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## Measuring Economic Growth and Development

**A** native American saying recommends, "One should not go hunting a bear unless one knows what a bear looks like." This is sound advice for bear hunters; it also has meaning for our inquiry. Understanding how to achieve economic development requires some agreement on what we want to achieve.

The previous chapter drew a distinction between economic growth and economic development. Economic growth refers to a rise in real national income per capita—that is, a rise in the inflation-adjusted, per person, value of goods and services produced by an economy. This is a relatively objective measure of economic capacity. It is widely recognized and can be computed with varying degrees of accuracy for most economies. There is far less of a consensus on how to define economic development. Most people would include in their definition increases in the material well-being of individuals as well as improvements in basic health and education. Others might add changes in the structure of production (away from agriculture toward manufacturing and services), improvement in the environment, greater economic equality, or an increase in political freedom. Economic development is a normative concept, one not readily captured by any single measure or index.

To understand the magnitude of the global challenge of development, it is essential to be able to track what has happened to an economy over time and make comparisons between countries. If we want to understand why some nations experienced more rapid growth and development than others, we need measures of economic performance that are relatively accurate and comparable. Poor countries are environments in which information is scarce and data can be of questionable quality, so we have to assure ourselves that our indicators, though imperfect, are sufficiently

the household perform these same tasks, they tend not to enter GDP. The scale of this problem tends to be larger in low-income countries and is evident in a poor nation like Cambodia, where about one-third of the labor force is classified as unpaid family workers, most of whom are engaged on family farms, producing food and other goods and services for their own consumption.

In most developing countries, a large number of activities do not enter the market. Much of what is produced by the agricultural sector is consumed by the farm household and never exchanged in the marketplace. To not include this production would seriously underestimate a nation's GDP. The usual practice is to include estimates from sample surveys of farm output consumed by the producer, which are then valued at the prices of marketed farm produce. This is done, for example, in Moldova and even includes the output of household garden plots. In India, estimates are made for the construction of traditional homes made out of mud, straw, and other local materials. Even illegal activity may be included, as in Afghanistan where estimates of poppy production, a banned crop, are part of the nation's GDP. Despite these adjustments, not all household production is accounted for. As economies grow, more output is transacted in the marketplace and gets included in GDP. The resulting estimates of GDP may overestimate the growth in economic activity because some of what is now captured is merely a transfer of production from within the household to the market.

An additional measurement problem for GDP arises from the need to compare apples with oranges in calculating the value of national output. A typical economy might produce thousands of different goods and services. Adding up the total value of goods and services that are traded in markets requires using their market prices. But accurate price information may not be available or may not be representative of market prices at the national level. Government agencies in poor countries may lack the means to conduct thorough market surveys of prices or may rely too heavily on information from major urban centers (where prices may be easier to track but are unrepresentative of markets around the country).

Another criticism of GDP is that it may be a measure of the goods and services produced by an economy, but does not account for the "bads" society produces. If a steel mill pollutes a river or the air, the value of the steel produced is included in GDP but the cost of pollution is not deducted. Should crime, congestion, and other social bads be deducted from estimates of GDP? *Gross domestic product* also does not account for the depreciation of goods (for example, when machinery or trucks wear out) or depletion of natural resources (when forests are cut, fisheries depleted, or mines exhausted). Proposals for making adjustments to GDP to account for these factors have been raised, but none has been widely adopted yet.<sup>2</sup> Although there are

<sup>2</sup>In 2008, President Nicolas Sarkozy of France established the international Commission on the Measurement of Economic Performance and Social Progress that included discussion of GDP as a useful measure. The commission, chaired by Joseph Stiglitz, a Nobel laureate in economics, raised many concerns about GDP as a measure of economic production and as a measure of the quality of life and of sustainability. More information is available at [www.stiglitz-sen-fitoussi.fr/documents/rapport\\_anglais.pdf](http://www.stiglitz-sen-fitoussi.fr/documents/rapport_anglais.pdf).

obvious flaws in GDP as a measure of national income, there are also many benefits. Having a widely agreed on approach to measuring national income facilitates comparisons of nations' economic activity both over time and relative to other countries. Both types of comparisons are essential to understanding the process of economic development.

### EXCHANGE-RATE CONVERSION PROBLEMS

Another measurement issue we need to consider is how to compare *levels* of GDP per capita across countries. The problem arises because each nation measures national income in its own currency: dinar in Tunisia, guarani in Paraguay, leu in Moldova, and so on. Economic growth rates can be computed in a nation's own currency, but if we want to understand better what is required to transform a nation from low to high income, it is useful to compare nations at different income levels. To do so requires converting GDP per capita into a common currency. The shortcut to accomplishing this goal is to use the market exchange rate between one currency, usually U.S. dollars, and each national currency. For example, to convert India's GDP per capita (2009) of about 57,000 rupees into U.S. dollars, use the appropriate exchange rate between the two currencies (about 49 rupees per US\$1 in 2009), which in this case yields an estimate of about US\$1,160.

A common reaction to this low figure by anyone who has lived in or visited India (or for that matter any developing nation) is that one U.S. dollar goes much further in India than it does in the United States. A basic woman's haircut in a less-affluent part of Mumbai, for example, might cost 200 rupees (US\$4 at the official exchange rate), whereas a basic haircut in Boston might run US\$40. If one can buy more for \$1 in India than one can in the United States—in this example, 10 haircuts in Mumbai for the price of 1 in Boston—then India's true level of per capita income must be higher than the one given by converting currency using the official exchange rate.

There is considerable merit to this argument. One problem with converting per capita income levels from one currency to another is that exchange rates, particularly those of developing countries, can be distorted. Trade restrictions or direct government intervention in setting the exchange rate make it possible for an official exchange rate to be substantially different from a rate determined by a competitive market for foreign exchange.

But even the widespread existence of competitively determined market exchange rates would not eliminate the problem. The huge price difference in haircuts between Boston and Mumbai is not the result of trade restrictions or a managed Indian exchange rate. Instead, a significant part of national income is made up of what are called **nontraded goods and services**—that is, goods that do not and often cannot enter into international trade. Haircuts are one example. Internal transportation, whether by bus, taxi, or train, cannot be traded, although many transport inputs, such as automobiles and rail cars, can be imported. Wholesale

and retail trade and elementary school education also are nontraded services. Land, homes, and office buildings are other obvious examples of goods that are not exchanged across national borders. Generally speaking, whereas the prices of traded goods tend to be similar across countries (because, in the absence of tariffs and other trade barriers, international trade could exploit any price differences), the prices of nontraded goods can differ widely from one country to the next. This is because the markets for nontraded goods are spatially separated and the underlying supply and demand curves can intersect in different places, yielding different prices.

Exchange rates are determined largely by the flow of traded goods and international capital and generally do not reflect the relative prices of nontraded goods. As a result, GDP converted to U.S. dollars by market exchange rates gives misleading comparisons of income levels if the ratio of prices of nontraded goods to prices of traded goods is different in the countries being compared. The way around this problem is to pick a set of prices for all goods and service prevailing in one country and to use that set of prices to value the goods and services of all countries being compared. In effect, one is calculating a purchasing power parity (PPP) exchange rate. Thus a cement block, a computer chip, or a haircut is assigned the same value whether it is produced in New Delhi or New York.

The essence of the procedure can be illustrated by the numerical exercise presented in Table 2-1. The two economies in the table are called the United States and India for illustrative purposes, and each economy produces one traded commodity (steel) and one nontraded service (retail sales). Each economy produces a different amount of each good. GDP, expressed in local currencies, is equal to the total value of production of steel plus retail sales. A ton of rolled steel sells for about \$1,000 in the United States and Rs 50,000 in India. The value of the services of retail sales personnel is estimated in the most commonly used way, which is to assume the value of the service is equal to the wages of the worker providing the service. (For the United States we assume earnings of \$10 per hour, working 40 hours per week for 50 weeks, for annual earnings of \$20,000. In India, we assume annual earnings of Rs 60,000.) Wages are likely to differ widely across countries and to be determined almost exclusively by domestic labor supply and labor demand conditions. This is because workers cannot easily migrate from one country to another to take advantage of any differences in wages (partly because of immigration rules and partly because the cost of moving to a new country can be high, both financially and psychically). From the data in Table 2-1 we determine that GDP in the United States equals \$240 billion and in India, Rs 1,490 billion.

One way of comparing the GDP levels in the two economies is to convert them into a single currency, say, the U.S. dollar. In this simple world of two goods and two nations, the exchange rate is determined solely by trade in steel. If steel is freely traded between the two countries, then the exchange rate settles where the price per ton of steel in the two countries is equal—that is, at the point at which the U.S. price of \$1,000 per ton equals India's price of Rs 50,000 per ton or

TABLE 2-1 Market Exchange Rate Versus Purchasing Power Parity Methods of Converting GDP

|                                      | UNITED STATES |                            |                                | INDIA    |                            |                                  |
|--------------------------------------|---------------|----------------------------|--------------------------------|----------|----------------------------|----------------------------------|
|                                      | QUANTITY      | PRICE (US\$)               | VALUE OF OUTPUT (BILLION US\$) | QUANTITY | PRICE (RUPEES)             | VALUE OF OUTPUT (BILLION RUPEES) |
| Steel (million tons)                 | 200           | 1,000 per ton              | 200                            | 25       | 50,000 per ton             | 1,250                            |
| Retail sales personnel (millions)    | 2             | 20,000 per person per year | 40                             | 4        | 60,000 per person per year | 240                              |
| Total GDP (local currency, billions) |               |                            | 240                            |          |                            | 1,490                            |

Market exchange rate based on steel prices = Rs 50,000/\$1,000 or Rs 50 = US\$1.

1. India's gross domestic product (GDP) in U.S. dollars calculated by using the official exchange rate: Rs 1,490 billion/Rs 50 = US\$29.8 billion.

2. India's GDP in U.S. dollars calculated by using U.S. prices for each individual product or service and applying that price to India's quantities (that is, using purchasing power parity [PPP]):

Steel: 25 million tons  $\times$  \$1,000/ton = \$25 billion

Retail sales personnel: 4 million people  $\times$  \$20,000/person = \$80 billion

GDP: \$25 billion + \$80 billion = \$105 billion

3. Ratio of PPP calculation of India's GDP to official exchange rate calculation: \$105 billion/\$29.8 billion = 3.5

where US\$1 = Rs 50.<sup>3</sup> Using this market-determined exchange rate, India's GDP of Rs 1,490 billion equals US\$29.8 billion, or about 12 percent of U.S. GDP in this hypothetical example.

The problem with this comparison is that, although Rs 50 and US\$1 purchase the same amount of steel in both countries, they purchase different amounts of the nontraded good. To compare the GDP levels of the two nations taking into account this difference in the purchasing power of the respective currencies, we cannot rely on market exchange rates. An alternative approach is to use a common set of prices applied to the output of both countries. We can calculate Indian GDP in U.S. dollars by applying U.S. prices for each product or service to India's quantities. (We could also compute U.S. GDP in terms of India's prices but the convention is to express PPP estimates in terms of U.S. dollars.) This PPP calculation results in India's steel production valued at US\$25 billion and retail sales valued at US\$80 billion, for an estimated India GDP of US\$105 billion. In this example, the PPP calculation of

<sup>3</sup>At any other exchange rate, there would be profitable opportunities to buy more steel from one of the two countries, causing changes in the market for foreign exchange until the two steel prices were equivalent and the exchange rate settled at US\$1 = Rs 50. This is sometimes referred to as *the law of one price*, reflecting how opportunities for arbitrage in traded goods lead to price convergence in these goods.

India's GDP is more than three times as large as the calculation that relied on market exchange rates. In terms of PPP, India's GDP is over 40 percent of the U.S. GDP.

Table 2-1 presents a hypothetical PPP conversion for two countries using two goods. The task becomes significantly more complicated in a world of tens of thousands of goods and more than 200 nations. The **International Comparison Program (ICP)**, which began in 1968 under the auspices of the United Nations and is now overseen by the World Bank, tackles this difficult task by deriving a set of **international prices** in a common currency. Detailed price data on a basket of hundreds of specific goods have been collected periodically for an ever-increasing number of nations. International prices are then derived by aggregating the price data from the individual countries and are used to determine the value of national output at these standardized international prices. The most recent round of international price comparisons released by the ICP was based on 2005 data and represented a significant quality improvement over the previous round of price data from 1993. Key elements of this improvement were coverage of a larger number of countries (146 countries in 2005 as compared to only 118 in 1993) and more careful comparison of specific goods and services across countries. (The next update of the ICP will be based on 2011 data, to be released in 2013.) Estimates of national income in terms of PPP are reported in the publications of the IMF, UN Development Programme (UNDP), World Bank, and other multilateral agencies. Researchers have made extensive use of these data.<sup>4</sup>

The ratio of GDP per capita based on international prices relative to GDP using official exchange rates ranged in 2009 from about 0.7 in Norway to 3.3 in the Gambia (Table 2-2). For high-income countries, like Germany, Japan, and the United Kingdom, the ratio is close to 1.0. This means market exchange rate conversion is a close approximation of what is obtained when converting German, Japanese, or UK GDP into international price dollars using the PPP method. This is to be expected because at similar levels of income the prices of nontraded goods tend to be similar as well. For low- and middle-income economies the ratio is greater than 1, consistent with the finding that the degree to which the official exchange rate conversion method understates GNP is related, generally, to the average income of the country. For China the ratio is 1.8, for Bolivia 2.5, for Vietnam and Ethiopia 2.7, and for India 2.8.

With differences of this magnitude, comparisons of per capita income levels using market exchange rate conversions can be misleading. Market exchange rates suggest that per capita incomes in the United States were about 40 times those in India in 2009. PPP calculations narrow the multiple to about 14 times—still a huge gap but maybe a more reasonable indicator of relative income levels. Another way of appreciating the difference between making comparisons of GDP using market exchange rates versus PPP is to think about world GDP as a whole. When world GDP

<sup>4</sup>If you read *The Economist* you may be familiar with another measure of PPP, the Big Mac index, which was introduced, lightheartedly, in 1986 and has been reported on annually ever since. The common basket of goods is a cheese hamburger with lettuce, onions, and pickles on a sesame bun. For a discussion of the Big Mac index as a measure of PPP, see M. Pakko and P. Pollard, "Burger Survey Provides Taste for International Economics," Federal Reserve Bank of St. Louis, *The Regional Economist* (January 2004), 12–13.

TABLE 2-2 Comparing GDP per Capita Using Market Exchange Rates and PPP in 2009 (US\$)

| COUNTRY        | GDP AT MARKET EXCHANGE RATES | GDP AT PPP | RATIO OF PPP CALCULATION TO MARKET EXCHANGE RATE CALCULATION |
|----------------|------------------------------|------------|--------------------------------------------------------------|
| Norway         | 79,089                       | 56,214     | 0.7                                                          |
| Japan          | 39,738                       | 32,417     | 0.8                                                          |
| Germany        | 40,670                       | 36,378     | 0.9                                                          |
| United Kingdom | 35,165                       | 35,155     | 1.0                                                          |
| United States* | 45,989                       | 45,989     | 1.0                                                          |
| Hungary        | 12,868                       | 20,312     | 1.6                                                          |
| Lebanon        | 8,175                        | 13,070     | 1.6                                                          |
| China          | 3,744                        | 6,828      | 1.8                                                          |
| Botswana       | 6,064                        | 13,384     | 2.2                                                          |
| Bolivia        | 1,751                        | 4,419      | 2.5                                                          |
| Vietnam        | 1,113                        | 2,953      | 2.7                                                          |
| Ethiopia       | 344                          | 934        | 2.7                                                          |
| India          | 1,192                        | 3,296      | 2.8                                                          |
| The Gambia     | 430                          | 1,415      | 3.3                                                          |

\*Gross domestic product (GDP) per capita in the United States is unchanged when measured in terms of purchasing power parity (PPP). This must be the case because the United States is used as the reference country by the International Comparison Program (ICP). As with any index number, the price index at the heart of the ICP must be compared relative to some base, and by convention, U.S. prices were selected.

Source: World Bank, "World Development Indicators," <http://databank.worldbank.org>.

is calculated by converting each nation's GDP into a common currency using market exchange rates, the low- and middle-income economies account for 29 percent of world output. When the calculation is based on PPP, the low- and middle-income economies account for 44 percent of world output.

PPP allows for more valid comparisons of real income levels across economies. But PPP has its limits too. Trade and capital flows are transacted at market exchange rates and should be converted at those rates. The ICP provides a consistent set of PPP estimates of national income, but these are only estimates and critics have pointed out flaws in data collection and methodology.<sup>5</sup> PPP conversions cannot correct for

<sup>5</sup>Angus Deaton provides a useful introduction to the ICP in "Reshaping the World: The 2005 Round of the International Comparison Program," in Prasada Rao and Fred Vogel, eds., *Measuring the Size of the World Economy: The Framework, Methodology, and Results from the International Comparison Program* (Washington, DC, World Bank, in press). Problems associated with constructing PPP estimates are discussed in Angus Deaton and Alan Heston, "Understanding PPPs and PPP-Based National Accounts," *American Economic Journal: Macroeconomics* 2, no. 4 (2010), 36-45.

underlying problems in the measurement of GDP in a nation's own currency. Variations in the quality of goods cloud cross-country comparisons. In addition, the specific price index constructed by the International Comparison Project gives more weight to the goods consumed in rich nations and tends to bias upward the GDP of poorer nations that consume a different basket of goods. This index number problem occurs whenever one studies the aggregate performance of an economy over time or compares the performance of different economies. But, despite these problems, much can be learned from the data at hand, and PPP estimates of GDP per capita are central to the study of economic growth and development.

### ECONOMIC GROWTH AROUND THE WORLD: A BRIEF OVERVIEW

We now turn from exploring the measurement of GDP to examining the actual performance of countries around the world in terms of the rate of growth of GDP per capita.<sup>6</sup> We begin by looking at the findings of economic historian Angus Maddison, who estimated income levels and corresponding rates of economic growth for the world economy as far back as the year 1 B.C.E. Such an exercise requires a lot of conjecture, especially the further back in time one goes. To perform the analysis, Maddison compiled estimates of population, GDP, and a price index for determining PPP.<sup>7</sup>

According to Maddison's calculations, average world income in 1000 was virtually the same as it had been 1,000 years earlier. In other words, growth in per capita income between 1 B.C.E. and 1000 was effectively zero. The next 820 years (from 1000 to 1820) were barely any better, with world income per capita growing, on average, by just 0.05 percent per year. (Note: This is not a growth rate of 5 percent; it is a growth rate of 0.05 percent.) During those 820 years, world GDP grew by only slightly more than the growth in world population. After eight centuries, world per capita income had increased by only 50 percent. To place this in some perspective, China today is one of the world's fastest-growing economies. With more than 1 billion people (about four times the entire world's population in 1000), economic growth in China averaged about 9.5 percent over the past decade, raising Chinese per capita incomes by 50 percent, not in 820 years but in just under 5 years!

<sup>6</sup>In this section we derive the growth rate of real GDP per capita in PPP using the formula for annual compound growth,  $Y_t = Y_0(1 + r)^t$ , where  $Y$  refers to real GDP per capita in PPP;  $t$ , the number of years under consideration;  $r$ , the rate of growth of real GDP per capita; and  $Y_0$  refers to real GDP per capita in the base year and  $Y_t$  in the final year. Alternative ways of estimating growth rates are discussed in Box 3-2.

<sup>7</sup>Angus Maddison died in 2010. His work is being maintained by his colleagues. The data reported here are from Maddison's original web page titled "Statistics on World Population, GDP and Per Capita GDP, 1-2008 AD." Links are available at [www.ggdc.net/MADDISON/oriindex.htm](http://www.ggdc.net/MADDISON/oriindex.htm), accessed February 2012.

Maddison's estimates indicate considerable uniformity in per capita incomes throughout the first millennium. The little bit of economic growth that did take place over the next 800 years was centered in western Europe and in what Maddison calls the western "offshoots" (Australia, Canada, New Zealand, and the United States). By 1820, these regions already had a decided advantage over the rest of the world. For example, whereas China and India may have been slightly ahead of the western European countries in 1000, average per capita incomes in western Europe and in their offshoots were already double those of China and India by 1820. Box 2-1 offers one explanation for some of the early and divergent trends and their consequences for the world we live in today.

Maddison's research suggests that rapid economic growth as we know it really began around 1820. He estimates that over the subsequent 190 years, the average growth in world income increased to 1.3 percent per year. Note that the difference between annual growth of 0.05 percent and 1.3 percent is huge. With the world economy growing at 0.05 percent per year, it would take more than 1,400 years for average income to double. With annual growth of 1.3 percent, average income doubles in just 55 years. The world had changed from no growth at all during the first millennium, to slow growth for most of the second millennium, to a situation in which, in the past two centuries, average real income began to double in less than every three generations.

Maddison's estimates of average income levels for the world's major regions since 1820 are shown in Figure 2-1.<sup>8</sup> Several features of these data are notable. First, economic growth rates clearly accelerated around the world since the early 1800s and especially after 1880. Second, and perhaps most striking, the richest countries recorded the fastest growth rates and the poorest countries recorded the slowest growth rates, at least until 1950. Per capita income in the Western offshoots grew by about 1.6 percent per year between 1820 and 1950, while in Asia it grew by only 0.16 percent. As a result, the ratio of the average incomes in the richest regions to those in the poorest regions grew from about 2:1 in 1820 to about 13:1 in 1950.

Between 1950 and 2008, the patterns of economic growth changed, at least in several regions. The gap between the Western offshoots and western Europe, which had been widening through 1950, narrowed significantly. The poorest region in 1950 (Asia) recorded the fastest subsequent growth rate (3.6 percent), thereby beginning to close the income gap with the richer regions of the world. By contrast, Latin America's growth stagnated during the 1980s and 1990s, and eastern Europe's collapsed after the fall of the Berlin Wall in 1989. Both regions resumed economic growth during the 2000s.

<sup>8</sup>Note that the y-axis in Figure 2-1 expresses GDP per capita in PPP using Geary-Khamis (GK) dollars, another PPP index. Figure 2-1 also expresses per capita income in logarithms. We will have more to say about the use of log scales later in this chapter. For now, it will be useful to know that when using a log scale, the slopes of the lines for each region are estimates of the growth rate of GDP per capita.

## BOX 2-1 JARED DIAMOND: GUNS, GERMS, AND STEEL

Most of this textbook is devoted to understanding why over the past 50 years some countries have experienced rapid economic growth and development while others have not. Jared Diamond, a physiologist, geographer, and Pulitzer Prize-winning author, poses a related but different question. The world as we know it is the result of the historical dominance of Eurasians, especially people of Europe and East Asia. Why, Diamond asks, did history turn out this way? Why did things not work in reverse with Native Americans, Africans, and Aboriginal Australians conquering Europeans? We know that Hernán Cortés, the conquistador, overthrew the Aztec Empire and began Spanish colonization of the Americas. But Diamond wants to understand why the opposite did not happen. Why didn't Emperor Montezuma cross the Atlantic and conquer Europe? World history would have turned out differently had he done so.

For Diamond, much of the history of the last two centuries is the result of what happened in the previous 10,000 years. It was the advantages Europe and Asia had over other continents by 1500 that determined much of what followed. Diamond is interested in the early divergence of regional incomes. He identifies the "proximate causes" of Eurasian dominance over other regions: guns, germs, and steel. Eurasians had guns and steel for swords, which gave them their military advantage; they carried diseases, such as measles and smallpox, which decimated other populations; and they had political structures that could finance seaworthy ships and organize expeditions that led to the conquest of other lands.

But these are only proximate causes. Diamond digs deeper asking why Eurasians had these advantages more than 500 years ago. Diamond's explanation is geography. Eurasia has a land mass that has an east-west axis whereas Africa and the Americas have a north-south orientation. An east-west axis permitted the more rapid spread of both domesticated animals (cattle, chickens, horses) and edible grains, which in turn permitted more rapid development of settled farming communities. In time, these communities became productive enough to support craftsmen and others who developed the technologies that led to the guns, ships, and steel necessary for foreign adventures and conquest. If a continent has a north-south axis, plant and animal varieties cannot spread as rapidly because they need to adapt to different climates as they move from one area to the next, thus significantly limiting the opportunity for economic growth.

Domesticated agriculture also lies behind the germs that decimated indigenous populations in the Americas and elsewhere. Many infectious diseases result from microbes crossing over from animal populations to humans. Eurasians acquired these diseases and built up their immunity to them as a consequence

of developing settled agriculture early. As more densely populated communities came in close contact with their farm animals, diseases spread as did immunity to them. Eurasia also happened to have more animal species suitable for domestication than other continents. As Diamond writes, "Just think what the course of world history might have been if Africa's rhinos and hippos had lent themselves to domestication! If that had been possible, African cavalry mounted on rhinos and hippos would have made mincemeat of European cavalry mounted on horses."

Sources: Jared Diamond, *Guns, Germs and Steel: The Fates of Human Societies* (New York, W. W. Norton, 1998). A summary is contained in a 1997 talk by Jared Diamond, "Why Did Human History Unfold Differently on Different Continents for the Last 13,000 Years?" April 22, 1997, transcript available at <http://edge.org/conversation/why-did-human-history-unfold-differently-on-different-continents-for-the-last-13000-years>, accessed February 2012.

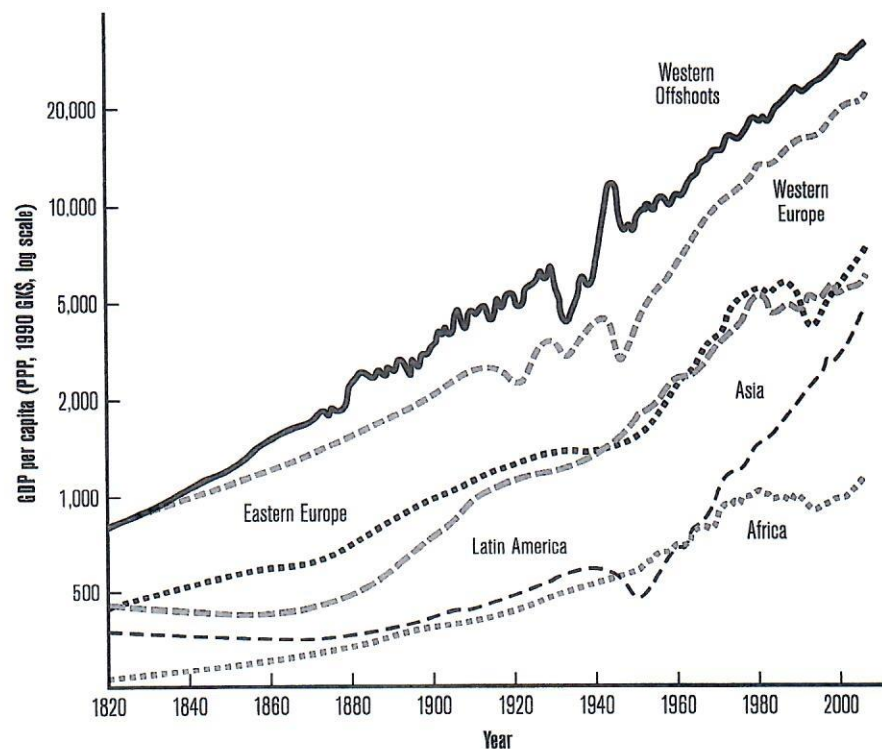


FIGURE 2-1 Levels of GDP per Capita by Region: 1820–2008

Notes: Western offshoots include Australia, Canada, New Zealand, and the United States. GDP, gross domestic product; GKS, Geary-Khamis dollars; PPP, purchasing power parity.

Source: Angus Maddison, "Statistics on World Population, GDP, and Per Capita GDP, 1–2008 AD," [www.ggdc.net/MADDISON/History\\_Statistics/vertical-file\\_02-2010.xls](http://www.ggdc.net/MADDISON/History_Statistics/vertical-file_02-2010.xls).

In Africa, as elsewhere, average growth rates accelerated after 1820 and did so again after 1950, in the period associated with the end of the colonial era. But as in Latin America, economic growth in Africa faded after 1980, continued to stagnate in the 1990s, and rebounded only recently. As a result, the income gap between the world's richest regions (the Western offshoots) and the poorest in 2000 (Africa) reached 19:1. According to Maddison's work, this is the largest gap in income between rich and poor regions the world has ever known.<sup>9</sup> Because of resurgence in economic growth in Africa during the 2000s, this gap has narrowed but still remains huge by historical standards.

Maddison's broad sweep of world economic history indicates how differential rates of economic growth, especially over the past two centuries, have produced the divergence in income levels that characterizes the world's economy today.

## ECONOMIC GROWTH, 1970–2010

Table 2-3 takes a closer look at the pattern of growth rates over the past four decades. The selection of decades as the unit of observation is somewhat arbitrary. The 1970s often are associated with two oil price shocks and other significant changes in commodity prices; the 1980s, with the first wave of international debt crises; the 1990s, with the major transition toward market economies, especially in eastern Europe and the republics of the former Soviet Union; and the 2000s, with the global consequences of the attacks of September 11, 2001, and of the financial crisis of 2008–09. The regional divisions in Table 2-3 differ from those in Maddison and conform to conventions used by the World Bank, a major source of data on economic development. Most of the regional definitions are self-explanatory; however, all high-income economies are combined in one category regardless of geographic location. Therefore, East Asia does not include Japan, Korea, Singapore, Taiwan, and a few small and affluent island economies. Similarly, Europe and Central Asia refers primarily to eastern Europe and Central Asia and excludes all (mostly western) European economies classified as high-income.

The growth rates in GDP per capita reported in Table 2-3 highlight major differences in economic growth both between regions and over time.<sup>10</sup> The 1970s were a decade in which *all* regions experienced positive growth. The 1980s often are referred to as “the lost decade” in Latin America because of the sharp downturn in regional

<sup>9</sup>Using a somewhat different methodology from that employed by Maddison, Lant Pritchett reached similar conclusions in “Divergence, Big Time,” *Journal of Economic Perspectives* 11, no. 3 (1997), 3–17.

<sup>10</sup>The growth rates in Table 2-3 are based on constant US\$. Although large differences in the level of GDP per capita are observed depending on whether PPP or market exchange rates are used, this is not the case when comparing *growth rates* of national income. The growth rates reported in the table are the differences between World Bank estimates of GDP growth and population growth by region and by decade.

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TABLE 2-3 Rate of GDP per Capita Growth (Percent/Year)

|                              | 1970s | 1980s | 1990s | 2000s |
|------------------------------|-------|-------|-------|-------|
| East Asia and Pacific        | 5.0   | 6.4   | 6.1   | 8.6   |
| Europe and Central Asia      | 4.4   | 1.5   | -2.9  | 5.7   |
| Latin America and Caribbean  | 3.0   | -0.3  | 1.7   | 2.5   |
| Middle East and North Africa | 3.0   | -1.1  | 0.8   | 2.9   |
| South Asia                   | 1.2   | 3.5   | 3.8   | 5.7   |
| Sub-Saharan Africa           | 1.1   | -1.2  | -0.2  | 2.6   |
| High income                  | 2.4   | 2.5   | 1.8   | 1.3   |

Sources: World Bank, *World Development Report 1995* (New York: Oxford University Press, 1995). World Bank, *World Development Report 2000/2001* (New York: Oxford University Press, 2001). World Bank, *World Development Report 2011* (Washington, DC: World Bank, 2011).

growth, from +3.0 percent in the 1970s to -0.3 percent in the following 10 years. Negative growth and falling per capita income also were features of the Middle East and North Africa region and sub-Saharan Africa in the 1980s. Growth in sub-Saharan Africa also remained negative, but by a smaller amount, throughout the 1990s. The economies of Europe and Central Asia collapsed in the 1990s after the transition from a planned to a market-based economic system. But the region rebounded during the 2000s, in some cases because of large improvements in commodity prices, especially oil, and in other cases because of the integration of these countries with the global economy. The poor performance of some regions during the 1980s and 1990s stands in sharp contrast to the accelerating growth rates—and the associated improvements in living standards—in both East and South Asia. The term *economic miracle* has been used to describe the historically unprecedented rates of growth achieved by some nations in these two regions.

The growth rates in Table 2-3 also reveal that the 2000s were the best decade since the 1970s for the low- and middle-income nations as a group. The political and economic events that rocked the high-income economies, especially the United States and the European Union, did not have the same impact elsewhere. Such resiliency on the part of low- and middle-income nations was not expected based on the experience of the 1980s and 1990s. Sub-Saharan Africa's improved growth performance is especially noteworthy. Some of it is due to much higher commodity prices. Emerging economies in the region are also benefiting from improved economic policies and management, more democratic and accountable governments, new technologies, and a new generation of development-oriented African leaders and entrepreneurs.<sup>11</sup>

<sup>11</sup>Steven Radelet, *Emerging Africa: How 17 Countries Are Leading the Way* (Washington, DC, Center for Global Development, 2010).

There are a few more points to take away from the growth rates presented in Table 2-3. First, remember that even small differences in growth rates imply huge differences in the potential for economic development. In the 1970s, economic growth in South Asia was 1.2 per year. At this rate, GDP per capita in the region expanded by a mere 12.5 percent in a decade. In the 1980s, South Asia achieved a growth rate a few percentage points higher, 3.5 percent, and ended the decade with a 41 percent increase in GDP per capita. In the 2000s, growth rates again grew by a few more percentage points, reaching 5.7 percent. That decade ended with per capita incomes 75 percent higher than they began. Second, the regional averages in Table 2-3 are weighted averages, where the weights are the population size of each nation in the region. Such averages are heavily influenced by the experience of the most populous country in the region, especially China in East Asia and India in South Asia, and disguise the wide range in individual country performance. For example, in East Asia, the Philippines' annual growth rate from 1979 to 2009 was only 0.7 percent, a fraction of its region's performance; Botswana grew at 4.4 percent per annum over these three decades, far exceeding not only the sub-Saharan Africa average but the performance of most nations worldwide.

The successful growth performance in Asia and a few countries in other regions relative to the high-income economies illustrates an observation by economic historian Alexander Gerschenkron. When Gerschenkron refers to "**the advantages of backwardness**," he is not suggesting that it is good to be poor. Instead, he means that being relatively poorer might allow low-income countries to grow more quickly. For the first nations to experience modern economic growth, in western Europe and its offshoots, growth rates were constrained by the rate of technological progress. That same constraint operates today. Growth rates in the high-income economies reported in Table 2-3 range from 1.3 to 2.5 percent, far lower than the growth rates of the successful regions in the developing world. Poor countries can borrow and adapt existing technology and have the potential to grow faster and to catch up to the more advanced economies. Over the past three decades, this is what enabled growth rates in Asia to exceed the average growth rate of the high-income nations. For development economists, the challenge is to understand why some countries have been able to realize the advantages of backwardness whereas others have fallen further behind.

### WHAT DO WE MEAN BY *ECONOMIC DEVELOPMENT*?

As indicated in Chapter 1, economic growth is a necessary but not sufficient condition for improving the living standards of large numbers of people in countries with low levels of GDP per capita. It is necessary because, if there is no growth, individuals can become better off only through transfers of income and assets from others. In a

poor country, even if a small segment of the population is very rich, the potential for this kind of redistribution is severely limited. Economic growth, by contrast, has the potential for all people to become much better off without anyone becoming worse off. Economic growth has led to widespread improvements in living standards in Botswana, Chile, Estonia, Korea, and many other countries.

Economic growth, however, is not a sufficient condition for improving mass living standards for several reasons. First, governments promote economic growth not just to improve the welfare of their citizens but also, and sometimes primarily, to augment the power and glory of the state and its rulers. Governments in developing nations may use national income to expand their militaries or construct elaborate capital city complexes in deserts and jungles. Political leaders may be corrupt and expropriate income for personal gain, whether for conspicuous consumption at home or the accumulation of wealth in overseas bank accounts and property. When gains from growth are channeled in such ways, they often provide little benefit to the country's citizens. Second, resources may be heavily invested in further growth, with significant consumption gains deferred to a later date. In extreme cases, such as the Soviet collectivization drive of the 1930s, consumption can decline dramatically over long periods. When the Soviet Union fell in 1991, its consumers were still waiting for the era of mass consumption to arrive. Normally, the power to suppress consumption to this extent in the name of economic growth is available only to totalitarian governments. Third, income and consumption may increase, but those who already are relatively well off may get all or most of the benefits. The rich get richer, the old saw says, and the poor get poorer. (In another version, the poor get children.) This is what poor people often think is happening. Sometimes, they are right.

If economic growth does not guarantee improvement in living standards, then GDP per capita may not be a meaningful measure of economic development. In addition to problems associated with how income is spent and distributed, any definition of economic development must include more than income levels. Income, after all, is only a means to an end, not an end itself. More than 2,000 years ago, Aristotle wrote, "The life of money-making is one undertaken under compulsion and wealth is evidently not the good we are seeking, for it is merely useful for the sake of something else."

If economic growth and economic development are not the same thing, how should we define economic development? Amartya Sen, economist, philosopher, and Nobel laureate, argues that the goal of development is to expand the *capabilities* of people to live the lives they choose to lead. Income is one factor in determining such capabilities and outcomes, but it is not the only one. To be capable of leading a life of one's own choice requires what Sen calls "elementary functionings," such as escaping high morbidity and mortality, being adequately nourished, and having at least a basic education. Also required are more complex functionings, such as achieving self-respect and being able to take part in the life of the community. Income is but one of the many factors that enhance such individual capabilities.

In his 1998 Nobel address, Sen identified four broad factors, beyond mere poverty, that affect how well income can be converted into "the capability to live a minimally acceptable life":

- *Personal heterogeneities*: including age, proneness to illness, and extent of disabilities.
- *Environmental diversities*: shelter, clothing, and fuel, for example, required by climatic conditions.
- *Variations in social climate*: such as the impact of crime, civil unrest, and violence.
- *Differences in relative deprivation*: for example, the extent to which being impoverished reduces one's capability to take part in the life of the greater community.

According to Sen, economic development requires alleviating the sources of "capability deprivation" that prevent people from having the freedom to live the lives they desire.

Sen's seminal contributions played a key role in the formulation of the human development approach to economic development. This approach is also associated with the UNDP and the work of Pakistani economist Mahbub ul Haq. Part of the motivation of Haq and Sen was a concern over the focus by other development economists on economic growth. Like Aristotle, they wanted to explore how "money-making" was "useful for the sake of something else." They wanted to see the focus shift from the production of commodities to a focus on human lives, including the enhancement of individual capabilities and the enlargement of people's choices.

## MEASURING ECONOMIC DEVELOPMENT

The UNDP published its first human development report in 1990 with "the single goal of putting people back at the center of the development process." Although the terminology is different, human development and economic development are the same idea. The distinction is intended to expand the perception of development as encompassing more than increases in per capita income (Box 2-2).

The UNDP attempted to quantify what it saw as the essential determinants of human development: to live a long and healthy life, acquire knowledge, and have access to the resources needed for a decent standard of living. For each of these elements, a specific measure was constructed and aggregated into an index, the **Human Development Index (HDI)**. Every year since 1990, the UNDP has calculated the value of the HDI for as many of the world's nations as the data permit and assessed the relative progress of nations in improving human development. Because the HDI combines outcomes with different units of measurement—years of life expectancy, years of schooling, and dollars of income—each outcome must be converted into an index number to permit aggregation into a composite measure. In response to criticisms of

## BOX 2-2 HUMAN DEVELOPMENT DEFINED

Human development is a process of enlarging people's choices. In principle, these choices can be infinite and change over time. But at all levels of development, the three essential ones are for people to lead a long and healthy life, to acquire knowledge, and to have access to resources needed for a decent standard of living. If these essential choices are not available, many other opportunities remain inaccessible.

But human development does not end there. Additional choices, highly valued by many people, range from political, economic, and social freedom to opportunities for being creative and productive, and enjoying personal self-respect and guaranteed human rights.

Human development has two sides: the formation of human capabilities—such as improved health, knowledge, and skills—and the use people make of their acquired capabilities—for leisure, productive purposes, or being active in cultural, social, and political affairs. If the scales of human development do not finely balance the two sides, considerable human frustration may result.

According to this concept of human development, income is clearly only one option that people would like to have, albeit an important one. But it is not the sum total of their lives. Development must, therefore, be more than just the expansion of income and wealth. Its focus must be people.

Source: United Nations Development Programme, *Human Development Report 1990* (Oxford: Oxford University Press, 1990), p. 10.

the index, the HDI has evolved over time, including different variables and changing how the index is computed. In the *Human Development Report 2010*, the 20th anniversary of the HDI, significant changes were made to the variables used, the construction of the indices for each dimension, and the method of aggregation.

As a proxy for living a long and healthy life, the HDI employs a nation's life expectancy at birth and compares progress on this measure relative to other nations. The goalposts for assessing life expectancy are a minimum value of 20 years and a maximum of 83.2. Twenty years represents the minimum life expectancy that permits a society to sustain itself. Anything less than 20 years would be below the prime reproductive age range and a society would eventually die out. Historical evidence bears this out. The maximum value of 83.2 years is what Japan achieved in 2010, the highest level recorded in any nation over the 20 years the HDI has been calculated. A country's score on this dimension is a measure of its populations' life expectancy compared to the maximum and minimum scores. For example, in 2010, El Salvador