simultaneously to relieve the constraints to economic growth and poverty reduction.

### Socioeconomic and demographic profile of global poverty

To devise an appropriate poverty reduction strategy, it is not enough to merely know how many people are poor. In order to choose the right poverty reduction policies, place devel-

opment programs in proper locations, and target the beneficiary population accurately, it is critically important to know where the poor live, what conditions they live in, and how they earn a living. This description of the poor is frequently done within each country, informing country dialogue on how best to improve the well-being of the less well off in society. But researchers and policy makers can also learn a great deal by examining a global profile of the poor. This examination can aid the international development community to better target poverty alleviation

programs as well as areas of well-being requiring emphasis.

The profile of the poor is based on harmonized household surveys from 91 countries in the Global Monitoring Database (GMD).<sup>14</sup> It is an update of a previous profile that was based on the harmonized data for 89 countries for 2013.<sup>15</sup> The sample used for this profiling covers about 76 percent of the world's population and 86 percent of the extreme poor in 2015. The data demands for the global poverty profile are more stringent than that for the global poverty update. It requires harmonization of additional variables like age, gender, education, and sector of work from diverse household surveys, which is why the poverty profile is available for only a subset of countries and for an earlier date.

Globally, extreme poverty continues to be disproportionately and overwhelmingly rural. The poverty rate in rural areas (17.2 percent) is more than three times as high as that in urban areas (5.3 percent); with approximately 54 percent of the world's population, rural areas account for 79 percent of the total poor. Rural poverty is strongly associated with the sector of employment; the extreme poverty rate is higher among agricultural workers, and they constitute almost two-thirds of the extreme poor. But nonfarm employment does not guarantee an escape from poverty; a significant share of poor adults in both urban and rural areas is employed in nonagricultural sectors.

A stronger correlation is observed between poverty and educational achievement. Of the adults with no education, more than a fifth are in poverty. There is a premium to having had even some schooling: the poverty rate more than halves for adults with incomplete primary education, whereas poverty is all but absent among adults with some tertiary education. Given that intergenerational mobility in education is low in low- and middle-income countries, there is a danger that this pattern will carry over to the next generation as well (Narayan et al. 2018). Increasing labor productivity in agriculture and improving human capital to facilitate labor migration into high-productivity sectors and locations are key to poverty reduction.

The fertility rate is usually higher among the poor. As a result, poor households are usually large and have many children. There are on average 7.7 members and 3.5 children under the age of 14 in the world's extremely poor households. Just under a fifth of children under the age of 14 live in poverty, and, despite representing only about a quarter of the population, they make up more than two-fifths of the absolute poor (table 1.1). There is suggestion of increasing concentration of poverty among children, with children under the age of 14 constituting a marginally larger share of the poor in 2015 (45.7 percent) than in 2013 (44.2 percent).<sup>16</sup> Children who grow up in poverty acquire less human capital because of inadequate or low-quality schooling and undernutrition. This makes childhood poverty especially pernicious because it perpetuates intergenerational poverty.

The current state of data limits the ability to understand the prevalence of poverty by gender and age. Household surveys collect information on total household consumption. They typically do not differentiate how resources are allocated within a household. For analytical purposes, it is assumed that all household members have equal needs and that total consumption is distributed equally within a household. The equal distribution assumption distorts the picture of poverty if there is inequality within households. For example, the profile shows that males and females are equally likely to be in poverty. Chapter 5 takes up this issue in detail and proposes methodological changes in house-

**TABLE 1.1 Age and Gender Profile of the Extreme Poor, 2015**

	Poverty rate (%)	Share of the poor (%)	Share of the population (%)
<b>Age group</b>			
0–14	19.3	45.7	27.4
15–24	11.7	16.9	16.6
25–34	9.4	13.0	15.9
35–44	8.7	10.1	13.4
45–54	6.4	6.4	11.6
55–64	5.9	4.2	8.2
65 and up	5.9	3.6	6.9
Total	11.5	100.0	100.0
<b>Gender</b>			
Male	11.7	50.3	49.6
Female	11.4	49.7	50.4

Source: Estimates based on the harmonized household surveys in 91 countries, circa 2015, GMD (Global Monitoring Database), Global Solution Group on Welfare Measurement and Capacity Building, Poverty and Equity Global Practice, World Bank, Washington, DC.

hold surveys to capture the intrahousehold distribution of consumption. In the meantime, differences in poverty by gender and age will be informed by assuming someone is poor if he or she lives in a poor household.

The poor lack not just income. Poverty also materializes as low educational attainment, poor health and nutrition outcomes, exposure to physical insecurity and natural hazards, and substandard living conditions. Globally, a large share of extreme poor households has no adult member with primary schooling, and in many households at least one child of school age (up to grade 8) is out of school (table 1.2). The poor are also poorly served in essential services like acceptable standards of drinking water, adequate sanitation facilities, and electricity (table 1.2).

Low levels of human capital and poor access to basic services undermine labor productivity of the poor, often their most important source of income, trapping them in income poverty. Increasingly, however, poverty is understood as encompassing more than just income. Sufficient education, good health, a safe living environment, and provision of basic services are desired for their intrinsic value, beyond their instrumental value in raising income. Chapter 4 takes a panoramic view of poverty as the inability to reach a sufficiency threshold in monetary terms as well as in a wide range of nonmonetary dimensions that directly affect an individual's well-being.

## Conclusions

Between 1990 and 2015, the world made steady progress toward the target of reducing the number of people living in extreme poverty to less than 3 percent globally by 2030. The extreme poverty rate dropped on average 1 percentage point every year, falling from 35.9 percent in 1990 to 10.0 percent in 2015. As a result of this decline, there were well over a billion fewer people living in poverty despite a global population that had increased by more than 2 billion people during this period. With the estimated extreme poverty rate at 10 percent in 2015, the target of 3 percent by 2030 could be attained even if the rate of poverty reduction was cut in half. That is to say, if instead of continuing to de-

**TABLE 1.2 Education and Access to Services among the Extreme Poor and Nonpoor Households**

	Share of households (%)	
	Poor	Nonpoor
No adult member has completed primary education	53.1	12.2
At least one school-age child (up to grade 8) is out of school	22.8	3.4
Household does not have access to limited-standard source of drinking water	37.0	8.6
Household does not have access to limited-standard sanitation facilities	66.8	16.3
Household does not have access to electricity	67.8	7.1

*Source:* Estimates based on the harmonized household surveys in 119 countries, circa 2013, GMD (Global Monitoring Database), Global Solution Group on Welfare Measurement and Capacity Building, Poverty and Equity Global Practice, World Bank, Washington, DC.

cline by a percentage point a year the global poverty rate declined by half a percentage point a year, the world would still meet the 3 percent target. Despite this scope for the pace to significantly slacken, all forecasts for 2030 considered in this chapter that are based on countries or regions growing in line with their recent historic performance indicate that the world will fall well short of the target.

Part of the explanation for the deceleration in poverty reduction is that not all regions have shared in the global economic growth of the last quarter century, nor have all regions succeeded in ensuring that the poor have fully shared in the benefits of growth. Sub-Saharan Africa has had inadequate levels of growth and inadequate poverty reduction from growth, and this has resulted in the increase of the total number of people in this region living in extreme poverty. In 1990, 278 million people in Sub-Saharan Africa lived in extreme poverty; by 2015, this increased to an estimated 413 million people. Forecasts based on historic average growth rates predict that the number of people living in extreme poverty in the region will remain above 400 million in 2030.

A related reason why poverty reduction is slowing is that previously progress rested heavily on the success of the countries of East Asia and Pacific and South Asia in reducing the total number of people living in extreme poverty. The countries of East Asia and Pacific have experienced remarkable reductions in extreme poverty. In 1990, there were 987 million people living in extreme poverty in this region, and this num-

ber dropped to 47 million people by 2015. On average, each year ended with about 38 million fewer people living in extreme poverty in the East Asia and Pacific region. But now, with the prevalence of extreme poverty below 3 percent, and the number of poor in this region contributing only about 6 percent to the total population of poor, there are few remaining gains to be made in this region in terms of having a significant effect in reducing the global poverty rate.

Although there are still many extreme poor in South Asia, a similar story will most likely soon occur there, and this is good news. In 1990, more than a half billion people in South Asia lived in extreme poverty; by 2015, this dropped to 216 million people. A relatively large portion of the extreme poor still live in South Asia, but the forecasts indicate (combined with the anticipated change in how consumption is measured in India) that the total number of poor there is rapidly declining. The success in reducing extreme poverty in many regions of the world means that the majority of the remaining gains in poverty reduction must come from the countries of Sub-Saharan Africa.

The unevenness of the progress in global poverty reduction brings into focus the relative strengths and weaknesses in how progress toward the goal of a world free of poverty is monitored. In various forecasts assuming that countries continue to grow in line with their recent performance (or with the average historic growth rate of their region), av-

erage poverty rates in all regions of the world except for Africa are below 2 percent; however, the forecasted average extreme poverty rate for Sub-Saharan Africa is above 25 percent. Even in a forecast based on an assumed real growth rate of 8 percent, the 3 percent global target is met but extreme poverty in Sub-Saharan Africa is in double digits (13.4 percent).

This sort of outcome, where extreme poverty is eliminated throughout the world except in one region where it is in double digits certainly does not portray a picture of a world free of poverty. This, then, is one of the key messages of this report: it is time to go beyond the focus on bringing down the average global poverty rate to 3 percent to reach the goals of eradicating extreme poverty and ensure that all share in the benefits of economic development.

A key point of this report is that the view of poverty needs to be broadened. Now that the extreme poverty rate is less than 3 percent in half the countries of the world and is becoming increasingly concentrated, finishing the job will require constructing a more detailed and complete picture of what is meant by a world free of poverty. To do this, the next chapters in this report go beyond extreme income poverty to start the process of monitoring poverty *in all its forms*. New measures introduced in this report allow one to better monitor poverty in *all countries*, in *multiple aspects of life*, and for *all individuals* in every household.

## Annex 1A

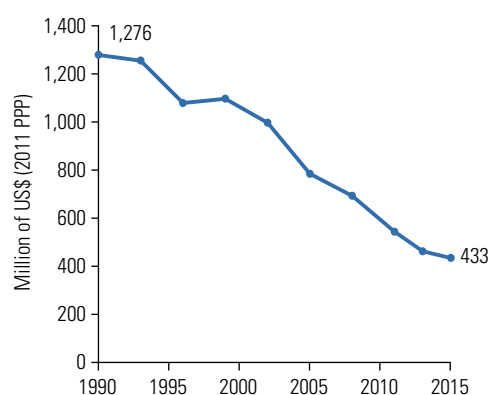
# Historical global and regional poverty estimates

This annex contains tables of historical poverty rates at the global, regional, and country levels. Poverty rates do not speak to the distribution of consumption (or income) among the poor, meaning that the poor may fare worse in certain countries than in others. For this reason, the poverty rates are complemented with other measures of poverty: the poverty gap, the poverty gap divided by the poverty rate, and the squared poverty gap (Foster, Greer, and Thorbecke 1984).

The poverty gap measures the average distance to the poverty line, where people above the poverty line are given a distance of zero. This measure reflects both the share of poor and the average daily consumption of the poor, but expressed as the average shortfall *among the entire population*. If two countries have the same poverty rate, but the poor in the first country have a daily consumption of US\$1.50, whereas in the other they have a daily consumption of US\$1.80, then the poverty gap will indicate a higher depth of poverty in the first country. When the poverty gap is divided by the poverty rate, the resulting number shows the average distance to the poverty line, or average consumption shortfall among the poor. If the average consumption shortfall of the poor is 0.25, then poor individuals on average consume 25 percent less than the value of the IPL, or US\$1.43 per day  $((1-0.25)*IPL)$ .

Since 1990, both of these complementary measures of poverty have improved. The total consumption gap of the poor (the sum of all consumption shortfalls of the poor) shrank from US\$1,276 million (2011 PPP) in 1990 to US\$433 million (2011 PPP) in 2015 (figure 1A.1). This improvement reflects both that the share of people living in extreme poverty has decreased and that the average income of the poor has increased over this time interval.

**FIGURE 1A.1** Global Total Consumption Gap of the Extreme Poor, 1990–2015



Source: PovcalNet (online analysis tool), World Bank, Washington, DC, <http://iresearch.worldbank.org/PovcalNet/>.

Note: PPP = purchasing power parity.

Although both the poverty gap and the poverty gap divided by the poverty rate are sensitive to the average level of consumption (or income) among the poor, they do not account for inequality among the poor. The squared poverty gap—which is the average squared distance to the poverty line, where people above the poverty line have a distance of zero—is sensitive to inequality among the poor. Suppose that two countries have the same poverty rate, and the poor in both countries on average consume US\$1.50 daily. Suppose further that, in one of the countries, all the poor consume US\$1.50, whereas the other country has many people consuming much less. The squared poverty gap measures this latter country, with greater inequality among the poor, as having more severe form of poverty.

An issue to keep in mind with these complementary poverty measures is that they are more sensitive to whether poverty is measured with consumption or income. Whereas

poverty estimates based on income can be zero—and even negative—in a given period because of negative income shocks, they rarely get close to zero when consumption is used. This makes it more likely that a country

using income is faring poorly in these complementary measures, and it makes it difficult to compare the depth of poverty across countries using consumption and income (see appendix A for more discussion on this).

**TABLE 1A.1 Global and Regional Extreme Poverty, 1990–2015**

**a. Global extreme poverty, 1990–2015**

Year	Poverty rate (%)	Poverty gap (%)	Squared poverty gap	Poor (millions)	Population (millions)
1990	35.9	12.7	6.1	1,894.8	5,284.9
1993	33.9	11.9	5.8	1,877.5	5,542.9
1996	29.4	9.8	4.7	1,703.2	5,792.6
1999	28.6	9.5	4.5	1,728.6	6,038.1
2002	25.6	8.3	3.9	1,609.9	6,276.8
2005	20.7	6.3	2.9	1,352.2	6,517.0
2008	18.1	5.4	2.4	1,223.2	6,763.7
2011	13.7	4.1	1.9	963.0	7,012.8
2013	11.2	3.4	1.6	804.2	7,182.9
2015	10.0	3.1	1.5	735.9	7,355.2

**b. Extreme poverty rates, by region, 1990–2015**

Percent

Region	1990	1993	1996	1999	2002	2005	2008	2011	2013	2015
East Asia and Pacific	61.6	54.0	41.1	38.8	29.9	19.1	15.1	8.6	3.6	2.3
Europe and Central Asia	2.9 <sup>a</sup>	5.0	7.2	7.8	5.9	4.9	2.8	2.1	1.6	1.5
Latin America and the Caribbean	14.2	13.2	13.8	13.6	11.8	9.9	6.9	5.6	4.6	4.1
Middle East and North Africa	6.2	6.7	5.8	3.8	3.2	3.0	2.7	2.7	2.6	5.0
South Asia	47.3	44.9	40.3	39.3 <sup>a</sup>	38.6	33.7	29.5	19.8	16.2	12.4 <sup>a</sup>
Sub-Saharan Africa	54.3	58.9	58.2	57.7	56.4	50.7	47.8	45.1	42.5	41.1
Sum of regions	43.1	40.6	35.1	34.0	30.4	24.5	21.3	16.1	13.1	11.6
Rest of the world	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.7
World	35.9	33.9	29.4	28.6	25.6	20.7	18.1	13.7	11.2	10.0

**c. Number of extreme poor, by region, 1990–2015**

Millions

Region	1990	1993	1996	1999	2002	2005	2008	2011	2013	2015
East Asia and Pacific	987.1	902.0	712.9	695.9	552.5	361.6	292.8	169.6	73.1	47.2
Europe and Central Asia	13.3 <sup>a</sup>	23.4	33.8	36.7	27.6	22.9	13.3	9.8	7.7	7.1
Latin America and the Caribbean	62.6	61.3	67.7	69.7	63.2	54.9	39.9	33.8	28.0	25.9
Middle East and North Africa	14.2	16.6	15.3	10.6	9.4	9.4	8.8	9.2	9.5	18.6
South Asia	535.9	542.1	518.0	534.4 <sup>a</sup>	554.3	510.4	467.0	328.0	274.5	216.4 <sup>a</sup>
Sub-Saharan Africa	277.5	327.3	350.7	376.1	398.0	387.7	396.4	406.4	405.1	413.3
Sum of regions	1,890.5	1,872.7	1,698.3	1,723.5	1,605.0	1,346.9	1,218.1	956.9	797.8	728.5
Rest of the world	4.3	4.9	4.9	5.0	4.9	5.3	5.1	6.2	6.4	7.3
World	1,894.8	1,877.5	1,703.2	1,728.6	1,609.9	1,352.2	1,223.2	963.0	804.2	735.9

Source: PovcalNet (<http://iresearch.worldbank.org/PovcalNet/>), World Bank.

Note: Sum of regions was previously referred to as *developing world*.

a. This estimate is based on a regional population coverage of less than 40 percent. The criterion for estimating survey population coverage is whether at least one survey used in the reference year estimate was conducted within two years of the reference year.



**TABLE 1A.2 Extreme Poverty, by Economy, 2015**

<b>Economy</b>	<b>Survey year(s)</b>	<b>Number of poor (millions)</b>	<b>Poverty rate (%)</b>	<b>Poverty gap (%)</b>	<b>Poverty gap/rate (%)</b>
Albania	2012	0.0	0.9	0.2	20.0
Algeria	2011.17	0.1	0.4	0.1	37.1
Angola	2008.5	7.8	27.9	8.7	31.2
Argentina	2014 and 2016	0.3	0.6	0.3	45.3
Armenia	2015	0.1	1.9	0.4	18.8
Australia	2010	0.1	0.5	0.3	62.0
Austria	2015	0.1	0.8	0.5	72.0
Azerbaijan	2005	0.0	0.0	0.0	
Bangladesh	2010 and 2016	24.4	15.2	2.8	18.1
Belarus	2015	0.0	0.0	0.0	
Belgium	2015	0.0	0.0	0.0	
Belize	1999	0.0	13.9	6.0	43.1
Benin	2015	5.2	49.6	22.4	45.1
Bhutan	2012 and 2017	0.0	1.7	0.3	16.3
Bolivia	2015	0.7	6.4	2.8	44.3
Bosnia and Herzegovina	2015	0.0	0.2	0.1	30.0
Botswana	2009.25	0.3	12.8	3.7	29.3
Brazil	2015	6.9	3.4	1.2	34.5
Bulgaria	2014	0.1	1.2	0.5	36.3
Burkina Faso	2014	7.8	42.8	10.8	25.2
Burundi	2013.5	7.6	74.7	32.9	44.0
Cabo Verde	2007.33	0.0	7.2	1.7	23.0
Cameroon	2014	5.2	22.8	7.1	31.3
Canada	2013	0.2	0.5	0.2	32.0
Central African Republic	2008	3.5	77.7	44.0	56.6
Chad	2011	4.8	34.1	13.2	38.7
Chile	2015	0.2	1.3	0.8	58.5
China	2015	10.0	0.7	0.2	21.9
Colombia	2015	2.2	4.5	1.7	38.2
Comoros	2013.5	0.1	18.2	6.5	35.7
Congo, Dem. Rep.	2012.4	55.1	72.3	34.6	47.9
Congo, Rep.	2011	1.7	34.9	13.5	38.7
Costa Rica	2015	0.1	1.5	0.6	38.8
Côte d'Ivoire	2015	6.5	28.2	9.1	32.4
Croatia	2015	0.0	0.8	0.4	46.7
Cyprus	2015	0.0	0.0	0.0	
Czech Republic	2015	0.0	0.0	0.0	
Denmark	2015	0.0	0.2	0.1	57.1
Djibouti	2013	0.2	18.6	6.3	33.9
Dominican Republic	2015	0.2	1.9	0.5	25.5
Ecuador	2015	0.6	3.4	1.2	35.8
Egypt, Arab Rep.	2015	1.3	1.4	0.2	11.9
El Salvador	2015	0.1	1.9	0.4	20.7
Estonia	2015	0.0	0.5	0.4	78.7
Eswatini	2009.25	0.5	39.0	14.8	37.9
Ethiopia	2010.5 and 2015.5	27.0	27.0	7.7	28.6
Fiji	2013.24	0.0	1.0	0.2	16.7
Finland	2015	0.0	0.0	0.0	
France	2015	0.0	0.0	0.0	
Gabon	2005 and 2017	0.1	4.1	1.0	24.1
Gambia, The	2010.08 and 2015.31	0.2	11.1	2.5	22.9
Georgia	2015	0.1	4.0	1.0	24.7
Germany	2015	0.0	0.0	0.0	
Ghana	2012.8	3.0	10.9	3.1	28.7
Greece	2015	0.2	1.5	0.8	52.7
Guatemala	2014	1.3	7.9	2.3	29.3
Guinea	2012	4.0	33.0	9.4	28.4
Guinea-Bissau	2010	1.2	65.3	29.4	44.9

*(continued)*

**TABLE 1A.2 Extreme Poverty, by Economy, 2015** *(continued)*

<b>Economy</b>	<b>Survey year(s)</b>	<b>Number of poor (millions)</b>	<b>Poverty rate (%)</b>	<b>Poverty gap (%)</b>	<b>Poverty gap/rate (%)</b>
Guyana	1998	0.1	6.5	1.9	28.9
Haiti	2012	2.5	23.7	7.6	32.1
Honduras	2015	1.4	16.2	5.6	34.9
Hungary	2015	0.0	0.5	0.3	61.2
Iceland	2014	0.0	0.0	0.0	
India*	2011.5	175.7	13.4	2.4	17.7
Indonesia	2015	18.5	7.2	1.2	16.6
Iran, Islamic Rep.	2014	0.3	0.4	0.1	16.2
Iraq	2012	0.8	2.2	0.3	14.8
Ireland	2015	0.0	0.2	0.2	95.7
Israel	2012	0.0	0.5	0.3	54.2
Italy	2015	1.2	2.0	1.4	70.5
Jamaica	2004	0.1	1.8	0.4	22.8
Japan	2008	0.3	0.2	0.2	68.2
Jordan	2010.24	0.0	0.2	0.0	16.7
Kazakhstan	2015	0.0	0.0	0.0	
Kenya	2005.38 and 2015.67	17.6	37.3	11.9	31.9
Kiribati	2006	0.0	11.8	3.0	25.4
Korea, Rep.	2012	0.1	0.3	0.1	44.0
Kosovo	2015	0.0	0.4	0.1	20.0
Kyrgyz Republic	2015	0.2	2.5	0.5	18.5
Lao PDR	2012.25	0.9	14.0	2.9	20.7
Latvia	2015	0.0	0.7	0.4	47.3
Lebanon	2011.77	0.0	0.0	0.0	
Lesotho	2010	1.2	54.8	28.1	51.3
Liberia	2014	1.8	40.2	12.3	30.7
Lithuania	2015	0.0	0.8	0.5	72.0
Luxembourg	2015	0.0	0.2	0.2	95.0
Macedonia, FYR	2014	0.1	5.0	2.4	47.2
Madagascar	2012	18.8	77.5	38.8	50.1
Malawi	2010.23	12.2	69.6	31.7	45.6
Malaysia	2013 and 2015.33	0.0	0.0	0.0	
Maldives	2009.5	0.0	4.1	0.8	20.3
Mali	2009.89	8.3	47.8	14.5	30.4
Malta	2015	0.0	0.0	0.0	
Mauritania	2014	0.3	6.2	1.5	23.9
Mauritius	2012	0.0	0.4	0.1	17.5
Mexico	2014 and 2016	4.2	3.3	0.8	24.4
Micronesia, Fed. Sts.	2013	0.0	15.4	5.5	35.9
Moldova	2015	0.0	0.0	0.0	
Mongolia	2014 and 2016	0.0	0.2	0.0	10.0
Montenegro	2014	0.0	0.0	0.0	
Morocco	2013.5	0.3	0.9	0.2	17.4
Mozambique	2014.44	17.4	62.2	27.3	43.8
Myanmar	2015	3.3	6.4	1.5	23.1
Namibia	2009.54 and 2015.27	0.3	13.4	4.5	33.8
Nepal	2010.17	2.0	7.0	1.4	19.8
Netherlands	2015	0.0	0.0	0.0	
Nicaragua	2014	0.2	2.9	0.6	22.3
Niger	2014	8.9	44.5	13.5	30.2
Nigeria	2009.83	86.5	47.8	18.6	38.9
Norway	2015	0.0	0.2	0.0	16.7
Pakistan	2013.5 and 2015.5	9.9	5.2	0.7	13.2
Panama	2015	0.1	2.0	0.5	26.8
Papua New Guinea	2009.67	2.3	28.4	10.3	36.3
Paraguay	2015	0.1	1.9	0.4	21.7
Peru	2015	1.1	3.6	1.0	27.3

*(continued)*

**TABLE 1A.2 Extreme Poverty, by Economy, 2015 (continued)**

Economy	Survey year(s)	Number of poor (millions)	Poverty rate (%)	Poverty gap (%)	Poverty gap/rate (%)
Philippines	2015	8.5	8.3	1.6	18.9
Poland	2015	0.0	0.0	0.0	
Portugal	2015	0.1	0.5	0.3	50.0
Romania	2015	1.1	5.7	1.9	33.4
Russian Federation	2015	0.0	0.0	0.0	
Rwanda	2013.75	6.0	51.5	17.6	34.2
Samoa	2008	0.0	1.1	0.1	10.5
São Tomé and Príncipe	2010	0.1	26.0	6.2	24.0
Senegal	2011.29	5.3	35.7	11.4	31.9
Serbia	2015	0.0	0.1	0.0	30.0
Seychelles	2013	0.0	1.0	0.4	40.6
Sierra Leone	2011	3.5	48.4	14.8	30.5
Slovak Republic	2015	0.0	0.7	0.3	35.1
Slovenia	2015	0.0	0.0	0.0	
Solomon Islands	2013	0.1	24.7	6.7	26.9
South Africa	2014.83	10.4	18.9	6.2	32.8
South Sudan	2009	8.7	73.3	40.0	54.6
Spain	2015	0.5	1.0	0.6	64.6
Sri Lanka	2012.5 and 2016	0.2	0.8	0.1	11.7
St. Lucia	1995	0.1	28.3	9.8	34.6
Sudan	2009	3.0	7.7	2.0	25.8
Suriname	1999	0.1	18.8	14.5	77.0
Sweden	2015	0.0	0.5	0.3	50.0
Switzerland	2015	0.0	0.0	0.0	
Syrian Arab Republic	2004	4.0	21.2	4.8	22.4
Tajikistan	2015	0.4	4.8	1.1	21.8
Tanzania	2011.77	21.9	40.7	11.7	28.9
Thailand	2015	0.0	0.0	0.0	33.3
Timor-Leste	2014	0.4	31.2	6.9	22.0
Togo	2015	3.6	49.2	19.9	40.5
Tonga	2009	0.0	1.0	0.2	21.4
Trinidad and Tobago	1992	0.0	0.6	0.2	35.7
Tunisia	2010.41	0.1	0.9	0.2	18.3
Turkey	2015	0.2	0.3	0.1	21.4
Turkmenistan	1998	0.2	2.8	0.4	15.5
Tuvalu	2010	0.0	2.4	0.2	6.8
Uganda	2012.45 and 2016.5	15.8	39.2	12.3	31.2
Ukraine	2015	0.1	0.1	0.0	8.3
United Kingdom	2015	0.1	0.2	0.1	39.1
United States	2013 and 2016	3.7	1.2	1.0	82.8
Uruguay	2015	0.0	0.1	0.0	23.1
Uzbekistan	2003	4.4	14.0	3.8	26.8
Vanuatu	2010	0.0	12.8	3.2	24.7
Venezuela, RB	2006	2.8	8.9	6.6	74.7
Vietnam	2014 and 2016	2.1	2.3	0.4	19.1
West Bank and Gaza	2011 and 2016.75	0.0	0.6	0.1	15.3
Yemen, Rep.	2014	11.0	40.9	12.0	29.3
Zambia	2015	9.3	57.5	29.5	51.3
Zimbabwe	2011	2.5	16.0	3.5	21.5

Source: PovcalNet (<http://iresearch.worldbank.org/PovcalNet/>), World Bank.

Note: The year column refers to the year of the survey that is used to calculate the 2015 estimate as listed in PovcalNet. Note that for economies that use EU-SILC surveys, the survey year is backdated by one year to align with the reference period for the income data in the survey (for example, the 2016 survey is listed as 2015). If one year is listed, and this year is different from 2015, the poverty estimate from the year of the survey has been extrapolated to 2015. If two years are listed, the 2015 estimates are based on interpolations between these two surveys. For more information on how these interpolations and extrapolations are carried out, see appendix A. The decimal year notation is used when data are collected over two calendar years. The number before the decimal point refers to the first year of data collection, while the numbers after the decimal point show the proportion of data collected in the second year. For example, the Algerian survey (2011.17) was conducted in 2011 and 2012, with 17 percent of the data collected in 2012. Pov. rate is the poverty rate, or the percentage of the population living on less than the IPL (international poverty line). Pov. gap is the average consumption shortfall of the population where the nonpoor have no shortfall (as described above). Pov. gap / pov. rate is the average consumption shortfall of the poor (as described above). \* indicates that the 2015 estimate for India is based on an imputation described in box 1.3.

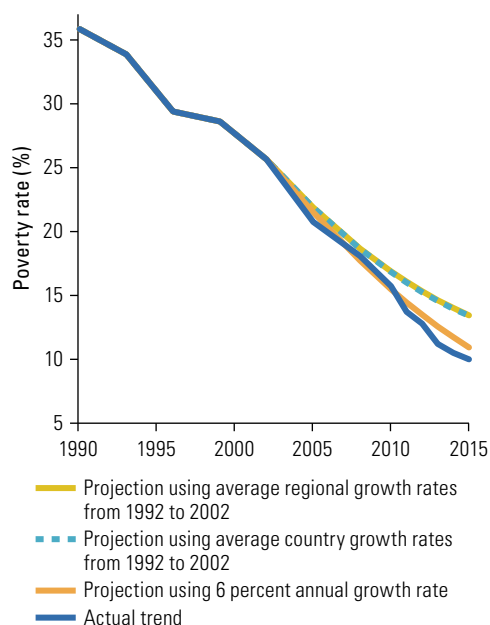
## Annex 1B

### Validation check of the 2030 poverty projections

The poverty projections to 2030 are based on several critical assumptions regarding countries' future growth rates and the nature of this growth. The global poverty patterns in 2030 may look very different if these assumptions are not met. The soundness of the 2030 forecasts can be assessed indirectly by pretending that the poverty levels and growth rates from 2002 to 2015 are unknown and applying the forecast methodology to 2002–15. For example, one can use the country-specific and regional growth rates from 1992 to 2002 to predict poverty rates from 2002 to 2015. With this approach, the 2015 forecasts can be benchmarked against the realized poverty levels in 2015. This would help uncover the sensitivity of the assumptions behind the projections and hence give an indication of the uncertainty surrounding the 2030 projections.

Using this approach, the global rate of extreme poverty is predicted to be 13.4 percent in 2015—well above the actual rate of 10.0 percent (figure 1B.1). This is largely because the regional growth rates in Sub-Saharan Africa are severely underestimated using historical growth data.<sup>17</sup> The regional growth rate in GDP per capita in Sub-Saharan Africa from 1992 to 2002 was 0.7 percent, whereas the actual growth in GDP per capita from 2002 to 2015 turned out to be several percentage points higher. Hence, the historical growth rates were not a good indication of the future growth rates, and the projections overestimate the amount of poverty in Sub-Saharan Africa in 2015. In other regions, such as East Asia and Pacific and South Asia, the projections are very close to the actual poverty levels in 2015. To match

**FIGURE 1B.1** Projections to 2015 of Global Extreme Poverty



Source: PovcalNet (<http://iresearch.worldbank.org/PovcalNet/>), World Bank.

Note: The figure assumes 2002 is the latest year of data and applies the forecasting methods used toward 2030 to obtain poverty “forecasts” for 2002–15. This can be benchmarked against realized poverty levels, and hence allows for an assessment of the soundness of the 2030 projections.

the actual global poverty rate observed in 2015, the 2002–15 projections would need to use annual growth rates in the range of 6 percent per year.

Although this example speaks to the inherent uncertainty of making long-term poverty projections, even with an annual growth rate across the globe of 6 percent until 2030, the projections still do not predict that the 3 percent target will be met.

## Notes

1. The interim target of a poverty rate of 9 percent was set by the World Bank Group president at the 2013 Annual Meetings: <http://www.worldbank.org/en/news/speech/2013/10/11/world-bank-group-president-jim-yong-kim-speech-annual-meetings-plenary>.
2. Survey coverage is assessed by considering surveys within a two-year window on either side of 2015, that is, surveys conducted between 2013 and 2017. By this criterion, two-thirds of the world is covered by a survey for the 2015 poverty update. The coverage would be lower for more recent years.
3. The core poverty numbers reported in this chapter are for 2015. These numbers are referred to as estimates. References to a nowcast indicate that the poverty rate is a forecasted estimate up to the current point in time, which for this report is 2018. Because this relies largely on realized growth rates and population figures, it should, in principle, be more reliable than a forecast. References to forecasts are used when the prediction is more remote in the future, later than the nowcast, typically 2030. Forecasts are based on assumed growth rates and predictions of population figures and are estimated with significantly less precision.
4. The growth rates used are from the World Development Indicators. Pass-through rates are essentially estimated by comparing average differences between national accounts and household surveys. The mean national consumption or income from each country's household survey is compared with either GDP or household final consumption expenditure (HFCE) from national accounts. HFCE is the preferred measure in most countries, except in Sub-Saharan Africa where GDP is used for estimating pass-through factors and growth rates. If GDP and HFCE data are unavailable, growth forecasts from the Global Economic Prospects are used. If these are also unavailable, growth forecasts from the World Economic Outlook are used. For Syria, no estimates are available in these sources. Instead, data from the *Economist's* Intelligence Unit are relied upon. The fraction of GDP/HFCE per capita that is assumed to pass through to the welfare vector is as follows: 0.785 for East Asia and Pacific, 0.773 for Europe and Central Asia, 0.829 for Latin America and the Caribbean, 0.544 for the Middle East and North Africa, 0.912 for South Asia, 0.748 for Sub-Saharan Africa, and 0.892 for the rest of the world.
5. GDP rates are used for Sub-Saharan Africa and for countries without HFCE growth rates. The same pass-through rates are applied as in the nowcast. The average regional growth rate is weighted using each country's population in 2015 as the weight.
6. Projections based on a global growth rate of 8 percent and no shared prosperity premium are nearly identical to the 6 percent growth and 2 percentage point premium scenario, and thus also get the global rate below 3 percent by 2030. In general, a mean growth rate of  $x$  percent combined with a shared prosperity premium of  $y$  percent is nearly identical to a growth rate of  $x + y$  percent and no shared prosperity premium. Projections using a 7 percent global growth rate and no shared prosperity premium, or a 5 percent growth rate and a 2-percentage-point premium, get very close to the 3 percent target.
7. East Asia and Pacific (6.4 percent), Latin America and the Caribbean (3.5 percent), the Middle East and North Africa (2.5 percent), Europe and Central Asia (1.0 percent), and the rest of the world (1.0 percent).
8. Some evidence suggests that, if price differences within countries are accounted for, the reduction in Sub-Saharan Africa has been greater than the numbers suggested here (Beegle et al. 2016). For more information on the impact of price differences within countries on poverty, see appendix A.
9. Of the 35 economies in FCS in 2015, 16 (45.7 percent) were in Sub-Saharan Africa. In terms of population, of the 481.1 million people living in FCS, 259.8 million (54.0 percent) were in Sub-Saharan Africa. More details on how countries are determined to be in FCS are given in appendix A.
10. The analysis uses a "rolling" roster of fragile situations, that is, the set of fragile situations can change from one year of the analysis to the next.
11. This analysis goes back only to 2005 because the World Bank classification of fragile situations began that year.
12. The aggregate FCS poverty rate is the population-weighted mean of the poverty

- rates of all economies in FCS. The number of poor is a product of the FCS poverty rate and the total population living in FCS. This leads to a slightly higher estimate of the total number of poor (744 million versus PovcalNet estimate of 736 million), but the discrepancy is inconsequential to the current discussion.
13. The World Bank's definition of fragility is based on the Country Policy and Institutional Assessment (CPIA), which assesses the conduciveness of a country's policies and institutions to poverty reduction, sustainable growth, and the effective use of development assistance. The CPIA comprises 16 indicators clustered in four dimensions: economic management, structural policies, policies for social inclusion and equity, and public sector management and institutions.
  14. Please refer to appendix A for more information on the GMD.
  15. The 2013 profile and the methodological details are reported in Castaneda et al. (2016).
  16. The 2013 estimates are based on a different set of 89 countries (Castaneda et al. 2016). When the 2013 profiling is repeated using the same 91 countries from 2015, children constitute 44.9 percent of the poor.
  17. Another reason for the discrepancy is that the projections used here assume that only a fraction of the growth rates observed in national accounts translates into growth in the consumption aggregate observed in surveys. The actual poverty numbers, in contrast, assume that all growth observed in national accounts translates into growth in the consumption aggregate. This implies that the projections are more pessimistic than the actual estimates for countries where the 2015 estimate is based on extrapolation.

# Shared Prosperity: Mixed Progress

This chapter reports on the progress achieved in promoting shared prosperity, defined as the growth in the average consumption or income of the poorest 40 percent of the population (the bottom 40). Introduced as one of two twin goals by the World Bank in 2013 along with ending extreme poverty, fostering shared prosperity embodies notions of economic growth and equity.

Shared prosperity is examined by country rather than globally. The latest available data, on 91 economies, paint a mixed albeit moderately positive picture. The bottom 40 were doing well in most economies for which data are available in about 2010–15. Overall, the incomes of the bottom 40 grew in 70 of the 91 economies monitored, and, in more than half the bottom 40 obtained a larger share of the total income. Good performance in shared prosperity is primarily but not exclusively found in South Asia, East Asia and Pacific, Latin America and the Caribbean, and the Baltic countries in Northern Europe. However, slow economic progress is hindering shared prosperity in some regions, particularly in Europe and Central Asia, and other high-income countries, which experienced negative or low levels of shared prosperity. More worrying, among the countries with high rates of poverty (most of which are located in Sub-Saharan Africa), income growth at the bottom has on average been lower than in the rest of the world. In addition, the picture of shared prosperity among the poorest economies as well as those in fragile and conflict-affected situations is only partial because data on the shared prosperity indicator remain limited.

## **Beyond extreme poverty: A focus on the bottom 40**

Promoting shared prosperity involves ensuring that the relatively poor in every country are able to participate in and benefit from economic success. Progress toward this goal is monitored through an indicator that measures the annualized growth rates in average consumption or income among the poorest 40 percent of the population in each country (the bottom 40).<sup>1</sup> Irrespective of the prevalence of extreme poverty, this measure is meaningful as a gauge of how well prosper-

ity is shared within each country. Thus, even in higher-income economies where extreme poverty rates are low, the shared prosperity goal is still highly relevant.

To estimate shared prosperity, two comparable surveys are needed. In this report, the selected surveys were for circa 2010 and circa 2015 (box 2.1). The survey data are used to calculate changes in consumption or income. This presents a greater data challenge than the calculation of a global poverty rate (chapter 1). Therefore, the set of countries included in the sample is smaller. The shared prosperity measure is reported for 91 econ-

### BOX 2.1 The Global Database of Shared Prosperity

Shared prosperity estimates are calculated using household surveys and are presented in the Global Database of Shared Prosperity (GDSP). The present report is grounded on the sixth edition of the GDSP (the fall 2018 release), which features data on 91 economies circa 2010–15. For details, please refer to appendix A.

ulation coverage is lower than in the earlier report, when it represented 75 percent of the global population.

### Continued progress in most economies though some are falling short

In this sample of 91 economies, the bottom 40 are mostly doing well. The incomes of the poorest 40 percent were growing in 70 of the 91 economies circa 2010–15. The simple average of the annualized consumption or income growth rate among the bottom 40 was 1.9 percent (table 2.1).

The performance in shared prosperity across the world ranges from an annualized 8.4 percent decline in income among the bottom 40 in Greece to an annualized growth of 9.1 percent in China (see figure 2.1 and map 2.1).<sup>2</sup> There are clear regularities in performance across regions and income groups, though with some exceptions. Three groups of economies can be identified on the basis of their performance in shared prosperity.

omies in which the combined population is 4.6 billion, representing 62 percent of the world's population in 2015. Compared to the previous report with data for circa 2008–13, the number of economies included in the present report is higher (91 rather than 83 economies). However, given that a few large countries, such as India, are excluded in this round because of lack of data, the global pop-

**TABLE 2.1 Shared Prosperity and Shared Prosperity Premium, 91 Economies, Summary Table, circa 2010–15**

Region	Population, millions	SP indicator available		Economies, number			Average SP (%)	Average SP Premium (p.p)
		Number of economies	% of total population	Growth in mean > 0	SP > 0	SP Premium > 0		
East Asia and Pacific	2,036.6	8	94.6	7	8	7	4.73	1.33
Europe and Central Asia	487.0	26	89.9	18	20	13	2.22	0.15
Latin America and the Caribbean	626.5	16	87.8	15	16	14	3.19	0.98
Middle East and North Africa	371.6	3	47.8	1	2	2	0.98	1.33
South Asia	1,744.2	4	21.3	4	4	0	2.62	-0.56
Sub-Saharan Africa	1,005.6	12	32.4	9	8	5	1.84	-0.55
Rest of the world	1,083.6	22	71.7	14	12	10	-0.27	-0.33
Fragile and conflict-affected	485.1	4	7.6	2	3	3	2.03	0.80
IDA and Blend	1,539.3	20	42.7	16	17	10	2.16	-0.11
Low income	641.9	7	35.1	6	5	3	2.06	-0.67
Lower-middle income	2,970.0	24	36.1	19	21	13	2.56	0.30
Upper-middle income	2,560.4	28	93.7	21	24	20	2.61	0.77
High income	1,182.9	32	73.6	22	20	15	0.85	-0.20
<b>Total</b>	<b>7,355.2</b>	<b>91</b>	<b>62.1</b>	<b>68</b>	<b>70</b>	<b>51</b>	<b>1.94</b>	<b>0.20</b>

Sources: GDSP (Global Database of Shared Prosperity) fall 2018 edition, <http://www.worldbank.org/en/topic/poverty/brief/global-database-of-shared-prosperity>; World Bank, Washington, DC, PovcalNet (online analysis tool), World Bank, Washington, DC, <http://iresearch.worldbank.org/PovcalNet/>.

Note: IDA = International Development Association; Blend = IDA-eligible countries but also creditworthy for some borrowing from the International Bank for Reconstruction and Development; SP = shared prosperity; the indicator measures growth in the average household per capita consumption or income of the bottom 40. Shared prosperity premium = the difference in growth in the average consumption or income of the bottom 40 and the mean, in percentage points (p.p.). Population coverage refers to 2015. The list of economies in fragility and conflict-affected situations is based on data for 2015. The shared prosperity indicator is close to zero (between -0.15 and 0.15 percent) in three countries: Iceland, Niger, and Romania.

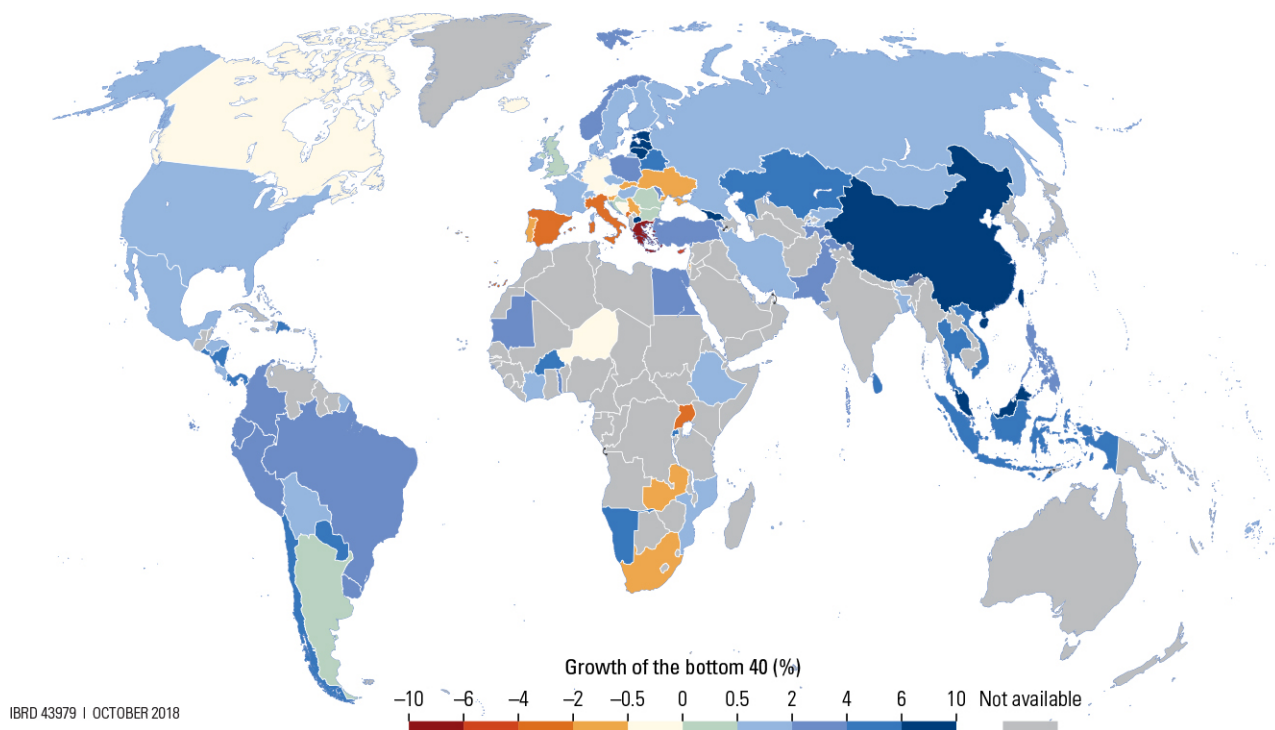


**FIGURE 2.1 Shared Prosperity, 91 Economies, circa 2010–15**



Source: GDSP fall 2018 edition, World Bank, Washington, DC, <http://www.worldbank.org/en/topic/poverty/brief/global-database-of-shared-prosperity>.  
 Note: The figure shows annualized growth in mean household per capita consumption or income (see annex 2B).

**MAP 2.1 Shared Prosperity across the World, 91 Economies, circa 2010–15**



*Source:* GDSP (Global Database of Shared Prosperity) fall 2018 edition, World Bank, Washington, DC.  
*Note:* The map shows annualized growth in mean household per capita consumption or income (see appendix A).

The first group consists of, by and large, a large part of the developing world in which the incomes of those in the bottom 40 are growing, in some cases strongly. This is primarily, though not exclusively, the case of economies in East Asia and Pacific, South Asia, and Latin America and the Caribbean. On average, the incomes of the bottom 40 in these regions grew by 4.7 percent, 2.6 percent, and 3.2 percent per year, respectively (table 2.1). In some cases, such as in various countries in East Asia and Pacific, current high levels of shared prosperity represent a continuation of over a quarter century of strong and broadly shared economic growth driven by labor-intensive development combined with investment in human capital, which particularly benefitted the lower part of the distribution (Birdsall et al. 1993; Commission on Growth and Development 2008) (see box 2.2). This success means that more than a billion people have risen out of ex-

treme poverty, and the region now consists of mainly middle-income countries (World Bank 2018a). The success in South Asia, as mentioned in the previous chapter, was more recent than in East Asia and Pacific but is still persistent.

In many Latin American and Caribbean countries, the progress in lifting incomes of those at the bottom has been widespread since the early 2000s and is still strong despite the more recent slowdown. After a decade of strong economic growth and shared prosperity, largely driven by favorable commodity prices and expanded social protection systems (Ferreira et al. 2013), regional growth has slowed since 2012 as international conditions deteriorated. The economic slowdown translated into slower poverty reduction and more sluggish income growth among the middle class, particularly in South American countries (Calvo-González et al. 2017; World Bank 2018b). The income of the bottom 40

## BOX 2.2 Country Stories

*With contributions from Kenneth Simler, Samuel Freije-Rodriguez, Rakesh Gupta N. Ramasubbaiah, and Carolina Mejia-Mantilla.*

### **Rising East Asia: China and Malaysia**

As described in chapter 1, the success of economies in East Asia and Pacific in drastically reducing poverty in the last few decades is unparalleled. Solid educational foundations and strong export-oriented growth from manufacturing have been some of the fundamental growth drivers in the region. The high rates of income growth among the bottom 40 continue to be observed in the last five years.

The fast growth of consumption per capita among the bottom 40 in China is supported by faster growth in rural than in urban household disposable income. For the period 2013–15, the higher income dynamism in rural areas is driven by household operations (family business or farm incomes), which accrue 2.8 percentage points (out of 10.1) of disposable income growth in rural households, but only 0.8 percentage points (out of 8.6) in urban households. This indicates that traditional economic activities continue to have a significant influence in the growth of the rural economy. Higher disposable income entailed a higher increase in consumption expenditure in almost all consumption items for rural residents.

In Malaysia, the rapid income growth among the bottom 40 (see figure 2.4) from 2011 to 2015 is fundamentally driven by extraordinary performance between 2011 and 2013—when wages rose sharply and overall income of the bottom 40 grew at an annual rate of 12 percent. The timing of the increase in labor earnings coincides with minimum wage legislation passed in 2012, which introduced minimum wages for the first time, relevant to all workers except domestic employees. In part, the minimum wage was put in place to address

the dysfunctional wage-setting practices for low-paid workers (Del Carpio and Pabon 2014). The increase of minimum wages has also been linked to strong reductions in inequality in other countries such as Brazil (World Bank 2016a). In contrast, household income growth was lower in 2013–15, about 6 percent per year, and almost distribution-neutral.

### **Stagnated incomes at the bottom in high-income countries**

Inequality in the developed world has recently been the focus of intensified public debate. Rich evidence using different and new estimation methods and sources of data on welfare distributions for Western Europe and the United States emerging from the last decade suggest that the top 1 percent are getting a larger share of national income since the 1980s and that the incomes of those at the bottom 50 percent have remained stagnant or even declined (Alvaredo et al. 2018). In the United States, for example, estimates suggest that the average pre-tax income for this latter group has stagnated at about \$16,000 (in constant 2014 dollars) since 1980 (Piketty et al. 2018). The question of lack of income growth for the median worker (a comprehensive description can be found in Shambaugh and Nunn 2018) is complex but has been addressed by several studies in the recent literature. Some explanatory factors focus on the emergence of superstar firms that led to increasing monopolistic rents and a declining labor share, which did not benefit lower-skilled workers during this period (Autor et al. 2017; Barth et al. 2016). Others stress the fact that technological change, combined with the educational landscape, has dampened median wage income growth (and increased polarization of the wage distribution)

and skill premiums in several high-income European and non-European economies (Katz and Autor 1999; Goldin and Katz 2007; Katz and Margo 2014; Ganong and Shoag 2017; Ridao-Cano and Bodewig 2018; Bussolo et al. 2018).

### **Droughts and pests affecting Uganda**

Between 2012 and 2016, Uganda experienced a setback in terms of reducing poverty and boosting shared prosperity, trends that had been observed throughout the decade leading up to 2012. The poverty headcount ratio (under the international poverty line) increased from 35.9 to 41.6 percent, and consumption for the bottom 40 shrank by 2.15 percent per year, more than the 0.96 percent per year decline for the average consumption. Behind the reversal of fortune were the drought and pests that affected the agricultural sector for the better part of 2016 and the beginning of 2017. Given that households engaged in agriculture remain highly vulnerable to weather and price shocks, these problems affected the livelihood of rural households in particular. Estimates using panel data show that the lack of rainfall and low prices contribute substantially to lower income for Ugandan agricultural households. A 10 percent decline in water sufficiency (rainfall) decreases crop income by 9.9 percent, while a 10 percent decline in the price of maize or beans lowers crop income by 4.5 or 9.2 percent, respectively (Hill and Mejia-Mantilla 2017). The effects are higher for poorer households as they are more vulnerable to adverse shocks. For these households, a 10 percent decline in rainfall and a 10 percent decline in maize and bean prices result in a 13.4 percent and 13.0 percent decline in crop income, respectively.

grew 1.4 percentage points more slowly per year in circa 2010–15 than in circa 2008–13 (reported in the previous edition of this report) with average annualized rates of 3.2 percent compared to 4.6 percent in the previous period (annex 2B, table 2B.2.). Still, shared prosperity continued to be high in many countries in the region. In Chile, incomes of the bottom 40 grew at a rate of 6.0 percent per year in 2010–15, driven by soaring hourly wages and a strong public transfer system protecting the most vulnerable.

Within this first group of good performers in shared prosperity, the Baltic states—Estonia, Latvia, and Lithuania—were able to recover vigorously after the 2008 and 2013 crises. Between 2010 and 2015, incomes of the bottom 40 in these countries grew at rates above 6 percent per year. These countries were among those that experienced the largest gross domestic product declines and fiscal deficits during the years of the crisis (OECD 2012), and implemented large fiscal consolidations programs (Sutherland, Hoeller, and Merola 2012). Starting in 2011, they experienced some of the strongest economic growth recovery relative to other European countries (De Agostini et al. 2015; World Bank 2018c).

A second group includes relatively rich economies, with low prevalence of extreme poverty (in the single digit), in which incomes of the bottom 40 are growing slowly, stagnating, or even losing ground. This is the case of several Eastern and Western European countries, such as Greece and Spain, as well as of other high-income economies, such as the United States. On average, the incomes of the bottom 40 in the so-called rest of the world contracted 0.3 percent per year in circa 2010–15. In some countries such as Greece, Portugal, and Spain, the negative performance reflects, to a greater extent, the slow recovery from the European debt crisis (IMF 2017; World Bank 2018c). In richer economies such as the United Kingdom and the United States, more structural processes that led to the stagnation of incomes at the bottom since the 1980s, or more recently in continental European countries such as Germany and Poland, which are sometimes linked to polarization of wages and regulations (Alvaredo et al. 2018; Piketty et al.

2017; Ridao-Cano and Bodewig 2018; Bus-solo et al. 2018). (See also box 2.2).

Finally, there is also cause for concern among some of the poorest economies and those in fragile and conflict-affected situations. On average, the incomes of the bottom 40 in Sub-Saharan Africa grew at 1.8 percent per year, a pace slightly lower than in the total sample. But this number is the average among economies where incomes of the bottom 40 declined or grew below 1 percentage point (over a third of African economies) and other economies in which income growth was strong, such as Burkina Faso and Rwanda. The negative performance in countries with high poverty rates like Uganda and Zambia is likely related to the poor performance of the agriculture sector, in part due to adverse climate shocks and pests (see box 2.2). Among four conflict-affected economies with available data, two had low or negative income growth for the bottom 40. Although Côte d’Ivoire’s shared prosperity of 0.7 is still low, it represents a recovery from a decade of political and economic crisis. In the Middle East and North Africa, the poor performance in West Bank and Gaza reflects to a large extent the economic despair in Gaza, despite progress in West Bank, which was largely restricted to urban areas. A second important source of concern among these poor or conflict-affected economies is that their coverage of the shared prosperity indicator is low, an issue highlighted in the next section.

### **The poorest countries have limited information about shared prosperity**

Of the 164 countries with an available international poverty rate, only a quarter of low-income economies and 4 of the 35 recognized as being in fragile and conflict-affected situations also have a shared prosperity indicator.<sup>3</sup> As a consequence, the coverage of shared prosperity in Sub-Saharan Africa is limited: only 12 of the 45 economies for which poverty estimates are available in the region are included (figure 2.2). In contrast, 84 percent of the high-income economies are represented in the shared prosperity analysis. Of the 57 countries with extreme poverty rates above 10 percent, only 13 have a shared

prosperity indicator. Two countries that concentrate a high proportion of the world's poor, India and Nigeria, are excluded because they lack comparable data across time. Population coverage is also limited among economies grouped by other World Bank country categories, such as small island nations for which there is no shared prosperity indicator available.

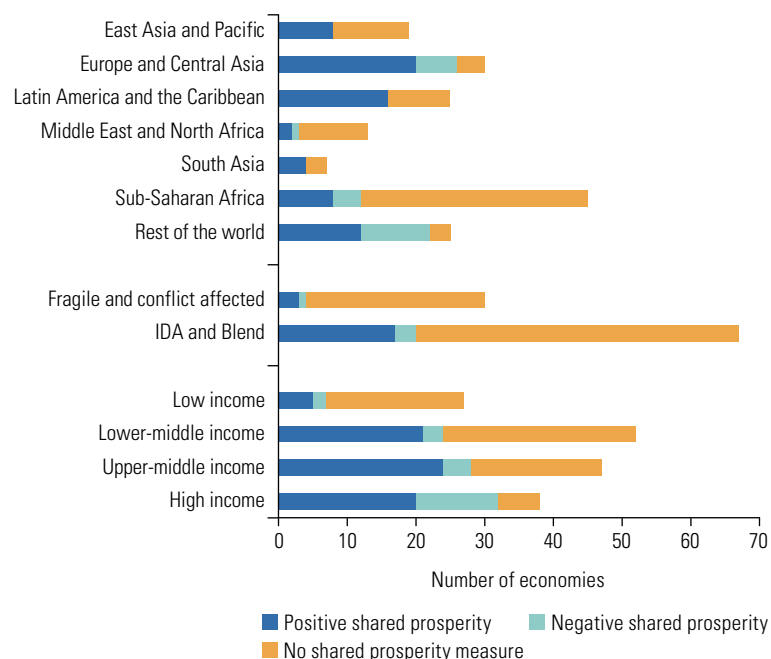
Because this round excludes many poorer countries as well as those in fragile and conflict-affected situations, the picture on shared prosperity for these economies is only partial. The computation of the shared prosperity measure relies on frequent and comparable data collection (appendix A). This is often associated with a country's level of development because data collection depends on the capacity of a national statistics office. Stronger commitments to narrowing the data gap are needed if the shared prosperity goal is to be monitored globally in a timely fashion (Independent Evaluation Group 2017).<sup>4</sup>

## Growth at the bottom and the top is not always even

The incomes or consumption of the bottom 40 depend directly on both the average growth within the economy and the share of national income that accrues to the bottom 40 (Rosenblatt and McGavock 2013; World Bank 2016b) (annex 2A). Improvements at the bottom may thus derive from the fact that society in general is doing better—that is, the tide lifts all boats. Improvements may also arise from progressive shifts in the distribution of economic gains (Lakner, Negre, and Prydz 2014, 2015). The *shared prosperity premium* represents an effort to capture such progressive shifts. It is defined as the difference between the annual income growth rate among the bottom 40 and the annual growth rate of the mean in the economy. A positive premium indicates that the incomes or consumption of the bottom 40 are increasing at an above average rate and that the bottom 40 are obtaining a larger share of overall consumption or income (see box 2.3 for a comparison with other concepts of inequality based on income shares).

Achieving progress is more elusive in the shared prosperity premium than in shared

**FIGURE 2.2 Shared Prosperity Estimates, 91 Economies, by Region, Group, and Income**



Sources: GDSP (Global Database of Shared Prosperity) fall 2018 edition, World Bank, Washington, DC, <http://www.worldbank.org/en/topic/poverty/brief/global-database-of-shared-prosperity>; PovcalNet (online analysis tool), World Bank, Washington, DC, <http://iresearch.worldbank.org/PovcalNet/>.

Note: The count is based on the 164 economies on which direct estimates of the poverty rate are available through PovcalNet. IDA = International Development Association; Blend = IDA-eligible countries but also creditworthy for some borrowing from the International Bank for Reconstruction and Development; No shared prosperity measure = economies with poverty rates reported in PovcalNet, but insufficient data to compute a shared prosperity indicator.

prosperity. The number of economies exhibiting a positive premium is less (51) than the number showing a positive shared prosperity indicator (70) (table 2.1.). The implication is that, in almost half the economies monitored, the consumption or income share of the bottom 40 is growing more slowly than the average, suggesting that the distribution in these countries is worsening because the bottom 40 are getting a smaller share of total income. Globally, the average shared prosperity premium is small. The simple average across all economies in the sample is 0.2 percentage points.

The regions with higher average premiums are East Asia and Pacific, the Middle East and North Africa, and Latin America and the Caribbean. In these regions, the incomes of the bottom 40 grew by 1.3, 1.3, and 1.0 percentage points above the mean, respectively. These regions also include a larger share of

### BOX 2.3 The Shared Prosperity Premium and Other Concepts of Inequality

The shared prosperity premium calculated on the basis of the 2010–15 sample shows that, in 51 of the 91 economies, the bottom 40 are obtaining a larger share of total income in their countries. This suggests that, in a little more than half of the economies, inequality has been declining. However, the perceptions of the public and the *World Inequality Report 2018* (WIR) do not seem to agree that within-country inequality is narrowing in a majority of countries.<sup>a</sup> According to the global picture displayed in the WIR, inequality has been widening over the past few decades, and the richest people in each country are increasing their share of national incomes at an alarming pace.

This mismatch in interpretations of inequality trends stems partly from differences in the definition of inequality, as well as from differences in the supporting data.

- *Inequality at the top versus inequality at the bottom.* The shared prosperity premium focuses on the bottom of the national income distribution as a gauge of inequality. It reflects an assessment of whether the poor are catching up or falling farther behind. Meanwhile, the WIR focuses on the top of the income

distribution to determine whether the rich are becoming richer.

- *The absence of the top income earners in household surveys.* Often, household surveys tend to suffer from nonresponse or underreporting at the top of the distribution. Therefore, to obtain reliable data on the top earners, studies focusing on the rich, such as the WIR, tend to be based on tax records, complementing household surveys. Yet, for a large part of the developing world, tax records are not readily available, and thus the present chapter is not able to account for underreporting at the top. The implication is that the analysis from the chapter differs from the WIR both because consumption or income at the top is not properly accounted for and because the subset of

countries for which the analysis is performed differs from WIR. Although the WIR uses data on top earners from administrative tax records only for 10 countries,<sup>b</sup> this type of data is currently available for 58 countries in the World Inequality Database for at least one year. In the dataset, high-income and upper-middle-income countries are more represented than low- and lower-middle-income countries. Of the 58 with some information on top incomes, 32 are also included in the present chapter. The large majority of the economies in both datasets (almost 80 percent) are upper-middle- and high-income economies, in which it was shown that the progress in terms of the shared prosperity premium was more limited than in the rest of the world. Table B2.3.1 compares both samples.

**TABLE B2.3.1 Number of Economies with Top Incomes Estimated in the World Inequality Database and in the Poverty and Shared Prosperity Report**

Income group	Both WID and PSPR	Only WID	Only PSPR
High income	18	13	14
Upper-middle income	9	3	19
Lower-middle income	4	6	20
Low income	1	4	6

Note: PSPR = Poverty and Shared Prosperity (this report); WID = World Inequality Database.

a. Several perception-based surveys in East Asia and Pacific indicate that respondents feel income disparities are too large (World Bank 2018a). For *World Inequality Report 2018*, see Alvaredo et al. (2018).

b. The WIR uses fiscal and national accounts data to scale up the income distributions to match national income estimates for a large number of countries. But the distributional information used comes from only 10 countries (Brazil, China, Côte d'Ivoire, France, Germany, India, Lebanon, Russian Federation, United Kingdom, and United States). These are used to predict income dynamics in their neighboring countries to obtain regional and global income inequality estimates.

economies with positive shared prosperity premiums, with all but one or two in each region for which the incomes of the bottom 40 grew at a faster rate than the rest of the economy (figure 2B.1).

In contrast, higher concentrations of shared prosperity premiums close to zero or negative are found in the other four regions.

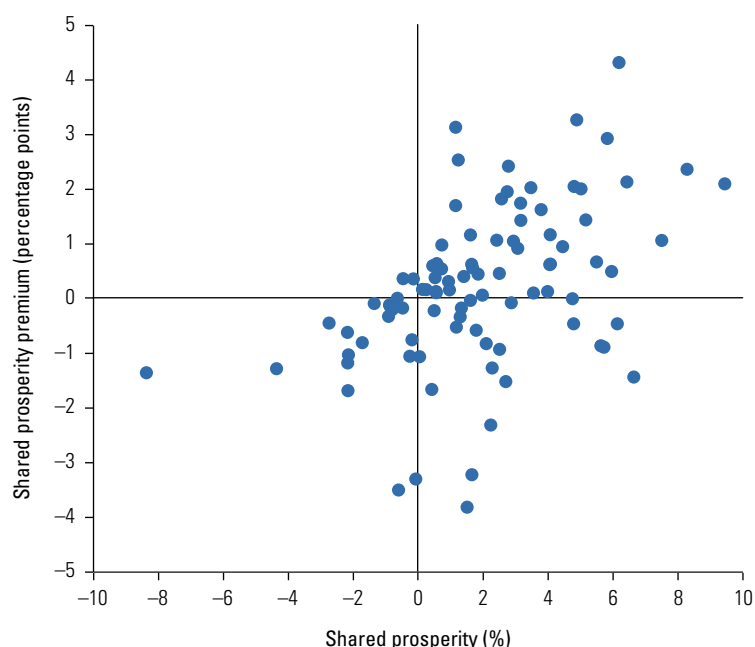
In the four South Asian economies included in the sample, incomes among the bottom 40 are growing, but at a slower pace than the mean. In addition, half the countries in Europe and Central Asia and more than half in Sub-Saharan Africa have negative shared prosperity premiums. These two regions are unique in that they house the lowest

and most negative shared prosperity premiums (Armenia, Mozambique, and Zambia), as well as some of the highest premiums (Burkina Faso and the Former Yugoslav Republic of Macedonia). This dichotomous trend in inequality in Sub-Saharan African has already been highlighted by Beegle et al. (2016), who find increasing and decreasing inequality without a clear pattern across economies (that is, no clear association with resource status, income levels, or initial levels of inequality).

Relative to the previous report, the average shared prosperity premium across all countries was slightly lower in 2010–15 than in 2008–13 (table 2B.3). Because of the limited sample coverage in some of the regions, comparisons focus on the three subgroups of countries for which data coverage is more stable and extensive across the two periods (see appendix A on comparability across rounds): Europe and Central Asia, Latin America and the Caribbean, and the rest of the world. The decline in the premium was more pronounced in Latin America and the Caribbean, suggesting not only that the economic slowdown in this region dampened the performance in consumption or income growth among the bottom 40, but also that overall consumption or income growth was not as equalizing as it had been in the past. This is the case, for example, among several South American countries, such as Peru and Uruguay, in which the rates of income growth among the bottom 40 were about 3 percentage points above the respective mean in 2008–13, whereas the corresponding gap in 2010–15 was closer to 1 percentage point.

There is a positive correlation between shared prosperity and the shared prosperity premium (figure 2.3). Of the 91 economies, 49 achieved both a positive shared prosperity indicator (absolute growth among the bottom 40) and a positive shared prosperity premium (relative growth among the bottom 40). This is the case of most countries in Latin America and the Caribbean and in East Asia and Pacific, but also in 12 of the economies of Europe and Central Asia. As examples, figure 2.4, panel a, shows three cases, Latvia, Peru, and the Malaysia, in which incomes grew across the entire distribution, whereas the in-

**FIGURE 2.3** Correlation between Shared Prosperity and the Shared Prosperity Premium, 91 Economies

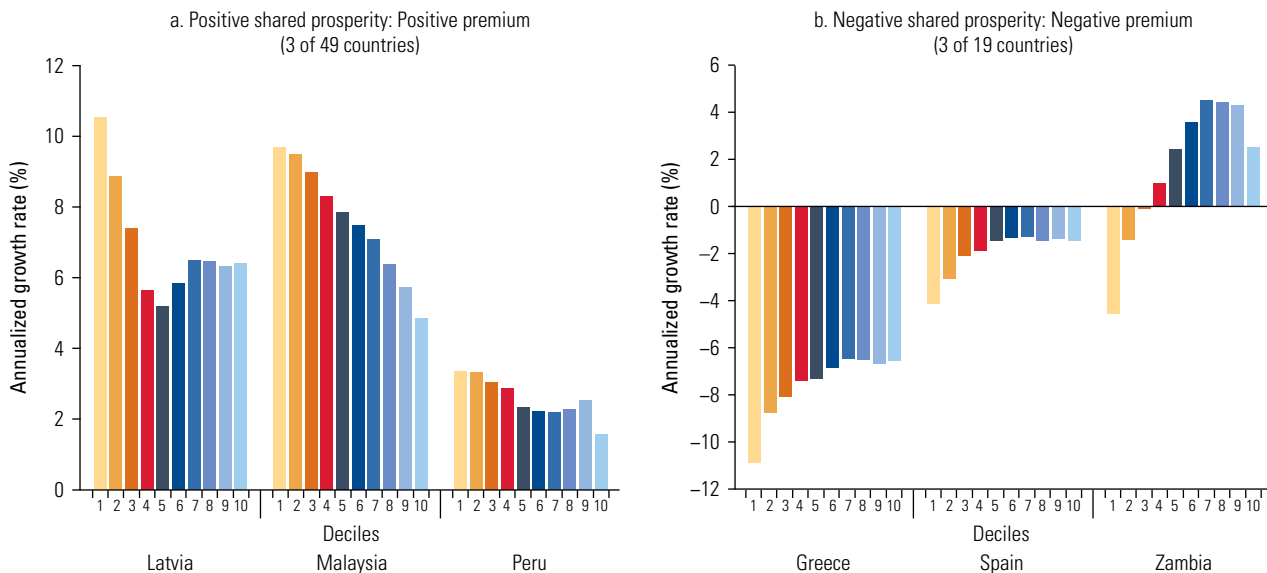


Sources: GDSP (Global Database of Shared Prosperity), fall 2018, World Bank, Washington, DC, <http://www.worldbank.org/en/topic/poverty/brief/global-database-of-shared-prosperity>; PovcalNet (online analysis tool), World Bank, Washington, DC, <http://iresearch.worldbank.org/PovcalNet/>.

comes of the bottom 40 grew at a more rapid rate relative to the average.

If the shared prosperity indicator is negative, the shared prosperity premium is almost always negative as well (see figure 2.3). Of the 21 economies with negative shared prosperity indicators, 19 also present negative premiums.<sup>5</sup> This occurs in Europe and Central Asia, Sub-Saharan Africa, and the rest of the industrialized countries (rest of the world). Greece, Spain, and Zambia are examples shown in figure 2.4, panel b. This means not only that incomes among the bottom 40 are shrinking rather than growing, but also that the decline is more profound among the bottom 40 than across the rest of the distribution. This result is consistent with the evidence showing that the poor are more highly exposed to downturns and shocks and that policies that safeguard them against such risks—safety nets and insurance—can help guarantee that prosperity is shared. Poorer households are also much more likely to reduce consumption in response to shocks

**FIGURE 2.4 Growth across Deciles of the Income Distribution, Selected Countries**



Sources: GDSP (Global Database of Shared Prosperity), World Bank, Washington, DC, <http://www.worldbank.org/en/topic/poverty/brief/global-database-of-shared-prosperity>; PovcalNet (online analysis tool), World Bank, Washington, DC, <http://iresearch.worldbank.org/PovcalNet/>.  
 Note: The bars illustrate the growth in the mean, by decile. The bottom 40 are in the left bars, in orange and red.

because they are also less likely to maintain savings (World Bank 2013).

### Who are the bottom 40?

People in the bottom 40 differ from those living in the top 60, in terms not only of their income but also of their characteristics. A closer look at who makes up the bottom 40 in a country may offer insights into the groups that are relatively more deprived. It can also guide national policy makers in identifying problem areas.

Compared with the top 60, people in the bottom 40 live disproportionately in rural areas and attain less education than the rest of society. In addition, children are more likely to be among the bottom 40 than among the top 60. In Côte d’Ivoire, for example, children under 15 years of age constitute about half the bottom 40, whereas they make up only a third of the top 60. Similarly, in the Philippines, children under 15 represent more than 40 percent of the bottom 40 but less than 25 percent of the top 60. This pattern is repeated across all countries and regions in the current sample. Chapter 1 concludes that children are more likely than adults to live in extreme poverty. The present chapter finds that, even in

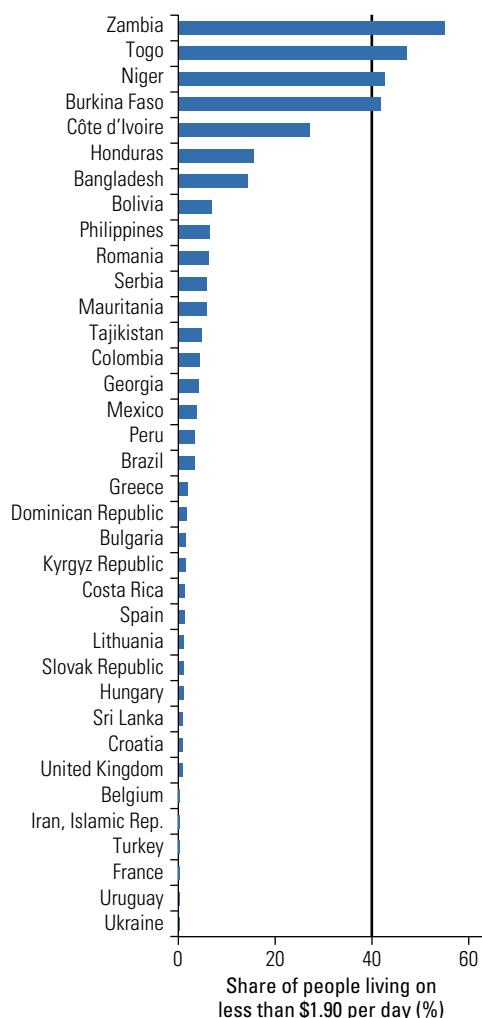
more highly developed countries with almost no extreme poverty, children are more likely to live in relatively more deprived households.

In addition, people in the bottom 40 differ significantly across countries. In terms of consumption or income, in most low-income economies, such as Togo and Zambia, everyone in the bottom 40 lives on less than US\$1.90 a day (figure 2.5). In contrast, in more well-developed countries, only a small share of the bottom 40 are living in extreme poverty.

Differences in income levels among the bottom 40 across countries reflect not only the wealth of these economies as a whole but also how the bottom 40 fare relative to the rest of the population. Although the bottom 40 in Croatia are consistently doing better than the bottom 40 in Brazil, the rich in Brazil are much richer than the top earners in Croatia (figure 2.6). This reflects the fact that Brazil is much more unequal than Croatia. The average daily income of the richest decile in Brazilian society is more than 30 times higher than the average daily income of the poorest decile, whereas the equivalent ratio in Croatia is 8. Findings are similar among high-income economies with negligible poverty rates: for example, the bottom 40



**FIGURE 2.5 Extreme Poverty and the Bottom 40, Selected Countries, circa 2015**

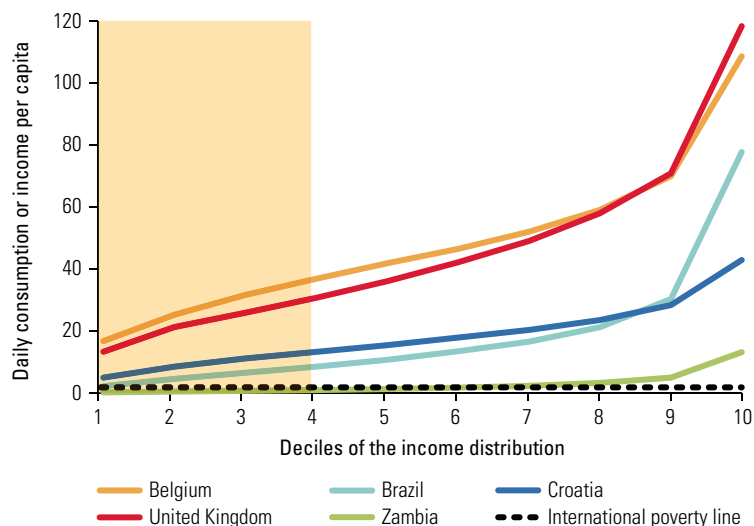


Source: GDSP (Global Database of Shared Prosperity), fall 2018, World Bank, Washington, DC, <http://www.worldbank.org/en/topic/poverty/brief/global-database-of-shared-prosperity> and PovcalNet (online analysis tool), World Bank, Washington, DC, <http://iresearch.worldbank.org/PovcalNet/>.

in Belgium have higher average incomes than the United Kingdom, even though the richest 10 percent are richer in the United Kingdom than in Belgium.

The relative position of the bottom 40—how deprived they are compared with the rest of the population—also varies largely across countries. The shared prosperity premium captures whether the bottom 40 are receiving a larger or smaller share of the overall pie. How large is this piece of the pie accruing to the bottom 40 across countries? In all economies on which data are available,

**FIGURE 2.6 Mean Income, by Distribution Decile, Selected Countries, 2015**



Source: PovcalNet (online analysis tool), <http://iresearch.worldbank.org/PovcalNet/>. World Bank, Washington, DC.  
 Note: The shaded area indicates the bottom 40. The lines represent the average daily consumption or income per capita by decile, expressed in 2011 purchasing power parity (PPP) U.S. dollars.

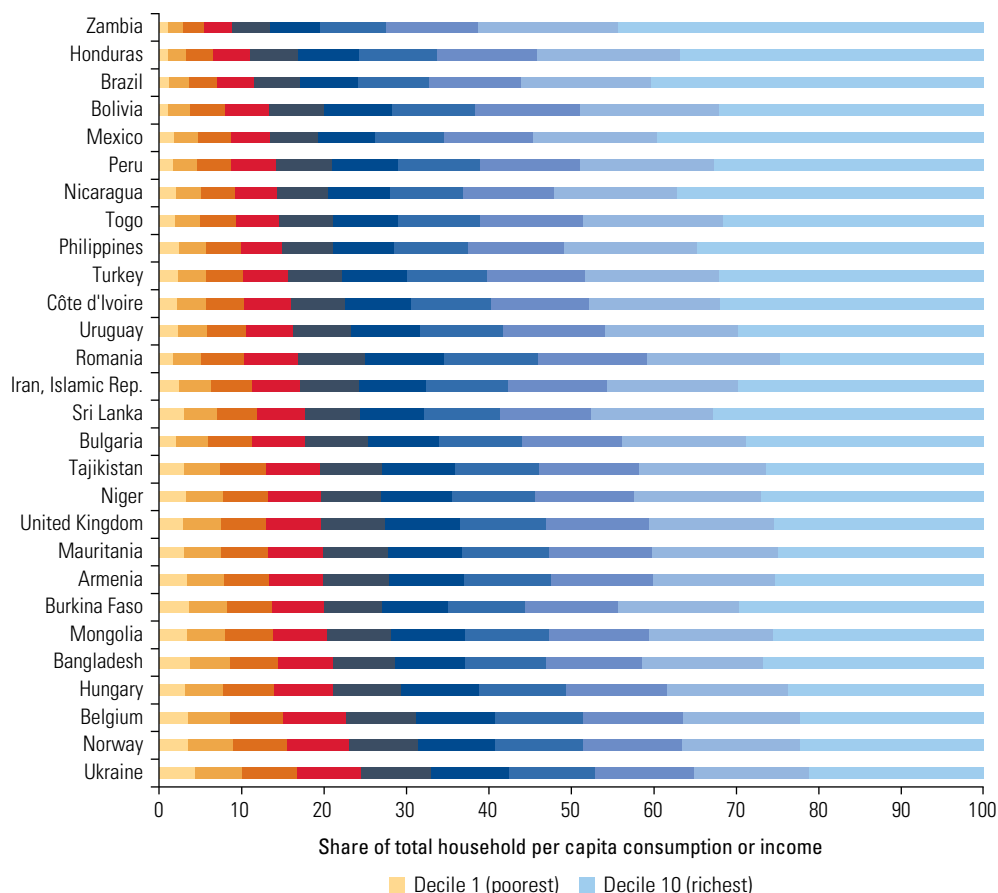
the bottom 40 receive less than 25 percent of the overall income (figure 2.7). In several Eastern European countries, such as Ukraine, the share is almost 25 percent. At the other extreme is Zambia, where the bottom 40 receive less than 10 percent of the pie. Similar, though less extreme, is the situation in several Latin American countries in which inequality tends to be high.

## Monitoring the twin goals

The joint monitoring of poverty and shared prosperity shines a spotlight on the extreme poor and the less well-off in each country. In this way, the most vulnerable can be identified no matter the corner of the world in which they live and, at the same time, their progress highlighted. This section addresses this progress on the twin goals across the 91 economies for which the shared prosperity indicator can be calculated among the 164 economies on which the international poverty rate is available.

There is a strong correlation between the twin goals, and most economies are performing well in both poverty reduction and boosting shared prosperity (figure 2.8, top left quadrant). In most of the 91 economies

**FIGURE 2.7 Share of Consumption or Income, by Decile, Selected Countries, circa 2015**



Source: PovcalNet (online analysis tool), World Bank, Washington, DC, <http://iresearch.worldbank.org/PovcalNet/>.

monitored, if the shared prosperity indicator is positive, then the poverty rate is falling. Regionally, circa 2010–15, all countries in East Asia and Pacific and in Latin America and the Caribbean enjoyed a reduction in poverty and positive shared prosperity. In terms of making progress on the twin goals, much can be learned from these two regions.

In contrast, some economies have performed poorly in achieving progress on the twin goals. In these economies, poverty rates rose, and the shared prosperity measure was negative in circa 2010–15 (see figure 2.8, bottom right quadrant). Of the 13 economies in this situation, only two also exhibited initially high rates of extreme poverty (South Africa and Uganda). The rest are European countries with extremely low international poverty rates, and the changes in poverty are thus also slight. Achieving equitable growth

can be challenging, and economic growth in these economies does not necessarily align with large welfare improvements among the poorest in society (Bussolo and López-Calva 2014).

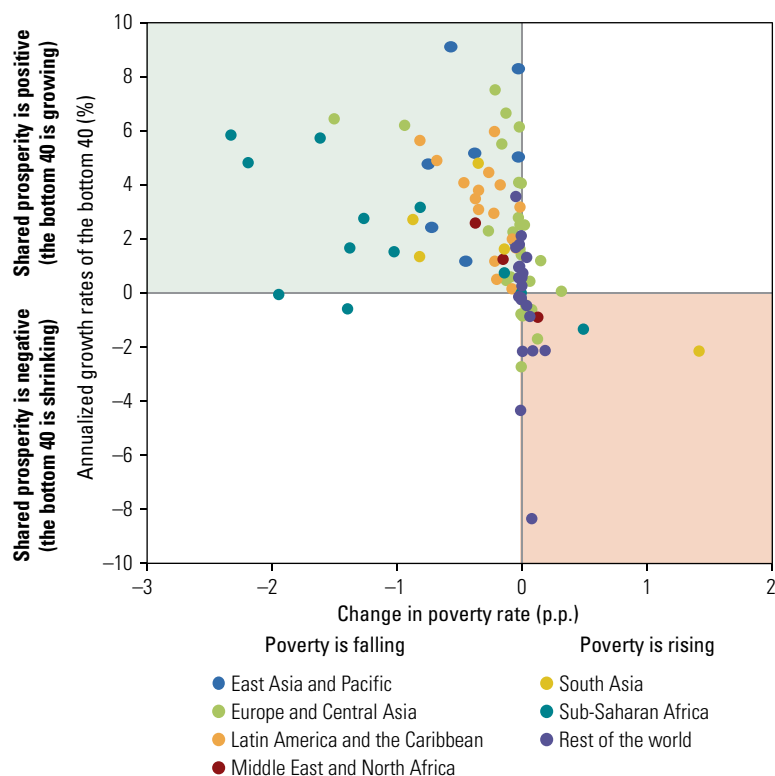
The risk of failing to reach the goal of reducing poverty below 3 percent by 2030 is greatest among the economies with extreme poverty rates above the global average of about 10 percent (figure 2.9). All but one of these economies are in Sub-Saharan Africa, with the exception being in Central America. Although only a fourth of the extremely poor economies are included in the shared prosperity sample (13 out of 57), an examination of their shared prosperity measure in 2010–15 is not encouraging for many of them.<sup>6</sup> Except for a few countries, such as Burkina Faso, Namibia, and Rwanda, if these economies are to have a chance of reaching

the 3 percent goal by 2030, growth rates will have to be high and incomes among the bottom 40 will have to rise at an even higher rate. Instead, in two-thirds of these countries, average incomes among the bottom 40 are increasing at an annual rate below the global average of 1.9 percent, and, in most of these, consumption growth is slower for the bottom 40 than for the mean in the country.

To conclude, although most countries have made progress in shared prosperity, the results are mixed. This is in part due to the fact that in several richer economies incomes of the bottom 40 are growing slowly or not at all. But there is also cause for concern at the very bottom—largely in Sub-Saharan Africa and in economies in fragile and conflict-affected situations.

This concern takes two forms: First, data scarcity among the poorest and most fragile situations continues to be an issue, so coverage of the shared prosperity measure in these countries is limited. This means that where we need the most light we have the least. Second, where there are data (the 13 countries), progress looks decidedly more mixed than among the middle-income success stories. As mentioned in chapter 1, reaching the global target of reducing extreme poverty to less than 3 percent by 2030 will require greater attention to inclusive growth in the world's poorest countries.

**FIGURE 2.8 Shared Prosperity and Changes in Extreme Poverty, 91 Economies, circa 2010–15**

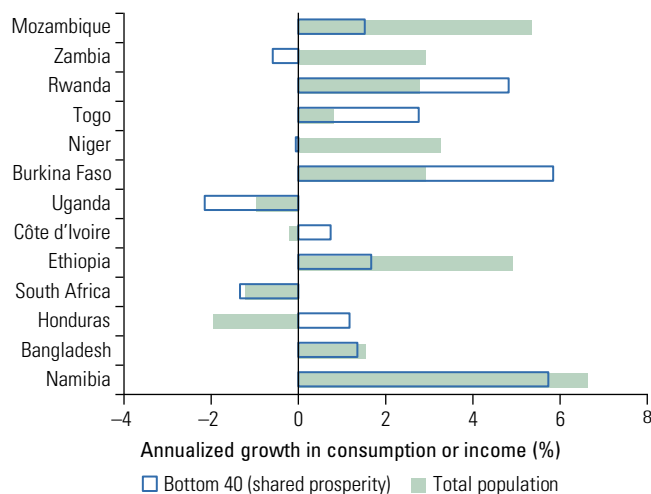


Sources: GDSP (Global Database of Shared Prosperity), fall 2018, World Bank, Washington, DC, <http://www.worldbank.org/en/topic/poverty/brief/global-database-of-shared-prosperity>; PovcalNet (online analysis tool), World Bank, Washington, DC, <http://iresearch.worldbank.org/PovcalNet/>. Note: Changes in poverty are measured as the annual percentage point change in the international poverty rate based on the US\$1.90-a-day poverty line. Changes in poverty are measured over the same period as shared prosperity.

**FIGURE 2.9 Shared Prosperity among the Poorest Economies, circa 2010–15**

Economy	Type	Shared prosperity period	2015 Poverty rate (%)
Mozambique	c	2008–14	62.2
Zambia	c	2010–15	57.5
Rwanda	c	2010–13	51.5
Togo	c	2011–15	49.2
Niger	c	2011–14	44.5
Burkina Faso	c	2009–14	42.8
Uganda	c	2012–16	39.2
Côte d'Ivoire	c	2008–15	28.2
Ethiopia	c	2010–15	27.0
South Africa	c	2010–14	18.9
Honduras	i	2011–16	16.2
Bangladesh	c	2010–16	15.2
Namibia	c	2009–15	13.4

Note: The column "Type" denotes whether the data reported are based on consumption (c) or income (i) data. The 2015 poverty rates have been lined-up to 2015 using interpolation or extrapolation methods. See appendix A for details.



Sources: GDSP (Global Database of Shared Prosperity), fall 2018, <http://www.worldbank.org/en/topic/poverty/brief/global-database-of-shared-prosperity>; World Bank, Washington, DC, PovcalNet (online analysis tool), World Bank, Washington, DC, <http://iresearch.worldbank.org/PovcalNet/>.

## Annex 2A

### Shared prosperity definitions

#### The definition of shared prosperity

The shared prosperity measure represents the annualized growth rate of the mean household per capita consumption or income of the poorest 40 percent of the population (the bottom 40), where the bottom 40 are determined by their rank in household per capita consumption or income. Unlike global and regional poverty estimates that are population weighted, global and regional means of shared prosperity are simple averages. This is because the shared prosperity indicator is purely national in focus.

#### The definition of shared prosperity premium

The World Bank's second twin goal, boosting shared prosperity, is sometimes characterized as a growth indicator and sometimes as an indicator of inequality. In fact, it is a bit of both. Growth in the average consumption (or income) of the bottom 40 can stem from the rising mean consumption (or income) of the overall population, changes in the share

of overall income that accrues to the bottom 40, or both. This can be analytically expressed as follows:

$$g_{40} = g_{mean} + g_{shareB40}, \quad (2A.1)$$

where  $g_{40}$  is the income growth among the bottom 40;  $g_{mean}$  is the growth in the mean; and  $g_{shareB40}$  is the growth in the income share of the bottom 40.

Although not an inequality indicator, the second term may be considered as the distributional term that accounts for changes in the proportion of total income growth that accrues to the bottom 40. This is precisely the shared prosperity premium (SPP), which is obtained by rearranging equation (2A.1) as follows:

$$g_{shareB40} = g_{40} - g_{mean} \equiv \text{SPP} \quad (2A.2)$$

This change in the share, or premium, does not directly measure the inequality in a society. But it is a (limited) measure of distributional changes. If the incomes of the bottom 40 grow at a rate that is above (or below) average, then inequality—at least between the bottom 40 and the rest of the distribution—will tend to narrow (or widen).

## Annex 2B

# Shared prosperity estimates by economy

**TABLE 2B.1** Shared Prosperity Estimates, 91 Economies, circa 2010–15

Economy	Period <sup>c</sup>	Type <sup>d</sup>	Annualized growth in mean consumption or income per capita <sup>a,b</sup>		Mean consumption or income per capita <sup>a</sup>			
			Bottom 40 (%)	Total population (%)	Initial year		Most recent year	
					Bottom 40 (\$ a day, PPP)	Total Population (\$ a day, PPP)	Bottom 40 (\$ a day, PPP)	Total Population (\$ a day, PPP)
China <sup>f</sup>	2013–15	C	9.11	7.37	3.91	9.46	4.65	10.90
Fiji	2008–13	c	1.17	-0.51	3.33	7.65	3.52	7.47
Indonesia	2015–17	c	4.77	4.79	2.51	5.68	2.75	6.24
Mongolia	2010–16	c	1.86	1.42	4.01	8.05	4.48	8.77
Malaysia	2011–15	i	8.30	5.95	7.89	21.76	11.14	27.95
Philippines	2009–15	i	2.43	1.38	2.38	6.75	2.74	7.33
Thailand	2010–15	c	5.03	3.04	5.67	13.29	7.24	15.43
Vietnam	2010–16	c	5.17	3.75	3.29	7.61	4.46	9.49
Armenia	2011–16	c	2.25	4.58	3.16	5.66	3.53	7.08
Bulgaria <sup>g</sup>	2009–14	i	0.43	2.11	8.15	16.86	8.32	18.72
Bosnia and Herzegovina	2011–15	c	-0.45	-0.79	9.51	19.26	9.34	18.65
Belarus	2011–16	c	4.06	3.46	9.40	16.34	11.47	19.37
Czech Republic <sup>g</sup>	2010–15	i	1.42	1.03	15.98	26.79	17.15	28.20
Estonia <sup>g</sup>	2010–15	i	6.15	6.62	10.71	21.07	14.44	29.04
Georgia	2011–16	c	6.44	4.32	2.46	5.97	3.36	7.38
Croatia <sup>g</sup>	2010–15	i	0.47	-0.12	9.28	18.82	9.49	18.71
Hungary <sup>g</sup>	2010–15	i	1.19	1.73	10.55	19.57	11.19	21.33
Kazakhstan	2010–15	c	4.09	3.47	5.50	9.58	6.72	11.36
Kyrgyz Republic	2011–16	c	0.59	-0.03	3.07	5.30	3.16	5.29
Kosovo	2012–15	c	3.50	1.57	4.66	8.39	5.17	8.79
Lithuania <sup>g</sup>	2010–15	i	6.65	8.10	7.91	16.79	10.91	24.79
Latvia <sup>g</sup>	2010–15	i	7.52	6.47	7.74	16.93	11.11	23.16
Moldova	2011–16	c	2.79	0.39	4.92	9.19	5.65	9.37
Macedonia, FYR	2009–14	l	6.20	1.90	3.36	9.46	4.55	10.42
Montenegro	2009–14	c	-2.73	-2.27	8.64	16.27	7.52	14.51
Poland <sup>g</sup>	2010–15	i	2.52	2.07	11.00	22.29	12.46	24.70
Romania <sup>g</sup>	2010–15	i	0.06	1.14	4.25	9.71	4.26	10.27
Russian Federation	2010–15	c	1.62	0.48	9.29	21.84	10.07	22.36
Serbia <sup>g</sup>	2012–15	i	-1.70	-0.88	4.69	12.04	4.45	11.72
Slovak Republic <sup>g</sup>	2010–15	i	-0.62	-0.61	13.17	22.95	12.77	22.25
Slovenia <sup>g</sup>	2010–15	i	-0.78	-0.56	21.12	34.70	20.31	33.74
Tajikistan	2009–15	c	2.30	3.58	2.69	5.13	3.08	6.34
Turkey	2011–16	c	2.53	3.47	6.45	15.73	7.30	18.66
Ukraine	2011–16	c	-0.85	-0.69	7.34	11.90	7.03	11.50
Argentina <sup>g</sup>	2011–16	i	0.15	0.00	8.44	23.25	8.51	23.26
Bolivia	2011–16	i	1.67	1.06	4.07	12.56	4.42	13.24
Brazil	2011–15	i	3.80	2.19	4.77	17.66	5.54	19.25
Chile	2009–15	i	5.97	5.49	5.21	15.69	7.37	21.63
Colombia	2011–16	i	3.49	1.48	3.57	13.27	4.24	14.28
Costa Rica	2011–16	i	2.00	1.95	6.69	21.42	7.39	23.59
Dominican Republic	2011–16	i	4.46	3.53	4.22	12.54	5.24	14.92
Ecuador	2011–16	i	2.95	1.92	4.10	12.26	4.74	13.49
Honduras	2011–16	i	1.17	-1.95	2.15	9.13	2.28	8.28
Mexico	2010–14	i	0.51	0.74	3.88	11.41	3.96	11.75
Nicaragua	2009–14	i	5.64	6.52	2.94	7.90	3.87	10.83

(continued)

**TABLE 2B.1 Shared Prosperity Estimates, 91 Economies, circa 2010–15 (continued)**

Economy	Period <sup>c</sup>	Type <sup>d</sup>	Annualized growth in mean consumption or income per capita <sup>a,b</sup>		Mean consumption or income per capita <sup>a</sup>			
			Bottom 40 (%)	Total population (%)	Initial year		Most recent year	
					Bottom 40 (\$ a day, PPP)	Total Population (\$ a day, PPP)	Bottom 40 (\$ a day, PPP)	Total Population (\$ a day, PPP)
Panama	2011–16	i	4.00	3.89	5.74	20.40	6.98	24.70
Peru	2011–16	i	3.08	2.18	4.11	12.04	4.79	13.41
Paraguay	2011–16	i	4.90	1.65	4.21	15.02	5.35	16.30
El Salvador	2011–16	i	4.08	2.93	3.46	8.86	4.22	10.23
Uruguay	2011–16	i	3.18	1.76	9.10	23.94	10.64	26.13
Egypt, Arab Rep.	2010–12	c	2.58	0.78	2.84	5.17	2.99	5.25
Iran, Islamic Rep.	2009–14	c	1.25	-1.27	6.60	17.42	7.02	16.34
West Bank and Gaza	2011–16	c	-0.89	-0.55	5.30	10.84	5.03	10.50
Bangladesh	2010–16	c	1.35	1.54	1.88	3.52	2.03	3.86
Bhutan	2012–17	c	1.63	1.67	3.54	8.08	3.83	8.78
Sri Lanka	2012–16	c	4.80	5.28	3.37	7.51	3.98	8.99
Pakistan	2010–15	c	2.72	4.25	2.28	4.01	2.60	4.94
Burkina Faso	2009–14	c	5.84	2.93	1.04	2.39	1.38	2.76
Côte d'Ivoire	2008–15	c	0.74	-0.22	1.46	3.91	1.53	3.84
Ethiopia	2010–15	c	1.67	4.91	1.48	2.88	1.61	3.66
Mozambique	2008–14	c	1.52	5.36	0.72	1.96	0.78	2.65
Mauritania	2008–14	c	3.17	1.44	2.37	5.27	2.86	5.74
Namibia	2009–15	c	5.73	6.64	1.75	7.79	2.41	11.27
Niger	2011–14	c	-0.06	3.26	1.27	2.35	1.27	2.59
Rwanda	2010–13	c	4.82	2.78	0.90	2.43	1.03	2.63
Togo	2011–15	c	2.76	0.82	0.89	2.63	0.99	2.71
Uganda	2012–16	c	-2.15	-0.96	1.39	3.32	1.28	3.19
South Africa	2010–14	c	-1.34	-1.23	2.12	11.80	1.99	11.11
Zambia	2010–15	c	-0.59	2.93	0.68	2.59	0.66	2.99
Austria <sup>g</sup>	2010–15	i	-0.47	-0.28	29.76	56.03	29.07	55.26
Belgium <sup>g</sup>	2010–15	i	0.57	0.48	26.73	47.73	27.50	48.89
Canada	2010–13	i	-0.24	0.83	27.36	55.97	27.16	57.37
Switzerland <sup>g</sup>	2010–15	i	0.98	0.84	31.99	63.63	33.59	66.35
Cyprus <sup>g</sup>	2010–15	i	-4.34	-3.04	27.05	50.63	21.66	43.38
Greece <sup>g</sup>	2010–15	i	-8.35	-6.98	14.56	31.08	9.41	21.65
Germany	2010–15	i	-0.18	0.59	28.13	52.31	27.88	53.88
Denmark <sup>g</sup>	2010–15	i	0.57	0.45	28.97	50.77	29.80	51.93
Spain <sup>g</sup>	2010–15	i	-2.16	-1.53	17.74	39.51	15.90	36.58
Finland <sup>g</sup>	2010–15	i	0.53	0.17	28.13	48.95	28.89	49.36
France <sup>g</sup>	2010–15	i	0.74	0.21	26.41	52.68	27.40	53.23
United Kingdom <sup>g</sup>	2010–15	i	0.26	0.11	22.00	46.34	22.29	46.60
Ireland <sup>g</sup>	2010–15	i	1.69	1.14	22.19	43.74	24.13	46.29
Iceland <sup>g</sup>	2009–14	i	-0.13	-0.47	29.23	51.35	29.04	50.15
Italy <sup>g</sup>	2010–15	i	-2.13	-1.08	19.88	42.44	17.85	40.19
Luxembourg <sup>g</sup>	2010–15	i	-2.14	-0.44	36.83	70.80	33.04	69.24
Malta <sup>g</sup>	2010–15	i	3.57	3.48	19.49	35.76	23.22	42.43
Netherlands <sup>g</sup>	2010–15	i	0.95	0.66	27.90	50.25	29.25	51.92
Norway <sup>g</sup>	2010–15	i	2.11	2.95	36.54	61.31	40.57	70.92
Portugal <sup>g</sup>	2010–15	i	-0.87	-0.74	13.11	27.85	12.55	26.84
Sweden <sup>g</sup>	2010–15	i	1.80	2.40	26.97	47.84	29.49	53.85
United States	2010–16	i	1.31	1.67	24.38	62.43	26.36	68.93

Source: GDSP (Global Database of Shared Prosperity), fall 2018, World Bank, Washington, DC, PovcalNet (online analysis tool), <http://iresearch.worldbank.org/PovcalNet>. World Bank, Washington, DC.

Note: PPP = purchasing power parity.

a. Based on real mean per capita consumption or income measured at 2011 Purchasing Power Parity (PPP) using PovcalNet (<http://iresearch.worldbank.org/PovcalNet>).

b. The annualized growth rate is computed as  $(\text{Mean in year 2}/\text{Mean in year 1})^{1/(\text{Reference year 2} - \text{Reference year 1})} - 1$ .

c. Refers to the year in which the underlying household survey data were collected and, in cases for which the data collection period bridged two calendar years, the first year in which data were collected is reported. See appendix A for criteria in selecting shared prosperity periods.

d. Denotes whether the data reported are based on consumption (c) or income (i) data. Capital letters indicate that grouped data were used.

e. Covers urban areas only.

f. See Chen et al. (2018) for details on how the shared prosperity estimate for China is calculated.

g. Source from World Bank (forthcoming). "Living and Leaving. Housing, Mobility and Welfare in the European Union," World Bank Regional Report.

**TABLE 2B.2 Changes in Shared Prosperity, 67 Economies, circa 2008–13 to circa 2010–15**

Region	Economies, number			Average SP		Average change in SP
	Total	Higher SP in circa 2010–15	Lower SP in circa 2010–15	Circa 2008–13	Circa 2010–15	
East Asia and Pacific	6	5	1	5.82	4.73	-1.09
Europe and Central Asia	22	12	10	1.51	2.41	0.90
Latin America and the Caribbean	14	4	10	4.56	3.21	-1.35
Middle East and North Africa	1	0	1	3.07	1.25	-1.82
South Asia	3	1	2	3.86	3.05	-0.81
Sub-Saharan Africa	1	0	1	4.09	-2.15	-6.24
Rest of the world	20	13	7	-1.10	-0.46	0.64
Total	67	35	32	1.92	1.87	-0.05

Source: GDSP (Global Database of Shared Prosperity), World Bank, Washington, DC, <http://www.worldbank.org/en/topic/poverty/brief/global-database-of-shared-prosperity>.  
Note: SP = shared prosperity; the indicator measures growth in the average consumption or income of the bottom 40. The 2008–13 release refers to the version included in *Poverty and Shared Prosperity 2016* (World Bank 2016b). The 2010–15 release refers to the version used in the present report. Regional and global averages of shared prosperity refer to simple averages across country means.

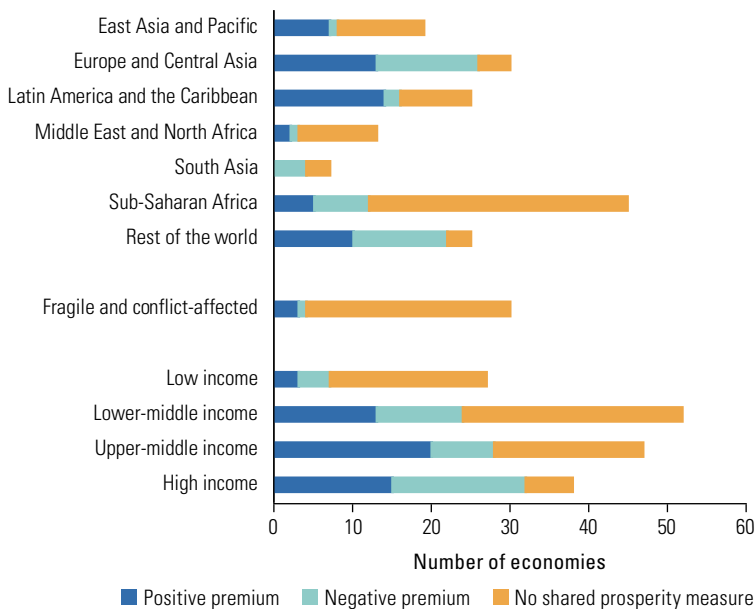
**TABLE 2B.3 Changes in the Shared Prosperity Premium, 67 Economies, circa 2008–13 to circa 2010–15**

Region	Economies, number			Average SPP		Average change in SPP
	Total	Higher SPP in circa 2010–15	Lower SPP in circa 2010–15	Circa 2008–13	Circa 2010–15	
East Asia and Pacific	6	4	2	0.91	1.10	0.19
Europe and Central Asia <sup>a</sup>	22	11	10	0.30	0.21	-0.09
Latin America and the Caribbean	14	4	10	1.51	1.20	-0.31
Middle East and North Africa	1	0	1	4.27	2.52	-1.75
South Asia	3	0	3	0.27	-0.69	-0.96
Sub-Saharan Africa	1	0	1	2.24	-1.19	-3.43
Rest of the world	20	7	13	-0.09	-0.32	-0.23
Total	67	26	40	0.58	0.31	-0.27

Source: GDSP (Global Database of Shared Prosperity), World Bank, Washington, DC, <http://www.worldbank.org/en/topic/poverty/brief/global-database-of-shared-prosperity>.  
Note: SPP = shared prosperity premium, which refers to the difference in the consumption or income growth of the bottom 40 and the mean of the country. The 2008–13 release refers to the version included in *Poverty and Shared Prosperity 2016* (World Bank 2016b). The 2010–15 release refers to the version covered in the present report. Regional and global averages of shared prosperity refer to simple averages across country means.

a. The SPP for FYR Macedonia is the same for both circa 2010–15 and circa 2008–13.

**FIGURE 2B.1 The Shared Prosperity Premium, 91 Economies, by Region or Income Classification**



Sources: GDSP (Global Database of Shared Prosperity), fall 2018, World Bank, Washington, DC, <http://www.worldbank.org/en/topic/poverty/brief/global-database-of-shared-prosperity>; PovcalNet (online analysis tool), World Bank, Washington, DC, <http://iresearch.worldbank.org/PovcalNet/>.

Note: The count is based on the 164 economies on which PovcalNet includes direct estimates of poverty. Premium refers to the shared prosperity premium. "Positive premium" indicates that the income of the bottom 40 grew at a faster rate than the average. "Negative premium" indicates that the incomes of the bottom 40 grew at a slower rate than the average in the country. "No shared prosperity measure" indicates that a poverty rate is reported in PovcalNet for the economy, but that the data are inadequate for computing shared prosperity.

## Notes

1. Survey income and consumption are used herein as equivalent aggregates. The assumption that they can be used interchangeably is a requirement of the global poverty and shared prosperity exercise given that country data are often available on only one or the other. For more on the implications of using income

or consumption for measuring poverty and changes over time, see the section on chapter 1 in appendix A. See also boxes 1.1 and 4.4 in World Bank (2016b).

2. Estimates for China are based on PovcalNet (see appendix A for further details).
3. The economies in fragile and conflict-affected situations included are Côte d'Ivoire, Kosovo, Togo, and West Bank and Gaza.
4. As of August 8, 2018, the World Bank considered that 83 economies exhibited moderate or extreme data deprivation. Data deprivation occurs if a country conducts fewer than two household surveys in a 10-year period (Sera-juddin et al. 2015). Recognizing that the poorest countries are more data challenged, the World Bank pledged in 2015 to help the poorest countries improve the frequency of data collection to one household survey every three years.
5. A positive premium occurs in association with a negative shared prosperity indicator in only two cases, namely, Bosnia and Herzegovina and Iceland. In these countries, the entire growth distribution is negative, shared prosperity is also negative though close to zero, and incomes among the top 60 are declining even more rapidly than the incomes of the bottom 40.
6. The sample of economies in which shared prosperity can be measured in circa 2010–15 (13 of the 57 countries with poverty rates above 10 percent) is small, but similar conclusions would be reached if older time spells for shared prosperity are considered—thus increasing the coverage among economies with poverty rates above 10 percent. Taking this expanded sample, in the five countries with the highest level of poverty at the US\$1.90 a day poverty line, none of which is included in the present round on shared prosperity, four have a negative shared prosperity and all have a negative premium.



# Higher Standards for a Growing World

This chapter presents two new sets of monetary poverty lines intended to complement the international poverty line (IPL) of US\$1.90 a day. First, two higher poverty lines, at US\$3.20 and US\$5.50 per day, are presented, reflecting typical national poverty thresholds in middle-income countries. Second, the chapter introduces a global societal poverty line (SPL) reflecting how monetary definitions of poverty at the national level vary with the overall income in a society. The SPL counts individuals as poor if they are living either on less than the IPL or on less than US\$1.00 a day plus half the median value of consumption or income of their nation.

The two sets of complementary poverty lines enrich our understanding of global monetary poverty. They reveal that global poverty rates are higher and being reduced more slowly than is indicated by assessments using the IPL. Although only 10 percent of the world population was living on less than US\$1.90 per person per day in 2015, a quarter of the world was living on less than US\$3.20 per person per day, and close to half the world was living on less than US\$5.50 per person per day. The societal poverty rate declined by about a third between 1990 and 2015, dropping from approximately 45 percent to 28 percent. The chapter shows that the elimination of monetary poverty, more broadly defined, is still a distant goal.

## Introduction

In 2013, the World Bank set a target of reducing extreme poverty as assessed by the international poverty line (IPL) to less than 3 percent of the global population by 2030. A frequent and important question posed when monitoring progress toward the goal of ending poverty is whether the IPL, currently valued at US\$1.90 in 2011 purchasing power parity (PPP) U.S. dollars, is too severe a threshold for defining whether someone is poor or not. Or, is US\$1.90 per day really enough to live a life free of extreme poverty?

One element of the answer involves examining the reason this amount was initially selected. The value of the IPL was derived from a set of national poverty lines—lines that reflected social and economic assessments made

in each country of how much someone needs to meet basic needs and live a life free of poverty. These national poverty lines came from some of the poorest countries in the world, and the US\$1.90 value was an average of national poverty lines from 15 of these very poor countries (Ferreira et al. 2016). The inference is that, if US\$1.90 defines the cost of basic needs in some of the poorest countries of the world, then it can be viewed as an absolute minimum threshold for defining poverty in all countries. This approach for setting the IPL is therefore guided by decisions made in some of the poorest countries of the world and, in this way, respectful of national values and choices.

In addition to reflecting national values and choices, the IPL also has the desirable

attribute that it is fixed in real terms over time and across countries. The value of the line will be regularly adjusted to reflect changing prices over time so that it maintains a constant value through 2030 in each country of the world. Fixing the real value of the IPL in this way ensures that the 3 percent by 2030 target will not be shifted to make it easier or more difficult to reach.

Additionally, the value of the IPL is converted into local currencies using the 2011 PPP index to lock in corresponding amounts of each local currency that can purchase approximately the same amount of basic goods within each country. Uniformity in purchasing power across countries is desirable because it guarantees that the yardstick of material well-being used in each country is comparable with the yardsticks used in all other countries. The comparable value of the line makes certain that, if individuals are identified as poor in one country because they are not able to acquire a basic bundle of goods, they would also be identified as poor in other countries if unable to purchase a similarly valued bundle of goods.

“Measurable, time-bound goals are crucial to focusing our work,” explains World Bank President Jim Yong Kim (2016). The decision to fix the purchasing power of the IPL over time (up through 2030), and over all countries of the world, ensures that the goal line for this time-bound target is not changed.

All of these attributes of the IPL have been persuasive in helping the global community reach agreement around the poverty goal. The success of the IPL in fostering coordination in the international community on the issue of poverty is evident in the incorporation of the IPL in first the Millennium Development Goals (MDGs) and now the Sustainable Development Goals (SDGs).<sup>1</sup>

Although the World Bank will continue to focus on the 3 percent target as assessed by the IPL, there are, nonetheless, reasonable concerns with the current valuation of the IPL. One source of concern is simply that, when those national poverty lines were constructed for the 15 poor countries, 60 percent of the global population was living in low-income countries. The average value of these national poverty lines was meaningful for the vast majority of the poor and a large portion

of the global population. By 2015, however, only 9 percent of the global population was living in low-income countries (Fantom and Serajuddin 2016). Because most of the extreme poor are now living in middle-income countries, and most of the total population is in middle- and high-income countries, the use of average assessments of basic needs in low-income countries is gradually becoming less relevant in many countries of the world.

To address this concern in part, the World Bank has introduced a new set of poverty lines that are higher in value and more relevant to current economic conditions. Looking beyond the IPL helps us better understand what poverty means in different parts of the world. This chapter discusses two ways in which the World Bank will now also report on poverty, by assessing complementary poverty lines that will help guide efforts to deliver on the broader objective of establishing a world free of poverty.

### **Higher poverty lines for everyone: US\$3.20 and US\$5.50 a day**

Although maintaining the value of the IPL fixed in real terms is essential to monitoring progress toward achieving the 2030 poverty target, recognizing that how countries and the global community define poverty and basic needs can change is also imperative. “The necessities of life are not fixed” argues Townsend (1979, 915). “They are continuously being adapted and augmented as changes take place in society and its products.”

To address the concern that the value of the IPL could be viewed as too extreme for much of the world or that the necessities of life are greater now than previously, the World Bank also uses poverty lines that are higher in value. The values of these lines have been identified in a manner similar to the IPL, that is, they reflect social and economic assessments made by governments; however, the assessments are more recent, and they are also produced in countries that are, on average, richer than those upon which the IPL is based.

These complementary lines reflect typical poverty assessments in lower-middle-income

countries (LMICs) and upper-middle-income countries (UMICs) in recent years.<sup>2</sup> Specifically, the lines are the median values of LMIC and UMIC national poverty lines in about 2011 (Jolliffe and Prydz 2016). The value of the poverty line based on assessments of needs in LMICs is US\$3.20 per person per day expressed in 2011 PPP U.S. dollars, whereas the value of the line based on typical basic needs in UMICs is US\$5.50 (table 3.1). Although these lines may sometimes be referred to as LMIC and UMIC lines, this does not mean that, for example, the LMIC line can be applied only in the case of LMICs. The two poverty lines simply offer higher values that reflect assessments of basic needs in these two groups of countries. (The values are based on a large database of harmonized national poverty lines in about 2011; see appendix A for details.)

As with the IPL, the intention is that the value of these LMIC and UMIC lines will remain fixed in real terms, thereby allowing poverty reduction to be monitored also at higher global poverty lines.<sup>3</sup> Because they are complementary lines based on more recent social assessments of basic needs, the lines will maintain greater relevance as poverty reduction is monitored over the next 15 years. The decision to use social assessments from middle-income countries also reflects the overall growth in the global economy. Using LMIC and UMIC median national poverty lines as the basis for the complementary lines means that these new lines better reflect the situations in countries that are home to most of the global population and most of the global poor.

Chapter 1 in this report shows the tremendous progress the world has made in reducing extreme poverty as measured by the IPL. As one remarkable example, target 1.A of MDG 1, to cut the poverty rate of 1990 in half by 2015, was reached approximately six years ahead of schedule. This is true whether we examine the global poverty rate or the global poverty rate less several high-income countries. This extraordinary success allows us to broaden our focus to ensure that those people who may not be poor as measured by the IPL, but who struggle nonetheless to satisfy their basic needs, also benefit from economic development.

**TABLE 3.1 National Poverty Lines, circa 2011**

Economy, income classification	Median	Mean
Low income	1.90	2.20
Lower-middle income	3.20	3.90
Upper-middle income	5.50	5.60
High income	21.70	21.20

Source: Jolliffe and Prydz 2016.

Note: Values are rounded to nearest 0.10. Economies are classified on the basis of official World Bank income classifications, which rely on measures of per capita gross national income. Estimates are based on national poverty lines in 126 economies. The selected poverty line for each economy is the one that is closest in time to 2011.

Table 3.2 shows the change since 1990 in the proportion of people living on less than US\$3.20 or less than US\$5.50 a day. The findings illustrated in the table suggest that the success in reducing extreme poverty has not been completely matched by reductions in the relative size of the population living on less than these higher-valued lines. Like the MDG of halving extreme poverty as measured by the IPL, the proportion of people living on less than US\$3.20 a day was also halved between 1990 and 2015. However, in contrast to the MDG, which was met about six years ahead of schedule, the proportion of people living on less than US\$3.20 was only halved by 2014, five years after the MDG target was reached. Measured according to the US\$5.50 line, the success in improving the well-being of people living in poverty must be additionally tempered. In 1990, approximately two-thirds of the population of the world was living on less than US\$5.50 a day. By 2015, this proportion had fallen, but it had not been halved. Slightly less than half (46 percent) of the world was still living on less than US\$5.50 a day in 2015.

Figure 3.1, panel a, illustrates why the rate at which extreme poverty is being reduced is not matched by reductions in the share of the world population living on less than US\$3.20 or US\$5.50. In 1990, there was a concentration of people who were consuming just less than the US\$1.90 threshold, as revealed by the distribution peaking to the left of this value.<sup>4</sup> Although one-third of the world's population consumed less than US\$1.90, most of those people consumed at rates between US\$1.00 and US\$1.90. Economic development shifted the distribution to the right, moving the hump over the US\$1.90 threshold, leading to a rapid reduction in the number of people consuming less than US\$1.90. In contrast, panel

**TABLE 3.2 Poverty at Higher Poverty Lines, US\$3.20 and US\$5.50 (2011 PPP)****a. Poverty rate by region at US\$3.20 (%)**

Region(s)	1990	1999	2008	2013	2015	Percentage point change, 1990–2015
East Asia and Pacific	85.3	67.1	37.4	17.5	12.5	-72.8
Europe and Central Asia	9.9 <sup>a</sup>	21.1	7.5	5.7	5.4	-4.6
Latin America and the Caribbean	28.3	27	15.7	11.4	10.8	-17.5
Middle East and North Africa	26.8	21.7	16.7	14.4	16.3	-10.5
South Asia	81.7	76 <sup>a</sup>	67.9	53.9	48.6 <sup>a</sup>	-33.1
Sub-Saharan Africa	74.9	78.3	72.2	67.8	66.3	-8.6
Sum of regions	66.4	60.1	45	33.7	30.7	-35.7
Rest of the world	0.8	0.8	0.7	0.8	0.9	0.1
World	55.1	50.6	38.2	28.8	26.3	-28.9

**b. Poverty rate by region at US\$5.50 (%)**

Region(s)	1990	1999	2008	2013	2015	Percentage point change, 1990–2015
East Asia and Pacific	95.2	87	63.6	42.4	34.9	-60.3
Europe and Central Asia	25.3 <sup>a</sup>	44.5	17.1	14.1	14	-11.3
Latin America and the Caribbean	48.6	47	33.3	27.2	26.4	-22.2
Middle East and North Africa	58.8	54.5	46.6	42.3	42.5	-16.3
South Asia	95.3	93.1 <sup>a</sup>	89.8	84.2	81.4 <sup>a</sup>	-14
Sub-Saharan Africa	88.5	90.5	88.1	85.4	84.5	-4.1
Sum of regions	80.5	79.3	66.5	57	53.7	-26.7
Rest of the world	1.7	1.3	1.2	1.5	1.5	-0.2
World	67	66.8	56.5	48.7	46	-21

Source: PovcalNet (online analysis tool), World Bank, Washington, DC, <http://iresearch.worldbank.org/PovcalNet/>.

Note: The criteria for estimating survey population coverage is whether at least one survey used in the reference year estimate was conducted within two years of the reference year. PPP = purchasing power parity.

a. This estimate is based on less than 40 percent of regional population coverage.

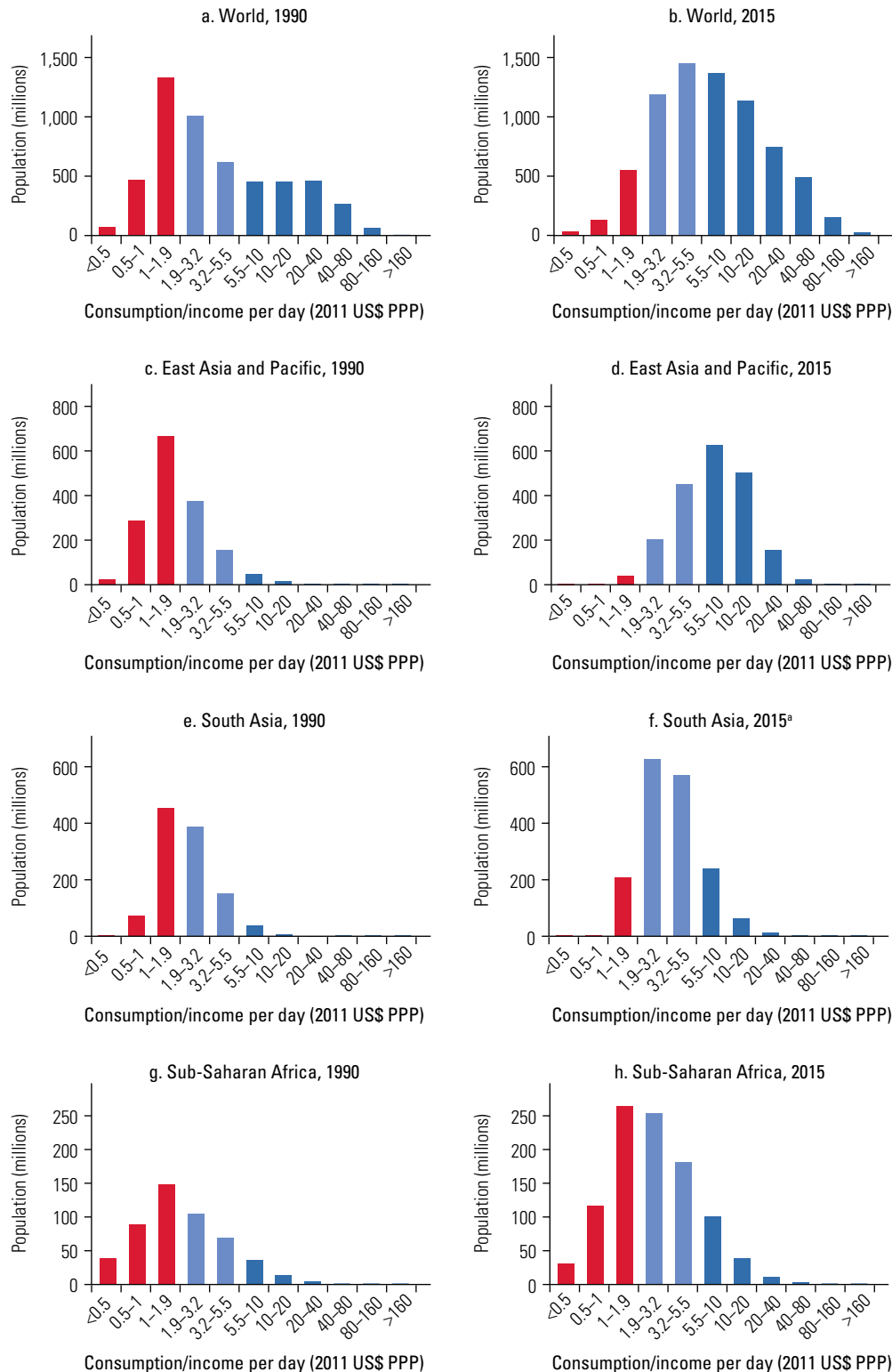
a shows that a significantly smaller share of people was living on more than US\$1.90 but less than US\$3.20. So the economic growth that led to a rapid reduction in extreme poverty could not carry as many people above the US\$3.20 threshold. This narrative is similar in the case of the US\$5.50 line: economic growth carried significantly fewer people past the US\$5.50 threshold.

The global distribution of consumption for 2015 offers useful insights into what one may expect in the near future (as illustrated by the histogram in figure 3.1, panel b). In 2015, the peak in the consumption distribution had shifted to the right and is now between US\$3.20 and US\$5.50. Only about 10 percent of the global population is still living on less than US\$1.90 a day. An implication of this is that growth in the near future will shift the distribution further to the right, leading to a rapid reduction in the share of people living on less than US\$5.50 a day. However,

with significantly fewer people now living below the \$1.90 threshold, future growth will not lift as many people past this threshold as previously experienced. Thus, the reduction in extreme poverty will be tempered, although the potential for progress in reducing the share of the world's population living on less than US\$5.50 a day will be significant. This reinforces the conclusion in chapter 1 that the slowdown in the rate of decline of extreme poverty will likely continue.

In addition to providing insight on the potential for global poverty reduction in the near-term future, these higher lines also present clear regional differences in the profile of the people living in extreme poverty or nearly so. The countries in East Asia and Pacific not only had the largest reductions in extreme poverty, but they also experienced the largest reductions in the proportion of people living on less than US\$3.20 and US\$5.50 (figure 3.1, panels c and d). Between 1990 and 2015, the proportion of

**FIGURE 3.1 Consumption and Income Distributions, 1990 and 2015**



Source: PovcalNet (online analysis tool), World Bank, Washington, DC, <http://iresearch.worldbank.org/PovcalNet/>.

Note: Bins were purposely selected to highlight US\$1.90, US\$3.20, and US\$5.50 poverty lines. The size of the selected bins produces a histogram that approximates the shape of the estimated density function of the log of income/consumption.

a. This estimate is based on less than 40 percent of regional population coverage.

people living on less than each of these three thresholds declined by nearly 60 percentage points. This can be seen in panels c and d in the large rightward shift of the distribution between 1990 and 2015. This massive progress over every threshold was experienced only in East Asia and Pacific. In the other regions, progress in reducing poverty at the various thresholds has been much more modest.

Figure 3.1, panel e, reveals that in South Asia the peak of the consumption distribution was slightly below US\$1.90 in 1990. By 2015, most people now lived on more than US\$1.90 but less than US\$3.20 (figure 3.1, panel f). There was a large decline—35 percentage points—in the share of people living on less than US\$1.90. There was also a decline (60 percent) in the number of people living below US\$1.90 (table 1A.1). The story for South Asia changes, however, when we examine the US\$3.20 poverty threshold. The percentage of the total population living below this threshold declined substantially over this time, but because of a growing population, the number of people living on less than US\$3.20 declined by only 8 percent over this 25-year period. In contrast to East Asia where the peak of the distribution essentially shifted past the US\$5.50 threshold, in South Asia the peak of the distribution of consumption essentially shifted from just below US\$1.90 to just below US\$3.20.

In the case of Sub-Saharan Africa (figure 3.1, panels g and h), the distribution has shifted rightward only very slightly. Although chapter 1 reported that extreme poverty declined by 13 percentage points in Sub-Saharan Africa between 1990 and 2015, panel d reveals that the peak of the consumption distribution was essentially around US\$1.90 in both 1990 and 2015. The decline in the prevalence of extreme poverty coincided with nearly a 50 percent increase in the number of people living in extreme poverty during this time period. Overall, the population of Sub-Saharan Africa nearly doubled in this time period, with one of the largest increases in population being for those living on less than US\$3.20 and more than US\$1.90. Economic growth slightly outpaced population growth resulting in a distribution of consumption that shifted only slightly to the right but grew significantly larger, reflecting the near doubling of the population.

## Higher lines tailored to country circumstances: Societal poverty

The second set of complementary poverty lines the World Bank is now reporting are tailored to the specific levels of economic development of each country and are designed to measure societal poverty. The introduction of this measure is in direct response to recommendations of the Commission on Global Poverty, led by Professor Sir A. B. Atkinson, to “introduce a *societal* head count measure of global consumption poverty that takes account, above an appropriate level, of the standard of living in the country in question, thus combining fixed and relative elements of poverty” (World Bank 2017, xxi).

A key attribute of the IPL is that it is converted into local currencies using the 2011 PPP U.S. dollars to ensure that the value of the line reflects approximately the same purchasing power in all countries (see earlier discussion). If an individual who is able to buy US\$2.00 worth of goods in one country each day is not considered poor, then an individual who is able to consume at that same level in another country will also not be poor. Everyone is assessed by the same standard regardless of where they live. This guiding principle of the monitoring of extreme poverty ensures that the material well-being of people can be assessed and compared meaningfully across the world.

Although ensuring equality in the yardstick of poverty is desirable, there are some trade-offs in making this choice. One trade-off in particular helped guide the World Bank toward the development of a new complementary poverty line, the societal poverty line (SPL). Fixing the value of the line in constant PPP terms across all countries ensures that the bundle of goods that can be purchased is the same. As economies grow, however, this bundle is becoming a less useful indicator of basic needs in many places. For example, in 2015, the extreme poverty rate was less than 3 percent in more than half the 164 countries in which the World Bank monitors extreme poverty; and the majority of the world no longer lives in low-income economies. For many countries, the social

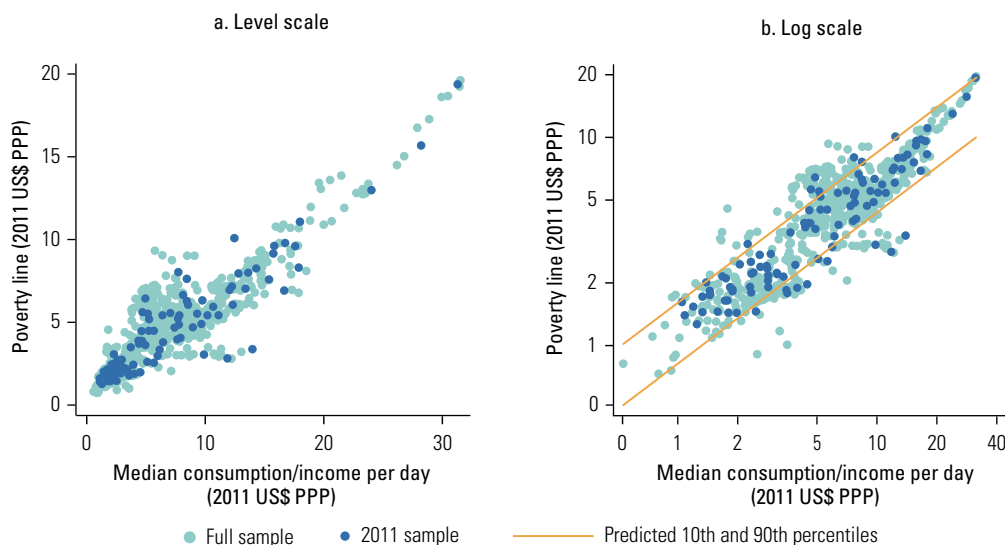
relevance of the IPL has lessened over time as their economies have grown. This is largely due to the observance that needs change as the world becomes richer (Townsend 1979).

A very closely related point is that, as countries grow richer, uniformity in the consumption bundle may not result in the same level of well-being everywhere. Carrying out basic functions of life might require more goods in some countries than in others, and fixing the consumption bundle could result in unequal assessment of people across the world in terms of their ability to function in society in a socially acceptable manner. Another way to express this is that ensuring equality across countries in terms of carrying out the same basic functions of life in each society may result in a poverty line that takes different monetary values (Sen 1983). For example, participating in the labor market may be viewed as a minimal social functioning; the cost of this functioning, however, may require only clothing and food in a poor society, whereas in a richer society it may require access to the internet, transportation, and a cell phone, in addition to clothing and food. Another example that more directly builds

on a relative notion of the poverty line revolves around the fact that participation in society with dignity may require more goods in a richer country than in a poorer country. Social participation might thus be more closely related to the concept of meeting basic needs in the poorest of countries, but in richer countries the ability to participate in society might be costlier.

This conceptual point, that the very definition of basic needs in terms of goods and services may vary across countries, appears to be empirically supported. Figure 3.2 shows that there is significant variation across countries in how basic needs are defined, as expressed in national poverty lines. The analysis in the figure is based on 699 estimated national poverty lines—all of which are expressed in comparable purchasing power terms. It reveals a strong positive correlation between the median level of consumption in each country and the assessment of basic needs. Analysis on a different set of national poverty lines has similarly shown that the values of absolute national poverty lines range across countries from US\$0.63 a day to more than US\$9.00 a day (in 2005 PPP U.S. dollars) and that higher

**FIGURE 3.2 National Poverty Lines and Economic Development**



Source: Jolliffe and Prydz 2016.

Note: Both panels plot 699 harmonized national poverty lines. Dark dots indicate the 104 poverty lines that are closest to 2011 (one unique line for each country), excluding lines prior to 2000. Both panels plot the same data. Panel a plots the lines on actual values. Panel b plots these same values, but the axis values of the plots are log transformations. Lines in panel b are predicted (conditional bivariate) 10th and 90th percentile lines. All axis values are expressed in 2011 purchasing power parity (PPP) U.S. dollars.

poverty lines correspond to relatively more well-off economies (Ravallion 2010).

This finding is not merely a cross-sectional association. If the definition of poverty changes as countries grow richer on average, national poverty lines should be changing in real terms over time. This is indeed what is observed. A few specific examples follow. In 2011, the government of India raised the real value of the urban poverty line by more than 40 percent, increasing it from Rs 33 to Rs 47 per person per day. The change in rural poverty lines was significantly less, about 19 percent, increasing from Rs 27 to Rs 32. At about this time, China increased the real value of the rural poverty line by more than 75 percent (Addison and Niño-Zarazúa 2012). Many governments have increased the real value of national poverty lines in recognition that their economies have grown so significantly that the concept of basic needs has changed fundamentally. After 15 years of keeping the real value of the national poverty line constant, the government of Nepal raised the real value of its poverty line in 2011 (CBS 2012). Similarly, the government of Jordan increased the real value of the poverty line by about 10 percent in 2011 (Jolliffe and Serajuddin 2018; World Bank 2009).<sup>5</sup> Absolute national poverty lines are behaving like relative poverty lines in that they are becoming higher as countries get richer. “It can be agreed that a sustained increase in average living standards is likely to lead eventually to more generous perceptions of what ‘poverty’ means in a given society,” notes Ravallion (1998, 29).

### Characteristics of the societal poverty line

To reflect this viewpoint, the World Bank will now initiate reporting on societal poverty, which is based on a poverty line that is adjusted for the median level of well-being in each country.<sup>6</sup> First, according to the definition of societal poverty used by the World Bank, individuals living in extreme poverty as measured by the IPL are also suffering from societal poverty. Second, the new measure considers that individuals are suffering from societal poverty if they are living on less than US\$1.00 a day plus half of the value

of median consumption (or income) per day in that country. If US\$1.00 plus half the median consumption is less than the IPL, then the SPL is equal to the IPL. In many countries, this value is greater than US\$1.90, and this greater value then becomes the SPL. More formally, the SPL adopted by the World Bank is calculated in 2011 PPP U.S. dollars as follows:

$$\text{SPL} = \max(\text{US\$1.90}, \text{US\$1.00} + 0.5 \times \text{median consumption}).^7 \quad (3.1)$$

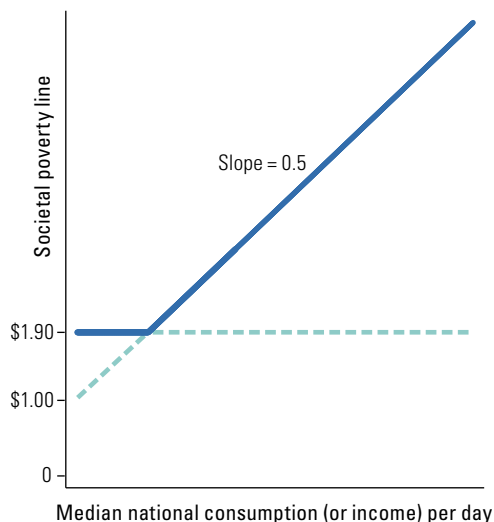
For example, in a country in which the median consumption per person is US\$1.60 per day, the IPL is greater than US\$1.00 plus half of US\$1.60, so the value of the SPL is US\$1.90.<sup>8</sup> Alternatively, in a country in which the median consumption is US\$3.00 per day, the SPL is US\$2.50 (US\$1.00 + 0.5 × US\$3.00). In defining societal poverty in this way, Jolliffe and Prydz (2017), build on the important contributions of Atkinson and Bourguignon (2001), Chen and Ravallion (2013), Foster (1998), and Ravallion and Chen (2011).

By this definition, societal poverty represents a combination of extreme poverty, which is fixed in value for everyone, and a relative dimension of well-being that differs in every country depending on the median level of consumption in that country. Figure 3.3 illustrates how the SPL changes as the median consumption in a country increases. In countries with low median consumption (less than US\$1.80 per person per day), a rise in median consumption does not change the SPL. Indeed, the SPL has the same value as the IPL in all countries with median consumption at less than US\$1.80. However, as countries with median consumption at more than US\$1.80 become richer, and the median consumption increases, the value of the SPL also rises. The climbing cost of social participation as the economy grows is reflected in the positive slope of the line.

The slope of one-half, the rate at which the SPL is rising as countries become richer, comes from the empirical association observed between national poverty lines and different measures of overall consumption in society. It indicates that, on average, the national poverty lines are increasing at a rate equal to half the median consumption



**FIGURE 3.3 Societal Poverty Line**



Source: Jolliffe and Prydz 2017.

Note: The lower bound is equal to the international poverty line, which is currently valued at US\$1.90 in 2011 purchasing power parity U.S. dollars. The slope is equal to 0.5. The intercept is US\$1.00. The kink point in the figure is at a median national consumption or income of US\$1.80.

in the countries. The slope of one-half and the intercept of US\$1.00 are the values that most closely fit the data provided by the national poverty lines and overall consumption in each country. This observed relationship between national poverty lines and national well-being determines the formula for measuring societal poverty.<sup>9</sup> In an important sense, the SPL and the IPL share the same empirical underpinning. Both are anchored in the distribution of national poverty lines, which represent countries' own judgements of what poverty means for them. Whereas the IPL focuses narrowly—and deliberately—on the choices of some of the poorest countries, the SPL is built on information from across the whole range of levels of development.

In addition to fitting the data well, the slope coefficient of half the median is widely used by many countries and organizations as a measure of relative poverty and inclusion. In the academic literature on poverty, this slope has been a subject of discussion for a long time, and, in policy, the Organisation for Economic Co-operation and Development uses 50 percent of median household income as the headline poverty indicator

for country poverty rates.<sup>10</sup> Similarly, European countries typically set national poverty thresholds at 50 percent or 60 percent of median disposable household income (Vecchi 2015). The gradient of 50 percent coincides with SDG indicator 10.2.1 on inequality, namely, the proportion of people living below 50 percent of the median income, by sex, age, and disability status.<sup>11</sup>

Similarly, the intercept of US\$1.00 per person per day in 2011 PPP U.S. dollars corresponds in value with some relevant empirical findings. Ravallion (2016) estimates an empirical lower bound on consumption in part to address the issue of how to monitor the concept of leaving no one behind. His analysis indicates that the value of this consumption floor is US\$0.67 in 2005 PPP U.S. dollars, which is US\$1.00 after conversion to 2011 PPP.<sup>12</sup> There are also analyses that aim to estimate minimum biological needs—a concept that differs significantly from socially acceptable ways of meeting basic needs. The value of these minimum needs tends to be about US\$1.00 (Lindgren 2015).<sup>13</sup>

The SPL is estimated by first extracting the median level of daily per capita consumption (or income) for each national distribution from PovcalNet, then following the formula in equation (3.1) to derive a set of country-specific values of the SPL.<sup>14</sup> If this value is greater than US\$1.90, the SPL is passed to PovcalNet, which reports the poverty rate associated with this line. This rate is the societal poverty rate. (If the  $SPL \leq US\$1.90$ , then societal poverty is simply the same as extreme poverty estimated in chapter 1.)

By design, the SPL rises with growth. The population-weighted average SPL across all countries increased from US\$5.30 in 1990 to about US\$6.90 in 2015, reflecting the steady, global growth in real median consumption during that time. The SPL growth rate has been much stronger in higher-income countries. Among today's UMICs, the mean SPL nearly doubled over the same time period, rising from US\$3.00 in 1990 to US\$5.80 in 2015. In contrast, the average SPL only slightly increased in value in low-income countries over this period—in large part because of changes in country composition of these income categories.

**TABLE 3.3 Average Societal Poverty Lines, by Region and Income Classification, 1990–2015**

<b>a. Region(s)</b>	<b>1990</b>	<b>1999</b>	<b>2008</b>	<b>2013</b>	<b>2015</b>	<b>Percentage point change, 1990–2015</b>
East Asia and Pacific	2.0	2.2	3.2	4.3	4.8	2.8
Europe and Central Asia	5.9 <sup>a</sup>	4.4	7.1	7.8	7.6	1.8
Latin America and the Caribbean	3.9	4.1	5.2	6.1	6.1	2.2
Middle East and North Africa	3.6	3.8	4.5	4.7	4.6	1.0
South Asia	2.0	2.1 <sup>a</sup>	2.2	2.5	2.6 <sup>a</sup>	0.6
Sub-Saharan Africa	2.1	2.1	2.2	2.3	2.3	0.2
Sum of regions	2.7	2.7	3.4	4.0	4.1	1.4
Rest of the world	17.8	19.8	22.1	22.0	22.8	5.0
World	5.3	5.4	6.2	6.7	6.9	1.6

<b>b. Income group</b>	<b>1990</b>	<b>1999</b>	<b>2008</b>	<b>2013</b>	<b>2015</b>	<b>Percentage point change, 1990–2015</b>
Low income	2.1	2.1	2.1	2.2	2.2	0.1
Lower-middle income	2.2	2.2	2.5	2.8	2.9	0.7
Upper-middle income	3.0	3.0	4.4	5.4	5.8	2.8
High income	16.4	18.2	20.4	20.5	21.2	4.8

Source: PovcalNet (online analysis tool), World Bank, Washington, DC, <http://iresearch.worldbank.org/PovcalNet/>.

Note: The table presents (population-weighted) average of the value of country societal poverty lines, evaluated at US\$1.00 + 50 percent × median consumption (or income) with a lower bound of US\$1.90 (2011 PPP). Current (2018) World Bank income classifications have been used. The criteria for estimating survey population coverage is whether at least one survey used in the reference year estimate was conducted within two years of the reference year. PPP = purchasing power parity.

a. This estimate is based on less than 40 percent of regional population coverage.

Table 3.3 reveals significant differences in the pattern of the regional growth of the SPL. For example, the mean SPL in South Asia, East Asia and Pacific, and Sub-Saharan Africa in 1990 was just slightly higher than the IPL of US\$1.90. Because of strong economic growth in East Asia and Pacific, the mean line more than doubled, to US\$4.80 per day in 2015. In contrast, in Sub-Saharan Africa, which has experienced much weaker overall growth, there has been little change in the value of the SPL, increasing only by \$0.20 since 1990.

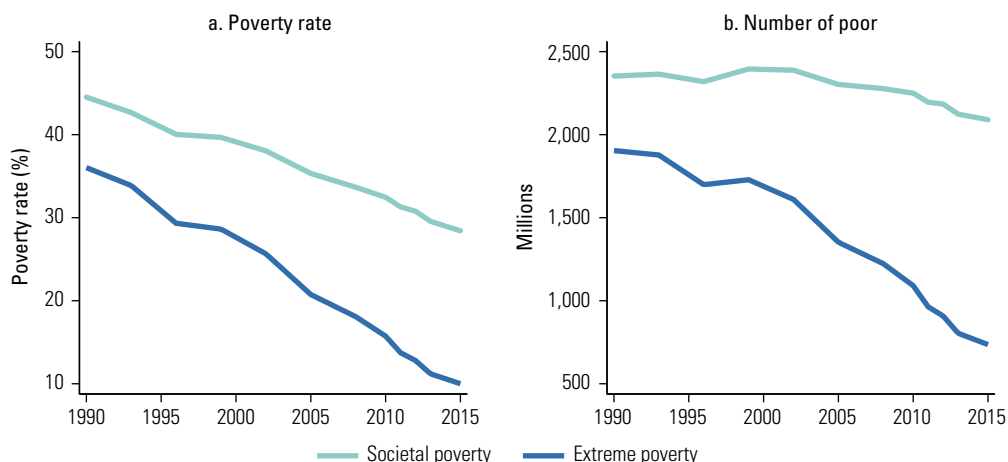
### Profile of societal poverty

Global counts of extreme poverty are based on data from PovcalNet (described in appendix A), and so too are the estimates of societal poverty presented in this chapter.<sup>15</sup> Using the country-specific SPL and following the same aggregation and lining-up methods as in the case of the extreme poverty estimates reported in chapter 1, the estimated societal poverty headcount was approximately 2.1 billion people in 2015.<sup>16</sup> This is almost three times more than the global count of people living on less than US\$1.90 a day, which was estimated at approximately 736 million in 2015. Figure 3.4 displays the change in both the count and the

rate of societal poverty, as measured by the SPL. It also displays the count and rate of absolute extreme poverty as measured by the IPL of US\$1.90 a day. The first striking aspect of the figure is that, although the total count of people living in extreme poverty has declined rapidly, the number of people who are identified as societally poor has largely stayed the same over the 25 years, between 1990 and 2015.

In contrast, the share of the global population that is societally poor has fallen steadily since 1990, but at a much slower pace than the decline in extreme poverty (figure 3.4, panel a). This divergence in the rate of decline amplifies the distinction between the two measures. Table 3.4 shows that, in 1990, the societal poverty rate, at 44.5 percent, was estimated at about 9 percentage points higher than the extreme poverty rate (35.9 percent, as seen in figure 3.4, panel a). By 2015, the gap between societal and extreme poverty, in terms of the percentage point difference (18.4), had more than doubled. In a growing global economy, this divergence is an expected outcome, and the magnitude of the change in the difference in the rates over the decades highlights the distinction in the informational content in these measures. In the 1980s and early 1990s, the societal poverty rate and the extreme pov-

**FIGURE 3.4 Societal and Extreme Poverty, Global Estimates, 1990–2015**



Note: Panel a shows the rate of extreme poverty based on the international poverty line (US\$1.90, 2011 PPP) and societal poverty based on the societal poverty line. Panel b shows the corresponding number of people who are poor by both lines. PPP = purchasing power parity.

erty rate were largely similar concepts because most of the world population was living in countries with low median national consumption, whereby the IPL and the SPL were either identical or close in value. They largely portrayed the same picture of poverty. But now, as countries have grown richer, and median consumption is above US\$1.80 in many countries of the world, the SPL is capturing significantly more information about the distributional aspects of growth.

Similar to the case of regional profiles of absolute poverty, Sub-Saharan Africa stands out because of the substantially higher rates of societal poverty. Although the societal poverty rate has declined 9 percentage points over the last 25 years in Sub-Saharan Africa, the overall rate is still almost half the population, 49 percent, in 2015. In contrast, societal poverty had dropped 38 percentage points in the East Asia and Pacific region, reducing by more than half the rate of 63.4 percent in 1990, to 25.1 per-

**TABLE 3.4 Societal Poverty Rates, 1990–2015**

Percent

a. Region(s)	1990	1999	2008	2013	2015	Percentage point change, 1990–2015
East Asia and Pacific	63.4	46.6	34.7	27.2	25.1	-38.3
Europe and Central Asia	22.2 <sup>a</sup>	27.0	19.4	17.7	17.3	-4.9
Latin America and the Caribbean	33.9	34.0	29.4	27.5	26.9	-7.0
Middle East and North Africa	28.6	26.6	23.7	21.5	22.9	-5.7
South Asia	51.0	46.9 <sup>a</sup>	42.0	35.4	32.9 <sup>a</sup>	-18.0
Sub-Saharan Africa	57.9	61.2	53.3	49.9	49.0	-9.0
Sum of regions	50.6	44.3	37.0	31.9	30.6	-20.0
Rest of the world	15.5	15.2	15.4	16.0	16.0	0.5
World	44.5	39.7	33.7	29.6	28.4	-16.1

b. Income group	1990	1999	2008	2013	2015	Percentage point change, 1990–2015
Low income	63.6	65.0	55.6	51.4	51.2	-12.3
Lower-middle income	50.5	46.7	40.3	34.9	32.9	-17.6
Upper-middle income	50.8	39.7	30.4	24.7	23.5	-27.3
High income	15.8	15.8	15.9	16.4	16.3	0.5

Source: PovcalNet (online analysis tool), World Bank, Washington, DC, <http://iresearch.worldbank.org/PovcalNet/>.

Note: World Bank income classifications are current as of 2018. Change is measured in percentage points (pp). "Sum of regions" was previously referred to as "developing world" for which PovcalNet monitors poverty.

a. The criteria for estimating survey population coverage is whether at least one survey used in the reference year estimate was conducted within two years of the reference year.

cent in 2015. All developing regions have seen an overall decline in societal poverty rates since 1990, especially during the 2000s. In contrast societal poverty has been stubbornly static, at about 16.0 percent in aggregate, in the mainly high-income countries in the “rest of the world” category, though remaining lower than in all the developing regions.

A similar pattern emerges in the lower half of table 3.4, which presents societal poverty rates by country income classifications. Countries are shown in their income classification as of 2018. So a country identified as a UMIC in 2018 was not necessarily a UMIC in 1990. It might have grown economically into that classification, and this happened often. Partly for this reason, the largest declines in societal poverty occurred among UMICs. The countries classified as UMICs in 2018 had realized some of the highest economic growth rates over the preceding 25 years.

The analysis of societal poverty by income classification confounds two issues. Economic growth is an important engine of poverty reduction, but growth alone is a less effective vehicle for reducing societal poverty if a country is already in the higher-income category. This is because societal poverty is a hybrid concept that mixes elements of absolute and relative poverty (Foster 1998). An implication of this hybrid concept (more specifically, the lower bound at the IPL and the positive intercept at one) is that the value

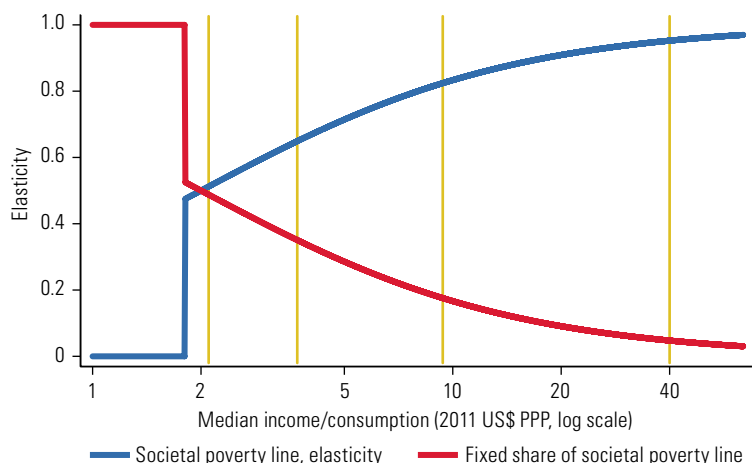
of the SPL increases in percentage terms at a rate that is slower than the percentage increase in economic growth. This means that, if median consumption doubles, the SPL increases, but by an amount less than double.

Because the percent increase in the SPL will always be less than the percent increase in median consumption, distribution-neutral growth will reduce societal poverty. By construction, the percentage increase in the SPL in response to a percentage increase in median consumption differs among rich countries relative to poor countries. For the poorest countries, among which median consumption is less than US\$1.80 a day, growth in median consumption does not change the value of the SPL. If a country’s median consumption grows sufficiently and crosses the US\$1.80 kink point, then the SPL will increase slightly (see figure 3.1). Figure 3.5 shows that for a typical country that has reached high-income status, that is, median consumption around US\$40 a day, the SPL rises at a percentage rate that is nearly equal to the percentage increase in median consumption. For the richest of countries, doubling median consumption nearly doubles the value of the SPL. In contrast, increasing the median consumption for countries whose median consumption is less than US\$1.80 has no effect on the SPL if the SPL has less value than the IPL.

An alternative way to interpret this is that, among low-income countries, improvements in societal poverty are highly correlated with improvements in extreme poverty; in fact, they are identical in the poorest countries. Among high-income countries, the shared prosperity premium is highly correlated with reductions in societal poverty. Positive shared prosperity, combined with a shared prosperity premium, indicates that a country is growing and that the poorest in the country are benefitting more from this growth. In high-income countries, this is precisely what is needed to reduce societal poverty. In this way, societal poverty combines information about reductions in extreme poverty (discussed in chapter 1) and the notions of shared prosperity and the shared prosperity premium (discussed in chapter 2).

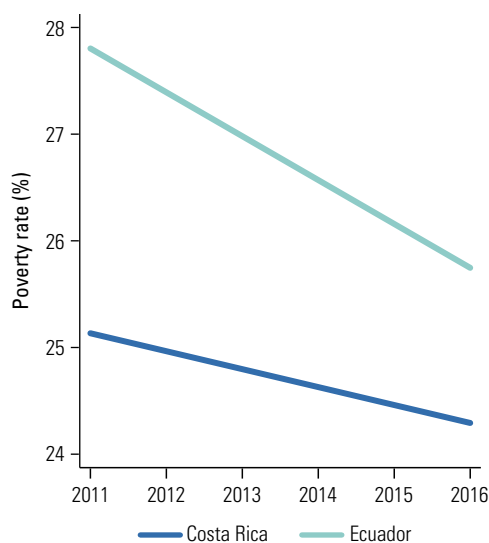
Figure 3.6 illustrates this by displaying the case of two UMICs, Costa Rica and Ec-

**FIGURE 3.5** Change in the Societal Poverty Line from Growth



Note: Vertical lines indicate the average national median consumption or income in 2013 for World Bank income classification groupings (from left to right): low-income (US\$2.1/day), lower-middle-income (US\$3.7), upper-middle-income (US\$9.3), and high-income (US\$40) countries. PPP=purchasing power parity.

**FIGURE 3.6 Societal Poverty and Shared Prosperity in Costa Rica and Ecuador**



Note: The figure shows the decline in societal poverty for Ecuador and Costa Rica over a time period where both countries had similar levels of economic growth. Societal poverty declined by more in Ecuador because the poor shared to a much larger extent in the economic growth.

uador. Between 2011 and 2016, both countries exhibited comparable overall economic growth. The average annual growth in survey consumption was 1.95 percent in Costa Rica and 1.92 percent in Ecuador. However, the level of shared prosperity during this period was greater in Ecuador than in Costa Rica. In Costa Rica, growth among the bottom 40 percent of the income distribution (the bottom 40) was essentially the same as the growth in mean consumption. In contrast, the bottom 40 grew a full percentage point more than the mean in Ecuador, resulting in a shared prosperity premium. Although the level of growth was the same, the decline in societal poverty was greater in Ecuador over the period because of the difference in shared prosperity. An examination across all UMICs and high-income countries for which data are available on shared prosperity reveals a strong correlation (equal to 0.6) between the shared prosperity premium and the reduction in societal poverty. Improvement in societal poverty in UMICs and high-income countries requires economic growth in which the poor disproportionately share. An examination of LMICs and low-income countries likewise indicates a correlation between the

shared prosperity premium and the reduction in societal poverty, but at a lower level (about 0.4). Improvement in societal poverty in low-income countries is driven much more by reductions in extreme poverty.

Because societal poverty is a hybrid of absolute and relative poverty concepts, it provides a natural bridge between the dual goals of reducing extreme poverty and increasing shared prosperity. Among the poorest countries, the value of the SPL is primarily determined by the IPL, and policies that promote reductions in extreme poverty will be the same as policies that reduce societal poverty. As countries become wealthier, the SPL is increasingly determined by the relative component of the poverty line, which means that policies that focus on raising the shared prosperity premium—the difference between the growth rate of the bottom 40 and the average growth rate in a country—will be more effective in reducing societal poverty than policies that simply promote growth in overall national income.

### Why not simply use national poverty lines?

The social and economic assessments made by governments in setting national poverty lines underpin essentially all global poverty lines, including the IPL, the higher lines of US\$3.20 and US\$5.50 (based on the median national poverty lines in LMICs and UMICs), and now the SPL.<sup>17</sup> Despite the importance of using assessments of basic needs undertaken by countries, this report reflects a purposeful decision not to allow these assessments alone to completely determine the value of the SPL. An assumption underlying the SPL is that the cost of social participation rises with the level of economic development (as evidenced by the positive income gradient of national poverty lines), but does not vary across countries at the same income.<sup>18</sup>

This differs greatly from a proposal that each and every national poverty line should be used as a global SPL (Gentilini and Sumner 2012). Such a definition of societal poverty would certainly show respect for the judgment of the government of each country, but it would suffer from the problem that countries with the same level of median consumption could have different assessments

of basic needs. The premise of global societal poverty is that it captures the idea that participation in society becomes costlier as countries become richer and that it is also meant to serve as a tool for global poverty monitoring. This latter element, that the SPL is a global poverty line, means that it should allow comparisons across countries or over time. The use of national poverty lines as the SPL is problematic on both these counts.

National poverty lines do not rise strictly in parallel with economic development, nor are they fixed in value as is the IPL. Figure 3.2 shows that there are many cases in which a country may exhibit higher median consumption than some other country but have a lower national poverty line. There are also many cases in which countries at the same level of economic development rely on vastly different assessments of basic needs. If one were to construct a global SPL based on the sum of national poverty lines, then two people who consume at the same level and living in countries at the same level of economic development might be treated differently in the global aggregation of societal poverty. An awkward implication of the use of national poverty lines directly, without any averaging, is that the global aggregation based on this rule would embody a counterintuitive social judgement that someone who is poor in one country may not be identified as poor if his or her well-being were assessed in a richer country with a lower national poverty line.

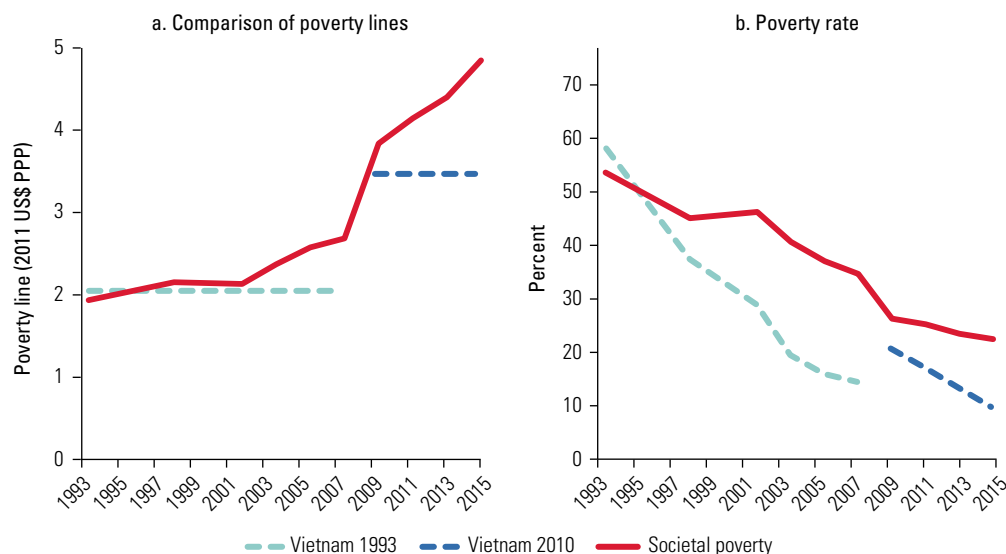
Figure 3.2, panel b, also includes predicted lines at the 90th and 10th percentiles from the bivariate (quantile) regression of the poverty line on median consumption. These predicted lines have similar slopes, and the ratio of these lines in levels is approximately 2 over the entire range. This suggests that, at any given level of national well-being, the range in values of national poverty lines is large. The most generous line is consistently about twice as large as the least generous line. This result is problematic for the proposal to construct a global count of the poor that treats the poverty line of each country as the relevant threshold. Allowing for such significant differences in the definition of basic needs across countries that are essentially at the same level of well-being is inconsistent with the idea that needs may rise as economic development expands.

In addition, the use of national poverty lines to count societal poverty is also problematic over time. As societies prosper, the real value of the threshold used to determine who is considered poor tends to increase. In poorer countries, this is typically a stepwise process. A poverty line is held static in real terms for several years or even several decades, and then it is revised and held static again for a long time. The length of time between the revisions depends on the country and the rate of growth experienced. The World Bank's SPL aims to capture how national poverty lines evolve as countries grow and thus provide a consistently defined measure of poverty that mirrors how societies typically measure poverty. The global SPL is derived from a global relationship between overall economic development and observed national poverty lines across societies, and this averaging over all countries helps improve comparability. An example from Vietnam follows.

In 1993, the General Statistics Office of Vietnam set a national poverty line that would reflect basic needs at the time. The line was equivalent to approximately US\$2.05 a day at 2011 PPP U.S. dollars, which was kept roughly constant in real purchasing power until 2010.<sup>19</sup> Between 1992 and 2008, living standards improved twofold, and poverty measured at the 1993 line fell from 58.0 percent to 14.5 percent. When a new survey was conducted in 2010, a fresh welfare measure and poverty methodology were developed to capture living standards and poverty more effectively and reflect current basic needs. The new poverty line was set at a value equivalent to approximately US\$3.50 a day at 2011 PPP, with a corresponding estimated poverty rate of 21 percent.

Figure 3.7 shows how the value of the national poverty line, SPLs, and corresponding headcount ratio have evolved in Vietnam. The SPL in 1993 was US\$1.92 a day, only slightly below the national threshold of US\$2.05. When the economy grew rapidly in the early 2000s, the value of the SPL rose. In 2010, when the new poverty line was set, the SPL was US\$3.80, a little above the national poverty line; for the latest survey, it was US\$4.90. Whereas the national poverty line is fixed in intervals, and goes up in discrete steps, the SPL has risen more smoothly, fol-

**FIGURE 3.7 Comparing National and Societal Poverty Lines and Rates, Vietnam, 1993–2015**



Note: PPP = purchasing power parity.

lowing the average trend of the national poverty line. In 2009, prior to the large increase in the national poverty line, the SPL definition of basic needs was much closer to the yet to be determined national poverty line definition of basic needs in 2010 than to the definition in 1993. Because the SPL was smoothly updated as the country prospered, the 2009 SPL was likely a better reflection of the social assessment of basic needs at that point than the existing definition based on the 1993 national poverty line value.

## Conclusion

This chapter discusses two new sets of poverty lines that the World Bank will use to report on global poverty, and that are intended to complement the monitoring of poverty as measured with respect to the IPL. One set has complementary poverty lines that are fixed at values greater than the IPL. These lines reflect typical assessments of basic needs, as measured in national poverty lines, for a set of LMICs and UMICs and are valued at US\$3.20 and US\$5.50 (2011 PPP). The basic descriptive statistics of the fixed poverty lines are quite striking. As chapter 1 describes, 10 percent of the population is living on less than US\$1.90. This chapter highlights that one-fourth of the world is living on less than

US\$3.20 per person per day, and slightly less than half of the world’s population is living on less than US\$5.50. The introduction of these lines is motivated primarily by noting that the world has grown richer, and now most of the extreme poor no longer live in low-income countries but rather are in middle-income countries. The relevance of an IPL based on national poverty lines from low-income countries has gradually diminished with time. The motivation for these new higher lines could just as easily be made by recognizing that it is difficult to precisely identify thresholds and legitimate to have differing views on what defines basic needs (Atkinson 1987). The higher lines can help address this concern.

There are a couple of key takeaways from these higher poverty lines. First, the rate of the reduction in extreme poverty in recent decades has not been matched by a similarly paced reduction in the share of people living on less than US\$3.20 or US\$5.50. More than 80 percent of the population of South Asia and Sub-Saharan Africa still live on less than US\$5.50 a day. Second, a large share of the world’s population is living on slightly less than US\$5.50. A reasonable expectation is that, if it continues, global economic growth will produce a rapid reduction in the count of people below this threshold.

The other new poverty line that the World Bank is now reporting is the SPL, which is a mixture of the fixed-in-value IPL and a line that rises in value with median consumption in a country. According to this line, individuals are considered poor if they are living either on less than the IPL or on a dollar a day, plus 50 percent of median consumption in their country of residence. The decision to anchor the SPL in a median measure of well-being fits the data well (as assessed by regressions of national poverty lines on consumption) and corresponds to existing definitions of relative poverty in many countries. The proposed SPL is also relevant to SDG target 10.2 aimed at the social, economic, and political inclusion of all. The indicator associated with this target is the share of people living on less than 50 percent of the median income. Although the focus of this SDG is on reducing inequality and improving inclusion, it overlaps with the idea of monitoring societal poverty. As countries grow, societal poverty provides information on the extent to which the poor share in the growth.

The rate of decline in societal poverty has been slower than the rate of decline in extreme poverty. This is to be expected: the value of the SPL rises as the economy grows. Societal poverty has declined by about a third across the world, dropping from approximately 44.5 percent to 28.4 percent between 1990 and 2015. The reduction in extreme poverty was about twice this rate, declining by about 72 percent, dropping from 35.9 percent to approximately 10.0 percent. In the 1990s, when extreme poverty was more widespread, the difference between societal poverty and extreme poverty was relatively modest. In 2015, the societal poverty rate was almost three times larger than the extreme poverty rate. The continued decline in extreme poverty will likely lead to greater divergence in the informational content of these two measures.

Another useful takeaway from the examination of societal poverty is the differential performance across regions. Most regions experienced a fairly modest reduction in the prevalence of societal poverty. The exceptions were the economies of East Asia and Pacific. Societal poverty was cut by more than half there between 1990 and 2015, declining from

the highest rate of all regions in 1990 (63.4 percent) to one of the lower rates (25.1 percent) in 2015. This impressive performance in reducing societal poverty was driven in large part by the extraordinary success in eradicating extreme poverty.

The focus of monitoring poverty reduction will continue to be on the progress in bringing extreme poverty below 3 percent, but it is clear that this measure of poverty is becoming less helpful in the majority of countries, which already exhibit rates near zero. Even though extreme poverty rates may be well below 3 percent in many countries, this does not mean that poverty is no longer a problem in these societies. The higher poverty lines, set in accord with typical national poverty lines from countries classified as lower-middle and upper-middle income, provide useful guides for monitoring progress on the basis of lines that are fixed in real terms over time. For middle-income countries, these are useful markers for measuring progress that aligns with the definition of basic needs in middle-income countries from 2011. For lower-income countries, they could be viewed as markers for more aspirational targets in poverty reduction.

Similarly, the measure of societal poverty provides a global tool to measure poverty in accord with how countries assess changing standards of basic needs; however, in contrast to the US\$3.20 and US\$5.50 lines, the real value of these lines changes over time as the country grows richer. Although the SPL can change in real terms over time, it is constant in value across countries that are at the same level of median consumption or income. Because the SPL is constructed to reflect, on average, national poverty lines at different levels of median consumption or income, it provides a useful measure of global poverty that aligns well with national assessments of poverty. Keeping the IPL fixed is highly desirable because it allows the progress toward an unmoving target to be monitored, but, as the world advances toward the eradication of extreme poverty, the US\$1.90 poverty line will become increasingly less relevant in many countries. In contrast, because the SPL yardstick is explicitly a function of the well-being of each country, it is, by construction, relevant for all countries over time.



## Annex 3A

# Historical global and regional poverty estimates

**TABLE 3A.1** Historical Trends, Global Poverty Estimates, 1990–2015

**a. US\$3.20 (2011 PPP) Poverty**

Year	Poverty rate (%)	Poverty gap (%)	Squared poverty gap	Poor (millions)	Population (millions)
1990	55.1	26.6	15.5	2,914.0	5,284.9
1993	54.4	25.6	14.7	3,013.4	5,542.9
1996	51.7	22.8	12.7	2,993.8	5,792.6
1999	50.6	22.3	12.4	3,056.1	6,038.1
2002	47.2	20.2	11.0	2,962.7	6,276.8
2005	42.2	16.9	8.8	2,753.3	6,517.0
2008	38.2	14.9	7.7	2,586.9	6,763.7
2011	32.8	12.1	6.0	2,298.8	7,012.8
2013	28.8	10.2	5.0	2,071.7	7,182.9
2015	26.3	9.2	4.6	1,932.7	7,355.2

**b. US\$5.50 (2011 PPP) Poverty**

Year	Poverty rate (%)	Poverty gap (%)	Squared poverty gap	Poor (millions)	Population (millions)
1990	67.0	41.5	28.8	3,540.5	5,284.9
1993	67.9	40.9	28.0	3,761.2	5,542.9
1996	67.3	38.7	25.6	3,900.0	5,792.6
1999	66.8	38.1	25.1	4,035.2	6,038.1
2002	64.0	35.6	23.0	4,018.2	6,276.8
2005	60.4	31.9	19.9	3,939.4	6,517.0
2008	56.5	29.0	17.8	3,823.7	6,763.7
2011	52.2	25.3	15.0	3,662.3	7,012.8
2013	48.7	22.6	13.1	3,498.3	7,182.9
2015	46.0	20.9	12.0	3,386.5	7,355.2

Source: PovcalNet (<http://iresearch.worldbank.org/PovcalNet/>), World Bank.

Note: PPP = purchasing power parity.

**TABLE 3A.2 Historical Trends, Regional Poverty Rates, 1990–2015**

Percent

**a. US\$3.20 (2011 PPP) Poverty rates**

Region	1990	1993	1996	1999	2002	2005	2008	2011	2013	2015
East Asia and Pacific	85.3	79.7	70.6	67.1	57.2	45.4	37.4	26.5	17.5	12.5
Europe and Central Asia	9.9 <sup>a</sup>	15.1	19.2	21.1	14.9	11.8	7.5	6.6	5.7	5.4
Latin America and the Caribbean	28.3	27.1	27.7	27.0	24.9	21.4	15.7	13.1	11.4	10.8
Middle East and North Africa	26.8	28.9	28.0	21.7	19.6	18.8	16.7	14.9	14.4	16.3
South Asia	81.7	80.4	77.3	76.0 <sup>a</sup>	75.5	71.5	67.9	58.9	53.9	48.6 <sup>a</sup>
Sub-Saharan Africa	74.9	78.2	78.0	78.3	78.2	74.8	72.2	70.1	67.8	66.3
Sum of regions	66.4	65.1	61.6	60.1	55.9	49.9	45.0	38.5	33.7	30.7
Rest of the world	0.8	0.8	0.7	0.8	0.7	0.7	0.7	0.8	0.8	0.9
World	55.1	54.4	51.7	50.6	47.2	42.2	38.2	32.8	28.8	26.3

**b. US\$5.50 (2011 PPP) Poverty rates**

Region	1990	1993	1996	1999	2002	2005	2008	2011	2013	2015
East Asia and Pacific	95.2	93.2	89.3	87.0	79.9	71.7	63.6	52.3	42.4	34.9
Europe and Central Asia	25.3 <sup>a</sup>	35.9	41.2	44.5	34.5	26.5	17.1	15.4	14.1	14.0
Latin America and the Caribbean	48.6	48.0	48.2	47.0	45.1	40.9	33.3	29.6	27.2	26.4
Middle East and North Africa	58.8	59.4	59.6	54.5	51.4	49.5	46.6	43.0	42.3	42.5
South Asia	95.3	95.0	93.9	93.1 <sup>a</sup>	92.8	91.0	89.8	86.4	84.2	81.4 <sup>a</sup>
Sub-Saharan Africa	88.5	90.4	90.2	90.5	90.9	89.9	88.1	86.9	85.4	84.5
Sum of regions	80.5	81.2	80.2	79.3	75.7	71.3	66.5	61.2	57.0	53.7
Rest of the world	1.7	1.6	1.4	1.3	1.3	1.2	1.2	1.4	1.5	1.5
World	67.0	67.9	67.3	66.8	64.0	60.4	56.5	52.2	48.7	46.0

Source: PovcalNet (<http://iresearch.worldbank.org/PovcalNet/>), World Bank.

Note: The criteria for estimating survey population coverage is whether at least one survey used in the reference year estimate was conducted within two years of the reference year. "Sum of regions" was previously referred to as "developing world." PPP = purchasing power parity.

a. This estimate is based on less than 40 percent of regional population coverage.

**TABLE 3A.3 Historical Trends, Regional Number of Extreme Poor, 1990–2015**

Millions

**a. Number of poor at US\$3.20 (2011 PPP)**

Region	1990	1993	1996	1999	2002	2005	2008	2011	2013	2015
East Asia and Pacific	1,366.5	1,332.1	1,224.7	1,205.4	1,057.1	859.5	723.8	524.0	352.2	254.2
Europe and Central Asia	46.1 <sup>a</sup>	70.8	90.4	99.4	70.2	55.4	35.6	31.6	27.7	26.2
Latin America and the Caribbean	124.5	125.9	135.7	138.4	133.0	118.8	90.8	78.3	70.0	67.5
Middle East and North Africa	61.5	71.2	73.4	60.4	57.4	58.2	54.6	51.2	51.5	60.6
South Asia	925.3	971.5	992.5	1,034.4 <sup>a</sup>	1,085.5	1,081.5	1,075.8	973.5	916.0	847.2 <sup>a</sup>
Sub-Saharan Africa	383.2	434.7	470.0	510.5	552.3	572.5	599.1	631.8	645.4	667.0
Sum of regions	2,907.1	3,006.2	2,986.7	3,048.6	2,955.5	2,745.9	2,579.6	2,290.3	2,062.8	1,922.9
Rest of the world	6.8	7.2	7.1	7.5	7.2	7.4	7.3	8.5	8.9	9.8
World	2,914.0	3,013.4	2,993.8	3,056.1	2,962.7	2,753.3	2,586.9	2,298.8	2,071.7	1,932.7

**b. Number of poor at US\$5.50 (2011 PPP)**

Region	1990	1993	1996	1999	2002	2005	2008	2011	2013	2015
East Asia and Pacific	1,525.3	1,557.7	1,550.2	1,562.2	1,476.0	1,357.5	1,231.0	1,035.2	851.7	710.4
Europe and Central Asia	117.3 <sup>a</sup>	168.5	194.0	209.7	161.8	124.4	81.0	73.7	67.8	68.2
Latin America and the Caribbean	214.4	223.1	235.8	240.8	241.1	227.6	192.5	177.2	166.9	165.4
Middle East and North Africa	135.1	146.4	156.3	151.6	150.9	152.9	151.9	148.3	151.7	157.9
South Asia	1,080.1	1,148.5	1,206.7	1,267.6 <sup>a</sup>	1,334.1	1,377.0	1,423.1	1,429.6	1,431.0	1,419.0 <sup>a</sup>
Sub-Saharan Africa	452.8	502.6	543.5	590.3	641.5	687.4	731.7	783.4	813.1	849.5
Sum of regions	3,525.0	3,746.8	3,886.5	4,022.2	4,005.4	3,926.9	3,811.2	3,647.4	3,482.2	3,370.3
Rest of the world	15.5	14.4	13.5	13.0	12.9	12.6	12.5	15.0	16.1	16.1
World	3,540.5	3,761.2	3,900.0	4,035.2	4,018.2	3,939.4	3,823.7	3,662.3	3,498.3	3,386.5

Source: PovcalNet (<http://iresearch.worldbank.org/PovcalNet/>), World Bank.

Note: The criteria for estimating survey population coverage is whether at least one survey used in the reference year estimate was conducted within two years of the reference year. "Sum of regions" was previously referred to as "developing world." PPP = purchasing power parity.

a. This estimate is based on less than 40 percent of regional population coverage.

## Notes

1. Target 1.A of the MDGs is to halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day. The indicator for monitoring progress in achieving the target was fixed at the proportion of people living on less than the World Bank IPL of US\$1.25 a day (in 2005 PPP values). Similarly, target 1.1 of the SDGs, to be achieved by 2030, is to eradicate extreme poverty for all people everywhere, measured as people living on less than \$1.90 a day, the IPL. See Millennium Development Goals Indicators (database), Development Indicators Unit, Statistics Division, United Nations, New York, <http://mdgs.un.org/unsd/mdg/Host.aspx?Content=Indicators%2fOfficialList.htm>; “Sustainable Development Goals: 17 Goals to Transform Our World,” United Nations, New York, <http://www.un.org/sustainabledevelopment/>.
2. The World Bank classification of countries according to regions and income groups is followed here. For details on income classification, see Fantom and Serajuddin (2016). For the World Bank regions, see “Select a Region,” in “Where We Work,” <http://www.worldbank.org/en/country>.
3. There may be different interpretations of what “fixed in real terms” means. Here it means that the lines are converted to domestic currency in 2011 prices, using the 2011 PPP conversion factors, and are thereafter adjusted over time by the main domestic consumer price index used in each country.
4. The bin sizes of the consumption distributions have been selected to correspond to key thresholds at US\$1.90, US\$3.20, and US\$5.50. The statement then about most people consuming just less than US\$1.90 is affected by the selected bin sizes. But an estimated density function of the log of consumption closely corresponds to the shape of the histogram displayed.
5. For more examples of countries that have changed the value of their national poverty lines, see the online appendix of Jolliffe and Prydz (2016), at [https://static-content.springer.com/esm/art%3A10.1007%2Fs10888-016-9327-5/MediaObjects/10888\\_2016\\_9327\\_MOESM1\\_ESM.pdf](https://static-content.springer.com/esm/art%3A10.1007%2Fs10888-016-9327-5/MediaObjects/10888_2016_9327_MOESM1_ESM.pdf).
6. The motivation for referring to the line as the SPL is drawn from the World Bank (2017, xxi), which recommends the introduction of “a ‘societal’ head count measure of global consumption poverty.”
7. In the relatively small number of countries in which extreme poverty is assessed using income rather than consumption, the SPL is similarly defined in terms of income instead of consumption.
8. If median consumption is US\$1.60, then US\$1.00 + half of US\$1.60 is US\$1.80. This value is less than the IPL of US\$1.90; so, in this case, the SPL is set at the lower bound, US\$1.90.
9. For a detailed discussion of the fit of the SPL with national poverty lines and how this fit compares with other candidate specifications, see Jolliffe and Prydz (2017).
10. See Fuchs (1967); “Poverty Rate” (indicator), Organisation for Economic Co-operation and Development, Paris (accessed January 26, 2017), <https://doi.org/10.1787/0fe1315d-en>.
11. For details on each of the 17 SDGs, including metadata and indicators, see “Compilation of Metadata for the Proposed Global Indicators for the Review of the 2030 Agenda for Sustainable Development,” Inter-agency Expert Group on SDG Indicators, Statistics Division, Department of Economic and Social Affairs, United Nations, New York. <http://unstats.un.org/sdgs/iaeg-sdgs/metadata-compilation/>. The decision that the cost of social participation is increasing in median consumption rather than, say, average consumption is discussed in detail in Jolliffe and Prydz (2017) and is consistent with arguments made by Aaberge and Atkinson (2013), Birdsall and Meyer (2015), and Stiglitz, Sen, and Fitoussi (2010) that the median is a better representation of the material well-being of a country relative to the mean and is also a simple way of capturing distributional aspects of well-being.
12. See Ferreira et al. (2016) for a discussion on inflating 2005 PPP values into 2011 PPP values. They assert that, on average, US\$1.90 in 2011 PPP U.S. dollars maintains the same purchasing power as US\$1.25 in 2005 PPP for the set of 15 poor countries that determine the IPL. They also demonstrate that this inflation rate of about 52 percent maintains an average purchasing power for essentially all countries in the PovcalNet database for which they estimate poverty (and have measures of PPP in

- both years). Inflating US\$0.67 by 52 percent results in US\$1.01. Furthermore, direct reestimation of Ravallion's (2016) consumption floor using 2011 PPP gives a value of US\$1.00 at 2011 PPP.
13. Similarly, Allen (2017, table 11) estimates the lowest cost of a diet consisting of 2,100 calories per day with 50 grams of protein and 34 grams of protein across several countries. The lowest value he estimates is US\$0.98 in 2011 PPP terms for Zimbabwe.
  14. See PovcalNet (online analysis tool), World Bank, Washington, DC. <http://iresearch.worldbank.org/PovcalNet/>. The estimates cited here were produced from the version of PovcalNet updated on October 1, 2016. China, India, and Indonesia have separate rural and urban distributions in PovcalNet, and no national median is readily available. For these countries, the national median is derived by combining the rural and urban population-weighted distributions available in PovcalNet and estimating the median of the joint national distribution. The resulting national median is used in defining the SPL for these countries. For high-income countries, the alignment of the surveys closest to the reference years is replicated using National Accounts data, the method in the PovcalNet reference-year aggregation.
  15. The profile of societal poverty presented here is based on estimates from PovcalNet as of September 2018, the same version of the data used in the rest of this report. See PovcalNet (online analysis tool), World Bank, <http://iresearch.worldbank.org/PovcalNet/>.
  16. Household survey data do not exist for every country in every year, but all global poverty estimates are for a specific year. To overcome the data gaps, survey data are projected forward and, sometimes, backcast to produce country poverty rates for each year. For an overview of the methods, see Ferreira et al. (2016); Jolliffe et al. (2015).
  17. The idea that national poverty lines represent social assessments of minimum needs has been a motivating argument behind the use of the IPL for many years. Ravallion, Datt, and van de Walle (1991) and the World Bank (1990) interpret national poverty lines in some of the poorest countries as representative of absolute minimum needs and use them in calculating the dollar-a-day IPL.
  18. The claim is not being made that this report empirically disentangles whether the rising value of national poverty lines reflects the growing cost of social participation (as is assumed here) or simply reflects a definition of basic needs that is more generous, resulting in greater utility. For a discussion of this identification challenge, see Ravallion and Chen (2017).
  19. The 1993 value was estimated from the national headcount ratio and an internationally harmonized welfare vector, following the method of Jolliffe and Prydz (2016).

# Beyond Monetary Poverty

This chapter reports on the results of the World Bank's first exercise of multidimensional global poverty measurement. Information on consumption or income is the traditional basis for the World Bank's poverty estimates, including the estimates reported in chapters 1–3. However, in many settings, important aspects of well-being, such as access to quality health care or a secure community, are not captured by standard monetary measures. To address this concern, an established tradition of multidimensional poverty measurement measures these nonmonetary dimensions directly and aggregates them into an index. The United Nations Development Programme's Multidimensional Poverty Index (Global MPI), produced in conjunction with the Oxford Poverty and Human Development Initiative, is a foremost example of such a multidimensional poverty measure. The analysis in this chapter complements the Global MPI by placing the monetary measure of well-being alongside nonmonetary dimensions. By doing so, this chapter explores the share of the deprived population that is missed by a sole reliance on monetary poverty as well as the extent to which monetary and nonmonetary deprivations are jointly presented across different contexts.

The first exercise provides a global picture using comparable data across 119 economies for circa 2013 (representing 45 percent of the world's population) combining consumption or income with measures of education and access to basic infrastructure services. Accounting for these aspects of well-being alters the perception of global poverty. The share of poor increases by 50 percent—from 12 percent living below the international poverty line to 18 percent deprived in at least one of the three dimensions of well-being. Across this sample, only a small minority of the poor is deprived in only one dimension: more than a third of the poor suffer simultaneous deprivations in all three dimensions. More than in any other region of the world, in Sub-Saharan Africa shortfalls in one dimension occur alongside deprivations in other dimensions. In South Asia, the relatively high incidence of deprivations in education and sanitation imply that poverty rates could be more than twice as high when these nonmonetary dimensions are added.

A second complementary exercise for a smaller set of countries (six) explores the inclusion of two additional nonmonetary dimensions. When measures of health and household security (the risk of experiencing crime or a natural disaster) are included alongside the previous three dimensions, the profile of the poor changes. In most countries, the share of the poor living in female-headed households is greater than when the nonmonetary dimensions are excluded and, in some countries, the poor also have a significantly higher presence in urban areas.

## Why look beyond monetary poverty?

Consider the following hypothetical example. Two families have the same income, say US\$3.00 per person per day. However, only one family has access to adequate water, sanitation, and electricity, whereas the other lives in an area lacking the necessary infrastructure for basic services, such as a power grid or water mains. Members of this second family will still consume water and use energy for lighting and cooking, but they may have to spend hours per week fetching water from a well, or pay higher prices to obtain lower-quality water from a truck. For sanitation, they may use a private or communal latrine, without the convenience or hygiene benefits of a sewerage connection. And with no access to an electricity grid, the second family's choice set for lighting and power options is severely reduced. Both households will spend some of their US\$3.00 per person per day to meet their energy and water needs. Yet, because their choice sets (including the prices they face) are so different, the differences in their living standards arising from the access that the first family enjoys are not captured by a monetary measure of poverty alone. The first family clearly enjoys a higher standard of living than the second, but a welfare judgment that considers only their incomes will pronounce them equally well-off. This is an example of when public action—or lack thereof—can directly affect the well-being of households by expanding—or not—their choice sets in ways that incomes and prices fail to fully internalize. It is possible that, under a broader assessment of poverty, the second family might be considered poor or deprived, even though its daily income is above the international poverty line of US\$1.90 per day.

To be clear: Income (or consumption expenditures valued at prevailing market prices) is hugely important for human well-being. Indeed, income and consumption are the workhorse metrics of individual welfare in economic analysis. They summarize a household's capacity to purchase multiple goods and services that are crucial for well-being, such as food, clothing, and shelter. And they do so with one remarkable property: because consumers choose the quantities they consume of

various goods taking their relative prices into account, these relative prices serve as natural weights with which to aggregate those quantities consumed.<sup>1</sup> That is why they form the basis for the first three chapters in this report. It is why poverty has typically been defined in terms of whether a household's income reaches or surpasses a monetary threshold, the poverty line, which represents the minimum amount needed to purchase a sufficient quantity of essential goods and services.

Yet the point of the example is that monetary-based measures do not encompass *all* aspects of human well-being. One reason for this is that not all goods and services that matter to people are obtained exclusively through markets. Consequently, the prices necessary to cost these goods and services either do not exist or do not accurately reflect their true consumption value (World Bank 2017b). Common examples of nonmarket goods without prices are public goods such as a clean environment and a secure community. Examples of goods with prices that often do not reflect true consumption value include those that require large public investments to make them available—the provision of a power grid is often necessary before a household can access electricity. Other core services at least partially provided through systems supported by direct government spending include health care and education. General government health expenditure accounts for more than half of total global health expenditure. Likewise, governments on average spend the equivalent of nearly 5 percent of the gross domestic product (GDP) of their economies on education. The presence of such goods renders the traditional monetary welfare measure incomplete with respect to a variety of core aspects of well-being.

This chapter presents a broader picture of well-being than that found in chapters 1–3, by considering a notion of poverty that recognizes the centrality of the monetary measure, but looks to complement it by explicitly treating access to key nonmarket goods as separate dimensions of well-being. Specifically, the chapter previews a multidimensional poverty measure derived from standardized data for 119 economies that provide a global picture for circa 2013. The multidimensional measure is anchored on consump-

tion or income as one dimension of welfare, and includes several direct measures of access to education and utilities (such as electricity, water, and sanitation) as additional dimensions. Although this multidimensional measure has wide country coverage, it still lacks information on other important dimensions of well-being including health care and nutrition, as well as security from crime and natural disasters. Consequently, in a more exploratory manner, the chapter extends the analysis by adding these dimensions for a smaller subset of countries for which information for all these dimensions can be captured within the same household survey.

The two exercises—one with broad country coverage, but fewer dimensions than one would ideally like, and the other with a relatively extensive set of dimensions, but available only as a pilot for a few countries—represent the World Bank’s first steps toward including multidimensional poverty indicators in the set of complementary indicators of global poverty, as suggested by the Commission on Global Poverty (World Bank 2017b). Going forward, the World Bank will monitor progress on multidimensional poverty at the global level using the three-dimensional measures presented in this chapter, while continuing its efforts to incorporate the dimensions missing from the global analysis for future rounds.

This approach adopts a living standards perspective, in that each dimension is valued instrumentally, that is, each dimension represents the ability to command goods and services that households value for other ends (in other words, consuming or owning these commodities allows for the satisfaction of different needs and wants). But it is also consistent with the capability framework, which calls for expanding the evaluative space for assessing welfare (Sen 1987). The capability approach advocates for a broader perspective to capture the “plurality of different features of our lives and concerns” (Sen 2009, 233). In this approach people have varying abilities to convert resources into the opportunity to be and do what they most value—that is, into what Sen terms “capabilities.”

Of course, measuring poverty multidimensionally is not a new endeavor. Indeed, multidimensional poverty measures have become widespread both at the global

and national level (box 4.1). The capability framework inspired the development of the first global efforts to measure poverty multidimensionally. These were carried out by the United Nations Development Programme (UNDP), through the Human Poverty Index in the late 1990s (UNDP 1997) and, more recently, through the Global Multidimensional Poverty Index (Global MPI), introduced in the 2010 Human Development Report (UNDP 2010), developed with the Oxford Poverty and Human Development Initiative (OPHI), and reported annually for over 100 countries. At the country level, an increasing number of governments are choosing to expand or complement their poverty measures with multidimensional indicators (see spotlight 4.1 at the end of this chapter). The efforts of the UNDP, OPHI, and most governments build on influential research by Sabina Alkire and James Foster (see, for example, Alkire and Foster 2011).

The efforts here are also indebted to these previous efforts by other researchers, governments, and international institutions. In addition, they follow on the World Development Report (WDR) 2000/01 *Attacking Poverty* (World Bank 2001), which recognized the many dimensions of poverty and considered deprivations in education and health alongside income in its analysis of the evolution of poverty. The present report goes beyond the WDR 2000/01 by taking advantage of richer household-level data that combine monetary and nonmonetary indicators to present deprivation in each domain as well as measures that aggregate these different deprivations. This proposal follows from the recommendations of the Commission on Global Poverty, led by Professor Sir A. B. Atkinson, to consider complementary indicators to monetary poverty “where a dashboard approach is proposed as part of the Complementary Indicators, . . . together with a measure of the extent of overlapping deprivations” (World Bank 2017b, 100).

The present exercise is also related to the Sustainable Development Goals (SDGs) established by the United Nations in 2015, which include a call for governments to report on their progress in improving the national multidimensional poverty indicator (Indicator 1.2.2 of SDG 1, end poverty in all its forms everywhere).<sup>2</sup> The focus of this

## BOX 4.1 Early Applications of Multidimensional Poverty Measurement

The approach followed in this chapter builds on previous applications of the multidimensional poverty concept. There is a long history of assessing the deprivation of individuals by combining multiple components of well-being. Inspired by empirical studies in the 1970s and early 1980s, various European countries have been measuring the share of the population that is deprived in a select number of socially perceived necessities as a core indicator of social exclusion.<sup>a</sup> In many of these cases, such as in Ireland, the United Kingdom, and, later, the European Union, the assessment of multiple deprivations combines income poverty with the counting of these material deprivations.<sup>b</sup> Since the 1980s, many countries in Latin America have complemented monetary poverty measures developed through household surveys with an indicator of unsatisfied basic needs that counts the number of deprivations in several indicators, including school enrollments among

children, housing conditions, access to basic services, and the economic capacity of household members. The basic needs indicators are generally calculated using census data.

The Mexican government has taken a lead in adopting a multidimensional approach in the official poverty measure. Following a comprehensive consultative process initiated in 2006, and grounded on a human rights perspective, the government, since 2010, has measured poverty as the share of the population that is deprived simultaneously in monetary terms and in at least one of six social indicators reflecting core social rights. These indicators cover gaps in education, access to health services, access to social security, access to basic residential services, housing conditions, and access to food (CONEVAL 2010).

Since 2010, OPHI and the UNDP have been computing the Global MPI for over 100 countries. The Global MPI replaced

the Human Poverty Index, which appeared in the Human Development Reports from 1997 to 2009 measuring country-level aggregate deprivations in health, education, and standard of living. The Global MPI combines 10 indicators grouped in three dimensions, namely, education, health, and standard of living, and identifies each person as poor or nonpoor according to how many deprivations they face (Alkire and Santos 2010; Alkire et al. 2015). This work has been adapted and adopted by many developing countries (see spotlight 4.1). The 2018 edition of the Global MPI includes 105 countries, with a population coverage of 75 percent of the global population (OPHI 2018). A comparison of the indicators included in the Global MPI, as well as the Mexican poverty measure and (selected indicators) for Europe 2020 and the multidimensional poverty measures presented in the chapter, is found in annex 4A.

a. The Level-of-Living Survey in Sweden and Townsend (1979) and Mack and Lansley (1985) in the United Kingdom are considered pioneers in Europe in this approach. Excellent reviews on early applications include Aaberge and Brandolini (2015) and Alkire et al. (2015). For the Swedish survey, see LNU (The Swedish Level-of-Living Survey) (database), Swedish Institute for Social Research, Stockholm University, Stockholm, <https://www.sofi.su.se/english/2.17851/research/three-research-units/lnu-level-of-living>.

b. In Ireland, “consistent poverty” is measured as the population share that is both income poor and deprived in two or more essential items. In the United Kingdom, a similar approach has been used since 2010 to measure child poverty. In the European Union, the Europe 2020 poverty and social exclusion headline indicator combines income poverty (the at-risk-of-poverty rate), household quasi-joblessness, and severe material deprivation (lacking at least four of nine items that are considered fundamental to enjoying an adequate standard of living). See Atkinson et al. (2002); Marlier et al. (2007).

chapter, on steps to develop a useful global multidimensional poverty measure, should not be taken as a preference for such a global measure over possibly richer country-level measures when assessing national progress. The requirement of a global multidimensional poverty measure for standardized household indicators across many countries necessarily limits indicator choice to the relatively few that are consistently measured. Nonetheless, despite this constraint of data

harmonization, several key insights emerge from the analysis.

## Considerations for constructing multidimensional poverty measures

This is the initial step by the World Bank to expand the space of assessment beyond the monetary to explicitly include access to non-



market goods and services that are essential for well-being. In addition to a measure based on economic resources, it incorporates a core set of indicators for nonmonetary dimensions and presents results on the extent to which these deprivations arise and overlap. Furthermore, it presents summary measures that combine the information into a single index, the multidimensional poverty headcount ratio.

Broadening the poverty measure to incorporate additional directly measured components involves two steps. First, one must select the dimensions, the indicators, and the respective sufficiency thresholds for each indicator. For example, in the case of the educational dimension, one possible indicator could be school enrollment for the school-age children in the household, and the sufficiency threshold is that all children are in school (and therefore every household member is considered deprived if at least one child is not enrolled). To consider the existence of multiple deprivations occurring in the case of a same individual, all indicators need to be observed or inferred for the same individual, typically from the same data source. Second, the information on each dimension is then aggregated into one index. Summary indexes can be applied to generate rankings across population groups and countries, while acknowledging the multiplicity of deprivations. This section briefly discusses the proposed choices in each of these two stages.

## Selected dimensions and indicators

The selection of the dimensions and indicators relevant to the measurement of standards of living is never simple. Possessing a clear conceptual framework to advise this process is therefore fundamental. The approach to the selection of the nonmonetary indicators is guided by the idea that poverty, at least in part, represents an inability to reach a minimum standard of material well-being comprising both market and nonmarket goods.

The choice of dimensions is informed by the following core principles:

- **Centrality of private consumption.** Private consumption (or income, when the

former is not available) captures people's access to certain crucial goods and services, including food, clothing, and shelter. The consumption measure uses market prices to aggregate across the various consumption goods.<sup>3</sup> Market prices reflect the ability of people to purchase goods and services, while allowing for variation in individual preferences. Other aspects of well-being on which prices are not available or are arguably not a good representation of value should therefore complement monetary poverty. Public goods as well as private goods that are heavily subsidized are cases in which prices either do not exist or, if they do exist, do not closely represent the household's valuation of the good.

- **Relevance.** The indicators included should be relevant in that they are widely acknowledged to represent essential aspects of well-being. Indicator thresholds should reflect minimum basic needs, comparable with the US\$1.90 per person per day poverty lines. The SDGs and other similar initiatives provide useful guidance.
- **Data availability.** Indicators should ideally be derived from the same data source (typically a household survey). One of the key features of the multidimensional approach is that it can be used to assess the extent to which deprivation in one dimension is related to deprivation in other dimensions for the same individual. However, because of the requirement about data sources, the choice of the dimensions and indicators to be included will ultimately be shaped by the availability of meaningful data.
- **Parsimony.** The multidimensional measure should be parsimonious. It should involve only a small number of judiciously selected dimensions to lend prominence to multidimensionality, while ensuring sufficient population coverage.

Because of data limitations, there exists a trade-off between the number of dimensions (measured by harmonized indicators) that can be included in the multidimensional poverty measure and the number of countries that can be included in the analysis. For example, comprehensive assessments of health

services and health outcomes are rarely available in the same household survey that also contains the lengthy questionnaires typically necessary to measure consumption poverty.

For this reason, the chapter conducts two complementary exercises. To get a global picture, the next section presents an analysis including a large number of economies (119, covering 45 percent of the world's population) and includes three dimensions, including consumption, represented by six indicators. The second exercise uses data for a much smaller set of countries (six) to explore the impact of adding two additional dimensions. The analysis that follows should be understood as an initial exploration to generate a consistent, conceptually robust, and practical proposal for expanding current poverty measurement methods to include other non-monetary dimensions of well-being.

The five well-being dimensions considered in this chapter are the following:

1. **Monetary well-being.** The first dimension is the monetary measure of well-being that the World Bank uses as its principal poverty measure: the consumption or income per person per day, valued at 2011 purchasing power parity (PPP) U.S. dollars, that is available to the individuals in the household (SDG target 1.1). This is the well-being measure and threshold featured in chapter 1 of this report. The dimension encompasses the range of goods and services that can be purchased at market prices. The sufficiency threshold is the international poverty line, currently set at US\$1.90 per person per day. Individuals living in households in which per capita income falls below this cutoff are considered deprived in the monetary dimension of well-being.
2. **Education.** Although education may be available through private or public institutions, provision among a large share of the population is fully or partially subsidized in most countries. The price that families must pay therefore does not adequately represent the value of the service. Indexes of multidimensional poverty typically include at least one indicator of access to formal education (related to SDG 4).
3. **Access to basic infrastructure.** The third dimension encompasses access to key services that often require large-scale public investments to make them widely available. Access to electricity and a certain standard of drinking water and sanitation are critical for economic activity and survival (related to SDGs 6 and 7). Although many individuals pay for the provision of these services (through utility bills or otherwise), the choice set available to users (and their prices) depends to a large extent on the initial investments that governments have made on electricity grids and water and sewer networks. This public action often determines the price and quality of the service provided.<sup>4</sup> For the 119-economy sample, indicators can be standardized across multipurpose household surveys to reflect wider definitions of “at least limited” drinking water and “at least limited” sanitation used in the SDG monitoring, whereas, for the smaller six-country sample, the chosen indicator applies a more stringent definition also used under the SDG framework of access to “at least basic” water and sanitation.<sup>5</sup>
4. **Health and nutrition.** Health is widely considered a core dimension of well-being. It is the focus of SDG 3: ensure healthy lives and promote well-being for all at all ages. As in other cases, health care is typically not supplied entirely through the market or valued entirely at market prices. The empirical challenge of including this dimension for a large set of countries limits the feasibility of investigating health and nutrition meaningfully in the 119-economy sample. However, for a smaller selection of countries, one may analyze indicators of access to formal health care services as well as direct individual assessments of nutrition. Four indicators are included in the health and

nutrition dimension: facility-based birth delivery, vaccination among children, the incidence of child stunting, and undernourishment among adult women. Whereas nutrition is intimately linked to food consumption—and thus can be argued to be already indirectly included in monetary poverty—stunting and malnutrition are also reflective of exposure to illness and lack of nutritional knowledge as well as possible unequal access of resources within households.

5. **Household security.** A final dimension considers the risks to which households are exposed and for which insurance or mitigation programs, where they exist, are often partially or fully supplied by the government. One of the basic functions of government is to ensure that the daily lives of the population are free of the fear of exposure to violence and crime. Although few living standard-type surveys adequately cover the relevant issues, some do contain questions designed to measure the

incidence of crime at the household level as well as the threat of crime, often defined by the incidence of crime in the community. The six-country study includes this indicator. In addition, this dimension incorporates a measure of the prevalence of natural disasters that severely affected households' well-being beyond short-term losses in consumption. Although information on the incidence of natural disasters is sometimes captured in shock modules in household surveys—such as in the six-country study analyzed in this chapter—other environmental qualities essential for a good life, such as air free of pollution, are most often not included and thus cannot be incorporated at this stage.<sup>6</sup>

Table 4.1 illustrates the individual indicators. Appendix A contains technical details on indicator definitions.

One limitation of the approach followed in this chapter is that it relies on indicators that are readily available in standard household surveys. For many of the dimensions

**TABLE 4.1** Dimensions of Well-Being and Indicators of Deprivation

Dimensions	Three dimensions (119 economies)	Five dimensions (6 countries)
<b>Monetary poverty</b>	Daily consumption or income is less than US\$1.90 per person	Daily consumption or income is less than US\$1.90 per person
<b>Education</b>	At least one school-age child up to the age of grade 8 is not enrolled in school No adult in the household (age of grade 9 or above) has completed primary education	At least one school-age child up to the age of grade 8 is not enrolled in school No adult in the household (age of grade 9 or above) has completed primary education
<b>Access to basic infrastructure</b>	The household lacks access to limited-standard drinking water The household lacks access to limited-standard sanitation The household has no access to electricity	The household lacks access to a basic-standard drinking water ("limited-standard" with an added criterion of the source being within a round trip time of 30 minutes) The household lacks access to basic-standard sanitation ("limited-standard" with an added criterion of the facility for the exclusive use of the household) The household has no access to electricity
<b>Health and nutrition</b>		Any woman age 15–49 with a live birth in the last 36 months did not deliver at a health facility <sup>a</sup> Any child age 12–59 months did not receive DPT3 vaccination <sup>a</sup> Any child age 0–59 months is stunted (HAZ < -2) Any woman age 15–49 is undernourished (BMI < 18.5)
<b>Security</b>		The household has been subject to crime in the previous 12 months or lives in a community in which crime is prevalent The household has been affected by a natural disaster (including flooding, drought, earthquake) in the previous 12 months

Note: BMI < 18.5 = body mass index below 18.5 (underweight); DPT3 = diphtheria-pertussis-tetanus vaccine; HAZ < -2 = the height-for-age Z-score is below -2, that is, more than two standard deviations below the reference population mean. "Limited-standard" drinking water is drinking water that comes from an improved source (for example, piped, borehole, protected dug well, rainwater, or delivered water). "Limited-standard" sanitation means using improved sanitation facilities (for example, flush/pour flush to piped sewer system, septic tank, or a composting latrine).

a. If the indicator is not applicable, for example if the household includes no women who gave birth in the previous 36 months, the household is classified as deprived if the relevant deprivation rates in the subregion of residence are sufficiently high. Specifically, the deprivation threshold is set such that the share of individuals in nonapplicable households that are classified as deprived equals the national share of deprived individuals in applicable households who actually experienced a recent birth or have a child under age 6.

considered, relevant information on the important aspect of service quality is sometimes available in specialized surveys, but not in standard household surveys that also record other data on well-being. Essential information on quality thus cannot be used for various indicators here (box 4.2). If this information becomes available through multi-purpose household surveys in the future or if a method can be developed to apply relevant administrative data at a sufficiently granular level, then subsequent measures of multidimensional well-being may reflect quality more accurately.

One dimension often featured in multidimensional well-being indexes, but not considered here, is employment in a stable, dignified job. Employment may matter beyond the monetary benefits individuals derive from it because jobs can give people a sense of self-esteem and help them stay connected with society. An unstable employment contract could be detrimental to well-being because of the financial and other risks associated with such jobs. Employment is not part of the multidimensional poverty measure presented here for two reasons. First, many of the frequently used indicators of employment in high-income countries, such as unemployment and wage employment, are not as relevant in low-income countries, which have very different labor market structures (Lugo 2007). Second, whatever relevant indicators of employment exist, these indicators are not available or not sufficiently harmonized in the different surveys considered here.

### **Aggregating multiple indicators into a single index**

Each of the five dimensions discussed above is considered fundamental to well-being, even if other, equally important aspects of living standards are missing. They are important not only separately but also in the way they are often present or absent together. The chapter therefore examines the share of people deprived according to each separate indicator, along with measures that capture the degree to which these deprivations arise together by counting the number of deprivations that individuals experience. In addition, the chapter presents summary indicators that

combine household information on well-being across dimensions into a single number. Such indicators facilitate comparisons across countries and time, especially if the extent of deprivation within countries varies across dimensions under consideration.

Any aggregation of indicators into a single index invariably involves a decision on how each of the indicators is to be weighted. There are various approaches to the selection of weights, including those stipulated by policy makers and those that are based on a poll of the preferences among the target population (Decancq and Lugo 2013). Although there are advantages and disadvantages to each of the methods, the approach chosen here follows standard practice in the field. Dimensions are weighted equally, and within each dimension each indicator is also equally weighted. The result is that each indicator has a different weight depending on the number of elements within its dimension. Weights must also adjust as the number of considered dimensions changes, as illustrated in tables 4.2 and 4.3, where the number of dimensions rises from three to five.<sup>7</sup>

The main summary measure presented in the chapter is the multidimensional poverty headcount ratio, denoted by *H*. This index describes the share of people who are considered multidimensionally deprived and parallels the headcount measure used for global poverty monitoring (the poverty rate). Individuals are considered multidimensionally deprived if they fall short of the threshold in at least one dimension or in a combination of indicators equivalent in weight to a full dimension. In other words, in the three-dimension exercise, households will be considered poor if they are deprived in indicators whose weight adds up to 1/3 or more. Analogously, in the five-dimension exercise, the weights on all deprivations must add up to 1/5 or more for a household to be classified as poor. For example, in the three-dimension case, every person who lives in a household without access to water and sanitation and with a child who does not attend school is considered multidimensionally deprived, whereas members of another household may be deprived because the household income does not meet basic needs. The index is thus a simple expression of an approach

## BOX 4.2 Incorporating Aspects of Quality into Multidimensional Poverty Measures

The measure of multidimensional poverty considered in this chapter does not contain sufficient information to thoroughly assess household well-being in all major dimensions, especially as it relates to the quality of services utilized. Although such information sometimes becomes available through specialized surveys, these specialized surveys often do not include all relevant dimensions of poverty. Therefore, the data requirement is too large for multidimensional poverty indicators to be accurately and consistently estimated across countries. In practice, this means that the indicators of multidimensional poverty considered here are restricted to reporting on the access of households to services, but not the quality of these services. Going forward, additional efforts are needed to collect richer data that include both access and quality of services.

Ensuring inclusive, equitable education of high quality is one of the core SDGs. Access to education is considered a fundamental right, but it needs to lead to “relevant and effective learning outcomes” (SDG target 4.1). An ideal indicator of education in a multidimensional poverty index ought to be the attainment by individuals of a basic level of learning capability (World Bank 2018d). Although indicators that account for learning outcomes are rare and might prove difficult to calculate through questions

that could be included in standard household surveys, a possible solution may involve national or subnational indicators of learning outcomes. Recently, the World Bank has harmonized data gathered through international educational testing programs—such as the Latin American Laboratory for Assessment of the Quality of Education, the Program for the Analysis of Education Systems of Confemen, the Program for International Student Assessment, the Southern and Eastern Africa Consortium for Monitoring Educational Quality, and the Trends in International Mathematics and Science Study—to allow for comparable indicators of learning to be computed across countries.<sup>a</sup> These data are core to the newly designed Human Capital Index (HCI) that the World Bank is presenting as part of the Human Capital Project (World Bank 2019). The HCI is a measure of human capital, designed as an indicator of each country’s future labor productivity, going beyond years of schooling. Specifically, the HCI combines, for each country, information on the level of education adjusted for quality and indicators of health status (stunting and mortality) (Kraay 2018).

The core drinking water and sanitation indicators of SDG 6.1 and 6.2 focus on the concept of safely managed, which contains a quality dimension that is not captured in the indicators described in this chapter. The World Health

Organization–United Nations Children’s Fund Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP) developed an operational model for monitoring SDG 6, on safely managed drinking water, sanitation, and hygiene.<sup>b</sup> Safely managed drinking water sources are basic drinking water sources located in the household, available as needed, and compliant with standards on fecal and chemical content. Similarly, safely managed sanitation services are basic sanitation facilities that are not shared and through which excreta are safely disposed in situ or transported and treated off-site.

Measures of quality could improve the indicator on electricity. In many countries, households may have access to electricity, but, because of frequent power outages, the service is unreliable. This ought to be incorporated so the indicator captures the benefits derived from the electricity rather than only a binary measure of access. Likewise, the quality of maternal care could be incorporated into the indicator on the births at health facilities. Many pregnant women may deliver at facilities, but the conditions of the facilities and the expertise of the people assisting the delivery can vary greatly. Accurate data on the quality of the facilities and the skills of the staff assisting in the deliveries would improve the accuracy of the health service indicator.

a. See LLECE (Latin American Laboratory for Assessment of the Quality of Education), Regional Bureau for Education in Latin America and the Caribbean, United Nations Educational, Scientific and Cultural Organization, Santiago, Chile; <http://www.unesco.org/new/en/santiago/education/education-assessment-llece/>; PASEC (Program for the Analysis of Education Systems of Confemen) (database), PASEC and Conference of the Ministers of Education of French-Speaking Countries, Dakar, Senegal, <http://www.pasec.confemen.org/donnees/>; PISA (Programme for International Student Assessment) (database), Organisation for Economic Co-operation and Development, Paris, <http://www.oecd.org/pisa/pisaproducts/>; SACMEQ (Southern and Eastern Africa Consortium for Monitoring Educational Quality) (database), SACMEQ, Gaborone, Botswana, <http://www.sacmeq.org/ReadingMathScores/>; TIMSS (Trends in International Mathematics and Science Study) (database), International Association for the Evaluation of Educational Achievement, Amsterdam, <http://www.iea.nl/timss>.

b. See JMP (WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene) (database), United Nations Children’s Fund, New York; World Health Organization, Geneva, <https://washdata.org/data>.

**TABLE 4.2 Indicator Weights: Analysis of Three Dimensions**

Three dimensions	Weights
Income per capita	1/3
Child school enrollment	1/6
Adult school attainment	1/6
Limited-standard drinking water	1/9
Limited-standard sanitation	1/9
Electricity	1/9

whereby the number of deprivations that people suffer are counted (Atkinson 2003).

The chapter also presents two alternative multidimensional poverty indexes (see annex 4B for a formalization of the measures). The first one, the adjusted headcount measure  $M$ , combines the incidence of poverty  $H$  with the average breadth of deprivation suffered by each poor person, as proposed by Alkire and Foster (2011). In addition, the chapter uses a measure that penalizes for the compounding effect of multiple deprivations experienced by the same household (Chakravarty and D'Ambrosio 2006; Datt, forthcoming). As a result, if a household is deprived in any two indicators, its deprivation will be considered greater than the sum of the deprivations of two other households each only deprived on a single indicator. The measure is referred to as the distribution-sensitive multidimensional measure, denoted by  $D$ . By incorporating information of the extent of deprivation suffered by individuals, both these measures bring valuable elements to the analysis. Although the three measures ( $H$ ,  $M$ , and  $D$ ) are presented in the chapter, precedence is given to the multidimensional poverty headcount ratio  $H$  because it is the closest analogue to the monetary poverty headcount ratio, used to monitor the first of the World Bank's twin goals (see chapter 1 of this report).

### A first global picture

Expanding a poverty measure to include nonmonetary aspects brings into focus deprivations that may otherwise remain hidden. For example, consider a slight extension of the monetary poverty measure: the addition of only two of the indicators described

**TABLE 4.3 Indicator Weights: Analysis of Five Dimensions**

Five dimensions	Weights
Income per capita	1/5
Child school enrollment	1/10
Adult school attainment	1/10
Basic-standard drinking water	1/15
Basic-standard sanitation	1/15
Electricity	1/15
Coverage of key health services	1/10
Malnourishment (child and adult)	1/10
Incidence of crime	1/10
Incidence of natural disaster	1/10

in table 4.1, namely educational attainment among adults and access to limited-standard sanitation. Considering these two indicators alongside monetary poverty and using a sample of 119 economies for circa 2013 (on data, see box 4.3.), the exercise finds 12 percent of the people to be monetarily poor, but, among them, only one individual in five is deprived only in the monetary dimension.<sup>8</sup> The rest of the 12 percent are deprived at least in either educational attainment or access to limited-standard drinking water, with 5 percent of individuals experiencing deprivations in all three dimensions. At the same time, many individuals are not monetarily poor but are deprived in other aspects of well-being.

This observation raises several questions: How does our view of global poverty change if poverty is defined as insufficiency not only in monetary resources but also in a range of nonmonetary attributes that directly affect people's well-being? Who are the new poor? In how many ways are they deprived? How do different regions fare if a wide-angle view of poverty is considered? Insights into the differential prevalence, nature, and distribution of multidimensional poverty in contrast to monetary poverty can be important for the formulation of effective poverty reduction policies. Highlighting the additional deprivations experienced by the extreme poor sensitizes policy makers to the importance of improving those aspects of human welfare not captured by the monetary measure alone. This is even more important as more people leave extreme poverty behind because a sizable share of the non-income-poor population experiences other deprivations.

Table 4.4 describes the share of people who are poor because of either monetary deprivation or multidimensional poverty as defined by the three dimensions and six indicators illustrated in table 4.1. The indicators cover the dimensions of monetary poverty, education (two indicators), and access to basic infrastructure (three indicators). Approximately one individual in eight (11.8 percent) in the 119-economy sample in circa 2013 lives in a household experiencing monetary poverty, whereas almost one person in five (18.3 percent) lives in a multidimensionally deprived household.<sup>9</sup> The multidimensional measure yields a more expansive view of poverty by counting as poor any individual with a cumulative deprivation above the critical threshold of 1/3.

The monetary poverty measure presented in chapter 1 outlines a bipolar world, with Africa on one end (a high poverty rate) and all the other regions, South Asia included, on the other end (a relatively low poverty rate). The separation of Sub-Saharan Africa from the other regions is seen more clearly when looking at the poverty trends over the last 25 years. East Asia and Pacific, South Asia, and Sub-Saharan Africa all started with a relatively high poverty rate in 1990; however, while poverty declined rapidly in the first two regions, the decline was much slower in Sub-Saharan Africa. Consequently, Sub-Saharan Africa today comprises most of the world's poor. If the trend continues, by 2030 the extreme poor will almost exclusively be in this region.

### BOX 4.3 Chapter 4: Data Overview

This chapter relies on information from the harmonized household surveys in the Global Monitoring Database (GMD) for circa 2013. Surveys have been included in the multidimensional poverty analysis if they satisfy the following criteria:

- They include a monetary welfare measure (income or expenditure) and indicators on education and basic infrastructure access that may be used to construct a multidimensional poverty measure.
- The surveys were conducted within three years of 2013, that is, from 2010 to 2016.

The extreme poverty rate (headcount ratio) reported in this chapter cannot be compared to the information presented in chapter 1 for practical and methodological reasons. For more details, see appendix A.

A different image of the world emerges through the multidimensional lens. The poverty rate in Sub-Saharan Africa continues to be worryingly high, with almost two in three individuals (64.3 percent) living in multidimensional poverty in circa 2013. This is an increase of 40 percent from an already high monetary poverty rate of 44.9 percent. South Asia, however, changes even more dramatically. In South Asia, more than twice as many people are multidimensionally poor as monetarily poor (table 4.4).

This raises important questions about the success of poverty reduction in South Asia. The challenge in securing higher living

**TABLE 4.4 People Living in Monetary or Multidimensional Poverty, 119 Economies, circa 2013**

Region	Monetary		Multidimensional		Number of economies	Population coverage (%)
	Headcount ratio	Share of the poor (%)	Headcount ratio (H)	Share of the poor (%)		
East Asia and Pacific	5.3	8.1	7.5	7.3	13	28.9
Europe and Central Asia	0.3	0.4	1.1	0.8	17	90.0
Latin America and the Caribbean	3.9	5.7	6.1	5.8	17	91.5
Middle East and North Africa	3.2	2.2	5.9	2.6	9	72.1
South Asia	11.9	12.3	26.6	17.7	5	23.0
Sub-Saharan Africa	44.9	70.9	64.3	65.4	29	60.7
Rest of the world	0.5	0.5	0.5	0.3	29	39.6
Total	11.8	100.0	18.3	100.0	119	45.0

*Source:* Estimates based on the harmonized household surveys in 119 economies, circa 2013, GMD (Global Monitoring Database), Global Solution Group on Welfare Measurement and Capacity Building, Poverty and Equity Global Practice, World Bank, Washington, DC.

*Note:* The reported multidimensional headcount ratio is estimated on the basis of three dimensions—monetary, education, and basic infrastructure access, as defined in table 4.1—and an overall poverty cutoff of one-third of the weighted deprivations. The data are derived from household surveys conducted in about 2013 (+/-3 years). Because of the unavailability or incomparability of data, analysis does not include all countries. The last column shows the percentage of regional or global populations covered by the surveys. Percentages may not sum to 100 because of rounding.

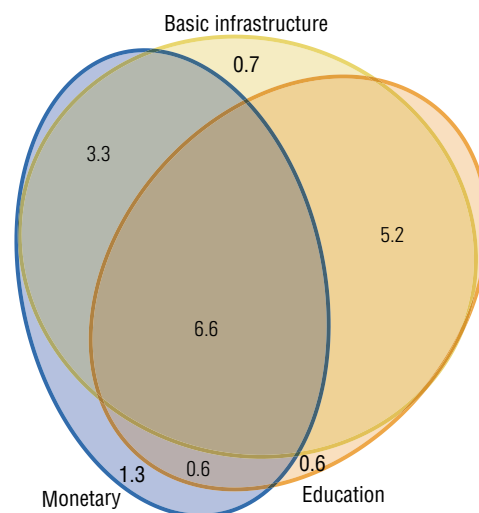
standards for the population of South Asia is more daunting when poverty in all its forms is considered. Although South Asia is expected to meet the goal of reducing extreme poverty below 3 percent by 2030, many people will still be living in unsatisfactory conditions if no progress is made in the other components of well-being.

It is apparent from table 4.4 that the multidimensional poverty headcount is always higher than the monetary poverty headcount. This regularity arises because of the relative importance assigned to each component and the stipulated overall poverty threshold that determines if a household is considered multidimensionally poor. If a household is deprived in at least one dimension, then the members are considered multidimensionally poor. Because the monetary dimension is measured using only one indicator, anyone who is income poor is automatically also poor under the broader poverty concept. The difference between the headcounts therefore hinges on those individuals among whom the privation is a result of a shortfall in the nonmonetary dimensions of life despite their ability to command sufficient financial resources to cross the monetary poverty threshold. These households would be deemed nonpoor under the narrower poverty concept on the basis of insufficiency in monetary resources, leaving policy makers with an unduly optimistic assessment of poverty from a multidimensional perspective.

The underlying structure of the deprivation experienced by the multidimensionally poor is depicted in figure 4.1. There is a large degree of overlap between dimensions. Only a small minority of the multidimensionally poor are deprived in only one dimension, whereas more than a third are simultaneously deprived in all three dimensions. The overlap is highest in Sub-Saharan Africa (annex 4C, figure 4C.1). A larger overlap between dimensions indicates a larger extent of interdependence, which implies that policy interventions targeted exclusively toward one dimension may not reduce multidimensional poverty and therefore a multipronged approach might be required.

Going from monetary to multidimensional poverty, the poverty rate more than doubles in the five South Asian countries be-

**FIGURE 4.1 Share of Individuals in Multidimensional Poverty, 119 Economies, circa 2013**



Source: Estimates based on the harmonized household surveys in 119 economies, circa 2013, GMD (Global Monitoring Database), Global Solution Group on Welfare Measurement and Capacity Building, Poverty and Equity Global Practice, World Bank, Washington, DC.

Note: The diagram shows the share of population that is multidimensionally poor, and the dimensions they are deprived in. For example, the numbers in the blue oval add up to 11.8 percent, which is the monetary headcount. Adding up all numbers in the figure results in 18.3 percent, which is the proportion of people that are multidimensionally deprived.

cause of the relatively low correlation in deprivations across dimensions. In these countries, a household that is deprived in education attainment has a high probability of being deprived in school enrollment as well, making its members multidimensionally poor. But the correlation between the monetary dimension and the education indicators is weak, which means the same households are not deprived in the monetary dimension. This adds new households to the count of the poor.

Because the difference in poverty incidence according to the two measures is the result of cumulative nonmonetary deprivations, it is natural to inquire about the components most responsible for the difference. Table 4.5 presents the poverty headcount ratio at US\$1.90 a day as well as the deprivation rate associated with each of the five nonmonetary indicators. Despite having made progress in poverty reduction, the countries included in the sample for South Asia still are highly deprived in the education dimension. An issue



**TABLE 4.5 Individuals in Households Deprived in Each Indicator, 119 Economies, circa 2013**

Region	Monetary (%)	Educational attainment (%)	Educational enrollment (%)	Electricity (%)	Sanitation (%)	Drinking water (%)
East Asia and Pacific	5.3	7.5	3.2	4.5	14.0	11.3
Europe and Central Asia	0.3	0.9	5.6	0.5	6.8	2.6
Latin America and the Caribbean	3.9	12.2	2.7	3.3	15.6	6.4
Middle East and North Africa	3.2	11.1	7.9	3.8	14.6	4.2
South Asia	11.9	31.6	22.6	23.8	39.5	7.0
Sub-Saharan Africa	44.9	46.2	20.8	64.8	61.9	33.9
Rest of the world	0.5	1.2	0.0	0.0	0.6	0.0
Total	11.8	17.0	9.0	15.9	23.8	10.9

*Source:* Estimates based on the harmonized household surveys in 119 economies, circa 2013, GMD (Global Monitoring Database), Global Solution Group on Welfare Measurement and Capacity Building, Poverty and Equity Global Practice, World Bank, Washington, DC.

*Note:* The definition of the indicators and the deprivation thresholds are as follows: Monetary poverty: a household is deprived if income or expenditure, in 2011 purchasing power parity U.S. dollars, is less than US\$1.90 per person per day. Educational attainment: a household is deprived if no adult (grade 9 equivalent age or above) has completed primary education. Educational enrollment: a household is deprived if at least one child (grade 8 equivalent age or below) is not enrolled in school. Electricity: a household is deprived if it does not have access to electricity. Sanitation: a household is deprived if it does not have access to even a limited standard of sanitation. Drinking water: a household is deprived if it does not have access to even a limited standard of drinking water. The data reported refer to the share of people living in households deprived according to each indicator.

of apparent global concern is poor sanitation: approximately a quarter of the population in the 119-economy sample lives in households lacking access to even a limited standard of sanitation. The populations in regions with low monetary poverty like East Asia and Pacific, Latin America and the Caribbean, and the Middle East and North Africa suffer a sanitation deprivation rate several times as high as that in the monetary dimension. Globally, almost one individual in six is not connected to electricity. Yet this is overwhelmingly a South Asian and Sub-Saharan African phenomenon: approximately one South Asian in four and two Sub-Saharan Africans in three lack electricity at home.

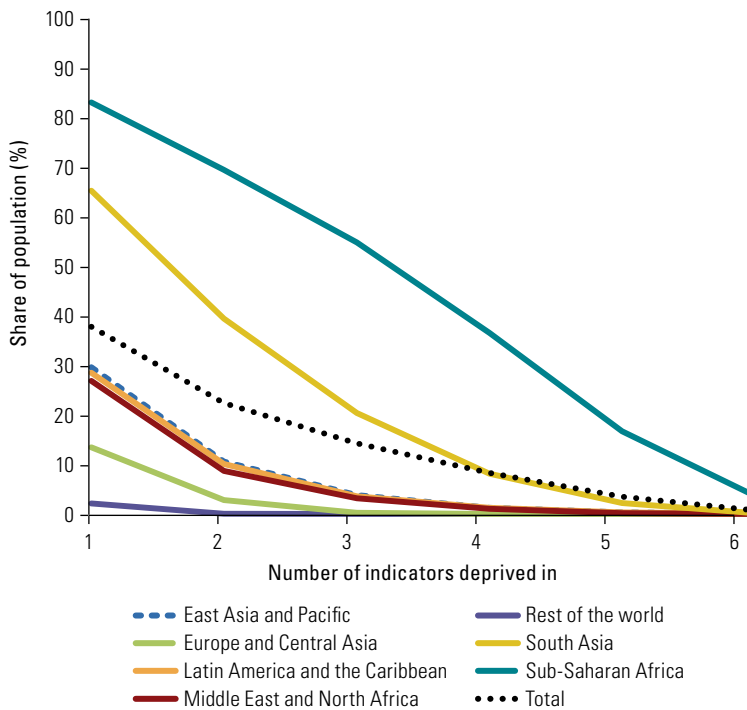
An examination of deprivation rates, one indicator at a time, generally confirms that the regional ranking for any one indicator is consistent with the others. Regions more deprived in one indicator are highly likely to be more deprived in other indicators. However, there are anomalies. For example, the Europe and Central Asia region shows the lowest incidence of monetary poverty; however, the share of people deprived in school enrollment in the region is higher than in both the East Asia and Pacific and the Latin America and Caribbean regions.

Important insights on the pattern of development can be gleaned from country outcomes as well. For example, Pakistan and Vietnam both have a low absolute poverty

rate, but Pakistan's level of deprivation in education attainment and enrollment is far higher than that of Vietnam (Table 4C.4). These countries typify the development experience of the two regions. Expansion in access to education preceded or was contemporaneous with the growth in income in East Asia, whereas despite rising incomes human development has lagged in South Asia (World Bank 2018d). Iraq experiences the highest deprivation in the education dimension, and it is one of the few countries where school enrollment outcome is worse than education attainment. Over the last 15 years, access to schooling in Iraq has been disrupted because of conflict, which is a reminder that progress cannot be taken for granted, especially in fragile and conflict-affected situations.

The examination of indicator deprivation rates does not reveal information about the simultaneity of deprivations. To consider this aspect, other tools are needed. One of the simplest approaches involves counting the number of indicators in which people are deprived contemporaneously. Figure 4.2 shows the shares of individuals deprived according to the maximum of six indicators. Approximately 60 percent of people in the 119 economies are not deprived in any of the six indicators. More than 80 percent of Sub-Saharan Africans exhibit at least one deprivation, but a smaller share of South Asians (65.6 percent) experience at least one deprivation; as

**FIGURE 4.2 Share of Individuals Deprived in at Least a Given Number of Indicators, 119 Economies, circa 2013**



Source: Estimates based on the harmonized household surveys in 119 economies, circa 2013, GMD (Global Monitoring Database), Global Solution Group on Welfare Measurement and Capacity Building, Poverty and Equity Global Practice, World Bank, Washington, DC.

the number of deprivations rises, a large gap opens between South Asia and Sub-Saharan Africa. Whereas 20.5 percent of South Asia’s population is deprived in three or more indicators, 55.1 percent of Africans are so deprived. On the shares experiencing four or more deprivations, South Asia catches up to the world at large. Thus, in addition to the relatively larger share of Sub-Saharan Africans who are deprived in each dimension, Sub-Saharan Africans suffer from a greater average number of deprivations than people elsewhere.

### Incorporating breadth of poverty into the measurement

Summarizing the information on the number of deprivations into a single index proves useful in making comparisons across populations and across time. Aggregate multidimensional poverty measures provide an easy way to rank countries and monitor their progress.

The adjusted headcount measure  $M$  defined in the previous section is sensitive to both the incidence and breadth of multidimensional poverty. If a poor household becomes deprived in additional elements, the changes are registered by the measure—something that will not be captured by the headcount  $H$ . The adjusted headcount measure, however, does not take into account the deprivations of households deemed to be multidimensionally nonpoor. This can ignore a substantial portion of deprivation. Of the total population in the sample, 15.5 percent is deprived in only one indicator and another 8.2 percent deprived in two indicators (table 4.6). A subset of these households is not identified as multidimensionally poor because their total weighted deprivation does not cross the poverty threshold of one-third. In fact, most individuals experiencing one deprivation and two-thirds of individuals experiencing two deprivations are not multidimensionally poor. They face an average of 0.13 and 0.25 weighted deprivations, respectively, which is missed by the intensity-sensitive measure.

The picture of poverty can shift yet again under the distribution-sensitive measure  $D$ , the third measure, because it differs from the adjusted headcount measure in two crucial ways. Unlike the adjusted headcount measure, the distribution-sensitive measure is not associated with a prespecified poverty threshold so it counts deprivations experienced by all households. Second, it penalizes compounding deprivations such that poverty is higher when one household experiences two deprivations than when two households experience one deprivation each.

The regional estimates for multidimensional headcount, adjusted headcount, and distribution-sensitive measures are presented in table 4.7. Because the scales of the two measures do not lend themselves to easy comparison, the focus is on the regional contribution to global poverty under each approach. Moving from multidimensional poverty headcount ( $H$ ) to the intensity-sensitive measure ( $M$ ), the concentration of poverty shifts further to Africa. This shift is driven by the breadth of deprivation in Sub-Saharan Africa, which is twice as high as in South Asia and several times higher than in other regions of the world (table 4.7).

**TABLE 4.6** The Multidimensionally Poor and the Breadth of Deprivation, by Number of Deprivations, 119 Economies, circa 2013

Number of deprivations	Share of the population (%)	Multidimensional poverty status		Breadth of deprivation	
		Nonpoor (%)	Poor (%)	Nonpoor	Poor
0	62.0	62.0	0.0	0.00	n.a.
1	15.5	14.1	1.4	0.13	0.33
2	8.2	5.7	2.5	0.25	0.43
3	6.0	0.0	6.0	n.a.	0.48
4	4.8	0.0	4.8	n.a.	0.65
5	2.8	0.0	2.8	n.a.	0.83
6	0.7	0.0	0.7	n.a.	1.00
Total	100.0	81.7	18.3	0.04	0.58

Source: Estimates based on the harmonized household surveys in 119 economies, circa 2013, GMD (Global Monitoring Database), Global Solution Group on Welfare Measurement and Capacity Building, Poverty and Equity Global Practice, World Bank, Washington, DC.

Note: A household is multidimensionally poor if it is deprived in more than a third of weighted deprivations. Breadth of deprivation refers to the average number of deprivations relative to the total number of indicators. It varies from 0 to 1, where 1 represents a person deprived in all six indicators. The shares may not sum to 100 because of rounding. n.a. = not applicable.

**TABLE 4.7** Regional Contributions to Multidimensional Poverty, 119 Economies, circa 2013

Region	Breadth of deprivation	Share of the population (%)	Multidimensional headcount (H)		Adjusted headcount measure (M)		Distribution-sensitive measure (D)	
			H	Contribution (%)	M	Contribution (%)	D	Contribution (%)
East Asia and Pacific	0.07	17.8	7.5	7.3	0.03	5.8	0.02	5.5
Europe and Central Asia	0.02	13.3	1.1	0.8	0.00	0.5	0.01	0.9
Latin America and the Caribbean	0.07	17.4	6.1	5.8	0.03	4.7	0.02	5.1
Middle East and North Africa	0.06	8.1	5.9	2.6	0.03	2.1	0.02	2.2
South Asia	0.21	12.1	26.6	17.7	0.14	15.9	0.09	15.2
Sub-Saharan Africa	0.44	18.6	64.3	65.4	0.40	70.8	0.29	70.9
Rest of the world	0.00	12.7	0.5	0.3	0.00	0.2	0.00	0.2
Total	0.14	100.0	18.3	100.0	0.11	100.0	0.07	100.0

Source: Estimates based on the harmonized household surveys in 119 economies, circa 2013, GMD (Global Monitoring Database), Global Solution Group on Welfare Measurement and Capacity Building, Poverty and Equity Global Practice, World Bank, Washington, DC.

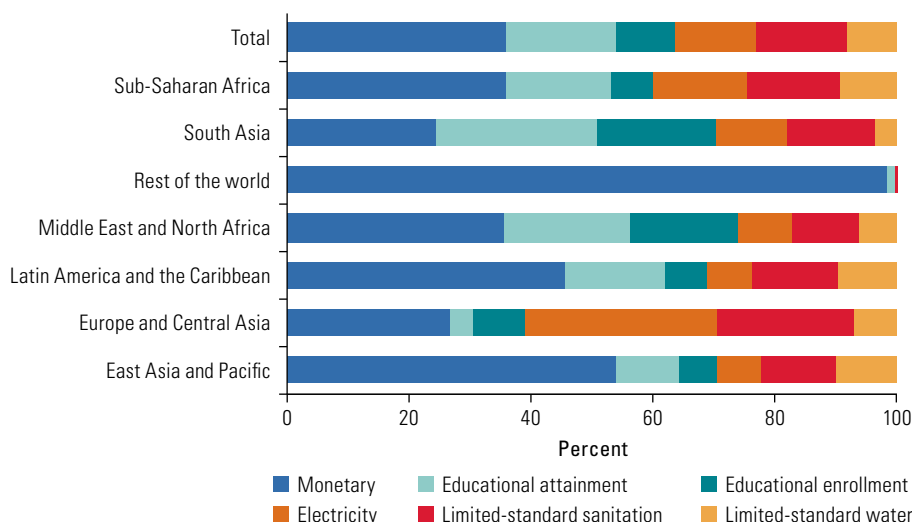
Note: Breadth of deprivation refers to the average number of deprivations relative to the total number of indicators. It varies from 0 to 1, where 1 represents a person deprived in all six indicators.

The distribution of global poverty is subject to two countervailing effects when going from the intensity-sensitive measure ( $M$ ) to the distribution-sensitive measure ( $D$ ). Counting all deprivations pushes the distribution of poverty to regions that have few multidimensionally poor but many who suffer from at least one deprivation. At the same time, assigning more importance to compounding deprivations pulls it toward regions with high breadth of deprivation. The first effect more than offsets the second in Europe and Central Asia, Latin America and the Caribbean, and the Middle East and North Africa, resulting in a slightly higher contribution of these regions to global poverty under  $D$  than under  $M$  (table 4.7).

An appealing feature of the adjusted headcount measure  $M$  is that the overall measure can be easily decomposed into the relative contribution of each indicator. Such decompositions matter for understanding the drivers of multidimensional poverty, and the sectors that ought to be given priority in the design of poverty-alleviating policies. If the poverty rate is high because of income insufficiency, a focus on economic growth or income support is appropriate; but, if education or access to utilities plays a dominant role in multidimensional poverty, investments in the corresponding sectors may yield the highest returns to poverty reduction.

In high-income countries, multidimensional poverty, though extremely low, almost

**FIGURE 4.3 Contribution of Indicators to the Adjusted Headcount Measure (M), 119 Economies, circa 2013**



Source: Estimates based on the harmonized household surveys in 119 economies, circa 2013, GMD (Global Monitoring Database), Global Solution Group on Welfare Measurement and Capacity Building, Poverty and Equity Global Practice, World Bank, Washington, DC.

exclusively arises because of insufficient income given the near-universal access to education and infrastructure services (figure 4.3). For the multidimensionally poor in Europe and Central Asia, access to electricity is a much more important driver of poverty than elsewhere. The comparison across Sub-Saharan Africa and South Asia reveals how the underlying structure of deprivations differs across the two regions. In South Asia, the education dimension has a disproportionate contribution to poverty (46 percent), whereas the contribution of monetary poverty is relatively low (24.6 percent). In Sub-Saharan Africa, the services (39.7) and the monetary (36.1) dimensions contribute the most to multidimensional poverty, and the education dimension contributes the least (24.2 percent). This may suggest a different policy focus in the two regions. The priority in these South Asian countries should be wider access to education whereas expansion of basic infrastructure services will have the strongest impact in Sub-Saharan Africa.

### Who are the monetarily and multidimensionally poor?

As the definition of poverty broadens to include additional aspects of deprivation, the composition of the poor changes. Monetary

poverty is predominantly a rural phenomenon: 45.8 percent of the total sample population is rural, but 81.3 percent of the monetarily poor are living in rural areas (annex 4C, table 4C.1). If poverty is considered more broadly with the multidimensional lens, the distribution of poverty tilts even more toward rural areas. Thus, 83.5 percent of the multidimensionally poor are rural dwellers, implying that, relative to urban households, rural households suffer cumulatively more deprivations in access to education and essential utilities. The most pronounced shifts of poverty toward rural areas are observed in East Asia and Pacific and in Latin America and the Caribbean (figure 4.4). In these regions, the shift in the composition is largely driven by deprivations in limited-standard sanitation and adult educational attainment. In contrast, poverty becomes more urban in the Middle East and North Africa and South Asia, suggesting that urban residents in these regions, although not monetarily poor, experience deprivations in some of these additional aspects of life.

With respect to household composition, households with children are overrepresented among both the monetarily poor and the multidimensionally poor, regardless of the gender or number of adults in the household (figure 4.5; also annex 4C, table 4C.2).<sup>10</sup> The shift

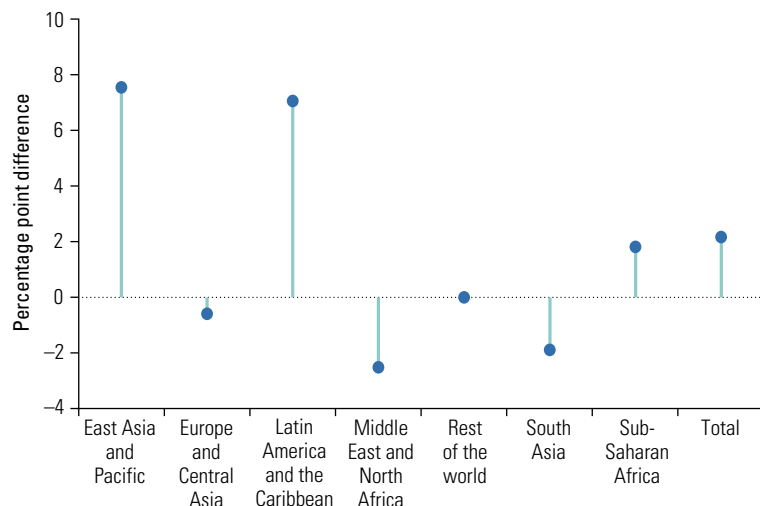
from an exclusively monetary approach to a multidimensional account of poverty does not substantially change the demographic composition of the poor, though households with only one adult woman (with or without children) represent a slightly larger share in the latter case (8.8 percent compared with 8.1 percent). All indicators included in this chapter are measured at the household level and thus do not distinguish differences within households. The estimates also assume that resources are distributed equally within a household, that all household members have similar needs, and that there are no scale economies in larger households. Assessing individual well-being requires measuring intrahousehold resource allocation and the needs of each household member. Chapter 5 investigates methods that estimate individual well-being from underlying household data.<sup>11</sup>

## A deeper look

Extending monetary poverty by including measures of access to education and basic infrastructure services changes the understanding of poverty. However, even this extension to three dimensions fails to capture other key dimensions of well-being. This section augments multidimensional poverty by also including measures of access to health care services and lack of security. The analysis is carried out on six countries for which information on households from a single data source is available. This exercise is exploratory in nature and the numbers presented might diverge from recent official sources (and even from the analysis performed in the previous section) because in all but one country the analysis is based on different household surveys than the one used for calculating monetary poverty. Instead, it uses surveys that are comprehensive enough to include the additional dimensions. The purpose of the exercise is to illustrate the gains and insights that could emerge if this information was available for a larger set of countries.

Accounting for the two extra dimensions of well-being further enhances the understanding of poverty. The proportion of people identified as poor under the expanded definition is higher than with the three-dimensional measure, suggesting that the

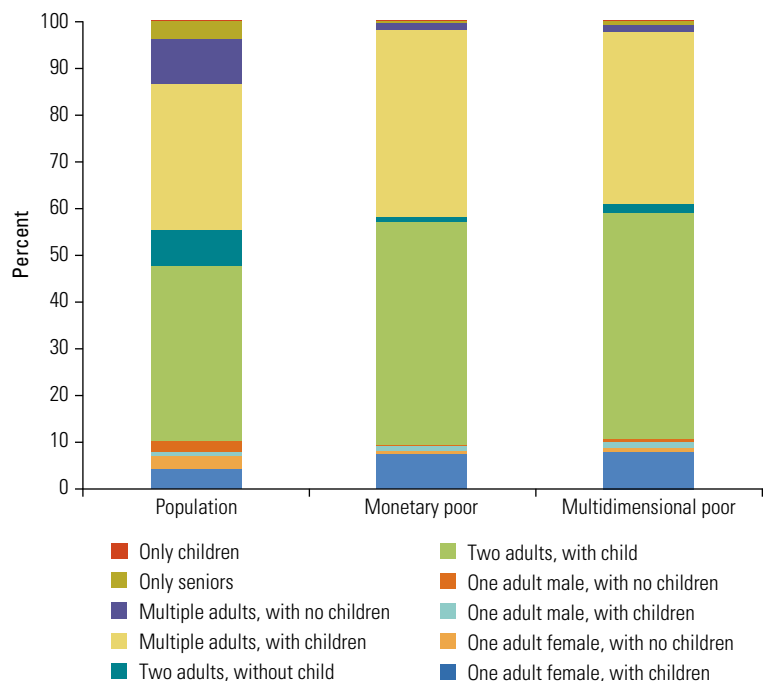
**FIGURE 4.4** Difference in the Share of the Poor in Rural Areas, Multidimensional Headcount vs. Monetary Headcount, 119 Economies, circa 2013



Source: Estimates based on the harmonized household surveys in 119 economies, circa 2013, GMD (Global Monitoring Database), Global Solution Group on Welfare Measurement and Capacity Building, Poverty and Equity Global Practice, World Bank, Washington, DC.

Note: The lines indicate the difference in percentage points of the rural share of the poor when comparing multidimensional and monetary poverty. A positive value indicates that the rural share of the poor is greater with the multidimensional measure.

**FIGURE 4.5** Contribution to Monetary and Multidimensional Poverty, by Household Type, 119 Economies, circa 2013



Source: Estimates based on the harmonized household surveys in 119 economies, circa 2013, GMD (Global Monitoring Database), Global Solution Group on Welfare Measurement and Capacity Building, Poverty and Equity Global Practice, World Bank, Washington, DC.

share of individuals who are unnoticed by monetary poverty measures could be even higher than reported in the previous section. Including health and security can also shift the common understanding of who the poor are and where they are located. Specifically, acknowledging deprivations along these two dimensions reveals that a larger share of the poor live in female-headed households and, in several cases, shifts poverty back toward urban areas.

### The six-country sample

The extended measure of poverty is computed for six countries—Ecuador, Indonesia, Iraq, Mexico, Tanzania, and Uganda—and covers the years 2009–14 (see appendix A for details on the surveys used). These countries have primarily been chosen on the basis of data availability. In each of these countries, a household survey has been conducted recently that collected information relevant to the five dimensions of poverty in a comparable manner. The six countries include low-income, lower-middle-income, and upper-middle-income countries, as well as all World Bank regions except Europe and Central Asia and South Asia. They therefore offer a rela-

tively balanced view of how countries might fare after the multidimensional poverty measure is extended.<sup>12</sup>

Summary analysis of the data reveals that deprivation rates vary greatly by country (table 4.8). Monetary poverty ranges from 2 percent in Ecuador to 44 percent in Tanzania.<sup>13</sup> Only 1 percent of the population does not have access to electricity in Ecuador, Indonesia, and Iraq, whereas the same measure is as high as 87 percent in Uganda. The countries also exhibit different deprivation rates in the newly added dimensions. More than 43 percent of individuals in Tanzania live in households where at least one child is stunted, whereas the same deprivation rate for Mexico is 15 percent. The country ranking on the crime indicator is nearly the reverse of the rankings on the other indicators. The upper-middle-income countries in the sample—Ecuador, Iraq, and Mexico—suffer from high crime rates and substantial insecurity in comparison with the low-income countries, Tanzania and Uganda. The share of individuals affected by a natural disaster also differs markedly across the six countries. Uganda stands out as the least well performing country; there, nearly a third of the population was affected by a drought in the year leading up to the survey.

**TABLE 4.8 Share of Individuals Deprived, by Indicator, Selected Countries**

Percent

Dimension	Indicator	Ecuador	Indonesia	Iraq	Mexico	Tanzania	Uganda
<b>Monetary poverty</b>	Daily consumption < \$1.9	2.0	3.5	2.5	9.2	43.6	35.8
<b>Education</b>	Any school-aged child is not enrolled in school	2.2	3.6	26.0	10.4	32.2	15.4
	No adult has completed primary education	4.8	5.3	12.6	5.3	13.9	26.1
<b>Access to basic infrastructure</b>	No access to basic-standard drinking water	11.3	19.0	13.4	3.7	54.6	54.0
	No access to basic-standard sanitation	14.1	26.6	13.5	19.4	74.5	77.0
	No access to electricity	1.2	0.8	0.7	4.3	79.7	87.2
<b>Health</b>	No facility delivery	6.8	16.6	11.7	4.6	36.7	30.8
	No DPT3 vaccination	3.6	33.6	—	11.9	—	8.4
	Any child is stunted	25.7	41.8	40.5	15.0	43.4	40.7
	Any female is malnourished	3.5	10.5	6.0	5.3	13.6	—
<b>Security</b>	Experienced or in threat of crime	33.0	6.9	21.1	16.4	1.8	5.1
	Affected by natural disaster	2.9	0.9	3.0	0.1	5.6	32.3

Source: Calculations based on Ecuador's Encuesta de Condiciones de Vida 2013–14; Indonesian Family Life Survey, 2014; Iraq Household Socio-Economic Survey, 2012; Mexican Family Life Survey, 2009–12; Tanzania's National Panel Survey, 2012–13; Uganda National Panel Survey 2013–14. See appendix A for details.

Note: Monetary poverty rates might differ from recent official estimates because, in all cases except for Iraq, this exploratory analysis is based on different household surveys than the ones used to calculate official monetary poverty, as reported in chapter 1 and earlier in this chapter. When an indicator is not available for the particular country, weights are shifted to the other indicators in the dimension. A household has access to a basic-standard drinking water if its drinking water comes from an improved source (for example, piped, borehole, protected dug well, rainwater, or delivered water) within a round trip time of 30 minutes. A household has access to basic-standard sanitation if it is using improved sanitation facilities (for example, flush/pour flush to piped sewer system, septic tank, or a composting latrine) and the facility is for the exclusive use of the household. — = not available; DPT3 = diphtheria-pertussis-tetanus vaccine.

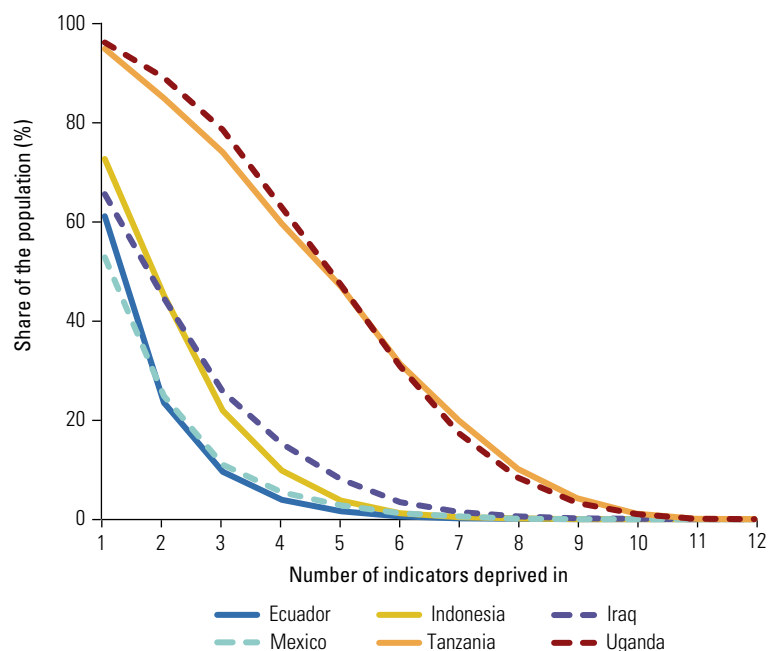
With the addition of health and security indicators, the share of individuals deprived in at least one indicator is troublingly high (figure 4.6). In Tanzania and Uganda, as many as 95 percent of the population is deprived in at least one indicator. Even in the top-performing countries, Ecuador and Mexico, more than half the population is deprived in at least 1 of the 12 indicators. If a household is considered worthy of attention when it is deprived in any of the relevant indicators, then monetary poverty and even multidimensional poverty measures in three dimensions fail to capture many households. The number of deprivations people experience declines rapidly as the deprived indicator count increases, and virtually no one is deprived in all 12 indicators (or 11 or 10) in any country. Yet the decline occurs more quickly in some countries than in others. In Tanzania and Uganda, about half of the population is deprived in five indicators, highlighting the compounded disadvantages many households suffer in these countries.

### Comparing alternative measures of poverty

Because of the frequency of cumulative deprivations, headcount ratios rise several-fold in some countries if one shifts from monetary poverty to the multidimensional poverty measure in five dimensions (figure 4.7). In Iraq, 2.5 percent of the population are counted among the monetary poor; 10.4 percent are poor if three dimensions are considered (with a cutoff of one-third); and 28.4 percent are poor if five dimensions are considered (with a cut-off of one-fifth). Poverty rates climb by an average 41 percent if the five-dimension measure is used instead of the three-dimension measure. Clearly, as the poverty measure becomes more comprehensive and deprivation in a single dimension (or indicators whose weights add up to that of a single dimension) continues to define poverty, the count of individuals living in poverty rises.

The headcount ratios mask the dimensions and indicators driving the rise in poverty rates, and those dimensions and indicators vary across countries. The increase may be caused by any of the added dimensions,

**FIGURE 4.6** Share of Individuals Deprived in at Least a Given Number of Indicators, Selected Countries

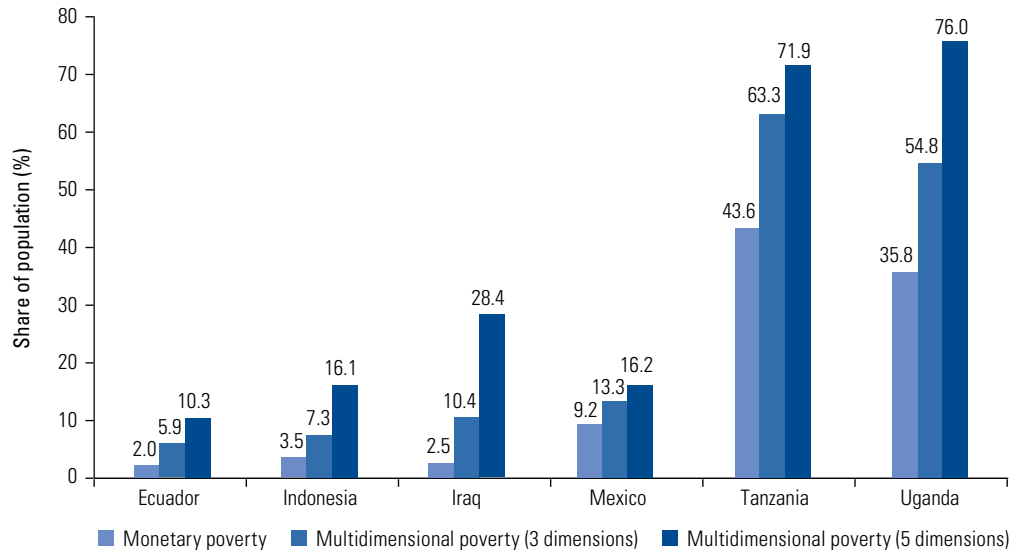


Source: Calculations based on Ecuador's Encuesta de Condiciones de Vida 2013–14; Indonesian Family Life Survey, 2014; Iraq Household Socio-Economic Survey, 2012; Mexican Family Life Survey, 2009–12; Tanzania's National Panel Survey, 2012–13; Uganda National Panel Survey 2013–14. See appendix A for details.

more stringent definitions in the services dimension, or the correlational structure linking the various dimensions. The last reason may be less apparent, but it is conceptually important: if households deprived in any of the added dimensions were already deprived according to the three-dimension measures, implying that the correlation between the deprivations are high, then adding new dimensions need not raise the poverty headcount rates. Conversely, if the new dimensions are uncorrelated or, especially, negatively correlated with deprivation according to the three-dimension measure, then the addition of the new dimensions may lead to an upward surge in poverty rates. Similar to the three-dimension multidimensional measure above, decompositions of the adjusted headcount ratios ( $M$ ) can be used to unpack how much the different dimensions contribute to poverty in each of the countries studied.

The addition of the health and security dimensions to the three-dimension measure shifts the drivers of poverty in several countries (figure 4.8). Measured in three dimen-

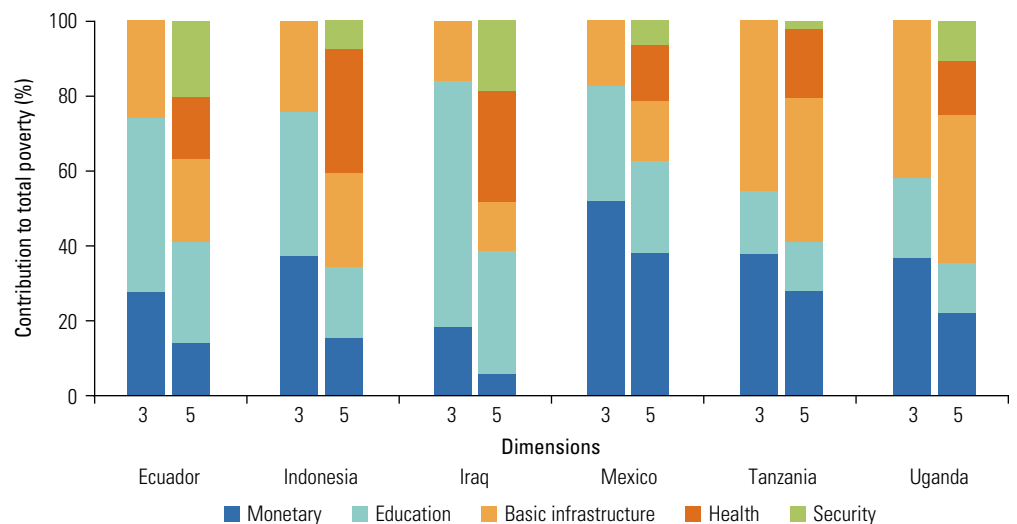
**FIGURE 4.7 The Headcount Ratio, by Alternative Poverty Measures, Selected Countries**



Source: Calculations based on Ecuador's Encuesta de Condiciones de Vida 2013–14; Indonesian Family Life Survey, 2014; Iraq Household Socio-Economic Survey, 2012; Mexican Family Life Survey, 2009–12; Tanzania's National Panel Survey, 2012–13; Uganda National Panel Survey 2013–14. See appendix A for details.

Note: The figure shows the share of the population that is considered poor under three different definitions of poverty. Monetary poverty = individuals living on less than US\$1.90 a day. Multidimensional poverty (three dimensions) = individuals deprived in at least 33 percent of the (weighted) indicators according to the multidimensional headcount measure; the dimensions considered are monetary poverty, education and access to basic infrastructure. Multidimensional poverty (five dimensions) = individuals deprived in at least 20 percent of the (weighted) indicators according to the multidimensional headcount measure and considering all five dimensions. Each dimension in the three-dimension measure is weighted 0.33. Each dimension in the five-dimension measure is weighted 0.20. In the multidimension measures, each indicator is weighted equally within dimensions. Monetary poverty rates might differ from recent official estimates because, in all cases except for Iraq, this exploratory analysis is based on different household surveys than the ones used to calculate official monetary poverty, as reported in chapter 1 and earlier in this chapter.

**FIGURE 4.8 Contribution to Multidimensional Poverty (M), by Dimension, Selected Countries**



Source: Calculations based on Ecuador's Encuesta de Condiciones de Vida 2013–14; Indonesian Family Life Survey, 2014; Iraq Household Socio-Economic Survey, 2012; Mexican Family Life Survey, 2009–12; Tanzania's National Panel Survey, 2012–13; Uganda National Panel Survey 2013–14. See appendix A for details.

Note: The figure shows the contribution of each dimension to the adjusted-headcount ratio M based on the dimensional breakdown method of Alkire et al. (2015).



sions, deprivations in the education dimension are behind two-thirds of the headcount ratio in Iraq. If the five-dimension measure is used, the role of educational deprivations decreases noticeably, and the two extra dimensions are behind roughly half the poverty headcount. Particularly, health deprivations emerge as an area with large contributions to poverty in Iraq. In contrast, in Tanzania and Uganda, the two new dimensions account for only 20 percent of poverty; and, in both the three-dimension measure and the five-dimension measure, monetary poverty and lack of access to basic infrastructure services are the major contributors to poverty.

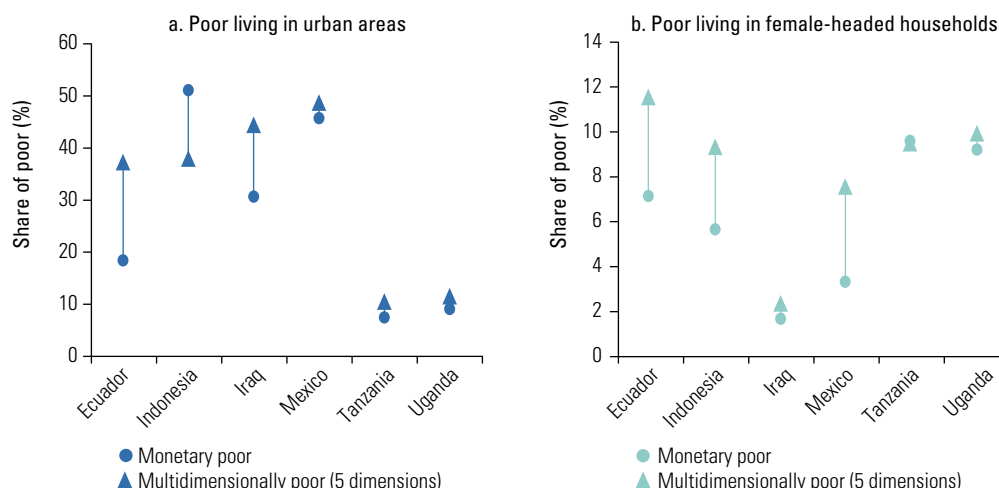
These effects are partially driven by the extent to which the deprivations tend to appear together, and the number of deprivations experienced by households. In Ecuador and Mexico, monetary poverty and threat of crime are negatively correlated, implying that the two indicators capture different types of households; households that suffer from monetary poverty are less likely to suffer from deprivations associated with crime relative to households that do not suffer from monetary poverty. When deprivations linked to crime are included in the measure of multidimensional poverty, many new households may be added to the ranks of the poor, which is the case in Ecuador. In the case of Mexico, many

of the households that suffer from crime do not experience other deprivations, and hence do not meet the criteria for classification among the poor. Consequently, security contributes only modestly to multidimensional poverty in Mexico. In Tanzania and Uganda, health care deprivations are positively correlated with monetary poverty, education deprivations, and deprivation in services. Yet, because many households already meet the cutoff for classification among the poor without adding the health care dimension, the dimension does not contribute much to the ranks of the poor.

### Poverty profiling with five dimensions of well-being

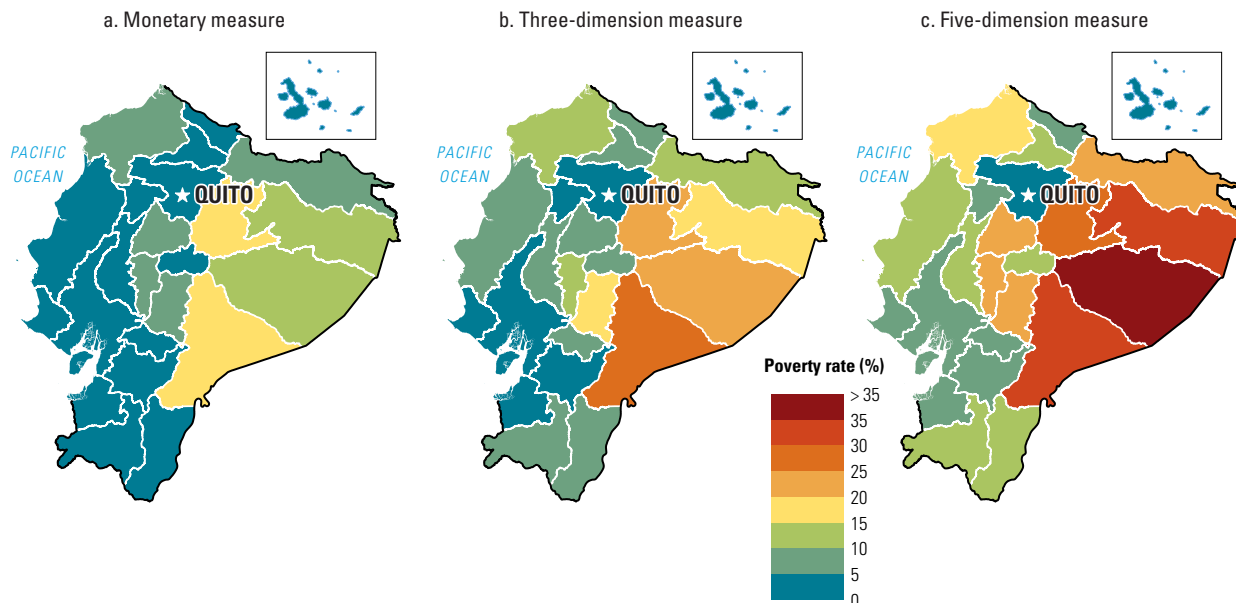
The correlational structure between the dimensions of well-being and their association with population characteristics may change the composition of the poor and the corresponding policy actions needed to reduce poverty. In Ecuador and Iraq, where the contribution to poverty from the security dimension is relatively large, many of the individuals suffering from threats of crime reside in urban centers. As a result, the share of the poor who reside in urban areas in Iraq rises from 31 percent to 44 percent if the focus shifts from monetary poverty to five-

**FIGURE 4.9 The Poor, by Sociodemographic Characteristics, Selected Countries**



Source: Calculations based on Ecuador's Encuesta de Condiciones de Vida 2013–14; Indonesian Family Life Survey, 2014; Iraq Household Socio-Economic Survey, 2012; Mexican Family Life Survey, 2009–12; Tanzania's National Panel Survey, 2012–13; Uganda National Panel Survey 2013–14. See appendix A for details.

## MAP 4.1 Provincial Poverty Rates, Ecuador



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Source: Calculations based on Ecuador's Encuesta de Condiciones de Vida 2013–14. See appendix A for details.

dimension poverty, and similarly from 18 percent to 37 percent in Ecuador (figure 4.9). In contrast, in Mexico, Tanzania and Uganda, where the security addition had a relatively small contribution to total poverty, urban poverty rates change only marginally in response to the addition of more dimensions. In Indonesia, where health deprivations make up the greatest contribution to poverty, the share of poor in urban areas decreases, suggesting that lack of health care primarily is germane to rural areas.

Adding more dimensions also highlights differences in the types of households considered poor. If the five-dimension measure is used instead of the monetary poverty measure, the share of the poor living in female-headed households, defined as households in which the only adult is a woman, increases in all six countries in the sample except Tanzania. In Indonesia, the shift causes the poverty rate among individuals in female-headed households to rise from less than the average rate to more than the average rate, hence targeting female-headed households becomes an important means to combat poverty.

As the composition of poverty changes, so does the spatial concentration of poverty

within a country. In Ecuador, for example, the thinly populated province of Pastaza is one of several eastern provinces with high poverty rates according to the monetary poverty measure, but it has an exceptionally high poverty rate according to the extended multidimensional poverty measure (map 4.1). Similar changes occur in other countries, suggesting that the geographical concentration of poverty shifts if more dimensions are considered. This may have important implications for policies aiming to eliminate the pockets of poverty and for the allocation of resources across regions within a country.

## Conclusion

Monetary poverty is the World Bank's workhorse measure to assess progress in poverty reduction across the world. This chapter examines the effects of extending the measure of poverty by adding nonmonetary dimensions in an attempt to broaden the measurement of well-being. The analysis should be viewed as a starting point for a deeper investigation of the measurement of poverty that recognizes that many dimensions of well-being are not all readily available through markets.

In addition to income and consumption, up to four other dimensions of poverty are included in the analysis, represented by a total of 12 indicators of well-being. Although there are many other valuable indicators that could have been included in the portfolio of nonmonetary indicators, the selected indicators satisfy explicit principles, including the centrality of private consumption, data availability and parsimony.

The consideration of access to education and basic infrastructure alongside income, in a sample of 119 economies for circa 2013 reveals that about a third of those that are multidimensionally deprived are not captured by monetary poverty. The most prevalent deprivation is access to adequate sanitation, which is associated with higher deprivation rates than income. In the exploratory analysis for six countries in which indicators of health, nutrition, and security are added to the analysis of poverty, new aspects of deprivation are uncovered. In some cases, the incidence of crime or the threat of crime is weakly or even negatively associated with monetary poverty. This implies that the characteristics of the poor shift as the definition of poverty is broadened to include security. For several countries, a larger share of the multidimensional poor live in urban areas and in female-headed households.

A growing toolbox for the assessment of well-being enhances the understanding of poverty. In some regions, deprivations in one dimension are accompanied by deprivations in other dimensions, whereas this is not the case for other regions. This has important implications for policies aimed at reducing

human suffering. Although this appreciation is not new or original, elevating additional aspects of well-being to the same level as consumption or income poverty can highlight the relevance of those aspects in comparison to an exclusive focus on monetary poverty.

Going forward, the World Bank will monitor progress on multidimensional poverty using the three-dimension poverty headcount presented in this chapter. However, the empirical challenges of a multidimensional poverty measure, especially at the global level, are great. The analysis described in this chapter relies heavily on available data for the various components of well-being. The data on 119 economies had to have been standardized so indicators on education and utilities could be examined alongside consumption. However, household consumption or income surveys often lack adequate information on many key aspects of well-being, such as health, nutrition, and security. Thus, the extended analysis on additional dimensions of poverty was restricted to six countries. These exercises are also suboptimal because information on the quality of the related services is missing. Richer datasets harmonized with respect to the measurement of essential service access and quality are needed. This appeal does not necessarily mean that already lengthy household survey questionnaires should be lengthened further. Where possible, alternative information sources, such as administrative data or vital statistics, can be combined with survey data at relatively little additional cost in order to broaden the understanding of well-being.

## Annex 4A

# Comparison of indicators used in multidimensional poverty measures

**TABLE 4A.1** Dimensions and Indicators

	World Bank (3 and 5 dimensions)	UNDP–OPHI MPI	Mexico	EU Social Indicators (selected)
<b>Monetary (and living standard)</b>	Consumption or income below \$1.90		Income below national well-being threshold	Income below 60% of median national equivalized income
		Housing Assets	Housing	Assets
<b>Basic infrastructure</b>	Electricity Drinking water Sanitation	Electricity Drinking water Sanitation Cooking fuel	Electricity Drinking water Sanitation Cooking fuel	
<b>Education</b>	Adult school attainment Child school enrollment	Adult school attainment (years of schooling) Child school attendance	Complete level of education School attendance	Early school-leavers (ages 18–24)
<b>Health and nutrition</b>	Coverage of vaccination Coverage of birth attendance Nutrition (children and adults)	Child mortality Nutrition (children and adults)	Coverage of health service Access to food	Infant mortality Life expectancy Self-reported unmet need for health care
<b>Security</b>	Incidence of crime Incidence of natural disasters			
<b>Employment</b>			Access to social security	Jobless households Employment of older workers

Sources: OPHI 2018; and World Bank 2017b.

Note: Indicators in blue reflect those that are included in the World Bank's multidimensional poverty measure for five dimensions. EU = European Union; MPI = Multidimensional Poverty Index; OPHI = Oxford Poverty and Human Development Initiative; UNDP = United Nations Development Programme.

## Annex 4B

### Multidimensional poverty measures: A formalization

The adjusted headcount measure  $M$  was developed by Alkire and Foster (2011), as a special case of the Alkire–Foster family of multidimensional poverty measures. One of the main characteristics of the measure is that it uses a dual cutoff. The first cutoff is the specific sufficiency threshold for each dimension. The second cutoff is often identified by the parameter  $k$  and represents the number of (weighted) deprivations needed before an individual may be considered multidimensionally deprived. The deprivations among individuals who are poor in at least  $k$  dimensions are aggregated for an entire society as follows:

$$M(\alpha, k; y) = \frac{1}{n} \sum_{i=1}^n \left[ \sum_{j=1}^d w_j \left( 1 - \frac{y_{ij}}{z_j} \right)^\alpha I_{ij} \right] I(c_i \geq k), \quad (4B.1)$$

where  $y_{ij}$  is the achievement of person  $i$  on dimension  $j$ ;  $z_j$  is the sufficiency threshold for dimension  $j$ ;  $I_{ij}$  is a dimension-specific indicator function that takes the value of 1 if  $y_{ij} < z_j$  and 0 otherwise;  $\alpha$  is a parameter of the measure's sensitivity to the depth of poverty; and  $I(c_i \geq k)$  is a poverty indicator function that equals 1 if the number of (weighted) dimensions in which the individual is deprived is at least equal to the parameter  $k$ . The measure  $M(\alpha, k; y)$  is decomposable across population groups, which can facilitate a regional analysis and is useful for targeting. It also satisfies several desirable properties, including dimensional breakdown, which is useful to understand the contribution of each dimension to overall poverty.

The most common application of the measure involves setting  $\alpha$  equal to zero. This special case is known as the adjusted headcount ratio ( $M$ ), and is defined as the share of multidimensionally poor households multiplied by the average number of deprivations experienced by the multidimensionally poor. This case is used more frequently because, in many applications, some indicators are categorical, and thus higher values of  $\alpha$  are not appropriate. This measure can be seen as more appealing than the multidimensional headcount  $H$  because it incorporates information on the breadth of poverty. The special case included in the present chapter is as follows:

For  $\alpha = 0$ ,  $k = \frac{1}{3}$ , then

$$M = \frac{1}{n} \sum_{i=1}^n \left( \sum_{j=1}^d w_j I_{ij} \right) I\left(c_i \geq \frac{1}{3}\right) = H \times A, \quad (4B.2)$$

where  $H$  is the multidimensional headcount rate, that is, the share of individuals who are multidimensionally deprived, and  $A$  is the average number of deprivations among those individuals who are multidimensionally deprived. This chapter first reports  $H$  as a summary measure across countries and regions and then  $H \times A$ .

Datt (forthcoming) proposes an alternative family of multidimensional poverty measures, known as the distribution-sensitive multidimensional poverty measures. The measure proposed does not make use of a dual cutoff, recognizing the essentiality of every deprivation. Every deprivation is counted toward the measurement of poverty even if a person is deprived in a single indicator with low weight. In addition, the measure penalizes for any compounding effect of deprivations characterized by parameter  $\beta$ . The larger the value of  $\beta$ , the higher the weight it places on the cumulative deprivations.

$$M(\alpha, \beta, y) = \frac{1}{n} \sum_{i=1}^n \left[ \sum_{j=1}^d w_j \left( 1 - \frac{y_{ij}}{z_j} \right)^\alpha I_{ij} \right]^\beta; \text{ for } \alpha \geq 0, \beta > 1. \quad (4B.3)$$

Although  $M(\alpha, \beta, y)$  is sensitive to the intensity of deprivation suffered by individuals, it does not satisfy the dimensional breakdown (unlike the previous measure).

If some of the indicators are binary, as in the case of this chapter,  $\alpha$  is set at 0, and  $M(\alpha, \beta, y)$  coincides with the measure of social exclusion presented by Chakravarty and D'Ambrosio (2006). The measure is also a member of the  $M$ -gamma class of indicators presented in Alkire and Foster (2016). The measure used in the chapter is defined as follows:

$$D = M(0, 2, y) = \frac{1}{n} \sum_{i=1}^n \left[ \sum_{j=1}^d w_j I_j(y_{ij} < z_j) \right]^2 \quad (4B.4)$$

## Annex 4C

### Statistical tables

**TABLE 4C.1** People Living in Monetary or Multidimensional Poverty, by Rural-Urban Areas, 119 Economies, circa 2013

Region	Rural share of total population (%)	Monetary headcount ratio (%)			Multidimensional headcount ratio (%)			Economies (number)	Population coverage (%)
		Rural	Urban	Rural share of the poor	Rural	Urban	Rural share of the poor		
East Asia and Pacific	55.7	6.5	3.9	67.8	10.2	4.2	75.5	13	28.9
Europe and Central Asia	33.5	0.5	0.2	52.7	1.8	0.8	52.2	17	90.0
Latin America and the Caribbean	21.0	11.2	1.9	61.0	19.9	2.5	68.2	17	91.5
Middle East and North Africa	43.6	6.4	0.9	84.8	11.5	1.9	82.2	9	72.1
South Asia	70.6	15.2	3.9	90.3	33.3	10.5	88.4	5	23.0
Sub-Saharan Africa	67.0	55.9	22.6	83.4	81.8	28.8	85.2	29	60.7
Rest of the world	24.6	0.6	0.4	30.7	0.6	0.4	30.7	29	39.6
Total	45.8	21.0	4.1	81.3	33.6	5.6	83.5	119	45.0

Source: Estimates based on the harmonized household surveys in 119 economies, circa 2013, GMD (Global Monitoring Database), Global Solution Group on Welfare Measurement and Capacity Building, Poverty and Equity Global Practice, World Bank, Washington, DC.

Note: Location of residence is missing for 1 percent of the total sample.

**TABLE 4C.2** People Living in Monetary or Multidimensional Poverty, by Household Type, 119 Economies, circa 2013

Profile	Population share (%)	Monetary poverty		Multidimensional poverty	
		Headcount ratio (%)	Share of the poor (%)	Headcount ratio (%)	Share of the poor (%)
One adult female, with child	4.4	20.3	7.63	32.7	7.92
One adult female, without child	2.8	1.8	0.42	5.5	0.84
One adult male, with child	0.8	17.1	1.09	30.3	1.25
One adult male, without child	2.4	1.7	0.35	5.5	0.74
Two adults, with child	37.3	14.9	47.48	23.5	48.29
Two adults, without child	7.7	1.6	1.04	4.4	1.86
Multiple adults, with child	31.1	15.1	39.92	21.4	36.59
Multiple adults, without child	9.7	1.8	1.53	3.0	1.6
Only seniors	3.9	1.4	0.45	3.9	0.83
Only children	0.0	24.9	0.08	38.7	0.08
Total	100.0	11.7	100.0	18.2	100.0

Source: Estimates based on the harmonized household surveys in 119 economies, circa 2013, GMD (Global Monitoring Database), Global Solution Group on Welfare Measurement and Capacity Building, Poverty and Equity Global Practice, World Bank, Washington, DC.

Note: The monetary and multidimensional poverty rates in this table differ slightly from those reported in tables 4.5, 4.6, and 4.7 because household type cannot be constructed for 0.4 percent of the sample because of missing information.

## Economy-level estimates

The estimates in tables 4C.3 and 4C.4 are derived from household surveys included in the GMD, for circa 2013. The surveys collect information on total household income or expenditure for monetary poverty estimation, as well as information on a host of other topics, including education enrollment, adult education attainment, and access to basic infrastructure services, which permits the construction of the multidimensional poverty measure. However, there is large heterogeneity in how the questions are worded, how detailed the response choices are, and how closely they match the standard definitions of access (for example, as defined by the Joint Monitoring Programme for drinking water

supply and sanitation). Despite best efforts to harmonize country-specific questionnaires to the standard definition, there could be some discrepancies with measures reported elsewhere. Therefore, the estimates must be taken as the best possible estimate under the stringent data requirement of joint observation of monetary as well as nonmonetary dimensions of well-being. Finally, both education indicators are household-level indicators (that is, the number of individuals *living in a household* in which one child is not attending school). This means that the table of each country's educational deprivations presented in the chapter cannot be directly compared to official estimates from the United Nations Educational, Scientific and Cultural Organization, which are based on individual-level indicators.

**TABLE 4C.3** Individuals in Households Deprived in Each Indicator, 119 Economies, circa 2013

Country	Year	Deprivation rate (share of population)					
		Monetary (%)	Education attainment (%)	Education enrollment (%)	Electricity (%)	Sanitation (%)	Drinking water (%)
Albania	2012	1.06	2.27	6.73	0.50	3.04	0.34
Argentina	2014	0.74	1.31	0.98	0.00	0.72	0.05
Armenia	2013	2.24	0.09	1.89	0.50	10.64	0.06
Austria	2013	0.34	0.00	0.00	0.00	0.96	0.00
Bangladesh	2010	19.63	29.14	16.83	43.63	48.32	3.75
Belarus	2013	0.00	0.79	0.00	—	10.60	0.00
Belgium	2013	0.14	1.41	0.00	0.00	2.10	0.00
Benin	2015	49.55	61.61	25.45	69.02	70.67	26.87
Bhutan	2012	2.17	49.96	6.53	12.90	33.76	1.73
Bolivia	2014	5.80	18.33	4.39	9.60	32.58	7.88
Bosnia and Herzegovina	2015	0.20	1.70	30.77	0.04	1.55	8.79
Brazil	2014	2.76	19.50	0.94	0.33	24.67	4.13
Bulgaria	2013	1.77	0.94	0.00	0.00	20.64	0.00
Burundi	2013	71.73	66.34	18.89	93.07	94.31	18.87
Cameroon	2014	23.83	24.39	15.94	1.20	38.93	23.20
Chad	2011	38.43	67.86	5.87	95.51	92.68	56.05
Chile	2013	0.92	4.64	0.39	0.33	0.47	0.91
Colombia	2014	5.03	6.71	3.03	2.39	9.70	5.04
Congo, Dem. Rep.	2012	77.08	28.73	26.94	85.50	70.08	47.90
Congo, Rep.	2011	36.96	13.39	2.25	40.90	47.29	20.23
Costa Rica	2014	1.45	4.43	1.01	0.57	1.92	0.39
Croatia	2013	0.75	0.26	0.00	0.00	1.93	0.00
Cyprus	2013	0.05	1.81	0.00	0.00	1.03	0.00
Czech Republic	2013	0.05	0.01	0.00	0.00	0.70	0.00
Côte d'Ivoire	2015	28.21	53.15	25.57	37.42	59.47	23.28
Denmark	2013	0.31	1.40	0.00	0.00	0.48	0.00
Djibouti	2012	18.32	32.98	4.05	45.41	37.33	9.25
Dominican Republic	2013	2.37	17.03	1.64	1.37	4.28	27.28
Ecuador	2014	2.63	4.74	1.97	0.96	5.57	4.28
Egypt, Arab Rep.	2012	2.29	14.15	7.16	0.28	11.43	1.08
El Salvador	2014	2.97	28.66	5.54	4.49	2.63	1.30
Estonia	2013	0.86	0.07	0.00	0.00	7.21	0.00

(continued)



**TABLE 4C.3 Individuals in Households Deprived in Each Indicator, 119 Economies, circa 2013**  
(continued)

Country	Year	Deprivation rate (share of population)					
		Monetary (%)	Education attainment (%)	Education enrollment (%)	Electricity (%)	Sanitation (%)	Drinking water (%)
Ethiopia	2010	33.56	72.39	37.98	82.53	95.56	50.55
Fiji	2013	1.37	0.79	1.43	10.00	7.15	8.27
Finland	2013	0.09	0.76	0.00	0.00	0.61	0.00
France	2013	0.06	1.04	0.00	0.00	0.47	0.00
Gambia, The	2010	25.08	20.12	10.59	67.10	16.44	11.37
Georgia	2013	6.88	0.19	0.97	0.00	6.04	0.18
Germany	2011	0.04	0.00	0.00	0.00	0.92	0.00
Ghana	2012	12.05	17.08	8.56	33.55	77.09	13.65
Greece	2013	0.96	2.63	0.00	0.00	0.48	0.00
Guatemala	2014	8.65	24.85	18.35	16.52	46.72	8.45
Guinea	2012	35.27	53.73	7.70	0.00	65.66	31.25
Guinea-Bissau	2010	67.08	44.12	5.81	97.09	65.77	36.35
Haiti	2012	23.49	23.18	9.00	64.31	68.80	33.50
Honduras	2013	17.32	14.05	16.56	13.92	19.55	9.85
Hungary	2013	0.11	0.01	0.00	0.00	5.33	0.00
Iceland	2013	0.05	0.06	0.00	0.00	0.00	0.00
Indonesia	2016	6.49	4.99	1.74	2.38	16.51	10.68
Iran, Islamic Rep.	2013	0.11	4.49	1.38	0.12	—	2.44
Iraq	2012	2.46	13.55	22.69	0.66	0.95	10.01
Ireland	2013	0.65	0.76	0.00	0.00	0.12	—
Italy	2013	1.37	1.29	0.00	0.00	0.76	0.00
Jordan	2010	0.12	1.83	2.99	0.00	0.00	0.24
Kazakhstan	2013	0.02	0.00	0.00	0.00	0.01	0.38
Kosovo	2013	0.29	0.73	59.40	0.24	—	2.67
Kyrgyz Republic	2013	3.26	0.21	0.00	5.29	0.50	10.67
Lao PDR	2012	22.75	13.45	14.45	11.13	32.10	44.34
Latvia	2013	1.14	0.77	0.00	0.00	14.68	0.00
Lebanon	2011	0.00	9.24	2.25	0.94	—	0.86
Lesotho	2010	59.65	21.25	10.52	83.63	—	—
Liberia	2014	38.61	40.56	2.83	95.67	53.39	19.13
Lithuania	2013	0.71	0.55	0.00	0.00	12.48	—
Luxembourg	2013	0.09	0.64	0.00	0.00	0.08	0.00
Madagascar	2012	77.63	82.46	34.63	27.98	89.48	58.84
Malawi	2010	71.38	47.72	3.12	5.14	26.43	19.41
Malta	2013	0.03	0.52	0.00	0.00	0.09	0.00
Mauritania	2014	5.97	54.26	8.31	62.54	49.30	23.54
Mexico	2012	3.93	6.08	2.76	0.81	4.43	7.41
Micronesia, Fed. Sts.	2013	15.96	8.75	27.99	23.63	19.06	4.97
Moldova	2013	0.08	0.23	0.62	0.09	0.00	28.86
Mongolia	2016	0.50	5.96	3.16	0.17	9.56	12.82
Montenegro	2013	1.04	13.00	37.73	0.99	12.35	4.75
Mozambique	2014	62.90	54.91	33.31	72.76	71.29	40.77
Myanmar	2015	6.36	17.75	13.70	16.20	20.12	29.43
Nepal	2010	14.99	28.56	9.51	31.47	47.32	16.78
Netherlands	2013	0.09	0.58	0.00	0.00	0.01	0.00
Nicaragua	2014	3.24	14.11	8.06	19.98	42.74	12.49
Niger	2014	44.54	70.58	11.71	87.03	83.74	48.54
Norway	2013	0.13	0.78	0.00	0.00	0.00	0.00
Pakistan	2013	6.07	37.09	31.65	8.13	35.11	7.90
Paraguay	2014	2.41	7.76	3.14	0.92	10.95	6.67
Peru	2014	3.72	5.83	1.09	6.80	8.98	14.37
Philippines	2015	6.58	4.52	4.40	9.13	6.78	10.61
Poland	2015	0.00	1.16	2.63	0.00	2.92	0.57
Portugal	2013	0.86	3.57	0.00	0.00	0.95	0.00

(continued)

**TABLE 4C.3 Individuals in Households Deprived in Each Indicator, 119 Economies, circa 2013**  
(continued)

Country	Year	Deprivation rate (share of population)					
		Monetary (%)	Education attainment (%)	Education enrollment (%)	Electricity (%)	Sanitation (%)	Drinking water (%)
Romania	2013	0.00	0.29	4.78	1.63	33.43	29.76
Russian Federation	2013	0.01	0.02	1.12	1.01	1.28	0.00
Rwanda	2013	59.49	37.54	4.34	80.55	15.03	25.58
São Tomé and Príncipe	2010	32.28	26.74	17.52	—	60.87	7.03
Senegal	2011	37.98	41.16	6.41	47.05	28.70	18.21
Serbia	2013	0.29	4.28	0.00	0.07	5.03	0.29
Seychelles	2013	1.06	94.93	0.00	—	—	8.70
Sierra Leone	2011	52.21	42.49	0.99	0.00	51.03	30.35
Slovak Republic	2013	0.28	0.01	0.00	0.00	1.29	0.00
Slovenia	2013	0.02	0.00	0.00	0.00	0.56	0.00
Solomon Islands	2013	25.14	11.40	13.54	53.83	58.52	25.46
South Africa	2014	18.85	2.26	1.54	4.09	4.17	6.38
Spain	2013	1.16	4.02	0.00	0.00	0.13	0.00
Sri Lanka	2016	0.73	3.78	4.01	2.47	1.15	11.02
Sweden	2013	0.64	0.89	0.00	0.00	0.00	0.00
Switzerland	2013	0.04	0.00	0.00	0.00	0.16	0.00
Tajikistan	2015	4.81	0.31	22.49	2.03	3.51	26.31
Tanzania	2011	49.09	60.61	26.47	84.28	40.79	31.77
Thailand	2013	0.04	15.07	0.67	0.15	0.26	2.68
Timor-Leste	2014	30.31	21.20	0.31	27.20	48.60	22.10
Togo	2015	49.15	26.57	2.32	—	51.82	40.63
Tunisia	2010	1.99	22.55	3.05	0.53	33.32	5.48
Turkey	2013	0.33	3.21	4.22	0.00	2.86	0.68
Tuvalu	2010	3.26	4.54	6.09	9.20	11.54	0.03
Uganda	2012	35.86	47.91	18.48	91.12	72.06	25.97
Ukraine	2013	0.00	0.50	28.94	0.00	27.10	0.00
United Kingdom	2013	0.16	0.48	0.00	0.00	0.40	0.00
Uruguay	2014	0.11	3.04	1.25	0.25	1.52	0.15
Vanuatu	2010	13.15	18.48	14.63	55.93	45.63	19.13
Vietnam	2014	2.64	5.85	1.29	0.89	19.84	7.09
West Bank and Gaza	2011	0.20	3.23	5.49	0.32	1.38	1.95
Yemen, Rep.	2014	18.82	15.95	15.74	33.89	42.53	14.02
Zambia	2015	57.50	24.37	30.37	69.21	59.80	30.67

Source: Estimates based on the harmonized household surveys in 119 economies, circa 2013, GMD (Global Monitoring Database), Global Solution Group on Welfare Measurement and Capacity Building, Poverty and Equity Global Practice, World Bank, Washington, DC.

Note: The definition of the indicators and the deprivation thresholds are as follows. Monetary poverty: a household is deprived if income or expenditure, in 2011 purchasing power parity U.S. dollars, is less than US\$1.90 per person per day. Educational attainment: a household is deprived if no adult (grade 9 equivalent age or above) has completed primary education. Educational enrollment: a household is deprived if at least one child (grade 8 equivalent age or below) is not enrolled in school. Electricity: a household is deprived if it does not have access to electricity. Sanitation: a household is deprived if it does not have access to even a limited standard of sanitation. Drinking water: a household is deprived if it does not have access to even a limited standard of drinking water. The data reported refer to the share of people living in households deprived according to each indicator. — = not available.

**TABLE 4C.4 Multidimensional Poverty across Alternative Measures, 119 Economies, circa 2013**

Country	Multidimensional headcount (H) (%)	Adjusted headcount measure (M)	Distribution-sensitive measure (D)	Number of deprivations (share of population)						
				0 (%)	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	6 (%)
Albania	1.21	0.005	0.005	87.7	11.0	1.0	0.1	0.1	0.0	0.0
Argentina	0.77	0.003	0.002	96.4	3.4	0.2	0.0	0.0	0.0	0.0
Armenia	2.24	0.008	0.005	85.4	13.9	0.7	0.0	0.0	0.0	0.0
Austria	0.34	0.001	0.000	98.7	1.3	0.0	0.0	0.0	0.0	0.0
Bangladesh	32.22	0.178	0.121	27.9	23.9	21.3	15.6	8.3	2.7	0.2
Belarus	8.56	0.029	0.011	89.2	10.4	0.4	0.0	0.0	0.0	0.0
Belgium	0.14	0.000	0.001	96.5	3.4	0.1	0.0	0.0	0.0	0.0
Benin	71.74	0.462	0.332	10.4	11.2	13.1	20.7	23.9	16.2	4.5
Bhutan	11.09	0.050	0.046	35.0	33.8	22.4	7.0	1.7	0.1	0.0
Bolivia	11.88	0.060	0.044	57.8	20.6	11.6	6.3	3.0	0.7	0.1
Bosnia and Herzegovina	1.05	0.005	0.013	61.5	34.5	3.6	0.3	0.1	0.0	0.0
Brazil	4.59	0.021	0.021	62.6	26.0	8.6	2.2	0.5	0.0	0.0
Bulgaria	1.77	0.008	0.006	78.7	19.3	1.8	0.1	0.0	0.0	0.0
Burundi	86.54	0.589	0.429	3.0	2.9	8.6	23.6	40.7	18.0	3.3
Cameroon	36.60	0.210	0.142	42.5	21.2	15.3	11.5	7.0	2.5	0.0
Chad	85.47	0.496	0.323	1.5	3.6	9.8	28.4	36.9	18.2	1.5
Chile	1.01	0.004	0.003	93.0	6.5	0.4	0.1	0.0	0.0	0.0
Colombia	6.54	0.028	0.018	78.6	14.4	4.4	1.7	0.7	0.2	0.0
Congo, Dem. Rep.	83.16	0.560	0.404	7.7	7.1	10.6	21.1	28.6	19.4	5.6
Congo, Rep.	42.64	0.228	0.141	27.0	28.5	23.6	15.4	5.0	0.5	0.0
Costa Rica	1.70	0.007	0.005	91.9	7.0	0.8	0.2	0.1	0.0	0.0
Croatia	0.75	0.003	0.001	97.1	2.8	0.1	0.0	0.0	0.0	0.0
Cyprus	0.05	0.000	0.001	97.4	2.3	0.3	0.0	0.0	0.0	0.0
Czech Republic	0.05	0.000	0.000	99.2	0.7	0.0	0.0	0.0	0.0	0.0
Côte d'Ivoire	49.89	0.294	0.206	16.9	19.0	20.7	18.9	14.5	8.1	1.9
Denmark	0.31	0.001	0.001	97.9	1.9	0.1	0.0	0.0	0.0	0.0
Djibouti	27.86	0.162	0.115	35.9	23.5	16.2	11.6	7.4	5.4	0.1
Dominican Republic	5.24	0.023	0.021	62.3	25.2	9.5	2.4	0.6	0.1	0.0
Ecuador	3.34	0.014	0.009	85.0	11.2	2.7	0.8	0.2	0.0	0.0
Egypt, Arab Rep.	4.12	0.017	0.015	70.6	23.5	5.1	0.7	0.1	0.0	0.0
El Salvador	6.50	0.028	0.022	66.2	24.8	6.8	1.9	0.3	0.1	0.0
Estonia	0.86	0.003	0.002	92.0	7.9	0.1	0.0	0.0	0.0	0.0
Ethiopia	82.18	0.523	0.372	2.6	7.3	11.0	18.4	28.1	24.0	8.6
Fiji	2.38	0.009	0.008	78.2	15.9	4.8	1.0	0.1	0.0	0.0
Finland	0.09	0.000	0.000	98.6	1.4	0.0	0.0	0.0	0.0	0.0
France	0.06	0.000	0.000	98.4	1.5	0.0	0.0	0.0	0.0	0.0
Gambia, The	30.83	0.161	0.104	21.5	31.7	26.8	15.3	3.9	0.8	0.0
Georgia	6.89	0.024	0.009	86.6	12.6	0.8	0.0	0.0	0.0	0.0
Germany	0.04	0.000	0.000	99.0	1.0	0.0	0.0	0.0	0.0	0.0
Ghana	26.02	0.137	0.095	19.6	36.9	19.7	13.6	7.2	2.6	0.5
Greece	0.96	0.003	0.002	96.0	3.8	0.1	0.0	0.0	0.0	0.0
Guatemala	21.56	0.110	0.075	39.4	24.3	18.3	11.1	5.2	1.6	0.2
Guinea	46.20	0.257	0.168	19.0	18.3	26.3	24.0	11.4	0.9	0.0
Guinea-Bissau	79.70	0.495	0.334	1.0	11.0	18.4	25.5	29.7	13.1	1.2
Haiti	43.90	0.248	0.169	15.0	22.1	21.3	19.0	14.1	6.9	1.6
Honduras	22.48	0.118	0.075	53.9	22.4	10.8	6.8	4.1	1.6	0.3
Hungary	0.11	0.000	0.001	94.6	5.4	0.0	0.0	0.0	0.0	0.0
Iceland	0.05	0.000	0.000	99.9	0.1	0.0	0.0	0.0	0.0	0.0
Indonesia	8.03	0.034	0.021	70.6	19.7	6.9	2.0	0.6	0.2	0.0
Iran, Islamic Rep.	0.70	0.002	0.003	92.1	7.2	0.6	0.0	0.0	0.0	0.0
Iraq	7.26	0.031	0.024	63.6	25.8	8.0	1.9	0.6	0.1	0.0
Ireland	0.65	0.002	0.001	98.5	1.5	0.0	0.0	0.0	0.0	0.0
Italy	1.37	0.005	0.002	96.6	3.3	0.0	0.0	0.0	0.0	0.0
Jordan	0.33	0.001	0.002	95.1	4.6	0.3	0.0	0.0	0.0	0.0
Kazakhstan	0.02	0.000	0.000	99.6	0.4	0.0	0.0	0.0	0.0	0.0
Kosovo	2.31	0.008	0.020	39.2	58.6	2.0	0.2	0.1	0.0	0.0

*(continued)*

**TABLE 4C.4 Multidimensional Poverty across Alternative Measures, 119 Economies, circa 2013 (continued)**

Country	Multidimensional headcount (H) (%)	Adjusted headcount measure (M)	Distribution-sensitive measure (D)	Number of deprivations (share of population)						
				0 (%)	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	6 (%)
Kyrgyz Republic	3.26	0.012	0.007	81.8	16.6	1.6	0.0	0.0	0.0	0.0
Lao PDR	28.77	0.151	0.099	24.0	41.4	17.3	10.4	4.4	1.9	0.6
Latvia	1.14	0.005	0.004	84.3	14.9	0.8	0.0	0.0	0.0	0.0
Lebanon	0.76	0.003	0.004	87.5	11.8	0.8	0.0	0.0	0.0	0.0
Lesotho	90.88	0.529	0.342	8.3	28.7	44.9	16.2	2.0	0.0	0.0
Liberia	53.24	0.312	0.211	2.6	24.2	25.3	22.9	18.8	6.2	0.1
Lithuania	1.06	0.004	0.005	86.8	12.6	0.6	0.0	0.0	0.0	0.0
Luxembourg	0.09	0.000	0.000	99.2	0.8	0.0	0.0	0.0	0.0	0.0
Madagascar	85.35	0.669	0.560	2.5	7.1	13.3	19.7	31.5	23.5	2.4
Malawi	75.07	0.385	0.216	16.4	27.6	32.3	19.2	4.4	0.2	0.0
Malta	0.03	0.000	0.000	99.4	0.6	0.0	0.0	0.0	0.0	0.0
Mauritania	43.25	0.206	0.119	21.0	18.6	18.8	22.1	16.0	3.3	0.1
Mexico	4.59	0.019	0.012	80.6	14.5	3.9	0.7	0.2	0.0	0.0
Micronesia, Fed. Sts.	20.84	0.103	0.067	42.4	30.4	16.0	7.3	3.4	0.5	0.0
Moldova	0.08	0.000	0.004	70.6	28.8	0.5	0.0	0.0	0.0	0.0
Mongolia	1.27	0.005	0.008	75.5	17.6	6.2	0.7	0.0	0.0	0.0
Montenegro	9.48	0.041	0.032	51.8	34.5	8.2	3.4	1.4	0.6	0.0
Mozambique	76.61	0.543	0.419	12.6	8.6	8.9	14.2	22.3	22.4	10.9
Myanmar	15.32	0.078	0.057	44.1	28.2	14.5	8.2	3.3	1.4	0.2
Nepal	28.17	0.150	0.102	32.1	24.8	19.3	13.9	6.9	2.4	0.7
Netherlands	0.09	0.000	0.000	99.3	0.7	0.0	0.0	0.0	0.0	0.0
Nicaragua	15.00	0.071	0.048	45.9	28.9	11.7	7.8	3.5	1.9	0.2
Niger	79.16	0.500	0.348	6.2	6.3	9.1	18.6	34.6	23.5	1.7
Norway	0.13	0.000	0.000	99.1	0.9	0.0	0.0	0.0	0.0	0.0
Pakistan	24.38	0.119	0.079	35.2	28.8	19.1	10.6	4.5	1.6	0.1
Paraguay	3.92	0.018	0.014	77.3	15.9	4.9	1.6	0.3	0.1	0.0
Peru	6.15	0.027	0.018	74.3	15.2	6.8	2.7	0.8	0.1	0.0
Philippines	8.70	0.040	0.025	74.2	15.7	5.8	2.7	1.2	0.3	0.0
Poland	0.08	0.000	0.002	93.5	5.9	0.6	0.0	0.0	0.0	0.0
Portugal	0.86	0.003	0.002	94.8	5.0	0.2	0.0	0.0	0.0	0.0
Romania	3.49	0.013	0.019	62.8	8.3	25.4	3.2	0.3	0.0	0.0
Russian Federation	0.99	0.003	0.002	96.6	3.4	0.0	0.0	0.0	0.0	0.0
Rwanda	63.13	0.362	0.226	12.9	15.7	27.5	27.0	13.6	3.1	0.2
São Tomé and Príncipe	51.11	0.247	0.139	20.2	33.6	30.7	12.5	2.7	0.2	0.0
Senegal	46.69	0.268	0.174	31.1	17.2	16.7	16.5	13.3	4.7	0.4
Serbia	0.38	0.002	0.003	91.0	8.2	0.7	0.1	0.0	0.0	0.0
Seychelles	9.69	0.048	0.048	4.6	86.2	9.2	0.1	0.0	0.0	0.0
Sierra Leone	56.91	0.298	0.173	21.5	22.1	24.6	21.8	10.0	0.1	0.0
Slovak Republic	0.28	0.001	0.000	98.5	1.5	0.0	0.0	0.0	0.0	0.0
Slovenia	0.02	0.000	0.000	99.4	0.6	0.0	0.0	0.0	0.0	0.0
Solomon Islands	37.62	0.193	0.124	14.2	24.4	33.0	18.3	7.6	2.3	0.1
South Africa	19.21	0.073	0.031	70.6	22.9	5.4	1.0	0.0	0.0	0.0
Spain	1.16	0.004	0.003	94.8	5.1	0.1	0.0	0.0	0.0	0.0
Sri Lanka	1.12	0.005	0.006	80.1	17.1	2.3	0.4	0.1	0.0	0.0
Sweden	0.64	0.002	0.001	98.6	1.3	0.1	0.0	0.0	0.0	0.0
Switzerland	0.04	0.000	0.000	99.8	0.2	0.0	0.0	0.0	0.0	0.0
Tajikistan	5.43	0.024	0.024	54.2	34.4	9.7	1.5	0.3	0.1	0.0
Tanzania	67.19	0.434	0.315	8.2	12.0	18.2	23.9	19.8	13.4	4.4
Thailand	0.28	0.001	0.005	82.2	16.9	0.8	0.1	0.0	0.0	0.0
Timor-Leste	39.49	0.192	0.111	28.6	25.3	22.6	15.8	6.5	1.1	0.0
Togo	60.66	0.343	0.216	26.0	19.8	22.4	22.0	9.8	0.2	0.0
Tunisia	4.16	0.020	0.024	52.6	31.0	13.5	2.6	0.3	0.0	0.0
Turkey	0.62	0.002	0.004	90.1	8.6	1.0	0.2	0.0	0.0	0.0
Tuvalu	3.88	0.015	0.012	70.7	24.4	4.3	0.5	0.0	0.0	0.0
Uganda	65.03	0.384	0.261	5.8	9.9	21.3	27.9	22.6	10.8	1.8
Ukraine	0.07	0.000	0.015	51.5	40.6	8.0	0.0	0.0	0.0	0.0

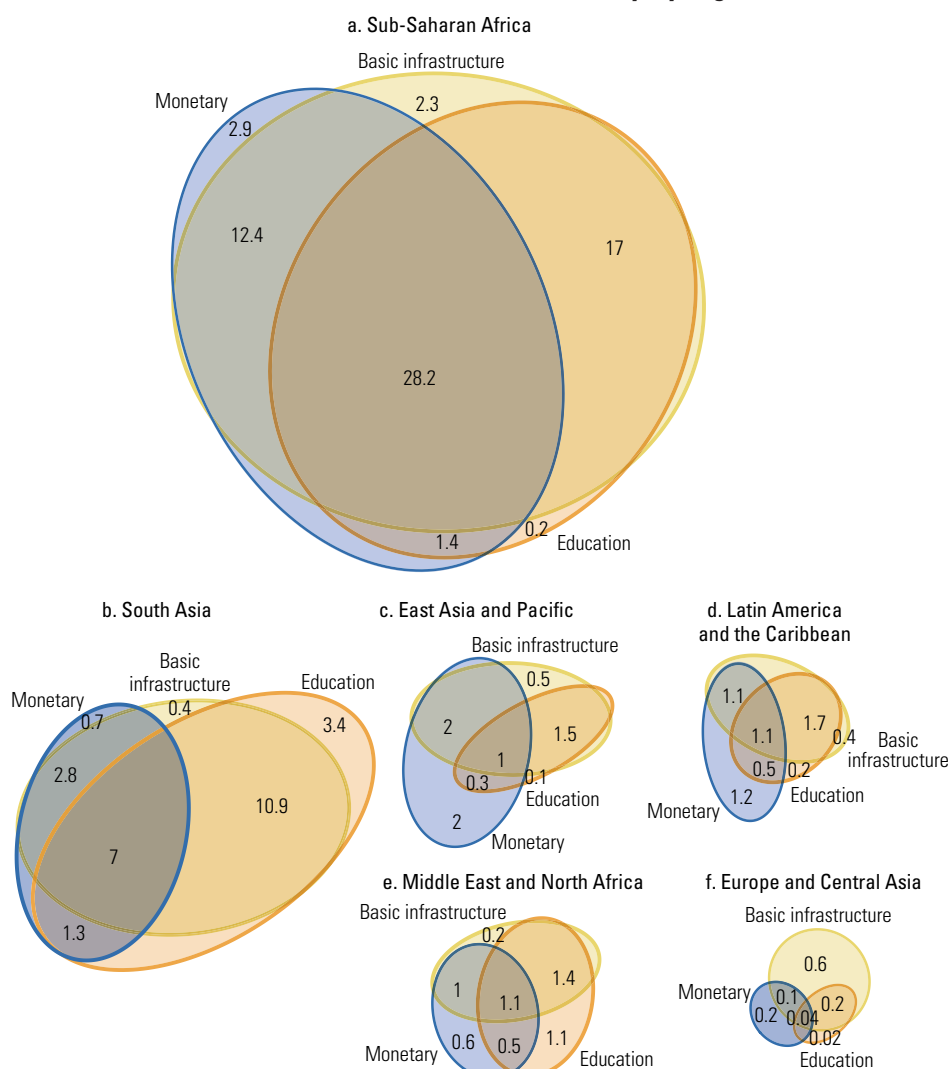
(continued)

**TABLE 4C.4 Multidimensional Poverty across Alternative Measures, 119 Economies, circa 2013 (continued)**

Country	Multidimensional headcount (H) (%)	Adjusted headcount measure (M)	Distribution-sensitive measure (D)	Number of deprivations (share of population)						
				0 (%)	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	6 (%)
United Kingdom	0.16	0.001	0.000	99.0	1.0	0.0	0.0	0.0	0.0	0.0
Uruguay	0.19	0.001	0.002	94.1	5.6	0.3	0.1	0.0	0.0	0.0
Vanuatu	33.12	0.154	0.095	22.4	25.3	26.5	17.4	6.7	1.6	0.3
Vietnam	3.78	0.019	0.016	74.8	16.3	6.3	1.9	0.6	0.1	0.0
West Bank and Gaza	0.49	0.002	0.004	88.4	10.6	0.9	0.1	0.0	0.0	0.0
Yemen, Rep.	29.98	0.154	0.098	34.0	24.5	18.2	14.6	7.1	1.4	0.1
Zambia	63.69	0.432	0.318	19.9	11.4	10.6	17.1	21.5	14.8	4.7

Source: Estimates based on the harmonized household surveys in 119 economies, circa 2013, GMD (Global Monitoring Database), Global Solution Group on Welfare Measurement and Capacity Building, Poverty and Equity Global Practice, World Bank, Washington, DC.

**FIGURE 4C.1 Share of Individuals in Multidimensional Poverty, by Region, circa 2013**



Source: Estimates based on the harmonized household surveys in 119 economies, circa 2013, GMD (Global Monitoring Database), Global Solution Group on Welfare Measurement and Capacity Building, Poverty and Equity Global Practice, World Bank, Washington, DC.

Note: The diagrams show the fraction of the regional population that is multidimensionally poor, and the dimensions the poor are deprived in.

## Notes

1. Economists describe this result formally by saying that utility-maximizing consumers will, in choosing their consumption bundles, end up equating their marginal rates of substitution (a ratio of marginal utilities) to the relative prices. Hence, so long as markets function well, relative prices are natural weights with which to aggregate goods and services. Where markets work less well, the case for adding separate dimensions of well-being is stronger (Ravallion 2011; Ferreira and Lugo 2013). In addition, even when there are prices for some of these dimensions, such as school fees for private schooling, these might not be reflective of the “value of a poorly maintained village school without a regular teacher. The implications of debt owed to a landlord may not be captured by ruling interest rates. The value of health services depends on the circumstances of the individual and household” (World Bank 2017b, 155).
2. See Sustainable Development Knowledge Platform (database), Department of Economic and Social Affairs, United Nations, New York, <https://sustainabledevelopment.un.org/>.
3. So long as markets work reasonably well, prices—the weights for the quantity of goods and services consumed—bear a very close relationship to the marginal contribution of those goods to well-being. In technical terms, the ratio of two prices equals their marginal rate of substitution between the two goods. When externalities or other imperfections distort the market price, then a shadow price can be used in principle to value a good. However, the information required to estimate an accurate shadow price is high, and frequently shadow prices cannot be estimated with much accuracy. Typically, when there is no adequate comparator, or the distortion is too great, one moves to add the good or service in question as a separate dimension.
4. Hentschel and Lanjouw (2000) distinguish three reasons for the price of public utilities to vary across consumers: rationed markets, public subsidies, and increasing marginal tariff rates. The authors present a method to impute the value of consumption of basic utilities irrespective of the source of water, cooking fuel, or electricity to be incorporated into the consumption aggregate. At present, data are not available at a large scale across countries and thus cannot be implemented.
5. “At least limited” and “at least basic” drinking water and sanitation reflect the key concepts of SDG monitoring in this exercise. Box 4.2 explains how the core SDG drinking water and sanitation indicators focus on a concept of “safely managed,” but there are relatively few datasets available with all necessary criteria (and data sources beyond household surveys are needed for some aspects of safely managed sanitation services). SDG monitoring also uses the less-stringent concepts of “limited” and “basic” access adopted in this report, for which data availability is higher, and because of the strong relevance of the concepts globally. SDG “limited-standard” drinking water is drinking water that comes from an improved source (for example, piped, borehole, protected dug well, rainwater, delivered water). SDG “basic-standard” drinking water has an added criterion of being within a roundtrip time of 30 minutes. SDG “limited-standard” sanitation means using improved sanitation facilities (for example, flush/pour flush to piped sewer system, septic tank, a composting latrine). SDG “basic-standard” sanitation has an added criterion of being for the exclusive use of the household (these concepts are reflected in table 4.1). Thus “safely managed” is a subset of “basic-standard,” which is a subset of “limited-standard,” with each additional criterion meaning fewer datasets currently available for analysis. Graphs at the World Bank Atlas <http://datatopics.worldbank.org/sdcatlas/SDG-06-clean-water-and-sanitation.html> make this clearer, and at the website of the WHO/UNICEF JMP, custodian agency for monitoring these indicators globally: <https://washdata.org/monitoring>.
6. The quality of the environment in which the individual resides matters greatly for well-being. Although environmental degradation can be partially offset through market purchases, such as flood insurance, these sorts of goods and services are not widely available and, in any case, often only partly alleviate the physical, mental, and health costs imposed when environmental disasters strike.
7. Not all indicators are applicable to every household. For example, not every household has a child below the school age for grade 8 (necessary for the school enrollment indicator). In these cases, the weight for the missing indicator is shifted to other indicators within the dimension so that each dimensional weight is unchanged. The same process occurs if the information on an indicator for a household is missing, even if the indicator is applicable. Because of this reweighting process, few households are ignored because of missing

data. Indeed, only households on which information is missing on all the indicators that constitute a dimension are not considered in the analysis.

8. The share of monetary poor differs from the numbers presented in chapter 1. This is primarily because the estimates presented in chapter 4 are from around 2013, and not “lined up” to 2015, as is the case in chapter 1 (see appendix A for details on why the numbers presented in this chapter differ slightly, and for how survey estimates are lined up to a reference year). The 2015 lined-up headcount ratio for the 119 economies covered here is 11.2 rather than 11.8 percent. This difference mostly reflects that countries had positive growth rates from 2013 to 2015, and hence reduced poverty during that time. For example, the headcount ratio presented here for the Lao People’s Democratic Republic, which is based on a survey from 2012, is near 23 percent, whereas the 2015 lined-up estimate for Lao PDR is 14 percent. Conversely, the recent crisis unfolding in the Republic of Yemen means that the headcount ratio of 19 percent presented in this chapter based on a survey from 2014, is lower than the lined-up estimate in 2015 of 41 percent.
9. These figures may not be representative of the entire region because of incomplete population coverage. The coverage in East Asia and Pacific and South Asia is particularly low (see last column of table 4.4.); China and India are not a part of this exercise because of data availability.
10. See the demographic composition typology proposed in Muñoz Boudet et al. (2018) for the methodology followed.
11. Some studies show that households with children will likely appear more disadvantaged under a child-specific multidimensional poverty measure (Hjelm et al. 2016).
12. The Indonesian survey is not nationally representative. The sample is representative of about 83 percent of the population and covers 13 of the 27 provinces in the country. The provinces excluded tend to be less developed.
13. The surveys are not necessarily the same surveys used for official national poverty estimates. The monetary poverty rate cited here may therefore vary somewhat from official estimates.

## SPOTLIGHT 4.1

# National Multidimensional Poverty Indexes

*Prepared by Sabina Alkire, Oxford Poverty and Human Development Initiative*

National Multidimensional Poverty Indexes (MPIs) are increasingly being adopted as official permanent poverty statistics, usually standing alongside and complementing national monetary poverty statistics (Alkire and Foster 2011; Alkire et al. 2015; UNECE 2017; OPHI 2018). Updated usually every one to two years, national MPIs are used to shape and energize effective policy actions. They are reported against SDG Indicator 1.2.2.

The Atkinson Commission report *Monitoring Global Poverty* placed great emphasis on national poverty estimates, both monetary and multidimensional, given their central relevance to national policy and public debate. In the case of poverty measurement, the report advocated jointly reporting the global and national poverty measures in national poverty reports. The report also scrutinized the dimensions and indicators covered by national MPIs, and observed that their data requirements are modest: most require 38–70 questions compared to 450 or more survey questions for monetary poverty measures (World Bank 2017b, 172).

But how do national MPIs differ from the global MPI that the United Nations Development Programme and Oxford Poverty and Human Development Initiative have published since 2010 (UNDP 2010; Alkire and Santos 2014) or from the ones presented in this chapter? The difference is similar to the difference between the US\$1.90 per day measure of extreme poverty globally and national monetary poverty measures. That is, whereas the global poverty measures are computed in a standardized format for every country, national poverty measures are tailored to the contours of poverty and the policy priorities of each context. Also, national measures are computed by national statistical offices, using national survey data. Thus, national MPIs may have different dimensions and indicators; their deprivation cutoffs may reflect the aspirations, context, or national plan of the country; and the weights and poverty cutoff are set so as to identify poverty according to national definitions. Nearly all national MPIs cover health, education, and living standards. The Atkinson report recommended six nonmonetary dimensions for the global MPI including employment, and many national MPIs already include a dimension on work.

National MPIs cannot be compared across countries precisely because the definitions differ. However, the great advantage of national MPIs is that they can be—and indeed are being—used to guide policy in powerfully practical ways. In particular, the following are the main uses to date of national MPIs by the increasing community of countries that use these indexes.

- **Complement monetary poverty.** The national MPI makes visible a set of nonmonetary deprivations. The value added is seen by exploring mismatches. For example, Chile's MPI made visible situations of high poverty in Atacama, a low-monetary poverty region in the country. Bhutan (2017) found that the district of Gasa, which had lowest monetary poverty, had the highest MPI because of missing services and infrastructure.



- **Ease communication.** The headcount ratio of monetary poverty, which is widely used, is always compared to the headcount ratio of multidimensional poverty. And the national MPI often accords with participatory work showing how people are poor. El Salvador's MPI was informed by a study on poverty “as Viewed by Its Protagonists” linking poor people's voices to each indicator of the MPI (UNDP 2014).
- **Monitor trends.** In every country, the national MPI tracks the trend of multidimensional poverty over time, nationally and by rural-urban regions, subnational regions, and social groups, providing a rigorous overview of progress.
- **Allocate resources.** The national MPI is regularly used to shape both sectoral and regional budget allocation across regions and across sectors. For example, Bhutan's district allocation formula uses the MPI.
- **Leave no one behind.** The national MPI is disaggregated by population subgroups to see who is the poorest. Changes over time are reported across subgroups, to establish whether the poorest regions are catching up—or whether their progress is slower than less poor regions, so that the poorest regions are gradually being left behind. For example, Pakistan's poorest district, Musakhel, reduced poverty the fastest over the period 2005–15.
- **Target households.** The national MPI structure is used to identify which poor people are to be recipients of certain benefits. This is usually done using a different data source: a census, partial census, or eligibility applications. For example, Costa Rica targets households according to their deprivation scores on the national MPI.
- **Coordinate policies.** The national MPI is used as a management tool to coordinate policies across sectors and across levels of government, and to design and monitor integrated, multisectoral policies that bridge silos. Although practices vary, this measure-to-manage approach is mainly used when data are updated every one to two years. For example, Colombia has a Ministerial Round Table chaired by the President, which meets regularly to accelerate progress in reducing its MPI—which is updated annually.
- **Be transparent.** Many countries post the computational files required to replicate their official national MPI online. For example, Mexico's CONEVAL both launches its MPI and posts online tables two weeks after cleaned data are received. In many cases, methodological notes, data tables, microdata, and presentations are also online, so citizens can easily learn and interact.

Thus, national MPIs provide a headline and high-resolution information panel on subnational conditions across population groups and across the joint distribution of deprivations in different dimensions of poverty. Although most cannot be compared cross-nationally,<sup>a</sup> they do complement official national monetary poverty statistics by providing policy-relevant evidence on poverty in other forms and dimensions.

Details of national MPIs and of their policy applications are available on the website of the Multidimensional Poverty Peer Network, a South–South Network that convenes countries using or designing or exploring national MPIs (see [www.mppn.org](http://www.mppn.org)).

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a. Nepal adopted the global MPI, with slight adaptation, as its national MPI in 2018, partly in order to avail such comparisons.



# Inside the Household: Poor Children, Women, and Men

The aim of this chapter is to enter the household to try and answer an apparently simple question: how many children, women, and men are poor? The common approach assigns all individuals within a household to the same poverty status as the household. However, this masks potential differences in poverty among household members. Ignoring these decreases the effectiveness of common approaches to targeting poverty reduction interventions and the take-up of these interventions because they do not address the needs and constraints of the poorest individuals.

The chapter begins with an analysis of global poverty data, including comparisons between male- and female-headed households, and introducing alternative household classifications related to the number of adults and income earners. Despite maintaining the concept of poverty based on the household, the analysis provides insights into sex and age differences among the poor. Next, evidence is presented on intrahousehold differences in resource allocation, first, by relying on a few datasets that provide information on consumption among individuals and, second, by applying models of intrahousehold resource allocation. A broader exploration of adult poverty follows according to the multidimensional approach introduced in chapter 4 but including individual-level information on educational attainment and body mass index.

The accumulated evidence of numerous studies and data sources suggests that women and children are often disproportionately affected by poverty albeit with considerable variation across countries and across types of households. Sex differences in poverty are largest during the reproductive years, when care and domestic responsibilities, which are socially assigned to women, overlap and conflict with productive activities. This tension is often most pronounced among the poorest countries and the poorest groups in society.

## Introduction

How many women are poor? How many poor children are there? These seem straightforward questions, but there are no straightforward answers. Most poverty measures, including most of those presented earlier in this report, refer to households. Individuals are typically classified as poor or nonpoor in accordance with the poverty status of the

households in which they live. This masks differences in poverty among the individuals within the same household.

In the absence of poverty data on individuals, perceptions about differences in poverty by sex and age are rarely supported by evidence. Consider, for example, the widely cited claim that 70 percent of the world's

poor are women. There is a solid consensus that the empirical data do not substantiate this claim and that the statistic is false (Chant 2008; Green 2010; Greenberg 2014; Quisumbing, Haddad, and Peña 2001; Sánchez-Páramo and Muñoz Boudet 2018). A common lens on the gender dimension of poverty is the difference between female- and male-headed households. The concept of household head is, however, often ill-defined and may even be misleading, for example, if vulnerable widows and more affluent single women are lumped under a single category of female-headed households and then used as a proxy for women in general (Bradshaw, Chant, and Linneker 2017; Grown 2010, 2014; Milazzo and van de Walle 2017).

Drawing on new work conducted for this report, and a review of the existing literature, this chapter revisits what we know about the poverty of individuals, with a focus on differences by sex and between children and adults. Child poverty, though related to the poverty of women, is a distinct issue. This chapter considers both because they are the two dimensions prioritized for the disaggregation of the global poverty figure (World Bank 2017b, 114). The accumulated evidence from many studies and data sources suggests that women and children are often disproportionately affected by poverty, but with considerable variation across countries. Sex differences in poverty are largest during the reproductive years when, because of social norms, women face strong trade-offs between reproductive care and domestic responsibilities on the one hand and productive activities on the other hand. The tension is often most pronounced in the poorest countries and among the poorest groups in society. In addition, women's intrahousehold bargaining power and poverty appear to be related to their position within the household, for example, as the first or more junior wife of the principal male, his mother, and so on. This underscores that gender, age, and status within the household are interrelated dimensions, which can be difficult to disentangle.

A secondary objective of the chapter is to test the boundaries on methods for identifying the poor, whether they live in poor households or not, and to highlight the challenges

in retrofitting household-level data to the individual. Advancing our understanding of the poverty of individuals requires a renewed emphasis on data collection and investments in survey data collection methodologies focused on the individual.

More reliable poverty estimates on individuals would facilitate a better understanding of the characteristics of poverty and its intergenerational transmission, the interventions appropriate for different types of individuals, and the more effective targeting of social protection and broader development programs. Such programs often rely on approaches targeted to households but may fail to reach potentially poor beneficiaries if many of these live in households not identified as poor (Brown, Ravallion, and van de Walle, forthcoming).

Measuring the monetary poverty of individuals requires two main pieces of information. The first is information on how total household resources are allocated among household members. This is an intuitive idea, but one vexed with theoretical and practical challenges. Data on the food consumption of individuals are difficult to collect whenever household members consume meals together. Other consumption items, such as housing or consumer durables, are shared among household members and often cannot be allocated to specific individuals even in principle. Because of these and other challenges, living standards surveys, the main data source for measurements of monetary poverty, typically collect most data on the consumption of households as a single entity. Poverty analysis thus remains fixed on the household. The second key ingredient is information on the ways basic needs differ across household members, for example, by sex and age, and across households of different sizes and compositions to assess whether differences in resources translate into differences in well-being and poverty. Even though not the primary focus of this chapter, the need to measure the poverty of individuals highlights the need to revisit the broader issue of equivalence scales (box 5.1).

This chapter highlights various methods that can be used to measure poverty among individuals and explore the effects of gender and age differences on poverty data. The

### BOX 5.1 Differences in Needs and Equivalence Scales

Global poverty estimates use data on consumption or income per capita to measure poverty. Similarly, the international poverty line, which is anchored on the average cost of meeting basic needs in the poorest societies, is expressed in per capita terms. This per capita approach assumes that needs do not vary across the members of households and that there are no economies of scale in larger households. Both assumptions are subject to criticism. Caloric needs vary by sex, age, physical activity (often related to occupation), and so on and are thus not the same across all household members. For example, a person engaged in heavy agricultural work typically requires more calories than an office worker. Likewise, shared household public goods may represent an advantage for larger households even at the same level of per capita consumption. One way to adjust for such differences in household size and composition is to use equivalence scales, the discussion of which goes back to the seminal work by Engel (1895) and Rothbarth (1943) (see Coulter, Cowell, and Jenkins 1992; Deaton 1997). Equivalence scales approximate the consumption needs of a household of a given size and demographic composition relative to a reference household (usually a household consisting of a single adult, or a single adult male). Many

national poverty assessments in both developing and high-income countries, including member countries of the Organisation for Economic Co-operation and Development (OECD), routinely use equivalence scales. The failure to account for equivalence scales will overestimate poverty in regions where households are large and contain lots of children, such as Sub-Saharan Africa, compared to regions where households are small and contain few children, such as Europe and Central Asia and to some extent East Asia and Pacific and Latin America and the Caribbean.

The main problem with adopting an equivalence scale approach in global poverty monitoring is that there is no consensus on what the best scale for this purpose would be across a wide range of countries. For example, nutrition-based equivalence scales, which account for differences in needs by sex and age and are used in many low-income countries, may be less appropriate in higher-income countries where food constitutes a smaller relative share in total consumption. Similarly, the economies of scale in shared goods may be offset by the greater need for health care and education expenditures (Abdu and Delamonica 2017) and the failure to value nonmarket (time and resources) expenditures

associated with children (Folbre, Murray-Close, and Suh 2018). In addition, adjusting consumption or income by an equivalence scale requires recalibrating the poverty line (Ravallion 2015). Central to this recalibration is the choice of a household with “reference demographics,” which may also vary from country to country. The use of a per capita scale in global poverty monitoring therefore imposes comparability across countries and is also transparent and easy to explain no matter how problematic it may be in the details (Ferreira et al. 2016).

The question of how to adjust for differences in needs arises even more prominently once the focus of the analysis moves inside the household. A comparison of inequality in consumption between adults and children or between men and women remains incomplete if we do not also consider differences in needs between these groups. (See also the section on “Differences in resources and poverty within households” in which all the country studies have adopted some variant of an equivalence scale.) Measuring the poverty of individuals would require not only estimating intrahousehold resource allocation but also adjusting for the differences in needs among individuals living in the same household and between households of different sizes.

starting point, in the next section, titled “Beyond headship: Gender and age profiles of the global poor,” is the monetary poverty estimates introduced in chapter 1, which represent the current state of play in global poverty monitoring. In comparing per capita household consumption against the international poverty line, which is also expressed in per capita terms, this approach assumes that resources are shared equally and that needs are the same across all members of a

household. This assumption is inadequate for a clear understanding of the differences within households and biases country poverty rates and the demographic profile of poverty if there are systematic differences by sex and age in the household. Despite these limitations, even the current data can provide meaningful though incomplete insights into sex and age differences in poverty if the analysis probes more deeply than comparisons of female- and male-headed households to

explore differences by household composition and over the life cycle.

The subsequent section of the chapter, titled “Differences in resources and poverty within households” presents evidence on intrahousehold differences in resource allocation, thus relaxing the assumption of equal sharing among household members. A few specialized datasets provide information, for at least some aspects of consumption, on how much is allocated to whom within the household. Invoking assumptions about household behavior and equivalence scales, a growing academic literature provides estimates on resource allocation across individual household members on the basis of (largely) household-level data.

In the penultimate section, the chapter describes a broader examination of well-being and poverty among adult household members based on the multidimensional approach introduced in chapter 4. Straightforward documentation on gender differences in nonmonetary dimensions of well-being may be derived from data collected on individuals, rather than households. An example is education, for which indicators of educational attainment have been used for many years to compare achievements and deprivations between women and men. Likewise, anthropometric data, such as weight, height, and the body mass index (BMI), which are commonly used to measure malnutrition, refer to individuals, not households. These data are used to provide perspective on multidimensional poverty among individuals.

## **Beyond headship: Gender and age profiles of the global poor**

This section analyzes data from the Global Monitoring Database (GMD), which is a collection of globally harmonized household survey data the World Bank uses to monitor global poverty and shared prosperity (box 5.2).<sup>1</sup> The global poverty figures rely on a concept of poverty based on the household (though expressed in per capita terms) and classify individuals as poor or nonpoor according to the poverty status of the households in which they live. Although this approach cannot reveal differences in poverty within households, innovative ways to analyze the data can reveal meaningful, though incomplete, information on sex and age differences, which are explored in this section.

This section shows that, although the proportion of women and men living in poor households is similar on aggregate, the proportions vary by women’s and men’s marital status, the presence of children and dependents in their households, whether or when they join the labor market, and their responsibilities within the family. Children and other dependents are an important factor of vulnerability, particularly among women during their reproductive years. Care responsibilities, especially borne by women, are greatest during those years in the life cycle that tend also to be the best for income generation. Relying on the economic activity of more adults, both women and men, helps shield the household against poverty, though doing so requires

### **BOX 5.2 Chapter 5: Data Overview**

This section relies on information from the harmonized sample of 104 household surveys for 89 countries in the 2013 Global Monitoring Database (GMD).<sup>a</sup> Additional labor data from the International Income Distribution dataset were merged for 17 countries in Sub-Saharan Africa (Muñoz Boudet et al. 2018). Because of remaining

quality concerns in the economic participation variables, 18 countries were dropped for the analysis of employment and economic typology of households. Because of low coverage in the Middle East and North Africa (4.1 percent), the results from this region are not presented.

a. GMD (Global Monitoring Database), Global Solution Group on Welfare Measurement and Capacity Building, Poverty and Equity Global Practice, World Bank, Washington, DC.

quality and affordable care services for children, the sick, and the elderly. Formal schooling is also a strong protective factor against poverty, especially for women. Interventions aimed at reducing poverty need to consider both household structure and individual characteristics to increase their chances of success.

The rates of women and men living in poor households are similar in the 89-country dataset used here (12.8 percent and 12.3 percent, respectively<sup>2</sup>). These poverty rates vary across regions, but gender differences are only statistically significant in South Asia. Worldwide, this translates to 104 women in poor households for every 100 men. In South Asia, the corresponding comparison is 109 women for every 100 men. These differences become starker at specific ages.

### Beyond headship

Many global and country-level analyses of poverty compare female- and male-headed households to highlight sex differences in poverty. However, the concept of the female-head is often difficult to interpret. First, it typically combines women who have never married, women who are widowed or divorced, and some women who are married. A related concern is that the headship concept risks conflating gender gaps with differences caused by demographic composition. For example, many female-headed households contain children but not adult males, whereas most male-headed households contain adult women and children. Second, self-reported household headship reflects social norms and views about who is understood as the head of the household, for example, the main breadwinner, the main decision maker, the oldest man, and so on. These norms may vary across countries, within countries, or across income

groups, and might privilege one sex over the other. Globally, self-reported female-headed households account for 23 percent of all households, but only 16 percent of poor households. Although this shows that the poverty rate is lower among these households than among male-headed households, we can learn little else (table 5.1).

### Poverty by age

Nearly one child in five<sup>3</sup> lives in a poor household. Children are twice as likely as adults to live in poor households. This primarily reflects the fact that the poor tend to live in large households with more children. Children are the poorest across all regions, but the patterns vary by region. For example, in Sub-Saharan Africa, 49.3 percent of girls and 49.5 percent of boys live in poor households and boys represent a slightly larger share (51 percent) of poor children than girls do. Differences with other age groups are even starker: boys and girls under 15 years of age are 10 percentage points more likely to live in a poor household than their young adult (ages 15–24) counterparts, and girls are 17.2 percentage points more likely than females above 60. In contrast, in South Asia, girls are poorer than boys (22.2 and 20.1 percent, respectively) and slightly more numerous than boys among the poor (50.5 percent), but differences in poverty rates between children and older adults—although sizable—are smaller than in other regions.

The rates of women and men who are living in poor households decline sharply as children reach adulthood, and they tend to stabilize after women and men reach 50 years of age. Starting in their early 20s and up to age 34, women are 2 percentage points more likely than men to live in poor households, which

**TABLE 5.1** Households in Extreme Poverty, Rates and Distribution by Headship, circa 2013

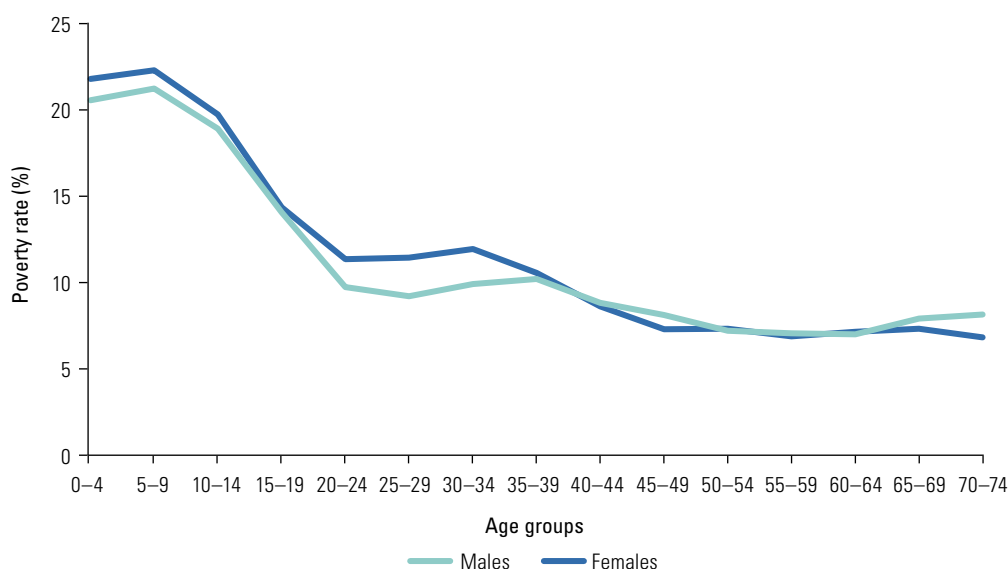
Percent

	Poverty rate	Share of poor households	Share of total households
Female-headed households	5.8	16.4	23.5
Male-headed households	9.0	83.6	76.5
All households	8.2	100.0	100.0

Source: Muñoz Boudet et al. 2018.

Note: Data are from 89 countries.

**FIGURE 5.1** Percent of Females and Males Living in Households in Extreme Poverty, by Age Group, circa 2013



Source: Muñoz Boudet et al. 2018.  
 Note: Data are from 89 countries.

is a significant, sizable difference (figure 5.1). In this age group, an average of 120 women are living in poor households for every 100 men. This gender gap coincides with the peak productive and reproductive ages of men and women, and can be related to factors such as household formation<sup>4</sup> and income generation for both men and women, and the implications of such processes on their welfare. It is well documented that female labor force participation declines during women’s reproductive years, particularly if they have young children (Aguero and Marks 2008; Cruces and Galiani 2007; Goldin and Katz 2002). Among the 20–34 age group, the gender gap in poverty rates ranges from 0.12 percentage points in Europe and Central Asia to 7.1 percentage points in Sub-Saharan Africa. In this age group, the gaps are wider in the poorest countries, especially the 17 countries with overall poverty rates above 35 percent, that is, Haiti and 16 Sub-Saharan African countries.

### Schooling, the labor market, and gender differences

Household surveys collect information on educational attainment and income-earning

capacity (proxied by employment status) of individuals. This allows for a closer look at how these characteristics build on the age and sex differences.

Formal schooling is inversely correlated with poverty among both women and men. Of the poor population ages 15 or above, 41 percent have no education. Women represent 62.3 percent of the poor population ages 15 or above with no schooling, but only 36.9 percent of the poor with tertiary schooling. The share of women living in poor households diminishes strongly with schooling.

The association between employment and poverty varies by sex and type of employment. In the prime productive years, between 25 and 54 years of age, women represent 86 percent of those out of the labor force and 60 percent of those who are unpaid workers. In poor households, while most men are paid workers or self-employed, over half of women are not in the labor force. Globally, 40 percent of poor men are self-employed, compared with only 19 percent of women (figure 5.2). In Sub-Saharan Africa and South Asia, self-employment is closely associated with poverty for men, but slightly less so for women.

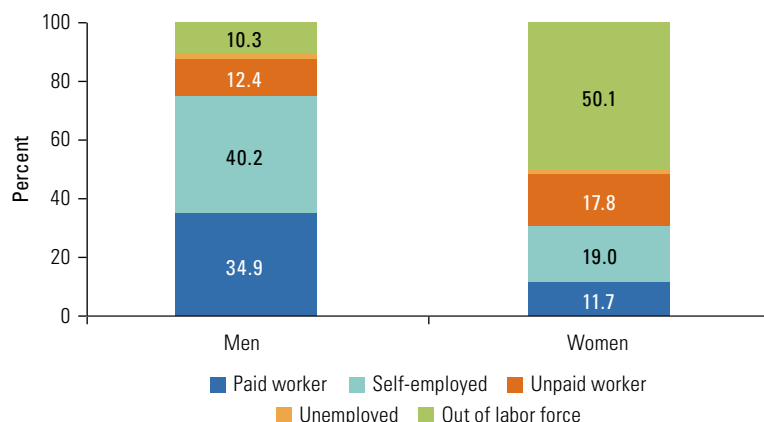


## Household structure and gender differences

The analysis demonstrates that household composition, particularly the presence of dependents and the type of earners, influences gender differences in poverty over the life cycle. Building on the framework introduced in Grown and Valodia (2010), this subsection illustrates two ways to classify households: a demographic typology and an economic one. The demographic typology is based on the adult composition of the household, starting with the age and sex of the adults (18–64 years) who live in the household and distinguishing separate categories for the elderly or seniors (ages 65 years or above) and children (under age 18). The economic typology is based on the presence and sex of all earners in the household and of the dependents who depend on the income of the earners. Earners are defined as any individuals ages 15 or above who are engaged in any economic activity for pay or profit.<sup>5</sup> Dependents here include nonearners ages 18–64 (unpaid family workers, and those that are unemployed or not in the labor force) and traditional dependents (children and seniors).

Within the lens of the household demographic typology, adult-couple households—consisting of two adults of opposite sex who are

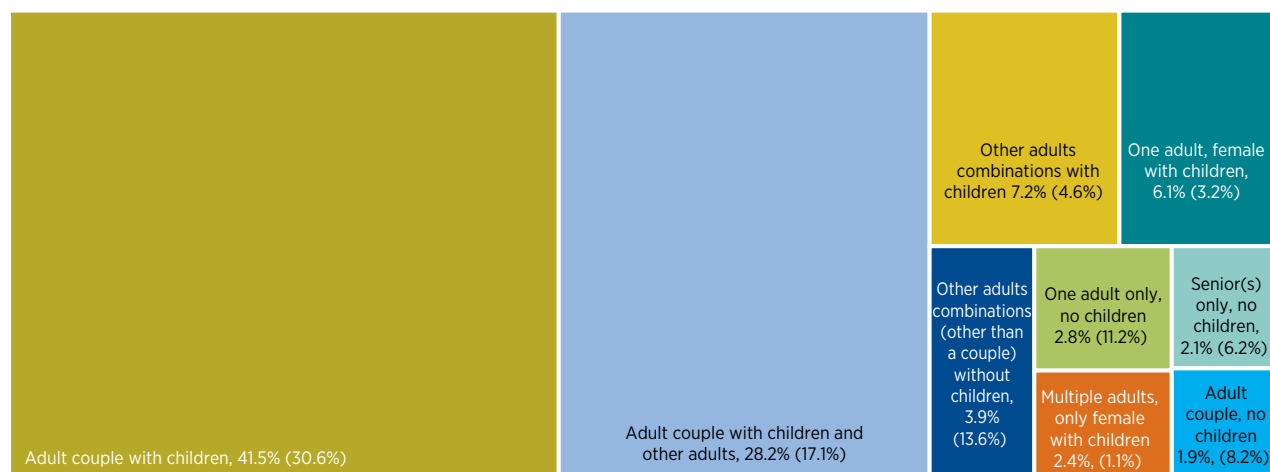
**FIGURE 5.2** Distribution of People Living in Households in Extreme Poverty, by Sex and Employment Status, circa 2013



Source: Muñoz Boudet et al. 2018.  
Note: Data are from 71 countries. Ages are 25–54.

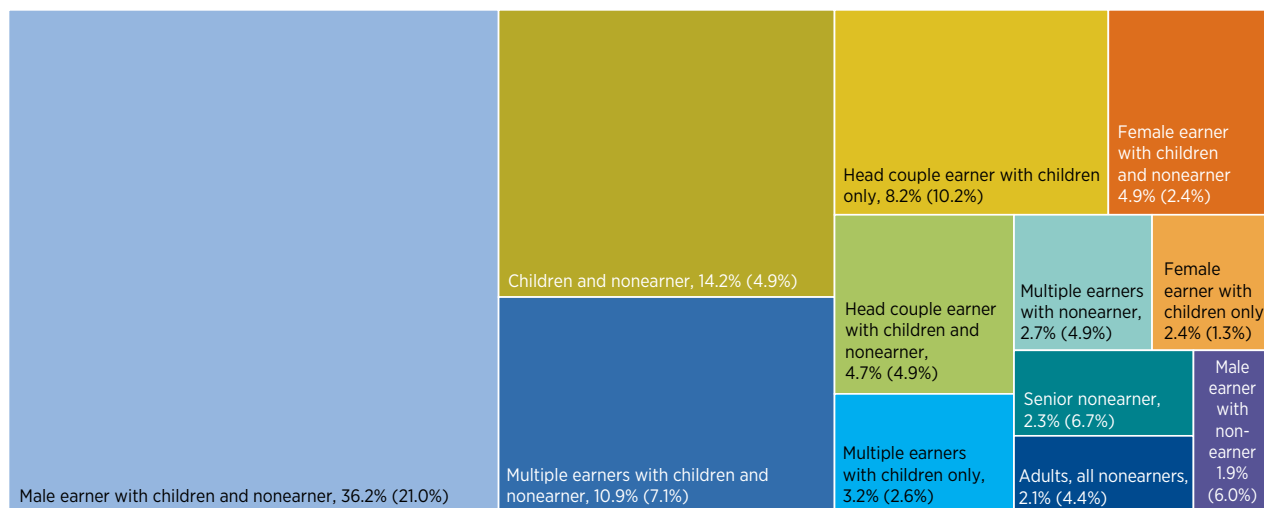
married or cohabiting—with children account for the largest share of poor households (figure 5.3). They are overrepresented among the poor, representing 31 percent of all households but accounting for 42 percent of poor households. Adult-couple households with children and other adults, that is, extended family households, which represent 17 percent of all households, account for the second-largest share among poor households (28 percent), and they are also overrepresented among the poor.

**FIGURE 5.3** Distribution of Households in Extreme Poverty, by Demographic Typology, circa 2013



Source: Muñoz Boudet et al. 2018.  
Note: The percentages in the cells refer to the share of the type among poor households; the numbers in parentheses refer to the share of the typology among all households. The figure shows typologies that represent at least 2 percent of either poor or all households. Data are from 89 countries.

**FIGURE 5.4** Distribution of Households in Extreme Poverty, by Economic Typology, circa 2013



Source: Muñoz Boudet et al. 2018.

Note: The percentages in the cells refer to the share of the type among poor households; the numbers in parentheses refer to the share of the typology among all households. The figure shows typologies that represent at least 2 percent of either poor or all households. Data are from 71 countries.

Meanwhile, adult-couple households without children are less likely to be poor (8 percent of all households; 2 percent of the poor). Other types of households gain relevance depending on the region. Adult woman households with children are disproportionately represented among the poor in Latin America and the Caribbean and in Sub-Saharan Africa. Three poor women in four live in adult-couple households with children only or with other adults, and this proportion increases to four poor women in five for the 20–34 years age group.

The analysis of poverty using the economic typology confirms that households with traditional dependents (children below 15 or seniors) fare less well than households without dependents (figure 5.4). In most cases, the presence of a nonearner, age 18–64, also raises the poverty rate. Households with no earners, combined with the presence of children, are the household type most at risk of poverty (14 percent of the poor while they account for less than 5 percent of households), followed by households with a single woman earner and dependents (5 percent of the poor and 2 percent of the population) and households with a male earner only, a nonearner and children (36 percent of the poor while they account for 21 percent of the population). Poor women are concentrated

in households with children and nonearners (42 percent in households where there is only a male earner and 15 percent in households with multiple earners).

### Differences in resources and poverty within households

The previous section summarizes what the data used to monitor global poverty reveal about gender and age differences in the profile of poverty, while maintaining the (generally implicit) assumption that resources under the per capita measure are shared equally. A more comprehensive measurement of gender and age differences in the profile of poverty requires a relaxation in the assumption of equal sharing to consider intrahousehold differences in resource allocation.

Measuring intrahousehold inequalities in resource allocation and poverty in household surveys is not an easy task. Accurate data on food consumption across individuals in a household are difficult to collect whenever household members cook together and share meals. Some household surveys collect such data using a 24-hour recall or direct observation (weighting, measuring by resident enumerators), but these methods are time-consuming and intrusive. Other consumption items, such as housing, are de facto

public goods within the household that are shared among household members and cannot be allocated to specific individuals even in principle (Case and Deaton 2002; Klasen 2007). The following section reports findings from four recent country surveys that collect data on consumption among individuals. These case studies are then complemented by model-based estimates of poverty in two countries. Modeling allows the resource shares of men, women, and children to be estimated over the entire consumption basket even though individual consumption data are only available on a few items, thus providing a more complete picture of intrahousehold resource sharing.

### Individual-level data on consumption

Starting in the 1980s, a few specialized studies have collected data on consumption among individuals, often with a focus on food (Behrman and Deolalikar 1990; Haddad, Hoddinott, and Alderman 1997; Haddad and Kanbur 1990; Pitt, Rosenzweig, and Hassan 1990). An early example of this literature is the work of Haddad and Kanbur (1990) who investigate intrahousehold inequality in food consumption in the Philippines through the lens of calorie adequacy, that is, calorie intake relative to standardized calorie requirements by age, sex, and pregnancy status. These data

suggest that total inequality in calorie adequacy among individuals is significantly underestimated, by 30 to 40 percent, if inequality within households is ignored.

More recent data collection efforts in Africa and Asia have allowed a fresh look at intrahousehold differences in poverty across various contexts and social settings (De Vreyer and Lambert 2017 on Senegal; D’Souza and Tandon 2018 on Bangladesh; Mercier and Verwimp 2017 on Burundi; Santaaulàlia-Llopis and Zheng 2017 on China).<sup>6</sup> Though these studies individualize only a few separate components of consumption (table 5.2), they reveal interesting differences in resource allocation among women, men, and children.

The evidence in this section shows that intrahousehold differences in consumption and poverty are widespread. In most cases, women and children are allocated a smaller share of the households’ resources than men.<sup>7</sup> Intrahousehold inequalities in resource allocation appear to be more pronounced for nonfood items than for core food items, hinting at a degree of solidarity within families. Similar to the previous section, we find evidence of complex dynamics within households, linked to life cycle and status that extend beyond simple gender or age divides. For example, intrahousehold bargaining power and poverty among women are related to their relationship with the principal male, such as first versus second wife, or mother versus wife.

**TABLE 5.2** Recent Datasets on Individualized Consumption

Country	Survey	Year(s)	Representativeness	Items individualized and data collection method
Bangladesh	Bangladesh Integrated Household Survey 1, 2	<i>2011–12, 2015</i>	National (rural)	Food (24-hour recall by the woman in charge of cooking)
Burundi	Panel Priority Survey	<i>2012</i>	The 2012 wave is a follow-up of a 1998 nationally representative survey	Food and clothing (respondents were asked to specify the share of household expenditures going to the main adult man, woman, sons, daughters, and other household members)
China	China Health and Nutrition Survey	<i>1989, 1991, 1993, 1997, 2000, 2004, 2006, 2009, 2011, 2015</i>	Select provinces	Food, alcohol, and cigarettes (24-hour recall over three days, plus household food inventory)
Senegal	Poverty and Family Structure Survey	<i>2006–07, 2010–12</i>	National	Most consumption is captured at the cell level (for example, clothing, mobile phones, transport, food outside the home); food consumed at home is individualized based on accounts about which meals are shared and estimates of the preparation costs

Note: The italicized years are used in the case studies.

## China

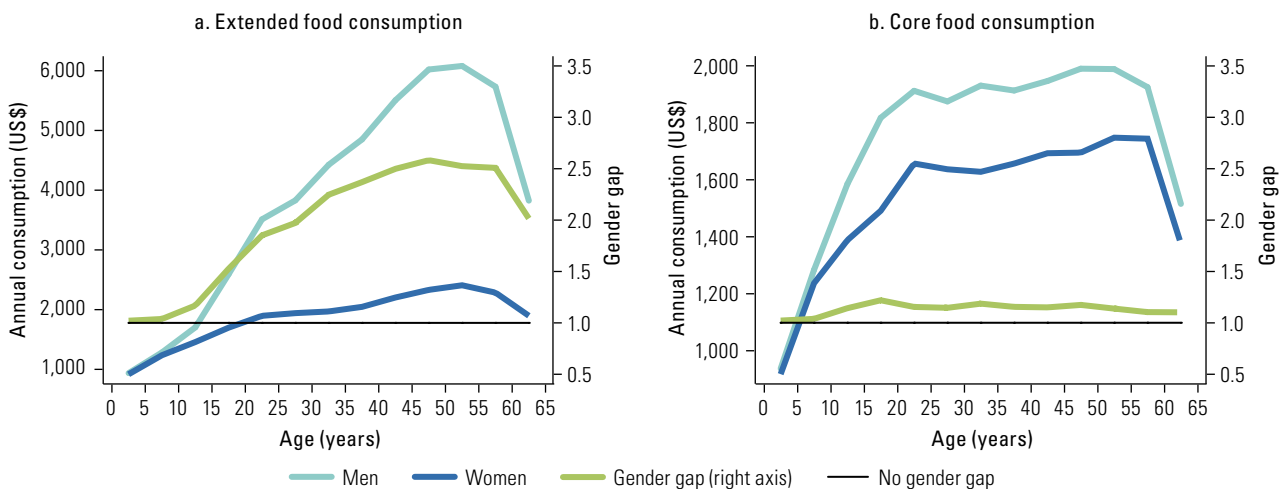
In China, intrahousehold and gender dynamics over the past 20 years have evolved against the backdrop of rapid economic and demographic change. The China Health and Nutrition Survey data allow the computation of an individual measure of extended food consumption, which includes all food items as well as alcohol and tobacco (Santaeulàlia-Llopis and Zheng 2017).<sup>8</sup> In 1991, extended food consumption was twice as high among men as among women, and, by 2009, this ratio had risen to 2.3. This gender gap is, however, largely accounted for by four items—tea, coffee, alcohol, and tobacco—that are consumed disproportionately by men and may reflect different degrees of control over resources or social norms about acceptable behavior for men and women. Excluding these items gives a narrower measure of core food consumption, according to which consumption is about 12 percent greater among men than among women, a ratio that has remained close to constant and could reflect differences in caloric need between men and women. Analysis over the life cycle shows that the gender gap in extended food consumption starts to emerge at about age 15 and peaks between the ages of 45 and 55, after which it declines sharply (figure 5.5). In contrast, the gender gap in core food consumption peaks much earlier, at around age 17–18, and stays at a similar level until age 50.

Typical household-level data miss a substantial portion of inequality among individuals. A comparison of an individual-level measure of extended food consumption to a household-level measure, where the latter is normalized for differences in household demographic composition using equivalence scales highlights this clearly. In the rural (urban) subsamples, household consumption per adult equivalent misses about 41 percent (38 percent) of individual inequality. This is again driven primarily by individual inequality in the consumption of alcohol, tobacco, coffee, and tea. Core food consumption inequality among small children ages 0–5 is about twice as high as the inequality among adults.

## Burundi

Burundi is one of the poorest countries in Africa, with a legacy of conflict and violence. Mercier and Verwimp (2017) use a household survey conducted in 2012 that asked mostly female respondents to specify how categories of consumption goods were allocated within the household to examine intrahousehold consumption inequality.<sup>9</sup> The data show a gender gap in clothing and food expenditures (the latter less pronounced) that benefits women. Among children, the consumption shares of food and clothing appear to be balanced between boys and girls. The large share of missing values in item groups other than food and clothing prevents additional analysis.

**FIGURE 5.5 The Gender Gap in Food Consumption over the Life Cycle, China**



Source: Based on Santaeulàlia-Llopis and Zheng 2017 and their supplementary material.

Note: The gender gap is the ratio of male-to-female consumption, based on a regression with age dummies and time fixed effects (pooling data from 1989, 1991, 1993, 1997, 2000, 2004, 2006, and 2009).

Assuming equal sharing among siblings of the same sex, irrespective of age, one may use the reported resource shares for food and clothing to compute a partially individualized measure of consumption. Taking into account differences in caloric needs by sex and age through the use of equivalence scales yields poverty rates of 65 percent among men, 56 percent among women, and 77 percent among children. Because of the disproportionate incidence of child poverty, children make up 68 percent of the hidden poor, that is, poor individuals living in nonpoor households, significantly more than their share in the sample population (56 percent). Mirroring the results from Senegal below, the age effect becomes insignificant if the analysis controls for the household member's status within the family, suggesting that individ-

ual consumption depends more on a person's position within the household than on age.

In Burundi, unlike in the other countries discussed in this section, women appear to be less poor than men. This highlights the context specificity of intrahousehold distribution rules. However, another potential explanation for the higher consumption shares among women may be that women overestimate their consumption relative to that of their husbands, for example because of internalized social norms or because they are not aware of some components of consumption among their husbands, such as food consumed away from home. Relying on one (female) respondent who reports about other members' consumption (see also box 5.3 for alternative measures of food security) may generate some measurement error.

### **BOX 5.3 Dietary Diversity as an Indicator of Individual-Level Food Security**

The four case studies show intrahousehold inequalities in the consumption of calories and nutrients, a pattern also found to varying degrees in Ethiopia (Coates et al. 2017), India (Fledderjohann et al. 2014), Nepal (Harris-Fry et al. 2018), and South East Asia (Bühler, Hartje, and Grote 2018). A double burden of malnutrition—simultaneous presence of undernourished and overweight individuals—is occurring in many households and countries, for example, in middle-income countries, stunted children living with obese mothers (Aitsi-Selmi 2015).

An alternative to the collection of individual food consumption could be dietary diversity. It is routinely collected for vulnerable individuals (infants and their mothers) in household health surveys, but less frequently collected for individuals in household consumption surveys.

Dietary diversity indicators capture the number of food items or groups consumed, often weighted according to the nutritional importance of the food

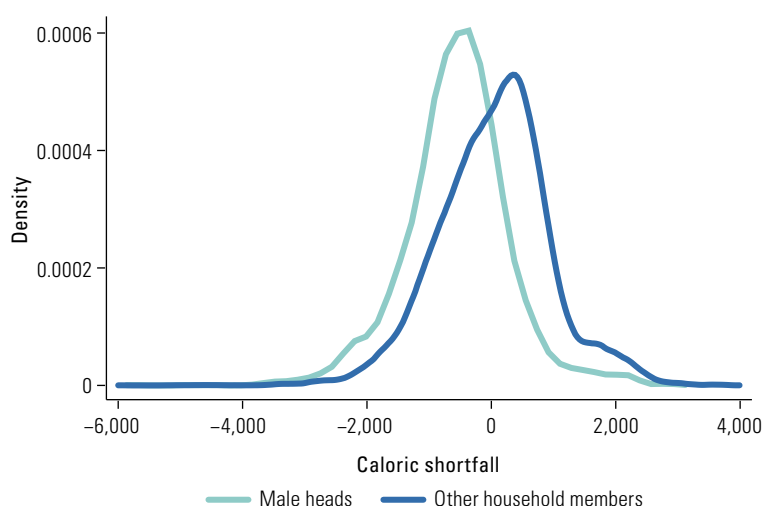
in question. Some measures additionally account for how often a given food (or items from a given food group) is consumed. Common metrics for dietary diversity are Household and Individual Dietary Diversity Scores (Maxwell, Vaitla, and Coates 2014), which count the number of food groups consumed over a 24-hour recall period by the whole household (reflects the household economic ability to access a variety of foods) or individual members (reflects dietary quality and nutrient adequacy [Arimond et al. 2010; Moursi et al. 2008; Savy et al. 2005; Torheim et al. 2004]).

Individual-level dietary diversity indicators are strongly correlated with the three common measures of child undernutrition: stunting, wasting, and underweight (Arimond and Ruel 2004; Chandrasekhar et al. 2017; Headey and Ecker 2013; Mallard et al. 2016; Rah et al. 2010; Ruel 2003). Across countries, even a very simple dietary diversity measure is better at predicting malnutrition than calorie deprivation (Headey and Ecker 2013).

Although the dietary diversity of mothers and their young children tends to be strongly correlated, children often consume fewer food groups than their mothers (Amugsi, Mittelmark, and Oduru 2015; Nguyen et al. 2013). In Bangladesh, even more food secure households have poor infant diets (Owais et al. 2016). Among children in Nepal, older children have better dietary diversity, but their diets are more likely to deteriorate when the household experiences a negative shock. Younger children have less diverse but more stable diets (Finaret et al. 2018). In India, children's diets vary by age and sex, with girls' diets less diverse than boys'—especially in adolescence (Aurino 2017).

In sum, individual-level dietary diversity metrics are a promising approach to assess individual food security (Bühler, Hartje, and Grote 2018; Headey and Ecker 2013; Leroy et al. 2015). Adding these questions to existing household consumption surveys could provide an alternative source of information about differences within households.

**FIGURE 5.6** Caloric Shortfalls of Male Heads and Other Household Members, Bangladesh



Source: D’Souza and Tandon 2018.

### Bangladesh

A significant portion of the population in Bangladesh is undernourished in terms of calories and specific micronutrients. Studies have also repeatedly demonstrated inequitable intrahousehold resource distribution. D’Souza and Tandon (2018) use the Bangladesh Integrated Household Survey to explore intrahousehold differences in undernourishment.<sup>10</sup> The analysis draws on data of 3,060 rural households with male heads who are married and whose spouses are present, but without pregnant or lactating women. Individual shortfalls from minimum dietary energy requirements are computed. Individuals who meet these requirements in calo-

ries and micronutrients are classified as adequately nourished, and those who do not are classified as undernourished. Similarly, a household is adequately nourished if the total household caloric availability exceeds the sum of the individual dietary requirements. The analysis reveals that male heads have much smaller caloric and micronutrient shortfalls than other household members (figure 5.6).

These differences lead to the misclassification of individuals relative to their household status, that is, undernourished individuals in adequately nourished households or adequately nourished individuals in undernourished households. Overall, the proportion of misclassification varies between 18 percent and 30 percent according to the type of member (first row of table 5.3) but in adequately nourished households, 55 percent of boys and 47 percent of girls are undernourished (whereas only 22 percent of heads and 9 percent of spouses are undernourished, third row of table 5.3).

### Senegal

The household structure in Senegal, as in other West African countries, is complex because of polygamy and the frequent presence of foster children. This offers opportunities to explore intrahousehold inequality within extended families. The 2006/07 Poverty and Family Structure Survey, described in De Vreyer et al. (2008), can be used to construct a relatively individualized measure of consumption and poverty status. To reflect intrahousehold structure and resource allocation

**TABLE 5.3** Individuals Misclassified by the Household Measure of Caloric Availability

Measure	Male heads	Spouses	Boys	Girls	Other adults
<i>All households</i>					
Share	0.24	0.18	0.30	0.28	0.22
Number	3,060	3,060	2,462	2,342	1,722
<i>Adequately nourished households</i>					
Share	0.22	0.09	0.55	0.47	0.15
Number	1,901	1,901	1,257	1,207	1,207
<i>Undernourished households</i>					
Share	0.26	0.32	0.05	0.09	0.39
Number	1,159	1,159	1,205	1,135	515

Source: D’Souza and Tandon 2018.

Note: Shares = population-weighted means of undernourished individuals in adequately nourished households and adequately nourished individuals in undernourished households. Number = observations.

more accurately, each household is divided into cells whereby the household-reported head forms a cell with unaccompanied dependent members; each wife of the head and her children and any other dependents then form separate cells, as do other adults with dependents, for example, married brothers. This cell structure is characteristic of households in Senegal.

The cell consumption data show that intrahousehold inequality accounts for almost 14 percent of total consumption inequality in Senegal, driven largely by intrahousehold inequality in nonfood consumption. About 13 percent of the poor live in nonpoor households and are hence invisible in standard measures of poverty (De Vreyer and Lambert 2017). There are also important gender differences. Per capita consumption is 33 percent greater among cells headed by a man than among those headed by a woman, and this difference is statistically significant. This pro-male-headed cell gap in consumption narrows if the analysis controls for education because literacy and numeracy outcomes are worse among women than among men. The remaining gender difference appears to be mainly attributable to the greater dependency ratio in female-headed cells because children are ascribed to their mother's cell (and not their father's) if the mother is present in the household (De Vreyer and Lambert 2017 and their supplementary material).

The social roles ascribed to women imply that their position in the household and their marital status are much more strongly associated with their material well-being than is the case for men. The mothers and daughters of the household-reported male head, and, to a lesser extent, his junior wives tend to be found in the least favored positions in the household, whereas no equivalent consumption penalty exists among fathers and sons. Widowed women, whether remarried or not, are also particularly vulnerable. These gender differences in per capita consumption extend to poverty. A cell headed by a daughter of the household-reported male head is 2.5 times more likely to be poor than the cell associated with the household head, whereas there is no significant difference in poverty status between cells headed by sons and those associ-

ated with the household-reported male head. The same is true for sisters versus brothers. Cells headed by women in a leviratic union—that is widows who “remarried” their former husband's brother or other male relative—have a higher probability of being poor, at an odd ratio of 1.4 relative to women in their first marriage, but the difference is not statistically significant (De Vreyer and Lambert 2017 and their supplementary material).

Taken as a whole, these studies give an idea of the potential misclassification of individuals with respect to households' poverty classification: many poor individuals do not live in poor households. In addition, they point out complex relationships between sex, age, and status within the household, especially in nonnuclear households, making it difficult to disentangle those effects. Furthermore, there are potentially complex interactions between the way the data were collected (for example, single or multiple respondents in the household, direct enumerator observation), the variable analyzed (caloric intake, food consumption, total consumption), and the level of disaggregation (individual-level analysis, cells/subgroups of household members, or broad categories such as children/women/men).

### **Estimating individual consumption from household-level data**

Collecting data on individual-level consumption is costly and not always feasible in the context of large-scale household surveys. Even specialized datasets, such as the ones presented earlier in this section, tend to individualize only some components of the overall consumption basket and thus provide a partial picture of sharing within households. Moreover, basing our understanding of intrahousehold differences in well-being and poverty on differences in the consumption of specific consumption items is problematic if preferences over those items differ between household members. For example, even if men disproportionately consume alcohol and tobacco, women might spend more on other items so that any subset of items cannot provide the full picture (Tian,

Yu, and Klasen 2018). An alternative approach is to model intrahousehold resource allocation on the basis of the observed behavior of the household and a structural model that describes the preferences of household members and how they make decisions (for example, the collective household model pioneered by Chiappori 1988, 1992). Armed with this structural model, and exploiting the fact that many household surveys collect consumption data of one or two items in a way that can be “assigned” to individuals, demand functions can be estimated that allow for teasing out how resources are shared inside the household even if data on consumption of most items are collected at the household level (see annex 5A for further details). This approach has two main advantages. First, it allows an estimation of the resource shares of women, men, and children over the entire consumption basket and therefore provides a more complete picture of the allocation of resources within households. Second, because the data requirements are modest, this approach could open the door to estimating individual-level poverty in many countries, beyond the select few case studies discussed in the previous section. A small but growing literature uses model-based estimates of intrahousehold resource allocation to explore differences in poverty between women and men or between adults and children in developing countries.<sup>11</sup>

Estimating individual poverty in this way requires that at least some parts of the household consumption basket can be assigned to individuals. In other words, one observes who within the household consumes what—either because the underlying household survey disaggregates items in such a way (for example, men’s clothing, women’s clothing, and children’s clothing), or because the survey asks respondents to assign an item to specific household members. These data requirements are modest. In fact, most studies rely on a single assignable good, typically clothing, that is disaggregated among men, women, and children in many standard household surveys. However, the underlying structural model estimates the resource shares of men, women, and children over the entire consumption basket. The flip side of this is that the structural model

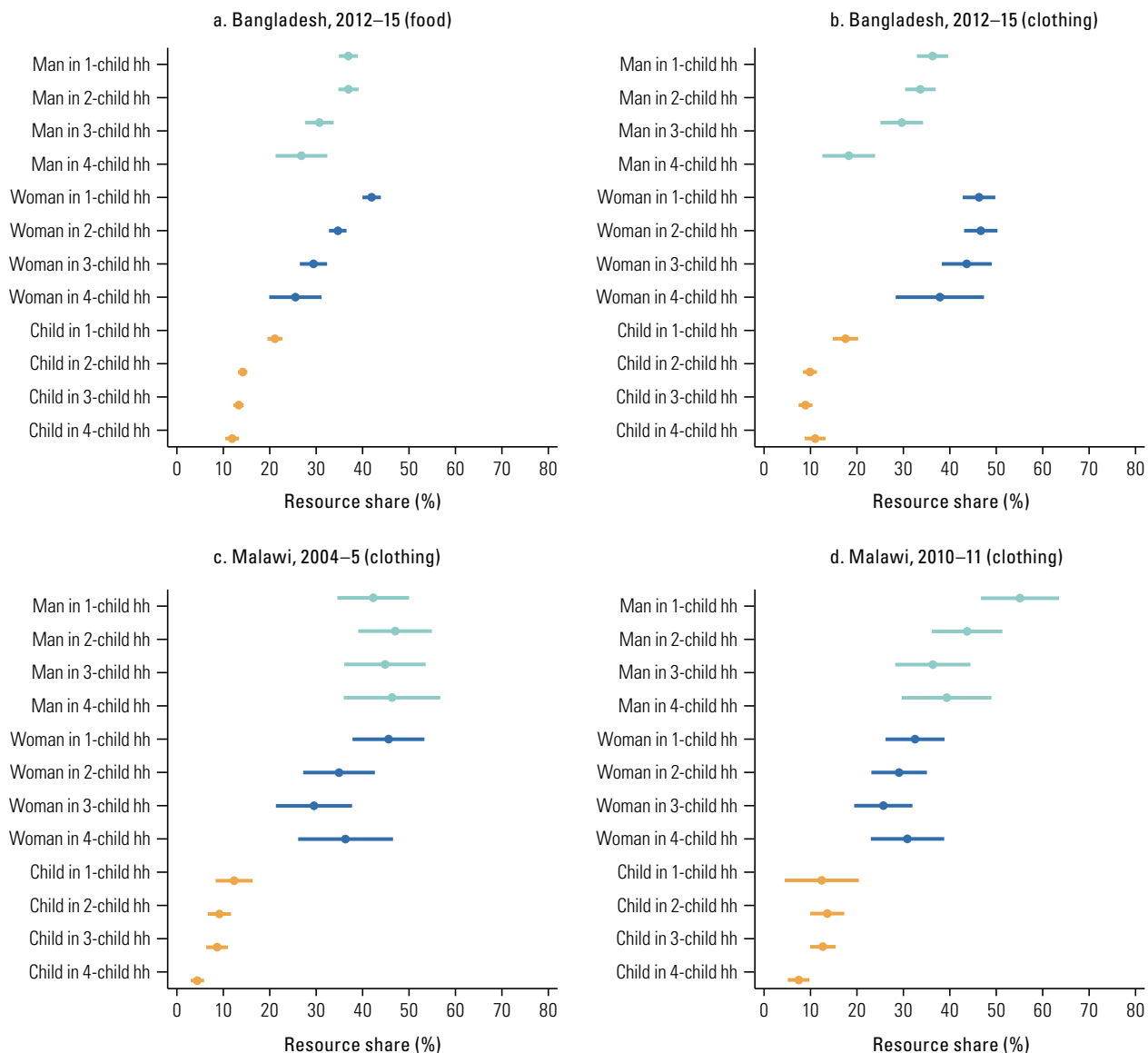
imposes strong assumptions on the ways in which households and individuals behave, and those assumptions are open to criticism (Basu 2006; Cuesta 2006; Doss 1996; Sen 1990; Udry 1996; World Bank 2017b). For example, this literature is largely based on the standard assumption of utility maximization and does not consider alternative explanations of human behavior. Likewise, the collective model assumes that all household decisions are efficient—in other words, whatever decision the household takes, no alternative decision would have been preferred by all its members. This rules out inefficient bargaining outcomes, whereby households may get trapped in situations where at least one household member could be made better off without making the others worse off (see Basu 2006; World Bank 2017b). Because of these assumptions, and additional econometric challenges in estimating the sharing rules empirically, model-based estimations of individual resource shares warrant additional validation and sensitivity analysis before they can be used in routine poverty monitoring.

As a first step in this direction, we use the model proposed by Dunbar, Lewbel, and Pendakur (2013) to estimate consistent intrahousehold differences in resource allocation and poverty in nuclear households in two countries (Bangladesh and Malawi). The model has the advantage that it is considerably less complex than previous approaches, which enhances transparency and makes estimating individual resource shares across countries more feasible using the same method (see annex 5A). Figure 5.7 shows estimates of resource shares in Bangladesh (pooling data for 2011/12 and 2015), with either food or clothing as the assignable good, and in Malawi in 2004/05 and 2010/11, with clothing as the assignable good.<sup>12</sup> The horizontal axis gives the percentage of household resources, both the point estimate and the confidence interval, that are allocated to an individual of type  $j$  living in a household of type  $s$ , holding the other household characteristics fixed at their mean. On the vertical axis are the types of individuals and household sizes. The share of household resources that goes to children has been divided by the number of children.

The results on Bangladesh in figure 5.7, panel a, which use food as the assignable



**FIGURE 5.7** Estimated Consumption Allocation, Men, Women, and Children, Bangladesh and Malawi



Source: Gaddis et al., forthcoming.

Note: The horizontal axis gives the percentage of household (hh) resources, both the point estimate and the confidence interval, that are allocated to an individual of type  $j$  living in a household of type  $s$ , holding the other household characteristics fixed at their mean. On the vertical axis are the types of individuals and household sizes. The share of household resources that goes to children has been divided by the number of children. hh = household.

good, show that, in households with one or two children, men receive about 37 percent of the resources. The share of resources going to men is smaller in households with three children (31 percent) and in households with four children (27 percent). In households with one child, women’s resource shares are larger than those of men (42 percent), but their resource shares decline more steeply as the number of children increases, to 35 percent in households

with two children, 29 percent in households with three children, and 26 percent in households with four children. Among the children, an only child receives, on average, about 21 percent of the resources. In households with multiple children, each child receives between 12 percent and 14 percent of the resources.

The broad patterns in resource allocation for Bangladesh are similar if one uses clothing as the assignable good (figure 5.7, panel

b), which lends credibility to the estimation method.<sup>13</sup> However, the precision is much greater with food, presumably because of food's larger share in household consumption (33 percent versus 3 percent). Moreover, in households with more than one child, the resource shares of women are somewhat smaller, and the resource shares of children are larger if the estimation is based on food.

These estimates suggest inequalities in the way resources are shared among household members, particularly between adults and children. However, unlike the nutrition-centered Bangladesh case study presented earlier, the estimates in this section do not suggest that women fare worse than men. One explanation for this divergence could be that D' Souza and Tandon (2018) use a measure of needs; another is that we are looking at a different sample—nuclear households here, compared with all couple-households, excluding pregnant and lactating women, in D'Souza and Tandon (2018). Yet another explanation is that, per definition, the approach used in this section uses information on the assignable good to estimate individual-level resource allocation over the entire consumption basket, beyond just food and nutrition. Still, these dif-

ferences in results underscore the need to further explore the robustness of model-based estimates of intrahousehold resource allocation.

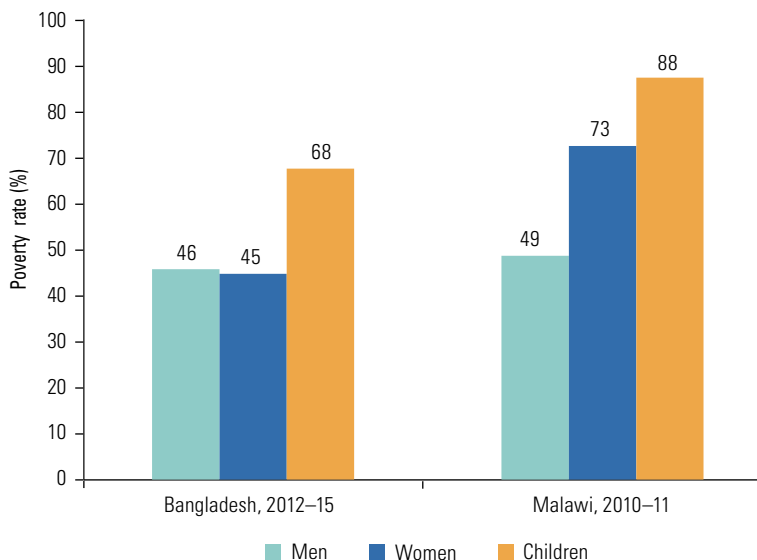
In Malawi in 2004/05 (figure 5.7, panel c), one finds that the share of household resources going to men does not vary with the number of children. It is greater than the share of resources going to women, though the confidence intervals overlap. The share of resources going to women also does not vary significantly with the number of children. The share of resources going to each child is not significantly different in households with one, two, or three children, but it is smaller when there is a fourth child. Focusing on the confidence intervals together with the point estimates, the results on Malawi in 2010/11 are qualitatively similar (figure 5.7, panel d) apart from the fact that the resource share of men is greater in households with one child than in households with more children.<sup>14</sup>

One may use the resource shares to estimate poverty rates among men, women, and children, depending on the size of the relevant household. This requires additional assumptions about household economies of scale and the relative needs of children. The estimates here follow Dunbar, Lewbel, and Pendakur (2013) in relying on an equivalence scale used by the OECD. Figure 5.8 summarizes the information on Bangladesh (using the more precise estimates based on food as the assignable good) and on Malawi (using the latest available survey). In both countries, the estimated poverty rates are significantly higher among children than among adults. The model estimates that women are poorer than men in Malawi, but not in Bangladesh. However, these results only apply to nuclear households. These make up the largest share of poor households globally but are often less poor than extended multigenerational households (see the previous section).

### An individual perspective on multidimensional poverty

The chapter now builds on the multidimensional approach described in chapter 4, which captured deprivations in education, health and nutrition, access to services, and security, in addition to monetary poverty. Bringing the multidimensional approach to

**FIGURE 5.8 Individual Rates of Poverty, Nuclear Households, Bangladesh and Malawi**



Source: Gaddis et al., forthcoming.

Note: Based on estimated resource shares in figure 5.7, panel a, Bangladesh, using food as the assignable good; panel d, Malawi, using the 2010–11 data.

individuals takes advantage of the fact that, in most household surveys, in contrast to consumption expenditures, nonmonetary indicators in a few key dimensions of well-being, such as education and nutrition, are often collected on an individual basis. For example, educational attainment is often lower among adult women than among adult men because of past gender gaps in school enrollments, and these differences within the household can be captured by a measure of multidimensional poverty among individual household members.

The multidimensional poverty measure introduced in chapter 4 combines monetary and nonmonetary dimensions of well-being, but it relies on households as the unit of analysis. By way of illustration, consider the dimension of education. The measure retroactively collapses the information about the educational attainment of individual household members into an indicator for the household, whereby the household is deprived if no adult member has completed primary education. Like the monetary poverty estimates in chapter 1, the household multidimensional poverty measure in chapter 4 cannot provide insights into differences within households.

Data on five countries—Ecuador, Indonesia, Iraq, Mexico, and Tanzania—are used to exemplify how one might apply the multidimensional poverty measure to the individual.<sup>15</sup> The focus is on adults (18+ years) because some of the indicators are not directly valid for infants and young children, such as educational attainment or the BMI, and because a multidimensional measure of child poverty should consider child-specific vulnerabilities (box 5.4).

The analysis uses the same five dimensions of multidimensional poverty as the country case studies in chapter 4.<sup>16</sup> The datasets have been selected on the basis of the availability of information on individuals, but the surveys provide information only about individual deprivations in the education and health-nutrition dimensions. The individual multidimensional poverty measure considers adults deprived in the education dimension if they have not completed primary schooling, and they are considered deprived in the nutrition indicator of the health and nutrition dimension if they are undernourished (table 5.4). The other dimensions—monetary poverty, access to services, and security—and the health indicator of the health and nutrition

#### **BOX 5.4 Child Poverty**

Children growing up in extreme poverty require special attention. They experience poverty differently than adults, and their needs and vulnerabilities change rapidly in ways that are foreign to adults (Abdu and Delamonica 2017).

Key dimensions of poverty among children include health, information, nutrition, education, water, sanitation, and housing. Poverty causes poor children to miss out on a good start in life. The consequences of inadequate nutrition, deficient early stimulation and learning, and exposure to stress and shame last a lifetime. They lead to stunted development, low capacity in the skills needed for work, restrained future productivity

as adults, and the transmission of poverty down the generations, including through early marriage. Beyond this sad and avoidable impact on human life and potential, neglecting children fails to build the human capital the world needs for sustained economic prosperity.

The numbers are stark: Children are more than twice as likely as adults to be living in poor households (the results are robust to the use of 32 different equivalence scales, and the youngest children are the least well off [Newhouse, Suárez-Becerra, and Evans 2017]). More than half (58 percent) of the children in fragile and conflict-affected situations live in poor households

and face immediate threats such as gender-based violence, recruitment as child soldiers, and discrimination in the provision of basic services. Irregular migration, displacement, and trafficking create multiple dangers for children; girls, especially, are disadvantaged because of gender inequalities.

Children living in poverty often experience stress, anger, frustration, sadness, and hopelessness because of the repeated instances of discrimination and social exclusion they encounter, which may lead them to drop out of school, lose friends, and become exposed to risks that more well-off children and adults never have to face (Save the Children 2016).

**TABLE 5.4 Indicators and Dimensions, the Individual and Household Multidimensional Poverty Measure**

Dimension	Deprived if		Weight (%)
	Individuals	Households	
Monetary poverty	Daily consumption per capita < US\$1.90		20
Education	Adult has not completed primary school	No adult has completed primary school Any school-aged child is not attending school	20
Health and nutrition	Any woman (ages 15–49) experiencing a live birth in the previous 36 months did not deliver at a facility Any child (ages 12–59 months) did not receive a DPT3 vaccination		20 <sup>a</sup>
	Adult undernourished (BMI < 18.5)	Any woman (ages 15–49) is undernourished (BMI < 18.5) Any child (ages 0–59 months) is stunted	
Access to services	No access to an improved source of water within a round trip distance of 30 minutes No access to improved sanitation facilities for use exclusively by the household No access to electricity		20
Security	Household has been negatively affected by crime in the previous 12 months or lives in an area where more than 20% of households have been negatively affected by crime		20

Note: Dimensions on which data on individuals are available are shaded gray. BMI < 18.5 = body mass index below 18.5 (underweight); DPT3 = diphtheria-pertussis-tetanus vaccine.

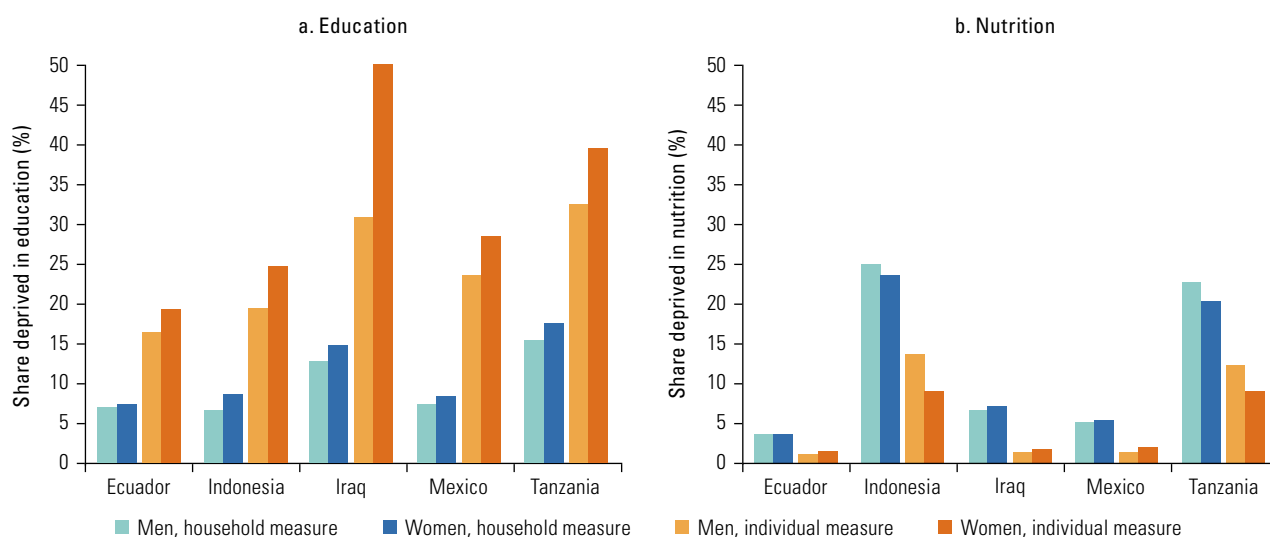
a. Health and nutrition each has a weight of 10 percent.

dimension may be analyzed meaningfully only among households with the existing data. Thus, the multidimensional poverty measure is de facto only partially individualized; only 30 percent of deprivations are measured among individuals. This is a clear limitation because one must fall back on the assumption of equal sharing among household members in the other indicators and dimensions (70 percent), and this dilutes whatever intrahousehold inequality one may find

in those dimensions that can be measured among individuals. Nonetheless, even a partially individualized multidimensional poverty measure reveals that multidimensional poverty is greater among women than among men in the countries under examination, driven by women’s disadvantaged position in educational attainment.

Figure 5.9 shows the share of men and women who are deprived in the two indicators on which data on individuals are avail-

**FIGURE 5.9 Gender Gaps, Education and Nutrition Deprivation, Selected Countries**



Source: Klasen and Lahoti, forthcoming.

able: education and nutrition. For each country and indicator, deprivation rates among men and women are compared through two approaches: one relying on the household, whereby all household members are assigned the same deprivation status, and the other relying on the individual, measuring individual deprivations directly.<sup>17</sup>

In education (figure 5.9, panel a), the household approach reveals some gender differences in education deprivation that tend to disadvantage women, showing that women are more likely than men to live in a household where no adult has completed primary school. These gender differences, which are muted under the household approach, are amplified if the data on individuals are used. In the five countries under examination, women are much more likely to be deprived in education than men if deprivations are measured across individuals, especially in Iraq (a gap of 19 percentage points). In addition to these gender gaps, an individual, whether a man or a woman, is more likely to be considered deprived in education if the measure of deprivation is applied across individuals. This reflects the fact that the household education indicator is defined in an expansive way, that is, all household members are considered nondeprived if any adult in the household has completed primary school, irrespective of who in the household benefited from education and whether there is any systematic gender bias. (Klasen and Lahoti 2016 show that defining deprivation in this way will lead to an underestimation of deprivation and poverty rates using a household-level approach because typically many deprived individuals live in households where one member has the required education.)

In terms of nutrition (figure 5.9, panel b), gender gaps are small, even if measured with reference to individuals, and they do not show a consistent pattern.<sup>18</sup> Unlike the case of education, a person is less likely to be considered deprived in nutrition under the individual approach than under the household approach. This is because the household nutrition indicator is defined restrictively, that is, all household members are considered deprived if any adult in the household is undernourished, which will overestimate depri-

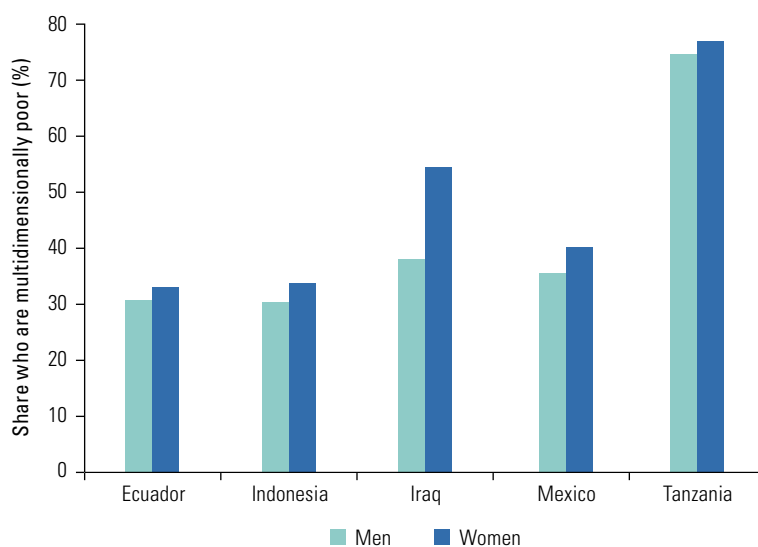
vation and poverty using a household-level approach (Klasen and Lahoti 2016).

The share of men and women who are multidimensionally poor, measured across individuals, is shown in figure 5.10. Multidimensional poverty is more prevalent among women than among men in all countries, with the largest gender gap in Iraq (54 percent versus 38 percent). Klasen and Lahoti (forthcoming) show that a significant gender gap in multidimensional poverty is also found in India.

These gender gaps may even be wider among the most vulnerable groups. For example, in all countries but Ecuador, widows are significantly more likely to be multidimensionally poor than widowers, and the gender gap ranges from 8 percentage points in Iraq to 19 percentage points in Mexico (Klasen and Lahoti, forthcoming). This highlights widowhood as an important vulnerability factor among women, which is not revealed in the household multidimensional poverty measure (Djuikom and van de Walle 2018).

The gender gaps illustrated in figure 5.10 are probably still an underestimation of the true extent of gender inequality in multidimensional poverty. Because of data limitations, even the individual multidimensional poverty measure individualizes only some

**FIGURE 5.10 Gender Gaps, Individual Multidimensional Poverty, Selected Countries**



Source: Klasen and Lahoti, forthcoming.

of the dimensions in which one may expect to find variations within households and systematic gender differences. As discussed in the previous section, intrahousehold inequalities in consumption may disadvantage women and children. But, because none of the datasets used here allows estimates of resource allocation across individuals, the individual multidimensional poverty measure must fall back to reliance on (unsatisfactory) assumptions about equal sharing associated with the monetary poverty dimension. Similarly, other studies have shown a gender dimension in access to services. For example, the individual deprivation measure, a new gender-sensitive multidimensional measure of poverty, illustrates how men and women are affected differently by lack of access to services because of social norms assigning domestic work to women (Hunt 2017; IDM 2017). A more refined individual multidimensional poverty measure would also capture women's and men's exposure to all forms of violence under the security dimension. Some forms of violence, particularly gender-based violence and especially intimate partner violence, are more frequently experienced by women than by men (Stöckl et al. 2013; UBOS and ICF International 2017). In contrast, men are more susceptible to recruitment in gangs and armed groups. An individual measure of exposure to violence could reveal such differences within households and lean toward greater intrahousehold variation in the multidimensional poverty measure.

Another direction for expanding the individual multidimensional poverty measure along gender lines would be to broaden the set of dimensions, to include time use and socioemotional dimensions of poverty. As discussed earlier, patterns of time use are very different between men and women, especially in the presence of children. Many studies (World Bank 2011; Bardasi and Wodon 2010; Blackden and Wodon 2006; Rubiano Matulevich and Viollaz 2018) show the persistent gap between time spent in market and non-market activities, with women consistently spending twice as much time as men in the latter (household chores, child and elderly care) and often having less leisure time. Data limitations on the actual distribution of time between care and household chores and

on simultaneous activities (watching a child while selling at the market) also hide the profound effect these differences have for labor force participation decisions, types of jobs, and hours spent working for pay or profit.

Participatory poverty research often shows that, although insufficient financial means are central to the experience of destitution among poor people, they are interlocked with other dimensions, such as voicelessness, social exclusion, shame, exposure to violence, lack of access to basic infrastructure and services, lack of education, poor physical and mental health, and illness. Box 5.5 summarizes findings from recent and ongoing participatory analysis of poverty (Narayan et al. 2000a; Walker and Godinot 2018).<sup>19</sup>

## Conclusion

This chapter starts with a question: How many women and children are poor? Despite the conceptual challenges in answering this question and the data limitations, accumulating evidence using different methods and data sources confirms the existence of a pattern of consumption inequality between children and adults and between women and men in the household. The results suggest that women are disproportionately affected by poverty. Likewise, the global poverty data and country studies show that children are poorer than adults, which is partly driven by demographic patterns of fertility and household formation. However, the picture of how much poorer children are in relation to adults is sensitive to assumptions about the relative needs of children, which requires further investigation beyond the scope of this chapter. In several countries, households seem to share basic food items somewhat equitably, but inequality among gender lines is stronger for more prized consumption items.

These general patterns mask contextual variation related to the position of individuals in the life cycle (marital status and parenthood), their status within the household (the sons, first wife, or mother of a man who is the household head hold higher relative status than his daughters or more junior wives), and their human capital and position in the labor market (schooling and employment status). Because of gendered social norms that view

### **BOX 5.5 Gender and Socioemotional Dimensions of Poverty: Participatory Studies**

The World Bank (2017b) recognizes that in-depth consultation with people experiencing poverty is essential to an understanding of the true nature of the multifaceted phenomenon of poverty. The *Voices of the Poor* reports (Narayan et al. 2000a, 2000b) highlight the importance of nonmonetary dimensions, access to services, and gender norms. Under the strain of vast social, economic, and political transformation, poor household members reflect on the contradiction between purported gender roles—homemaker for women and breadwinner for men—and the reality of women performing income-earning tasks, which increases their time poverty. Under stress, men are more likely to abuse alcohol, and domestic violence spreads. All these factors affect children negatively.

Following the same approach, people living in extreme poverty in Bangladesh, Bolivia, France, Tanzania, the United Kingdom, and the United States are leading research with the International Movement ATD Fourth World and Oxford University to understand the dimensions of poverty that matter most in their lives (Walker and Godinot 2018).

Provisional findings indicate that, while lack of financial resources and the inability to meet basic needs are central, both women and men frequently associate these needs with their direct consequences in terms of physical and mental health. Shame, fear, depression, worry, and anger emerge as integral components of the experience of poverty. Poverty is also relational. As a group, people living in poverty experience oppression, exploitation, humiliation, and the denial of rights, including the denial of rights to health care and education. As individuals, they experience social isolation, stigma, and discrimination. Beyond their intrinsic importance, these factors also contribute to a lack of social and political voice and to relative powerlessness, all often resulting in social exclusion.

Both women and men emphasize these dimensions, but they experience them differently. Gender roles mean that women feel stress and stigma in the context of care and family responsibilities under tightly constrained domestic budgets. Men can feel emasculated if they cannot fulfill their breadwinning

role. Whereas women may face sexual exploitation and gender-based violence, especially as domestic workers, men face exploitation and discrimination as casual laborers. Children find themselves socially excluded at school, singled out if they are unable to afford the totem items of their peers. They are often embarrassed to invite friends home to their substandard housing.

In rural areas, people living in poverty may lack basic social and infrastructure service provision locally, whereas, in cities, point of use charges deny them access. Gender roles imply that lack of proximate clean water affects more the time and lives of women (and children) who are responsible for fetching it, cooking, and cleaning. Stigma is more contagious in rural settings, afflicting all members of extended families, than in urban areas, where social life is more individualized. Although poverty is pain, people experiencing it often demonstrate resourcefulness; they acquire knowledge and skills that could be useful to others, and they feel they have a positive and valuable contribution to offer to society.

unpaid work as a female prerogative, women face a strong trade-off between reproductive and productive functions, and mothers who do not work for pay are especially likely to live in poor households. Adult couples with dependent children or other nonearners ages 18–64 in the household are overly represented among the poor. These gender gaps in poverty are stronger in Sub-Saharan Africa and South Asia; within countries, these inequities seem stronger among the poorest, which has strong implications for reaching the twin goals, reducing poverty and sharing prosperity.

Gender gaps are also pervasive in other key components of welfare. Although gender gaps in school enrollments have narrowed significantly over the past decades (and in some countries reversed), adult women around the world continue to be disadvantaged in educational attainment because of past (and sometimes present) gender inequalities in access to schooling. Participatory research also highlights gender differences in the socioemotional dimensions of poverty.

Advancing our understanding of poverty among individuals requires a renewed emphasis on individual-level data collection.

This chapter has touched upon various data gaps limiting our understanding of individual poverty. Three broad directions for data collection and methodological survey research emerge from this discussion. First, although full individual-level consumption data collection remains infeasible for most living standards surveys, there may be some scope to collect partially individualized consumption data. This could take the form either of fielding an individual-level module to a subset of households or of identifying a subset of consumption items (beyond clothing) that can signal inequalities within households and that can be collected for individuals (or, at the minimum, for men, women, girls, and boys) in a reliable and cost-effective way. Advancing this type of data collection would facilitate the application of the collective model to estimate intrahousehold resource shares. Second, expanding individual-level data collection on nonmonetary dimensions, such as time use, violence, access to services and assets, and some of the socioemotional dimensions highlighted by participatory research, would allow for the advance of multi-dimensional measures of individual poverty and analysis of the intersectionality of deprivations. Third, additional methodological research is needed to shed light on the difference, in terms of accuracy and cost, between self- and proxy-reporting for data referring to individuals. The marginal cost of individual-level data collection is strongly influenced by whether survey enumerators need to interview multiple household members (thus allowing for repeat visits to the household), which has major implications for survey operations. Existing research highlights the importance of respondent selection for data on assets and labor (on assets: Kilic and Moylan 2016; Doss, Kieran, and Kilic 2017; on labor: Bardasi et al. 2011; Dammert and Galdo 2013), but similar investigations would be useful for other dimensions of living standards and welfare, including consumption.

In terms of research, recent advances in the application of the collective bargaining model to household survey data are prom-

ising but need to be put to the test in additional validation studies and extended to more complex household structures (beyond nuclear households). Specialized data collections and participatory research could help to test some of the key assumptions underlying these methods and explore the sensitivity of results to alternative assumptions. Further investigations of how relative needs and preferences differ inside the household would allow for a better understanding of whether an unequal resource allocation translates into differences in well-being and poverty.

The findings of this chapter have important implications for policies and interventions to alleviate poverty and enhance shared prosperity. Given the importance of maternal health and education for the formation of children's human capital in many contexts, better understanding intrahousehold poverty could help design more effective interventions to weaken its intergenerational transmission. Understanding differences in poverty levels between different household members is important for the effective targeting of poverty reduction programs. At present, commonly used household targeting of social assistance programs may miss a significant share of the poor: those people hidden in overall nonpoor households. Understanding how gender and age affect the demand for basic services is key to making sure that interventions to expand basic infrastructure and social services address the differentiated needs and constraints of the poorest. Factoring in the potential impacts of interventions on time use would benefit women disproportionately. Finally, better understanding of the socioemotional dimensions of poverty would help increase the take-up of programs and strengthen their design and implementation by lifting relevant social and psychological barriers and decreasing stigma. As more poverty alleviation programs focus on productive inclusion, the success of active and enabling policies that stress agency and entrepreneurial initiative also depends on fostering the mindset that help poor people and society recognize their potential.



## Annex 5A

# Technical note: Estimating intrahousehold resource shares

### The basic approach

Most studies estimating intrahousehold resource shares are based on the collective household model (Chiappori 1988, 1992). The collective model recognizes that household members have their individual preferences and assumes Pareto efficiency, that is, whatever decision the household takes, no alternative decision would have been preferred by all its members. In this model, it is as if each household member (that is, woman, man, or child) is allocated a fraction of the household's total resources (that individual's resource share), which the individual then allocates according to his or her own preferences. Each household member determines his or her demand for each consumption item by maximizing his or her utility function, subject to the individual's resource constraint (that is, determined by resource share) and a vector of shadow prices. These shadow prices are equivalent to market prices for private goods, but lower than market prices for goods that are shared by multiple household members. (Bourguignon and Chiappori 1992; Browning et al 1994; Chiappori and Meghir 2015.) There are two routes to recover individual resource shares from observed household expenditures. One is to assume that preferences of adults in couples are no different from preferences of singles. Consumption by adults in couples is then deduced from the observation of consumption

by singles and by couples, with assumptions on economies of scale for the public goods. An alternative route, which is followed in this chapter, is to use information on the consumption of assignable goods, that is, goods that are consumed only by one type of individual in the household. For assignable goods, the household's consumption is also the consumption of the individual, so that the household's budget share for an assignable good (observed) is equal to the product of an individual's resource share by the budget share the individual would choose subject to his or her own shadow budget constraint (both unobserved). The estimates presented in this section, which are based on the approach proposed by Dunbar, Lewbel, and Pendakur (2013), make some further assumptions of similarity of certain aspects of preferences.<sup>20</sup> The resource shares are identified from the observation of the budget shares of assignable goods (see below for details).

### The model underlying individual resource shares

Households are supposed to be composed of one adult man, one adult woman, and  $s$  children. Each household member is of type  $j$ , where  $j = m, f, c$  for the adult man, adult woman, and children, respectively. Following Dunbar, Lewbel, and Pendakur (2013), the demand system can be written as follows:

$$\begin{aligned} W_{m,s} &= \eta_{m,s}(z) (\alpha_{m,s}(z) + \beta_0 \ln(\eta_{m,s}(z)x)) \\ W_{f,s} &= \eta_{f,s}(z) (\alpha_{f,s}(z) + \beta_0 \ln(\eta_{f,s}(z)x)) \\ W_{c,s} &= \eta_{c,s}(z) \left\{ \alpha_{c,s}(z) + \beta_0 \ln \left[ \frac{\eta_{c,s}(z)}{s} x \right] \right\} \end{aligned} \tag{5A.1}$$

where  $W_{j,s}$  is the household budget share of member  $j$ 's assignable good in a household with  $s$  children;  $\eta_{j,s}(z)$  is the resource share of household member of type  $j$  in a household with  $s$  children;  $x$  is the household's total nondurable expenditure; and  $z$  is a set of sociodemographic characteristics of the household. The last equation in the demand system (5.1) gives the household budget share of the children's assignable good. The children are jointly treated as one member of the household; this requires the simplifying assumption that resources are shared equally among the children.

The term in parentheses in each equation of the demand system (5.1)— $\alpha_{j,s}(z) + \beta_0 \ln(\eta_{j,s}(z)x)$ —is referred to as  $j$ 's latent budget share (for  $j = m, f$ , and the corresponding term for children). The latent budget share is linear in the log of individual resources.

## Notes

1. This section draws on Muñoz Boudet et al. (2018).
2. These rates are higher than the rates in chapter 1 because they are based on a subset of countries and household surveys (see box 5.2). Corresponding rates for the 2015 GMD data are 11.4 and 11.7 percent for women and men, respectively.
3. In 2015, 19.3 percent of those ages 0–14 lived in poor households.
4. Average age at marriage by country was 25 years for women (minimum 17.2 and maximum 33.8 years) and 28.4 years for men (minimum 21.7 and maximum 36.5 years) (World Marriage Data 2015 using the latest data for 2013).
5. Farmers are considered earners, even if they produce mostly for subsistence purposes, unless they are classified in the survey as unpaid family workers.
6. To the best of our knowledge, these are the few relatively recent datasets that collect consumption data with the level of detail necessary for intrahousehold analysis and a significant geographical coverage. Other existing datasets are either limited in geographic scope, are outdated, or can only assign a small proportion of consumption to individuals.
7. Although these smaller shares may reflect differences in needs or preferences, the evidence

in this section points to differences not fully accounted by those.

8. The China Health and Nutrition Survey is a panel dataset that has tracked food consumption among individuals in about 6,800 households in nine provinces since the early 1990s. The survey records the quantity (in grams) of a variety of food items, including alcohol and tobacco, that each household member consumed at and between meals, at home and away from home, during three days at a level of detail suitable for nutritional analysis. Local prices are used to compute a monetary measure of consumption.
9. The Burundi survey included a module on individual consumption, which asked a single respondent, a woman household member considered responsible for the household budget, to specify the share of household consumption dedicated to five groups of individuals: the main adult man, the main adult woman, the sons, the daughters, and all other household members. In about two-thirds of households, the woman respondents reported that they were the wives of the household heads whereas, in the remaining third, they reported that they headed the households.
10. The Bangladesh Integrated Household Survey was conducted between December 2011 and March 2012. It covered 5,000 households and was representative of rural Bangladesh. The survey recorded individual food consumption, in grams, for over 300 food items for every household member during the previous 24 hours, as reported by the woman in charge of cooking and serving.
11. See Bargain, Donni, and Kwenda (2014) on Côte d'Ivoire; Bargain, Kwenda, and Ntuli (2017) on South Africa; Bargain, Lacroix, and Tiberti (2018) on Bangladesh; Belete (2018) on Ethiopia; Brown, Calvi, and Penglase (2018) on Bangladesh; Cuesta (2006) on Chile; Dunbar, Lewbel, and Pendakur (2013) on Malawi.
12. The results are based on pooling the Bangladesh Integrated Household Survey 2011–12 and 2015 and on using the Malawi Integrated Household Survey 2004–05 and 2010–11.
13. See Bargain, Lacroix, and Tiberti (2018) for a similar validation study.
14. The resource shares are estimated less precisely in Malawi than in Bangladesh, even in comparisons with resource shares estimated

- on the basis of expenditures on clothing. This may arise because of differences in sample size (4,149 households in Bangladesh against 3,045 in Malawi in 2004/05). The additional estimation of resource shares in Tanzania based on pooling the 2012–13 and 2014–15 datasets did not yield interpretable results. The sample size was considerably smaller, with only 1,552 observations, which may explain why the estimation results were inconclusive.
15. Details on the datasets used are presented in chapter 4. This section does not include a discussion of Uganda, because anthropometric information is not available on adults in that country.
  16. Following chapter 4, the individual multidimensional poverty measure gives equal weight to each dimension (0.2), and all indicators within a dimension are weighted equally. The only exception is the health and nutrition dimension; the two subdimensions (health, nutrition) are weighted equally. For the Alkire-Foster (2011) measure,  $\alpha = 0$  is used, and a household classified multidimensionally poor if it is deprived in at least 0.2 of the weighted indicators ( $k = 0.2$ ). The results are qualitatively similar for different parameters of the Alkire-Foster (2011) measure and for the Datt (forthcoming) measure.
  17. In education, the approach compares the share of adults deprived according to the household indicator (no adult has completed primary school) and the individual indicator (the adult has not completed primary school). In nutrition, the approach compares the share of adults deprived according to the household indicator (any woman [ages 15–49] in the household is undernourished) and the individual indicator (the adult is undernourished).
  18. In addition, most surveys are characterized by numerous missing values for nutrition among individuals, which reduces the reliability of this indicator. This is because household survey protocols typically allow for only a limited number of revisits to each household. Household members who are not at home during the first visit and subsequent revisits are not measured.
  19. In this ongoing work to gain insight on the dimensions of poverty in six countries, each national team of 10–15 people is responsible for the local design, execution, and analysis of the research. Each team includes people who are poor, but also academics and practitioners who provide services or advocate for the poor. Outreach is undertaken among people of working age, the elderly, and children, all of whom participate in detailed moderated discussion, first, within peer groups of people with similar experiences and, then, in mixed groups that explore relationships across dimensions and seek consensual conclusions.
  20. The first is that Engel curves for the assignable good have the same shape across household members. The second is that preferences are similar across household types, where household types are differentiated by the number of children living in the household. These assumptions can be used in isolation or jointly (as done here) to identify the share of resources accruing to each member of the household.



# Appendix A

## Data Details

The poverty and shared prosperity measures and supporting analysis in this report are based on household surveys from around the world. Because the variables available in the household surveys differ across countries and years, the country coverage varies from chapter to chapter according to the data requirements for the analysis. As the data requirements become more demanding, the subset of countries that can meet them decreases. Thus, the same country coverage is not possible across all five chapters of this report.

This data appendix first provides an overview of the main data sources for this report along with country classification definitions applicable throughout the report. In the subsequent sections, chapter-specific data and methodological issues, such as survey selection criteria, definitions, additional data sources, and key measurement issues are described separately for each of the five chapters.

### Main databases for the report

#### PovcalNet

PovcalNet is an online tool for global poverty monitoring hosted by the World Bank (<http://iresearch.worldbank.org/PovcalNet>). PovcalNet was developed with the purpose of public replication of the World Bank's poverty measures at the international poverty line (IPL). PovcalNet contains poverty estimates from more than 1,600 household surveys spanning 164 economies and over 40 years, from 1977 to 2017. To produce global

and regional estimates and to facilitate comparisons across countries, PovcalNet aligns the surveys to specific reference years (for additional details, see the chapter 1 section of this appendix). This report is based on the September 2018 vintage of PovcalNet. The PovcalNet poverty measures are used for the analysis of global poverty at the IPL in chapter 1 and for the analysis of poverty at higher poverty lines in chapter 3 (table A.1).

#### Global Database of Shared Prosperity

The Global Database of Shared Prosperity (GDSP) includes the most recent figures on annualized consumption or income growth of the bottom 40 percent of the population (the bottom 40) and related indicators over similar time periods and intervals. All numbers were vetted by an internal Technical Working Group. This report is based on the sixth edition of the GDSP (the fall 2018 release), which features data on 91 economies circa 2010–15 (<http://www.worldbank.org/en/topic/poverty/brief/global-database-of-shared-prosperity>). The harmonized surveys for the GDSP are all sourced from the Global Monitoring Database (see below). The GDSP is the main data source for the shared prosperity analysis presented in chapter 2 of this report (see table A.1).

#### Global Monitoring Database

The Global Monitoring Database (GMD) is the World Bank's repository of multitempic

**TABLE A.1 Overview of Principal Data Sources by Chapter**

	Global Monitoring Database	PovcalNet	Global Database of Shared Prosperity
Chapter 1: Ending Extreme Poverty	Fall 2018 release, data from circa 2015	Fall 2018 release, data from 1977–2017	
Chapter 2: Shared Prosperity	Fall 2018 release, data from circa 2010–15		Fall 2018 release, data from circa 2010–15
Chapter 3: Higher Standards for a Growing World		Fall 2018 release, data from 1977–2017	
Chapter 4: Beyond Monetary Poverty	Fall 2017 release, data from circa 2013		
Chapter 5: Inside the Household	Fall 2016 release, data from circa 2013		

income and expenditure household surveys used to monitor global poverty and shared prosperity.<sup>1</sup> As of June 2018, the GMD contains more than 1,100 household surveys conducted in 156 economies. For a few economies, the welfare aggregate of the GMD spans up to 46 years, from 1971 to 2017, whereas for most other economies, coverage is significantly less. The household survey data are typically collected by national statistical offices in each country, and then compiled, processed, and vetted for inclusion in the GMD by the World Bank’s internal Technical Working Group. Selected variables have been harmonized to the extent possible such that levels and trends in poverty and other key sociodemographic attributes can be reasonably compared across and within countries over time. The GMD’s harmonized microdata are used in PovcalNet and the GDSP.

In this report, the GMD is used for the global poverty profile in chapter 1, the multi-dimensional poverty measures in chapter 4, and the individual poverty measures in chapter 5. Whereas chapter 1 uses the latest version of the GMD, analyses in chapters 4 and 5 are based on previous versions (see table A.1).

### Classification of economies

The economy classifications by income level, geographical region, and fragile and conflict-affected situation are described in this section. The term country, used interchangeably with economy, does not imply political independence but refers to any territory for which authorities report separate social or economic statistics.

### By income

The World Bank updates annually the income classification of economies. The income classification used in this report is based on the World Bank’s 2018 fiscal year classifications. According to fiscal 2018 definitions, low-income economies are defined as those with a gross national income (GNI) per capita, calculated using the World Bank Atlas method, of US\$1,005 or less in 2016; lower-middle-income economies are those with a GNI per capita between US\$1,006 and 3,955; upper-middle-income economies are those with a GNI per capita between US\$3,956 and 12,235; and high-income economies are those with a GNI per capita of US\$12,236 or more. The list of economies by income and lending classification is available at <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>.

### By geographical region

In this report, the six geographical regions comprise (1) low- and middle-income economies, and (2) economies eligible to receive loans from the World Bank (such as Chile) and recently graduated economies (such as Estonia). The aggregate for the six geographical regions is reported as the “sum of regions,” which in previous publications was often referred to as the “developing world.”

The economies excluded from the six geographical regions (as defined above), mostly high-income economies, are grouped in a category called “rest of the world” in this

report. This group was often referred to as “other high-income” or “industrialized economies” in previous publications.

The economies in each of the six regions and the “rest of the world” category are listed below.

**East Asia and Pacific:** American Samoa; Cambodia; China; Fiji; Indonesia; Kiribati; Democratic People’s Republic of Korea; Lao People’s Democratic Republic; Malaysia; Marshall Islands; Federated States of Micronesia; Mongolia; Myanmar; Northern Mariana Islands; Palau; Papua New Guinea; Philippines; Samoa; Solomon Islands; Thailand; Timor-Leste; Tonga; Tuvalu; Vanuatu; Vietnam.

**Europe and Central Asia:** Albania; Armenia; Azerbaijan; Belarus; Bosnia and Herzegovina; Bulgaria; Croatia; Czech Republic; Estonia; Georgia; Hungary; Kazakhstan; Kosovo; Kyrgyz Republic; Latvia; Lithuania; former Yugoslav Republic of Macedonia; Moldova; Montenegro; Poland; Romania; Russian Federation; Serbia; Slovak Republic; Slovenia; Tajikistan; Turkey; Turkmenistan; Ukraine; Uzbekistan.

**Latin America and the Caribbean:** Argentina; Barbados; Belize; Bolivia; Brazil; Chile; Colombia; Costa Rica; Cuba; Dominica; Dominican Republic; Ecuador; El Salvador; Grenada; Guatemala; Guyana; Haiti; Honduras; Jamaica; Mexico; Nicaragua; Panama; Paraguay; Peru; St. Kitts and Nevis; St. Lucia; St. Vincent and the Grenadines; Suriname; Trinidad and Tobago; Uruguay; República Bolivariana de Venezuela.

**Middle East and North Africa:** Algeria; Djibouti; Arab Republic of Egypt; Islamic Republic of Iran; Iraq; Jordan; Lebanon; Libya; Morocco; Oman; Syrian Arab Republic; Tunisia; West Bank and Gaza; Republic of Yemen.

**South Asia:** Afghanistan; Bangladesh; Bhutan; India; Maldives; Nepal; Pakistan; Sri Lanka.

**Sub-Saharan Africa:** Angola; Benin; Botswana; Burkina Faso; Burundi; Cabo Verde; Cameroon; Central African Republic; Chad; Comoros; Democratic Republic of Congo; Republic of Congo; Côte d’Ivoire; Equatorial Guinea; Eritrea; Eswatini; Ethiopia; Gabon; The Gambia; Ghana; Guinea; Guinea-Bissau; Kenya; Lesotho; Liberia;

Madagascar; Malawi; Mali; Mauritania; Mauritius; Mozambique; Namibia; Niger; Nigeria; Rwanda; São Tomé and Príncipe; Senegal; Seychelles; Sierra Leone; Somalia; South Africa; South Sudan; Sudan; Tanzania; Togo; Uganda; Zambia; Zimbabwe.

**Rest of the world:** Andorra; Antigua and Barbuda; Aruba; Australia; Austria; The Bahamas; Bahrain; Belgium; Bermuda; British Virgin Islands; Brunei Darussalam; Canada; Cayman Islands; Channel Islands; Curaçao; Cyprus; Denmark; Faroe Islands; Finland; France; French Polynesia; Germany; Gibraltar; Greece; Greenland; Guam; Hong Kong SAR, China; Iceland; Ireland; Isle of Man; Israel; Italy; Japan; Republic of Korea; Kuwait; Liechtenstein; Luxembourg; Macao SAR, China; Malta; Monaco; Nauru; Netherlands; New Caledonia; New Zealand; Norway; Portugal; Puerto Rico; Qatar; San Marino; Saudi Arabia; Singapore; Sint Maarten (Dutch part); Spain; St. Martin (French part); Sweden; Switzerland; Taiwan, China; Turks and Caicos Islands; United Arab Emirates; United Kingdom; United States; U.S. Virgin Islands.

## **By fragile and conflict-affected situation**

Economies with fragile situations are primarily International Development Association-eligible countries and nonmember or inactive countries and territories with a 3.2 or lower harmonized average of the World Bank’s Country Policy and Institutional Assessment (CPIA) rating and the corresponding rating by a regional development bank, or with a United Nations or regional peacebuilding and political mission (for example by the African Union, European Union, or Organization of American States) or peacekeeping mission (for example, by the African Union, European Union, North Atlantic Treaty Organization, or Organization of American States) during the last three years. The group excludes World Bank countries (for which the CPIA scores are not publicly disclosed) unless they have a peacekeeping or political/peacebuilding mission. This definition is pursuant to an agreement between the World Bank and other multilateral develop-

ment banks at the start of the International Development Association 15 round in 2007.

The World Bank releases annually the Harmonized List of Fragile Situations. The first such list was compiled in fiscal 2006 and has gone through a series of changes in terms of classification from the Low-Income Countries Under Stress List (2006–09), to the Fragile States List (2010), to the current Harmonized List of Fragile Situations (2011–15). The concept and the list have evolved as the World Bank's understanding of the development challenges in countries affected by violence and instability has matured. The lists of economies by year are available at <http://www.worldbank.org/en/topic/fragilityconflictviolence/brief/harmonized-list-of-fragile-situations>.

## Chapter 1 data and methodology

The World Bank now reports global and regional poverty estimates every two years, coinciding with the publication of the Poverty and Shared Prosperity report. Up until 2008, the frequency of the global estimates was every three years. Because new surveys become available and existing survey and auxiliary data are sometimes updated, the global and regional estimates are revised regularly.

The 2018 edition of global poverty estimates is based on the most recent data available. This section explains notable changes since the 2016 edition of global poverty estimates, discusses some key measurement issues, and describes the auxiliary data, including purchasing power parity (PPP) conversion factors, consumer price indexes (CPIs), population data, and national accounts data.

### Household survey data for poverty monitoring

Poverty rates for a region are marked with a note if the available household surveys cover less than 40 percent of the population in the region. The criterion for estimating survey population coverage is whether at least one survey used in the reference year estimate was conducted within two years of the reference year. For the purpose of this chapter, the im-

putation estimates for India are not counted toward the 40 percent, which means the South Asia coverage for 2015 is below the threshold. The recent availability of additional survey data has filled gaps in the regional poverty trend for the Middle East and North Africa. In the 2016 edition of the *Poverty and Shared Prosperity Report*, the estimates for the Middle East and North Africa region were not reported for 1999, 2002, and after 2008 because of low population coverage of the data. In the current edition, regional estimates for the Middle East and North Africa are reported for all years.

### India

Although the most recent round of National Sample Survey (NSS) data that the Government of India uses for poverty estimation was collected in 2011–12, a subsequent round of the NSS was collected in 2014–15. This more recent survey collects socioeconomic and demographic information similar to the 2011–12 NSS and earlier NSS rounds. But the 2014–15 NSS cannot be used for direct poverty estimation because the consumption data on only a small subset of items have been released. Given the importance of India to the global poverty count, and the unique situation of having common socioeconomic and demographic data in the 2014–15 NSS (and found in earlier NSSs), a model of consumption has been estimated on the basis of the common socioeconomic, demographic, and geographic characteristics of the population (Newhouse and Vyas 2018). This allows for an estimate of poverty at the IPL for India in 2014–15, which is then lined up to 2015 and used as the poverty estimate for India in chapter 1 (for details on the lineup method, see the section “Estimating global and regional poverty: The ‘lineup,’” below). For further details on the consumption model for India, see box 1.3 in chapter 1.

### Auxiliary data: PPP, CPI, population, and national accounts

**PPP conversion factors.** The poverty estimates for all countries are based on consumption PPPs from the 2011 round of data



collection coordinated by the International Comparison Program. The PPP conversion factors include benchmark countries where actual price surveys were conducted, and regression-based PPP estimates where such surveys were not conducted or not appropriate for poverty measurement. Since the 2016 edition of the *Poverty and Shared Prosperity Report*, the 2011 PPP conversion factors for Egypt, Iraq, Jordan, Lao PDR, and the Republic of Yemen have been revised (Atamanov, Jolliffe, and Prydz 2018).

**CPI.** The primary source of CPI data used for global poverty measurement is the International Monetary Fund's International Finance Statistics (IFS) monthly series. Previously, the World Development Indicators (WDI) annual series were used. When monthly IFS series are not available or not appropriate for poverty monitoring, other sources are used. China and India use rural and urban CPIs provided by the national statistical offices, six countries use national series provided by the national statistical offices (the Islamic Republic of Iran, Iraq, Kenya, Maldives, Nicaragua, and República Bolivariana de Venezuela), and five countries use CPIs implied from the surveys (Bangladesh, Ghana, Lao PDR, Malawi, and Tajikistan). A more detailed description of CPIs used for global poverty monitoring is available in Lakner et al. (2018).

**Population.** The primary source of population data is the December 2017 version of the WDI. For additional details see Chen et al. (2018).

**National accounts.** The primary source of per capita gross domestic product (GDP) and household final consumption expenditure (HFCE) data is the December 2017 version of the WDI. Per capita GDP is used for countries in Sub-Saharan Africa and in countries for which HFCE is not available. Everywhere else, per capita HFCE is used. A more detailed description of the national accounts data used for global poverty monitoring will be available on the PovcalNet website. For nowcasts, growth projections for recent years are taken from the World Bank's Global Economic Prospects, and from the International Monetary Fund's World Economic Outlook, when the former is unavailable.

The CPI, population, and national accounts data used for the latest global estimates are available on the PovcalNet site (<http://iresearch.worldbank.org/PovcalNet/Data.aspx>). For additional details on recent changes and data updates, see the What's New notes of the Global Poverty Monitoring Technical Notes (<http://iresearch.worldbank.org/PovcalNet/whatIsNew.aspx>).

## Estimating global and regional poverty: The “lineup”

Because the household surveys necessary to measure poverty are conducted in different years and at varying frequencies across countries, producing global and regional poverty estimates entails bringing each of the country-level poverty estimates to a common reference or “lineup” year. For countries with surveys available in the reference year, the direct estimates of poverty from the surveys are used. For other countries, the poverty estimates are imputed for the reference year using the country's recent household survey data and real growth rates from national accounts data. The procedures for doing this depend on the survey years available for the country.

When a survey is available only prior to the reference year, the consumption (or income) vector from the latest survey is *extrapolated* forward to the reference year using real growth rates of per capita GDP (or HFCE) obtained from national accounts. Each observation in the welfare distribution is multiplied by the growth rate in per capita GDP (or HFCE) between the reference year and the time of the survey. Poverty measures can then be estimated for the reference year. This procedure assumes distribution-neutral growth—that is, no change in inequality—and that the growth in national accounts is fully transmitted to growth in household consumption or income. If the only available surveys are after the reference year, a similar approach is applied to extrapolate backward.

When surveys are available both before and after the reference year, information from both surveys is used to interpolate poverty. In these cases, the welfare vectors (that is, per capita consumption or income) from the two surveys are both lined up to the ref-

erence year using growth rates of per capita GDP (or HFCE). After this, the poverty rate is calculated for each of the two lined-up surveys and then averaged, with each point weighted by the relative distance of the survey year to the reference year. The surveys are lined up to the reference year using two different interpolation methods. The default method is applied when the growth in the survey mean between the two surveys is of the same sign as the real growth in per capita GDP (or HFCE) from the first survey to the reference year, and from the reference year to the second survey. With this default method, the growth in welfare from the time of the survey to the reference year is proportional to the relative growth in per capita GDP (or HFCE) over the same period. The first step entails imputing the survey mean at the reference year using the following formula:

$$\mu_{t_r} = \mu_{t_1} + \frac{GDP_{t_r} - GDP_{t_1}}{GDP_{t_2} - GDP_{t_1}} * (\mu_{t_2} - \mu_{t_1}), \text{ (A.1)}$$

where  $t_r$  indicates the reference year,  $t_1$  indicates the time of the first survey,  $t_2$  indicates the time of the second survey (such that  $t_2 > t_r > t_1$ ), and  $\mu$  indicates the survey mean at the specified time. Upon computing  $\mu_{t_r}$ , each element of the welfare vector from the first survey is grown or shrunk by the rate  $\frac{\mu_{t_r}}{\mu_{t_1}}$ ,

while each element of the welfare vector from the second survey is grown or shrunk by the rate  $\frac{\mu_{t_r}}{\mu_{t_2}}$ . The alternative method involves extrapolating the consumption vector to the reference year for each of the two surveys using the real growth rates of per capita GDP (or HFCE). The mechanics of the extrapolation and interpolation are described in more detail in box 6.4 in Jolliffe et al. (2015).

### A truly global approach to poverty measurement

All economies are now included in the global poverty estimates. Previously, the practice was to assume that economies in the “rest of the world” category have zero extreme poverty. As pointed out in the Commission on Global Poverty report, this assumption is in-

consistent with a “truly global” approach to poverty measurement (World Bank 2017b, 47). The Commission therefore advised the inclusion of all economies in the global poverty measures. For further discussion, see Ferreira, Lakner, and Sanchez (2017).

### Key poverty measurement issues

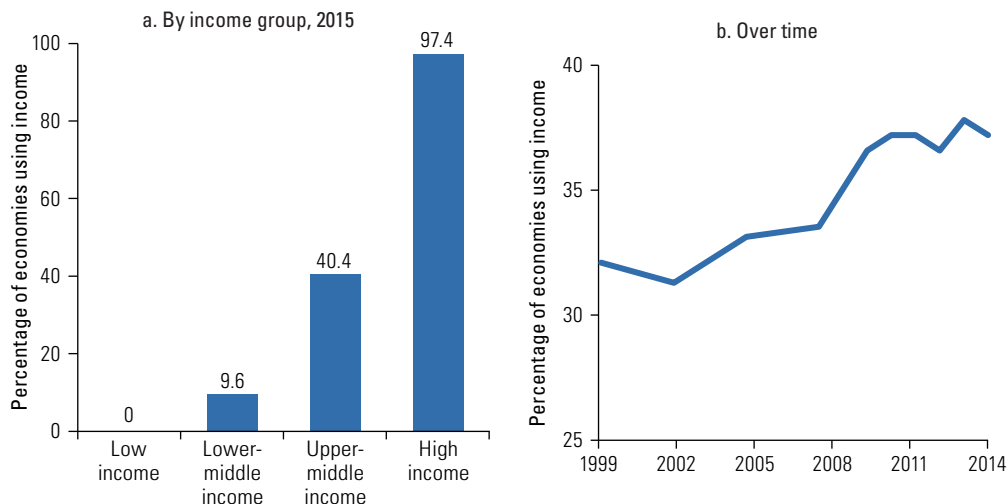
There are many technical details on how global poverty is measured. Ferreira et al. (2016) provide a good overview of many of these issues, particularly concerning the valuation of the most recent IPL at US\$1.90 in 2011 PPPs. For a more in-depth discussion of select measurement and data issues, see also Jolliffe et al. (2015). Two key measurement concerns are discussed below. These two areas are currently being examined, and potential methods for improvement are being considered.

### Consumption- and income-based measures of well-being

National poverty rates are based on measures of consumption or income. Countries typically choose the measure that can be more accurately measured while balancing concerns about respondent burden. On the one hand, consumption measures of poverty require a wide range of questions and are thus more time consuming. Income measures, on the other hand, are difficult to obtain when a large fraction of the population works in the informal sector or is self-employed, and income data are not collected for tax purposes. This is frequently the case in poorer countries, which therefore often opt for using consumption (figure A.1). None of the low-income countries uses income, but this share increases to 10 percent, 40 percent, and 97 percent for lower-middle-, upper-middle-, and high-income countries, respectively. As living standards have improved, so has the share of countries using income-based measures of poverty, and it will likely continue to do so (figure A.1).

Both approaches to measuring poverty have advantages and disadvantages. The consumption approach is arguably more connected to economic welfare. Whereas income is valuable because it allows individuals to

**FIGURE A.1 Use of Income/Consumption to Measure Poverty**



Source: PovcalNet, World Bank, Washington, DC, <http://iresearch.worldbank.org/PovcalNet/>.

purchase goods, consumption is valuable for its own sake. Income measures of poverty also suffer from the disadvantage that incomes might be very low—even negative—in a given period. Negative incomes are often not an accurate depiction of the well-being of a household, so currently negative values are being discarded. This is particularly relevant for self-employed individuals who tend to experience large income shocks at greater frequencies. At a theoretical level, consumption will likely be smoothed to safeguard against such shocks, preventing consumption-based measures of poverty from being as vulnerable to large shocks as income-based measures. A household that has managed to save sufficient resources may not suffer greatly from a negative income shock. Consumption-based measures of poverty, conversely, are often more time demanding, require detailed price data, and often post fieldwork adjustments, such as rent imputations, which can matter greatly for the final poverty estimates. Income measures need not rely on more than a handful of questions and can, at times, be verified from other sources.

The differences between income and consumption measures matter for comparing trends and patterns in poverty. Given that incomes can be very low and negative, poverty rates are typically higher when income is used

rather than consumption. For a given poverty rate, poor households also tend to be further below the poverty line when income is used. This is explained by the earlier point about very low incomes: whereas it is plausible that households have a zero income in a given time period, subsistence requires a minimum level of consumption, which is strictly above zero. The differences also matter for nowcasting and making poverty projections for the future. Typically, such projections are made by assuming a fixed growth rate of household consumption/income over time. If some households have zero income or a negative income, then, regardless of how large growth rates are assumed to be, those households will never be projected to move out of poverty.

### **Accounting for spatial price differences across and within countries**

Welfare is measured by aggregating a household's total value of consumption or total income over a defined time period and then dividing by household size. When converted at market exchange rates, US\$100 can buy different quantities and qualities of goods and services in say Nigeria than in the United States. When comparing poverty rates across countries, local currencies are converted to PPP dollars to account for differences in the pur-

chasing power across countries, ensuring that a dollar can purchase approximately the same bundle of goods and services across countries.

Important differences in price levels also appear *within* countries. Suppose a household pays \$1.00 for a kilo of rice in an urban center, whereas a rural household in the same country pays only \$0.50 for a similar quality and amount of rice. Assume more generally that prices for all goods are twice as high in urban areas. If both households consumed the same quantity of goods, and if one were to assess poverty on the basis of the self-reported value of goods and services consumed without accounting for these price differences, one would conclude that the rural household in this scenario is poorer than the urban household. From a welfare perspective, however, both households are consuming the same items and are at approximately the same level of well-being. To properly compare the welfare levels of the two households, one would need to account for the differences in price levels that the two households face.

This example highlights the importance of spatial price adjustments within countries. If certain households are deemed poorer solely because they face different price levels, then policy responses to poverty within countries may be misinformed. Because price differences can vary greatly within a country, accounting for regional price differences can have vast implications for subnational profiles of poverty, allocation of resources, and the design of poverty reduction strategies. As national poverty is falling in many countries around the world, it is becoming increasingly important to correctly identify the remaining areas where poverty reduction lags. Without spatial price adjustments, a national poverty line could overestimate poverty in areas with low prices, typically rural areas, and underestimate poverty in areas with high prices, typically urban areas.

Current measurement practices comprise a wide range of methods to account for differences in the cost of living across regions, or across rural and urban areas. Some countries peg prices to the price level of the capital region, or a large city. With this approach, the mean of the spatially adjusted welfare aggregate is larger than the mean without adjustments, essentially inflating the overall level of

well-being relative to other countries at the same nominal level of average consumption. Much work is yet to be done to assure that similar practices are applied in various countries. Ferreira et al. (2016) contains more information on the methods applied in different countries.

## Data for global and regional poverty profiles

The global poverty profile for 2015 in chapter 1 is an update of the global profile of the poor first reported in Castaneda et al. (2016) for 2013. The methodological details of poverty profiling are presented in the original paper. The current exercise uses the 2018 vintage of the GMD, covering 91 economies and more than 5.6 billion people, and lines up the survey-based poverty estimates to 2015. The exercise also uses recent population projections from the United Nations Department of Economic and Social Affairs to adjust (that is, post-stratify) the sampling weights to the “lineup” year.

For the Sub-Saharan Africa regional poverty profile, the analysis of demographic characteristics presented in this section builds on the harmonized 24-country data from the book *Poverty in a Rising Africa*. The book examines the trends in poverty and inequality in Sub-Saharan Africa using comparable surveys (Beegle et al. 2016). Of the 148 surveys conducted in 48 Sub-Saharan African countries between 1990 and 2012, two or more surveys were comparable in only 27 of 48 countries, and the data were available for 24 of the 27 countries. The current analysis adds Burundi (2006 and 2013) and Seychelles (2006 and 2013); uses more recent data for Cameroon (2014), Côte d’Ivoire (2015), Madagascar (2012), Rwanda (2013), and Togo (2015); and drops Mauritius, resulting in a 25-country sample with a slightly different composition. For the set of countries and surveys included in the present analysis, the median year for the base period is 2004 and the median year for the terminal period is 2011. The countries represent 73 percent of the total population of Sub-Saharan Africa in 2015, and the average poverty rates for the two periods are 59.7 and 47.7 percent, respectively. These figures are different

from but close to the poverty rates for Sub-Saharan Africa around the same time—56.9 percent in 2002 and 44.9 percent in 2011 from PovcalNet. The discrepancy arises because PovcalNet includes a wider range of surveys.

### **Missing data on forcibly displaced persons**

Worldwide, it is estimated that there are nearly 70 million people in 2017 who have been forcibly displaced because of persecution, conflict, and generalized violence. Over the last 10 years, the number of forcibly displaced persons has increased by more than 50 percent (UNHCR 2018). As the number of forcibly displaced persons—refugees, asylum seekers, and internally displaced persons—continues to increase, it becomes essential to measure their welfare for an accurate monitoring of global poverty. However, there are many challenges in monitoring the welfare of the displaced persons. Many countries do not count refugees as part of the usual resident population in the population census, and the census enumeration often excludes refugee camps and temporary reception centers where refugees are housed. The exclusion of refugees from the population census implies they are not a part of the sampling frame used in household surveys. Similarly, typical sample designs for household surveys used for poverty measurement explicitly exclude people living in institutions or camps and without an address.

Administrative registration databases maintained by government agencies or international organizations like the United Nations High Commissioner for Refugees are not well integrated into the data systems of national statistical offices throughout the world, nor do these data correspond well with definitions in household surveys. For example, the unit of record in administrative databases is typically a case (for example, border crossing that can occur multiple times for an individual) or application, which does not match the definition of a household, the unit of analysis for sample surveys. This difference makes administrative databases challenging to use as sampling frames of the population of displaced persons (Expert Group on Refugee and Internally Displaced Persons Statistics 2018).

Because of the low prevalence of refugees in general and their concentration in dense geographical pockets, it might be difficult to draw a nationally representative sample using conventional sampling methods. Refugees and internally displaced persons are highly mobile, especially when the crisis is unfolding, which complicates the survey effort. Even when the displaced households can be located, the nonresponse rate might be high because of their wariness of divulging personal information. The problem with nonresponse can become more severe when the survey needs to interview vulnerable populations like women (for example, for birth history) and children (for example, for anthropometric measures).

In sum, socioeconomic surveys on displaced persons are marked with incomplete coverage, unrepresentative samples, and possibly larger-than-usual sampling and non-sampling errors, which results in an underestimate of the level of global poverty and an undercount of the number of poor. To improve the ability to get a complete picture of the poverty situation in the world, and to understand how policy can affect the well-being of displaced persons, a first step is to ensure that they are included in population censuses and the national sample surveys of the country of their residence.

## **Chapter 2 data and methodology**

### **Welfare aggregate**

The mean of the bottom 40 within each country refers to the average household per capita consumption or income among this segment of the population. The choice of consumption or income depends on the data available for each economy, and in most cases is consistent with the welfare aggregate used to measure poverty (see annex 2B, table 2B.1).

For China, shared prosperity is estimated by PovcalNet using grouped data. Because grouped data are provided separately for urban and rural populations, the bottom 40 percent of the national population must be estimated. The bottom 40 are identified using the national poverty gap and choosing a poverty line that corresponds to the threshold

consumption level of the national bottom 40 percent. PovcalNet uses a parametric Lorenz curve fitted to grouped data, with an adjustment for differences in price levels between urban and rural areas, and urban–rural population shares from the WDI. Because shared prosperity is estimated using grouped data for China, it is approximate and may differ from using official microdata (see Chen et al. 2018 for details).

In countries in Europe and Central Asia using household per capita income as the welfare aggregate, households with negative incomes are included when estimating shared prosperity.

### Surveys used to calculate shared prosperity

Among the 164 economies with a poverty estimate, significantly fewer have a shared

prosperity estimate because of stricter data requirements. Economies are included in the fall 2018 edition of the GDSP if the following requirements are met:

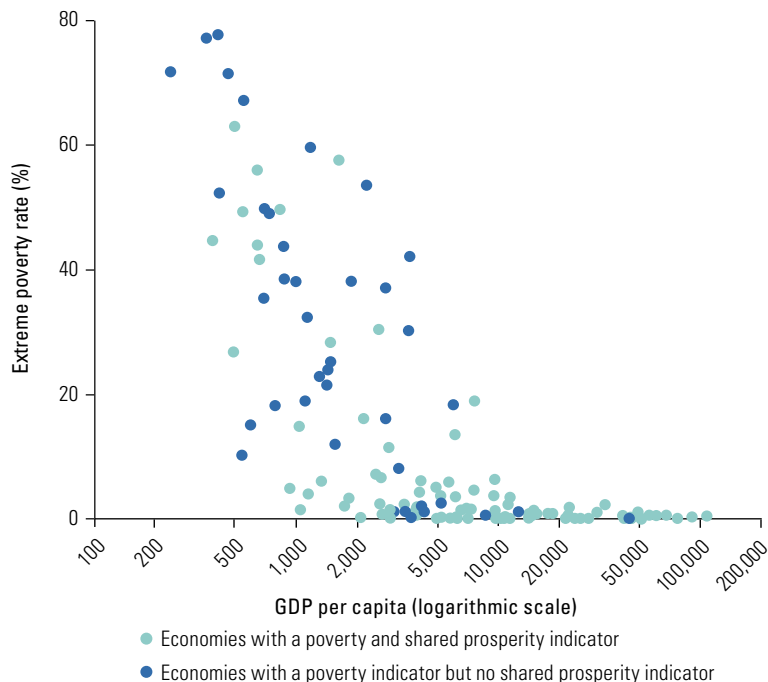
- Two relevant household surveys have been conducted and have yielded comparable data.
- Among comparable surveys, one must be conducted within two years of 2010, and the other within two years of 2015. For example, the Solomon Islands cannot be included because, although two rounds of a comparable household survey have been conducted (in 2005 and 2013), 2005 is more than two years from 2010. China is an exception to this rule because a survey break between 2012 and 2013 means that surveys conducted around 2010 and 2015 are not comparable. The shared prosperity period used for China is 2013–15.
- The period between the selected initial and end years should range between three and seven years. For example, a shared prosperity period of 2012–13 meets the second selection criterion but would not be allowed because it does not meet this third requirement.
- In cases where multiple surveys can fulfill these criteria, the most recent survey years are typically chosen.

### Factors affecting the inclusion of economies in the GDSP

The computation of the shared prosperity measure relies on frequent data collection, which may depend on the capacity of a national statistics office—often related to the level of development of a country. Among the 107 economies with a poverty rate below 10 percent in 2015 measured by the IPL, 78 also have a shared prosperity estimate for 2010–15 (figure A.2). Meanwhile, among 57 economies with a poverty rate at more than 10 percent, only 13 have a shared prosperity indicator.

Population coverage is also limited among economies grouped by other World Bank country categories, such as vulnerable, poor, or small nations. For example, a shared prosperity measure is not available on any of the 15 small island nations.

**FIGURE A.2 Shared Prosperity Indicators Are Less Likely in Economies at Lower GDP per Capita**



Sources: GDSP (Global Database of Shared Prosperity), fall 2018, World Bank, Washington, DC, <http://www.worldbank.org/en/topic/poverty/brief/global-database-of-shared-prosperity>; PovcalNet (online analysis tool), World Bank, Washington, DC, <http://iresearch.worldbank.org/PovcalNet/>; WDI (World Development Indicators) (database), World Bank, Washington, DC, <http://data.worldbank.org/products/wdi>.

Note: Based on data on 164 economies in PovcalNet associated with direct estimates of poverty. Poverty rates are based on the PovcalNet 2015 lineup.

## Comparison of shared prosperity across rounds of GDSP

Comparing the performance in shared prosperity across rounds has limitations. The current release of the GDSP includes 91 economies. Since the circa 2008–13 GDSP used in *Poverty and Shared Prosperity 2016* (World Bank 2016b), 19 countries have been added, and 10 countries removed because they no longer fulfill the data requirements (table A.2). Of the 72 economies occurring in both rounds, the shared prosperity measure has not been updated in five—Mexico, Montenegro, Nicaragua, Rwanda, and Togo—because no new surveys have become available or, in the case of Mexico, because of a break in the survey series. A comparison of shared prosperity indicators can be carried out in 67 economies across rounds.

The country sample changed across the releases of the GDSP for two main reasons:

1. Data requirements were met in one round but not in the next because appropriate data within the established time frame were not available or because of a lack of data comparability. Between circa 2008–13 and circa 2010–15, 10 countries were removed for these reasons.
2. Some countries that did not previously meet data requirements do so now. Between circa 2008–13 and circa 2010–15, 19 countries were added for this reason. This occurs when countries collect new household surveys, following a long gap.

Despite these challenges, the fall 2018 GDSP contains updated values of shared prosperity for three-quarters of the sample (67 economies) used in *Poverty and Shared Prosperity 2016* (World Bank 2016b). Econ-

omies with data updates were mainly in Europe and Central Asia, Latin America and the Caribbean, and other high-income countries (the rest of the world). Therefore, only in these regions can trends in shared prosperity be reliably examined. At the other extreme, new household survey data in the Middle East and North Africa and in Sub-Saharan Africa are scarcer, and shared prosperity estimates were updated in only one economy per region following the publication of *Poverty and Shared Prosperity 2016*.

## Chapter 3 data and methodology

### Poverty rates at higher poverty lines

The poverty estimates at the higher poverty lines presented in chapter 3 are extracted from PovcalNet. See the discussion in the chapter 1 section of this appendix for details on household surveys, auxiliary data, and measurement issues. For India, the poverty estimates are extrapolated using 2011–12 survey data and the pass-through rate described in box 1.3 in chapter 1. Poverty rates at the societal poverty line are also estimated from PovcalNet.

### Database of harmonized national poverty lines

A database of harmonized national poverty lines is used to derive the societal poverty line presented in chapter 3. Jolliffe and Prydz (2016) construct a set of national poverty lines by combining national poverty rates from national sources, reported in the World Bank’s databases, with corresponding consumption and income distributions from PovcalNet used for international poverty estimates. Because the consumption and income distributions used are all expressed in per capita PPP terms, the estimated national poverty lines are all expressed in comparable per capita PPP dollars. The national poverty lines are harmonized in terms of the unit of measure in the sense that they are all expressed in per capita terms.

Following this approach, rather than collecting publicly reported poverty lines, al-

**TABLE A.2 Shared Prosperity Availability across Rounds**

GDSP round	Number of economies
Circa 2008–13	82
Removed	10
Added	19
Circa 2010–15	91
Circa 2008–13 and circa 2010–15	72
With updated shared prosperity measure	67

lows for a substantial increase of the set of countries for which we have national poverty thresholds. This approach also results in a series of historic and current poverty lines that allows one to subset on a specific year corresponding to the most recent International Comparison Program reference year (for example, 2011).

Subsetting on national poverty lines closest to 2011 both provides recent socio-economic assessments of basic needs and reduces the reliance on CPI data for lining up the poverty lines to a common year. The larger database contains 864 harmonized national poverty lines. The analysis of the circa-2011 national poverty lines for the lower-middle-income and upper-middle-income country lines is based on a subsample of 126 lines; and the estimation of the societal poverty line, discussed in this chapter, is based on a subsample of 699 harmonized national poverty lines. For more details on the construction of the database of harmonized national poverty lines, see Jolliffe and Prydz (2016); and for discussion of the data underlying the estimation of the societal poverty line, see Jolliffe and Prydz (2017). For a discussion of the precision of these harmonized lines, see the online appendix to their paper at [https://static-content.springer.com/esm/art%3A10.1007%2Fs10888-016-9327-5/MediaObjects/10888\\_2016\\_9327\\_MOESM1\\_ESM.pdf](https://static-content.springer.com/esm/art%3A10.1007%2Fs10888-016-9327-5/MediaObjects/10888_2016_9327_MOESM1_ESM.pdf).

## Chapter 4 data and methodology

Chapter 4 uses data from the harmonized household surveys from the 2017 edition of the GMD. Surveys have been included in the multidimensional poverty analysis if they satisfy the following criteria:

- They include a monetary welfare measure (consumption or income) and indicators on education and service access that may be used to construct a multidimensional poverty measure.
- The surveys were conducted within three years of 2013, that is, from 2010 to 2016. The circa 2013 restriction strikes a balance between maximizing country coverage of

indicators and maintaining cross-country comparability.

Most of the surveys used in the analysis were conducted during 2012–14 (88 countries). No household income and expenditure survey data were available for the populous African countries of Nigeria and Sudan in the 2010–16 period, which explains the low regional population coverage in Sub-Saharan Africa (see table 4.4). The population coverage for the rest of the world category is small because of limited coverage in the GMD. Because of the selection criteria above, the set of countries differs from that in chapter 1.

## Differences from chapter 1 poverty estimates

The extreme poverty rates (headcount ratios) reported in this chapter cannot be compared to the information presented in chapter 1 for three practical and methodological reasons. First, if a survey was available for a country in both 2013 and 2015, the 2013 data are used in this chapter to minimize the overall dispersion in survey years. Second, to examine the simultaneous incidence of deprivations, only unit-record data are used in this chapter, which limits the number of countries considered. In contrast, grouped data also enter into the estimation of the global poverty rate reported in chapter 1 if unit-record data are unavailable. China is a notable example where only grouped data are available. This explains the low population coverage of the East Asia and Pacific region in this chapter. Third, PovcalNet relies on recent surveys to impute the headcount ratio for the lineup year, 2015, assuming distribution-neutral growth. These adjustments are not made in this chapter because the lineup process cannot be applied to the other indicators of well-being. A full list of the countries for which different surveys are used in chapter 1 (for the 2015 estimates) and chapter 4 is included in table A.3.

## Six-country sample

The extended multidimensional analyses covering five dimensions of poverty are based on the household surveys for the six countries in table A.4. Except for Iraq, the surveys are not



**TABLE A.3 Surveys Used in Chapter 1 and Chapter 4 in Cases Where Different Survey Rounds Are Used**

<b>Economy</b>	<b>Survey used in chapter 4</b>	<b>Survey(s) used in chapter 1 for extreme poverty</b>
Argentina	EPHC 2014	EPHC 2014 and EPHC 2016
Armenia	ILCS 2013	ILCS 2015
Austria	EU-SILC 2014	EU-SILC 2016
Bangladesh	HIES 2010	HIES 2010 and HIES 2016
Belarus	HHS 2013	HHS 2015
Belgium	EU-SILC 2014	EU-SILC 2016
Bhutan	BLSS 2012	BLSS 2012 and BLSS 2017
Bolivia	EH 2014	EH 2015
Brazil	PNAD 2014	PNAD 2015
Chile	CASEN 2013	CASEN 2015
Colombia	GEIH 2014	GEIH 2015
Costa Rica	ENAHO 2014	ENAHO 2015
Croatia	EU-SILC 2014	EU-SILC 2016
Cyprus	EU-SILC 2014	EU-SILC 2016
Czech Republic	EU-SILC 2014	EU-SILC 2016
Denmark	EU-SILC 2014	EU-SILC 2016
Dominican Republic	ENFT 2013	ENFT 2015
Ecuador	ENEMDU 2014	ENEMDU 2015
Egypt, Arab Rep.	HIECS 2012	HIECS 2015
El Salvador	EHPM 2014	EHPM 2015
Estonia	EU-SILC 2014	EU-SILC 2016
Ethiopia	HICES 2010	HICES 2010 & HICES 2015
Finland	EU-SILC 2014	EU-SILC 2016
France	EU-SILC 2014	EU-SILC 2016
Gambia, The	IHS 2010	IHS 2010 and IHS 2015
Georgia	HIS 2013	HIS 2015
Germany	EU-SILC 2012	EU-SILC 2016
Greece	EU-SILC 2014	EU-SILC 2016
Honduras	EPHPM 2013	EPHPM 2015
Hungary	EU-SILC 2014	EU-SILC 2016
Indonesia	SUSENAS 2016	SUSENAS 2015
Iran, Islamic Rep.	HEIS 2013	HEIS 2014
Ireland	EU-SILC 2014	EU-SILC 2016
Italy	EU-SILC 2014	EU-SILC 2016
Kazakhstan	HBS 2013	HBS 2015
Kosovo	HBS 2013	HBS 2015
Kyrgyz Republic	KIHS 2013	KIHS 2015
Latvia	EU-SILC 2014	EU-SILC 2016
Lithuania	EU-SILC 2014	EU-SILC 2016
Luxembourg	EU-SILC 2014	EU-SILC 2016
Malta	EU-SILC 2014	EU-SILC 2016
Mexico	ENIGH 2012	ENIGH 2014 and ENIGH 2016
Moldova	HBS 2013	HBS 2015
Mongolia	HSES 2016	HSES 2014 and HSES 2016
Montenegro	HBS 2013	HBS 2014
Netherlands	EU-SILC 2014	EU-SILC 2016
Norway	EU-SILC 2014	EU-SILC 2016
Pakistan	PSLM 2013	PSLM 2013 and PSLM 2015
Paraguay	EPH 2014	EPH 2015
Peru	ENAHO 2014	ENAHO 2015
Portugal	EU-SILC 2014	EU-SILC 2016
Romania	HBS 2013	EU-SILC 2016
Russian Federation	HBS 2013	HBS 2015
Serbia	HBS 2013	HBS 2015
Slovak Republic	EU-SILC 2014	EU-SILC 2016
Slovenia	EU-SILC 2014	EU-SILC 2016

(continued)

**TABLE A.3 Surveys Used in Chapter 1 and Chapter 4 in Cases Where Different Survey Rounds Are Used (continued)**

Economy	Survey used in chapter 4	Survey(s) used in chapter 1 for extreme poverty
Spain	EU-SILC 2014	EU-SILC 2016
Sri Lanka	HIES 2016	HIES 2012 and HIES 2016
Sweden	EU-SILC 2014	EU-SILC 2016
Switzerland	EU-SILC 2014	EU-SILC 2016
Thailand	SES 2013	SES 2015
Turkey	HICES 2013	HICES 2015
Uganda	UNHS 2012	UNHS 2012 and UNHS 2016
Ukraine	HLCS 2013	HLCS 2015
United Kingdom	EU-SILC 2014	EU-SILC 2016
Uruguay	ECH 2014	ECH 2015
Vietnam	VHLSS 2014	VHLSS 2014 and VHLSS 2016
West Bank and Gaza	PECS 2011	PECS 2011 and PECS 2016

Source: GMD (Global Monitoring Database), Global Solution Group on Welfare Measurement and Capacity Building, Poverty and Equity Global Practice, World Bank, Washington, DC.

Note: Only economies where different survey rounds are used for chapter 4 and the 2015 poverty estimates of chapter 1 are listed. For economies where EU-SILC is used, the income data is from the year prior to the survey. For example, the EU-SILC 2016 survey uses data from 2015. Romania is the only economy where both the survey year and the type of survey differ from chapter 1 to chapter 4.

the same surveys used for official national poverty estimates. Therefore, the monetary poverty headcount ratios cited in this section may vary from official estimates.

## Definitions of indicators

### Monetary poverty

- **Income per capita.** A person is considered deprived if the household consumption or income per person per day falls below the IPL, currently set at US\$1.90 in 2011 PPPs.

### Education

- **Child school enrollment.** Individuals are considered deprived if they live in a household in which at least one school-aged child up to the age of grade 8 is not enrolled in school. If a household has no child up to this age, this indicator is not

applicable, and the deprivation in the education dimension is measured solely using the adult school attainment indicator.

- **Adult school attainment.** Individuals are considered deprived if no adult (at or above the age one is normally at when attending the ninth grade) in the household has completed primary education.

### Access to basic infrastructure

- **Electricity.** A person is considered deprived if the household has no access to electrification from any source, that is, grid electricity or self-generation.
- **Limited-standard drinking water.** A person is considered deprived if the household has no access to even a limited standard of drinking water. For a selection of countries, a variation closer to the Sustainable Development Goals' safely managed drinking water concept is available: a household is considered deprived if it has no access to basic drinking water (a limited-standard source that is within a round-trip time of 30 minutes). For more information, see <https://washdata.org/monitoring>.
- **Limited-standard sanitation.** A person is considered deprived if the household has no access to even a limited standard of sanitation.

**TABLE A.4 Household Surveys, Six-Country Sample**

Country	Year	Survey
Ecuador	2013–14	Encuesta de Condiciones de Vida
Indonesia	2014	Indonesian Family Life Survey
Iraq	2012	Iraq Household Socio-Economic Survey
Mexico	2009–12	Mexican Family Life Survey
Tanzania	2012–13	National Panel Survey
Uganda	2013–14	Uganda National Panel Survey

tion facilities, that is, a sanitation facility that hygienically separates excreta from human contact. For a selection of countries, exclusivity of the facility is also taken into consideration. In those countries, a household is considered deprived if it lacks a limited-standard facility that is used only by members of the same household. The addition of this criterion to “limited” is called “basic-standard” sanitation. For more information, see <https://washdata.org/monitoring>.

## Health and nutrition

- **Birth delivery.** A person is considered deprived if any woman in the household between the ages of 15 to 49 has given birth (live) in the previous 36 months, and the delivery did not occur in a formal facility.
- **Vaccination.** A person is considered deprived if the household has any child between the ages of 12 to 59 months who has not received a third diphtheria-pertussis-tetanus vaccination.
- **Child stunting.** A person is considered deprived if the household has any child between the ages of 0 to 59 months who is stunted (the height-for-age Z-score is below  $-2$ , that is, more than two standard deviations below the reference population median).
- **Undernourishment.** A person is considered deprived if any woman between the ages of 15 to 49 in the household is undernourished (her body mass index is below 18.5 [underweight]).

The measure of access to formal health care is not applicable to all households because a significant share of households have not experienced a birth in the previous three years or do not have a child younger than 5 years. For such households, access to health services is approximated by the share of individuals in applicable households in the same community who are observed to be deprived. The deprivation threshold for the rate of health service access is set such that the share of individuals in nonapplicable households that are classified as deprived equals the national share of deprived individuals in appli-

able households who actually experienced a recent birth or have a child younger than 6 years.

## Security

- **Incidence of crime.** A person is considered deprived if anyone in the household has experienced crime in the previous year or lives in a neighborhood where at least 20 percent of households contain at least one individual who experienced crime in the previous year.
- **Incidence of natural disaster.** Individuals are considered deprived if their household has experienced a severe shock (a loss of income, property, or livestock) because of drought, flooding, earthquake, or other natural disaster in the previous 12 months.

## Chapter 5 data and methodology

This section uses the harmonized household surveys from the 2016 release, circa 2013 data, edition of the GMD. Even though GMD data for circa 2013 was used for chapters 4 and 5, the set of countries covered differs because different variables are required for the analysis. The combined sample of the data used in chapter 5 contains records representing 5.2 billion individuals in 89 countries, with estimates of poverty figures lined up—that is, extrapolated—to 2013 and then updated to 2016. The data include welfare aggregates based on a money metric, either household per capita consumption or income, depending on the concept used in each country (see chapter 1 discussion above for details). Nearly 83 percent of the sample originates in middle-income countries. East Asia and Pacific and South Asia account for nearly two-thirds of the sample. The GMD sample has a high regional coverage of developing countries in East Asia and Pacific, South Asia, Latin America and the Caribbean, and Europe and Central Asia (above 87 percent) and partial coverage of Sub-Saharan Africa (74 percent). Additional labor data from the International Income Distribution dataset were merged for 17

**TABLE A.5 Household Surveys for Case Studies and Sharing Rule Estimates**

Country	Survey	Year(s)
<b>Case studies</b>		
Bangladesh	Bangladesh Integrated Household Survey	2011–12
China	China Health and Nutrition Survey	1989, 1991, 1993, 1997, 2000, 2004, 2006, 2009
Senegal	Poverty and Family Structure Survey	2006–07
Burundi	Panel Priority Survey	2012
<b>Sharing rule estimates</b>		
Bangladesh	Bangladesh Integrated Household Survey	2011–12, 2015
Malawi	Malawi Integrated Household Survey	2004–05, 2010–11
Tanzania	National Panel Survey	2012–13, 2014–15

countries in Sub-Saharan Africa (Muñoz Boudet et al. 2018). Because of remaining quality concerns in the economic participation variables, 18 countries were dropped for the economic typology of households. Because of low coverage in the Middle East and North Africa (4.1 percent), the results from this region are not presented.

### Differences in resources and poverty within households

This section draws on the household surveys in table A.5.

### An individual perspective on multidimensional poverty

This section uses the same household surveys that were used in the six-country sample in chapter 4 (see table A.4), except Uganda is excluded because the survey did not collect anthropometric information for adults.

### Note

1. GMD (Global Monitoring Database), Global Solutions Group on Welfare Measurement and Capacity Building, Poverty and Equity Global Practice, World Bank, Washington, DC.

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The World Bank Group has two overarching goals: End extreme poverty by 2030 and promote shared prosperity by boosting the incomes of the bottom 40 percent of the population in each economy. As this year's Poverty and Shared Prosperity report documents, the world continues to make progress toward these goals. In 2015, approximately one-tenth of the world's population lived in extreme poverty, and the incomes of the bottom 40 percent rose in 77 percent of economies studied.

But success cannot be taken for granted. Poverty remains high in Sub-Saharan Africa, as well as in fragile and conflict-affected states. At the same time, most of the world's poor now live in middle-income countries, which tend to have higher national poverty lines. This year's report tracks poverty comparisons at two higher poverty thresholds—US\$3.20 and US\$5.50 per day—which are typical of standards in lower- and upper-middle-income countries. In addition, the report introduces a societal poverty line based on each economy's median income or consumption.

*Poverty and Shared Prosperity 2018: Piecing Together the Poverty Puzzle* also recognizes that poverty is not only about income and consumption—and it introduces a multidimensional poverty measure that adds other factors, such as access to education, electricity, drinking water, and sanitation. It also explores how inequality within households could affect the global profile of the poor.

All these additional pieces enrich our understanding of the poverty puzzle, bringing us closer to solving it.

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